A RANDOMIZED CONTROLLED TRIAL OF SIMPLE DIAGNOSIS AND TREATMENT FOR URGENCY URINARY INCONTINENCE IN WOMEN

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BACKGROUND: Urinary incontinence is a common but under-diagnosed and under-treated problem in women. The traditional extended evaluation for urinary incontinence is difficult to perform in the primary care setting, creating a significant barrier to treatment. A simple 3-item measure to diagnose and classify incontinence in women (the 3 Incontinence Questions) was developed to facilitate diagnosis and treatment of this problem. However, the efficacy and safety of using this measure to initiate treatment for incontinence are unknown.

METHODS: In this double-blind, multicenter, clinical trial, 645 ambulatory women who self-identified as having urgency-predominant incontinence using the 3 Incontinence Questions and denied other major urologic or neurologic co-morbidities were randomized to 12 weeks of pharmacologic therapy with fesoterodine (participant-directed dosing of 4 to 8 mg daily) (N=322) or placebo (N=323). Frequency of urgency incontinence and other urinary symptoms was assessed at baseline and 12 weeks using voiding diaries in which women recorded all incontinence and voiding episodes over a 3-day period. Safety was assessed through adverse event monitoring and measurement of post-treatment postvoid residual volume (PVR), with specialist referral for PVR of 250 mL or greater or clinical safety concern. Treatment effects on urinary symptoms and safety outcomes were examined using analysis of covariance models, with adjustment for baseline values as well as clinical site.

RESULTS: Mean (SD) age of participants was 56 (14) years, and mean (SD) baseline urgency incontinence frequency was 3.9 (3.0) episodes per day. After 12 weeks, participants in the fesoterodine group reported an average of 0.9 fewer instances of urgency incontinence, 1.0 fewer instances of total incontinence, and 0.9 fewer urgency-associated voids per day, compared to placebo (P < 0.001 for all). Four serious adverse events occurred in each treatment group; no serious adverse events were related to pharmacologic therapy. Mean (SD) postvoid residual volume after 12 weeks was 39 (48) mL in the fesoterodine versus 31 (39) mL in the placebo group (P = 0.04). No participant developed a post-treatment PVR of 250 mL or greater or required specialist referral for a safety concern.

CONCLUSION: Among ambulatory women with urgency urinary incontinence diagnosed using a simple 3-item measure, pharmacologic therapy with fesoterodine resulted in a moderate decrease in urgency incontinence frequency, without causing significant urinary retention or increasing serious adverse events. These findings support the initial efficacy and safety of a streamlined diagnostic and treatment algorithm for urgency incontinence among women who are appropriate for evaluation and treatment in primary care.
**Table 1:**

| No. outcomes / participants | TSH <0.45 mIU/L vs. euthyroidism: HR (95% CI) | TSH 0.10-0.44 vs. euthyroidism: HR (95% CI) | TSH <0.10 vs. euthyroidism: HR (95% CI) | P for trend * |
|----------------------------|---------------------------------------------|---------------------------------------------|----------------------------------------|--------------|
| Total mortality            | 7'920 / 48'791                              | 1.28 (1.09-1.50)                            | 1.27 (1.07-1.50)                        | 1.33 (1.02-1.73) | 0.053 |
| CHD mortality              | 1'779 / 48'783                              | 1.32 (1.02-1.72)                            | 1.29 (0.96-1.73)                        | 1.89 (1.12-3.19) | 0.01 |
| CHD events                 | 3'695 / 22'437                              | 1.20 (0.99-1.45)                            | 1.27 (1.03-1.56)                        | 1.07 (0.68-1.67) | 0.63 |

CHD: coronary heart disease; CI: confidence interval; HR: hazard ratio; TSH: thyroid-stimulating hormone.  
* P for trend across TSH categories (euthyroidism 0.45-4.49 mIU/L, TSH 0.10-0.44 mIU/L, and TSH <0.10 mIU/L)

**DISCOVERY OF THE “APPRENTICE” EFFECT:** FIRST YEAR STUDENTS ARE OVERWHELMED AND RETICENT. C. Smith 1; William Hill 2; Magdalena Morris 3; Chris Francovich 4; Franclene Langlois-Winkle 5; Bruce Robbins 6; Lynne Robins 1; Andrew Turner 6.  
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**BACKGROUND:** Studies of diagnostic reasoning have identified an “intermediate” effect, where mid-level learners generate more propositional assertions than novices or experts when solving clinical problems. Expert knowledge is encapsulated rather than being lost or disconnect- ed. None of these investigations have studied premedical students. We report here on part of a larger study about the nature of expert knowledge encapsulation.  

**SUBCLINICAL HYPERTHYROIDISM AND MORTALITY** Tinh-Hai Collet 1; Jacobijn Gusseklo 2; Douglas C. Bauer 3; Wendy P.J. den Elzen 2; Philippe Balmer 4; Giorgio Iervasi 5; Anne R. Cappola 6; Andrew Turner 6.  
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(Tracking ID # 7438)

**BACKGROUND:** Data regarding the association between subclinical hyperthyroidism and cardiovascular outcomes are conflicting among large prospective cohort studies. This might reflect differences in participants’ age, gender, thyroid-stimulating hormone (TSH) levels or preexisting cardiovascular disease. We aimed to assess the risks of coronary heart disease (CHD) and total mortality associated with subclinical hyperthyroidism.

**METHODS:** We searched MEDLINE and EMBASE without language restrictions, and reference lists of retrieved articles to find prospective cohort studies with baseline thyroid function assessment and follow-up of subsequent total mortality, CHD mortality and CHD events. Individual data on 49,030 participants with 458,686 person-years of follow-up between 1981 and 2007 were supplied from 9 prospective cohorts in the United States, Europe, Australia and Brazil. We examined the risk of CHD events in 22,676 participants from 6 cohorts with available data. Euthyroidism was defined as a TSH 0.45-4.49 mIU/L and subclinical hyperthyroidism as a TSH 0.45-4.49 mIU/L and subclinical hyperthyroidism as a TSH

**RESULTS:** Among 49,030 adults, 1,300 had subclinical hyperthyro-

**CONCLUSION:** Subclinical hyperthyroidism is associated with increased risk of total and CHD mortality. The risks are higher with lower TSH, particularly in those with TSH below 0.10 mIU/L. Future studies should assess which conditions increase the risk of total and cause-specific mortality associated with subclinical hyperthyroidism.
METHODS: Semi-structured interviews were audio taped for ten each of premedical students (P), first year medical students (MS1), third year medical students (MS3), second year medicine residents (R), and experienced medicine faculty (F). Simultaneously, a process observer recorded emotional tone using a validated tool. Transcripts blinded to learner level were created. Transcripts were analyzed in two ways. One team used grounded theory, identifying salient categories in the data, coming to agreement about the set of categories, and scoring each passage for these categories. Another analyst performed a propositional analysis, identifying IF-THEN assertions and organizing these into propositional maps.

RESULTS: Grounded theory analysts identified 17 salient categories in the transcript data. Inter-rater reliability after a single adjudication session was 81% and was 92% for the final analyses. The category for this analysis “struggling with disease definition” was scored as follows [Group (# text units)]: PM (117), MS1 (174), MS3 (17), R (24), and F (1). For example, “I’ll never be able to learn that much...but something that’s really helped, knowing people who have done it. I mean the fact that there are doctors, doctors exist, so it must be possible” (MS1). Also, the number of text units in the categories “history” and “disconfirming example” increased with expertise, while the number in “physical” and “tests” peaked at the R level. The average number of propositions per group was as follows: PM 4.2+/−2, MS1 2.3+/−1.8, MS3 8.4+/−3.1, R 12.4+/−5.4, and F 9.6+/−4.2. The word count per transcript steadily increased with expertise. Propositional maps for MS1’s were blunted compared with all other groups, and focused on a desire for concreteness. For instance, “I feel like labs would help a lot...x-rays or CT scans” (MS1). Emotional tone averaged 0.23 (aroused) for PM, −0.067 (tense) for MS1, 0.42 (alert) for MS3, 0.51 (alert) for R, and 0.78 (excited) for F. One R scored ‘sad’ (recounting a patient who had recently died) and three F were the only interviewees to score “calm.”

CONCLUSION: Triangulation between grounded theory categories, propositional analysis, and process observation suggest that the MS1 year is particularly difficult. Much of this difficulty is due to the volume of information and the lack of an organizing conceptual structure. It is not known whether this is a developmental or curricular effect.

“NO TIME TO THINK ABOUT HEALTH”: EXPLANATORY MODELS OF CARDIOVASCULAR DISEASE AMONG BENGALI IMMIGRANTS Mihir Patel 1; Lhasa Ray 2; Erica Phillips-Caesar 1; Carla Boutin-Foster3.

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BACKGROUND: Bengalis, a South Asian ethnic subgroup, make up an increasing portion of the South Asian immigrant population and have the highest prevalence, the earliest onset, and the most severe manifestations of cardiovascular disease (CVD) among all South Asian subgroups. Few studies have focused on the explanatory models of cardiovascular disease among the Bengali population. The objective of this study was to apply Kleinman’s Explanatory Model of Disease as a framework to elicit perspectives on cardiovascular disease among a cohort of Bengali immigrants.

METHODS: This was a qualitative study conducted among patients of Bengali origin who were recruited from a Federally Qualified Health Center in New York City. These health centers provide comprehensive community based primary care and social services to underserved communities. Eligible patients were those identified from the practice site that were 18 or older and able to speak English. Demographic data also included years of residence in the US and acculturation assessment. The electronic medical records were used to collect data on cardiovascular risks such as height, weight, lipid profile, and blood pressure. Individual interviews using open-ended questions based on Kleinman’s model were used to identify an explanatory model of cardiovascular disease. Participants were asked to reflect on experiences that they or members of their social network (friends, co-workers, or family) had with heart disease and describe what cardiovascular disease meant to them, what they thought caused it, and how it could be prevented.

RESULTS: A total of 60 Bengali patients were interviewed with two-thirds being male patients. The average age was 43 years. The average length of time in the U.S. was 16 years and 5 months, while the Marin acculturation score averaged moderately low at 8.6. Half of subjects finished college, yet most worked in semi-skilled jobs. Two-thirds of patients were obese by BMI and 88% displayed central obesity. Fifty-nine percent were sedentary expending less than 1000 kcal of energy per week. Mean blood pressure was 111/70 mm Hg. Average total cholesterol was 172 mg/dL, mean LDL was 102 mg/dL, mean HDL was 41 mg/dL, and mean triglyceride level was 155 mg/dL.

The most frequent themes surrounding the meaning of CVD involved stress and fear. For example, one participant said, “It’s very very scary. If this should happen (to me) what would I do?” Much of these perceptions stemmed from experiences a relative had rather than their own personal
experiences. The major themes describing causative factors included having too much stress related to work and caring for one’s family as well as lack of time to practice healthy lifestyle habits. Acquiring CVD was felt to be related to “hard work and not taking proper rest. I have to take care of my family in Bangladesh and here. I have to think about too much stuff.” Another patient said that “because of no time we don’t think about health, we think about other things.” Themes regarding how to prevent CVD included individual physician guidance on healthy lifestyles as well as education targeting the entire Bengali community. For example, one participant explained that others “need a lot of help. They need to have a Bangladeshi doctor, diet, and exercise.” Another said, “Actually we should alert people. I think a talk show would be great, you know on Bengali channels.”

**CONCLUSION:** These findings point to several culturally patterned belief systems about cardiovascular disease that need to be integrated when developing interventions or counseling individual Bengali patients about CVD. The meaning, the etiology, and the prevention of cardiovascular disease were all centered around the major theme of stress related to work and of taking care of the family in the US and back home in Bangladesh. These findings will be used to develop a community-based intervention that focuses on stress reduction, work-life balance and education about lifestyle habits.

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**METHODS:** Illness was retrospectively assessed in a large, real-world patient population. The cumulative risk and hazard of VTE prophylaxis during their hospitalization. The highest number of VTE events occurred during the index admission. VTE hazard peaked at approximately 1.7 per 1,000 person-days on the 8th day following admission, and 50% had been incurred by the 18th day. VTE frequency then further decreased during days 20–29 (17 events, 47% in-hospital; proportion of 180-day cumulative risk ~62%) and gradually declined thereafter, fluctuating at a background level of 1–9 events during each 10-day interval up to 170–180 days.

**CONCLUSION:** Among the cohort of 5,200 at-risk medical patients who received pharmacological prophylaxis for VTE, 4.6% experienced an incident VTE event during the 180-day evaluation period following index hospitalization. Half of these events occurred post-discharge. The risk of VTE was highest within the first 19 days after index admission. Results from this study indicate that a non-trivial risk of VTE extends into the period after discharge. Acknowledgment: This study was funded by sanofi-aventis U.S., Inc. The authors received editorial/writing support in the preparation of this abstract provided by Tessa Hartog, PhD, of Excerpta Medica, funded by sanofi-aventis U.S., Inc.

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**DURATION OF THE RISK OF VTE IN US MEDICAL PATIENTS**

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**BACKGROUND:** The risk of developing venous thromboembolism (VTE) is significantly increased in patients hospitalized for medical illness. The incidence and time course of VTE events following hospitalization for medical illness was retrospectively assessed in a large, real-world patient population.

**METHODS:** Administrative claims data derived from the Thomson Reuters MarketScan Inpatient Drug Link File were used to identify patients with hospitalization for severe infectious disease, congestive heart failure, cancer, or chronic obstructive pulmonary disease. Included patients had been admitted to hospital between January 1, 2005, and December 31, 2008. Included patients had been continuously enrolled for >12 months prior to admission (patient history) and >180 days after admission, and were required to have received any pharmacological prophylaxis during their hospitalization. The cumulative risk and hazard of VTE – measured as the number of VTE events per 1,000 person-days – were established across an evaluation period of 180 days.

**RESULTS:** The study cohort consisted of 5,200 medical patients, with a mean (standard deviation [SD]) age of 68.9 (13.0) years and 51.0% were female. The mean (SD) length of stay in hospital was 6.5 (6.1) days, during which patients received VTE prophylaxis for a mean (SD) duration of 5.0 (4.7) days. 16.0% of patients received anticoagulation therapy within the period extending from discharge to 35 days after discharge. Appropriateness of prophylaxis was not determined. A total of 239 VTE events occurred during the 180-day evaluation period and 127 (53%) of these events occurred during the index hospitalization. The highest number of VTE events occurred during the first 9 days (71 events, 89% in-hospital; proportion of 180-day cumulative risk ~20%) and during days 10–19 (64 events, 78% in-hospital; proportion of 180-day cumulative risk ~52%) following index admission. VTE hazard peaked at approximately 1.7 per 1,000 person-days on the 8th day following admission, and 50% had been incurred by the 18th day. VTE frequency then further decreased during days 20–29 (17 events, 47% in-hospital; proportion of 180-day cumulative risk ~62%) and gradually declined thereafter, fluctuating at a background level of 1–9 events during each 10-day interval up to 170–180 days.

**CONCLUSION:** Among the cohort of 5,200 at-risk medical patients who received pharmacological prophylaxis for VTE, 4.6% experienced an incident VTE event during the 180-day evaluation period following index hospitalization. Half of these events occurred post-discharge. The risk of VTE was highest within the first 19 days after index admission. Results from this study indicate that a non-trivial risk of VTE extends into the period after discharge. Acknowledgment: This study was funded by sanofi-aventis U.S., Inc. The authors received editorial/writing support in the preparation of this abstract provided by Tessa Hartog, PhD, of Excerpta Medica, funded by sanofi-aventis U.S., Inc.

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**INTERPERSONAL DISCRIMINATION AND HEALTH UTILITY SCORES AMONG BLACK AND WHITE MEN AND WOMEN IN THE UNITED STATES**

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**BACKGROUND:** Very little is known about the prevalence of discrimination across race and gender. While discrimination has been shown to impact health, no studies to date have examined the association between discrimination and health utility scores.

**METHODS:** We examined data from the National Health Measurement Study (NHMS), a nationally representative sample of 3844 adults aged 35 to 79 in the non-institutionalized US population. These data include self-reported lifetime and everyday discrimination as well as several health utility indexes (EQ-5D, HUI3, and SF-6D used here). Weighted health utility means and percentages for discrimination were computed separately within four gender by race subgroups. Each gender by race group was further stratified by discrimination scale scores and multiple regression to compute mean HRQOL scores adjusted for age, income, education, and chronic diseases. All analyses used survey weights to account for the sampling design of NHMS.

**RESULTS:** Black men reported the highest lifetime discrimination scores, followed by black women; white women tended to report the least lifetime discrimination. The distribution of everyday discrimination scores was very similar for black men and women; white men’s and women’s scores shifted toward the low-discrimination end of the scale compared to blacks. Health utility tended to get worse as reported discrimination increased. With a few exceptions, differences between mean health utility scores in the lowest and highest discrimination groups exceeded the 0.03 difference generally considered to be a clinically significant difference.

**CONCLUSION:** Persons who experienced interpersonal discrimination tended to score lower on health utility measures. Understanding the pathways by which discrimination may impact health utility scores is important if we are to improve health-related quality of life.

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**INCIDENCE OF CARDIOVASCULAR EVENTS FOLLOWING HOSPITAL ADMISSION FOR PNEUMONIA**

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**BACKGROUND:** Studies suggest an increased risk of cardiovascular events, primarily acute myocardial infarction, around the time of hospital admission for pneumonia. Therefore we examined incident
cardiovascular events, including myocardial infarction, congestive heart failure, unstable angina, stroke, and serious cardiac arrhythmias, within 90 days after hospitalization for pneumonia.

METHODS: Using data from the administrative databases of the Department of Veterans Affairs, we examined a cohort of subjects hospitalized with pneumonia between October 2001 and September 2007. Subjects were at least 65 years of age. We examined the incidence of an inpatient diagnosis of myocardial infarction, congestive heart failure, cardiac arrhythmias, unstable angina, and stroke by ICD-9 codes excluding those with the same diagnosis prior to the admission for pneumonia.

RESULTS: The cohort comprised 50,119 subjects with a mean age of 77.5 years (standard deviation 6.7 years), and 98% of the cohort was male. The 90-day incidence of cardiovascular events was 1.5% for myocardial infarction, 10.2% for congestive heart failure, 9.5% for arrhythmia, 0.8% for unstable angina, and 0.2% for stroke. The majority of events occurred during the initial hospitalization for pneumonia.

CONCLUSION: A clinically important number of subjects in this cohort suffered a cardiovascular event within 90 days of hospital admission, suggesting that such events may have an important role in post-pneumonia mortality. Additional research is needed to determine whether interventions may reduce cardiovascular events after pneumonia.

ADIPONECTIN AND ALL-CAUSE MORTALITY IN A COHORT OF ELDERLY PEOPLE WITH TYPE 2 DIABETES Jessica Rohman Singer 1; Walter Palmas 1; Steven Shea 1; Jose Alejandro Luchsinger 1. 1Division of General Medicine, Department of Medicine, Columbia University College of Physicians and Surgeons, New York, New York. (Tracking ID # 78771)

BACKGROUND: Nearly a quarter of Americans over the age of 60 are estimated to have type 2 diabetes. The Action to Control Cardiovascular Risk in Diabetes Trial demonstrated that tight glycemic control was associated with increased mortality, while tight lipid and blood pressure control had no association with mortality. These surprising findings raise the possibility of novel predictors of mortality in people with type 2 diabetes.

We sought to explore whether insulin resistance measured by adiponectin level was related to increased mortality in people with type 2 diabetes. High levels of adiponectin are known to be associated with lower risk of developing type 2 diabetes, but no data have been published to our knowledge regarding the association of adiponectin level and mortality specifically in patients with type 2 diabetes. Data regarding adiponectin level and mortality in non-diabetic populations are inconsistent.

METHODS: Participants were a subsample of 627 subjects from the Informatics for Diabetes Education and Telemedicine project (IDEATel) who were enrolled in a substudy. IDEATel was a CMS supported randomized controlled trial designed to evaluate the effectiveness of telemedicine case management in elderly Medicare beneficiaries with type 2 diabetes but without severe co-morbid disease. Subjects were enrolled in IDEATel from December 2000 to October 2005. Adiponectin was measured on frozen serum samples for all subjects and mortality data were collected from the National Death Index through 11/30/2009. ANOVA and Chi-square were used to compare relevant continuous and categorical variables across quartiles of adiponectin. Cox proportional hazards regression was performed to examine the relationship between adiponectin level and all-cause mortality adjusting for age, gender, race/ethnicity, hemoglobin A1c, blood pressure, LDL, HDL, triglycerides, BMI, albumin/creatinine ratio, c-reactive protein, active tobacco use and medication use, specifically thiazolidinediones (TZDs).

RESULTS: Subjects had a mean age of 72, were 70% women, 83% Hispanic and 15% African American. Compared to the lowest adiponectin quartile, those in the highest adiponectin quartile had higher HDL (51.4+/−16.7 vs. 42.7+/−12.3; p<0.001), higher log albumin/creatinine (1.6+/−0.6 vs 1.3+/−0.5; p=0.0037), higher frequency of TZD use (58.6% vs. 5.8%; p<0.0001), lower triglycerides (121.6+/−61.3 vs 144.6+/−77.9; p=0.005) and lower CRP (0.3+/−1.3 vs. 1.0+/−1.3; p<0.0001). Cox regression models demonstrated that compared with those in the lowest quartile of adiponectin, those in the highest adiponectin quartile had an increased hazard of death with a fully adjusted hazard ratio of 4.0 (95% CI 1.7, 9.2); p-value=0.0003 for trend across quartiles of adiponectin level (Table 1). These results remained consistent when the analysis was stratified by age, gender and TZD use and after excluding those subjects who died within one year of adiponectin sampling. We conducted a secondary analysis in a sample of 464 participants for whom we were able to calculate change in weight predating the adiponectin measurement. After adjustment for weight gain or loss of more than 10% of body weight, the association between adiponectin and higher mortality remained significant with a fully adjusted hazard ratio of 3.1 (95% CI 1.2, 7.9); p=0.01 for trend across quartiles of adiponectin level.

CONCLUSION: Higher adiponectin level was associated with higher all-cause mortality in a cohort of elderly people with type 2 diabetes.

Table 1:

| Adiponectin Quartile | Hazard Ratio (95% CI) |
|----------------------|-----------------------|
| 1                    | Reference             |
| 2                    | 1.5 (0.7, 3.5)        |
| 3                    | 2.8 (1.3, 6.2)        |
| 4                    | 4.0 (1.7, 9.2)        |
| p-value for trend    | 0.0003                |

A RANDOMIZED PILOT TRIAL OF A FULL SUBSIDY VERSUS A PARTIAL SUBSIDY FOR OBESITY TREATMENT Adam Gilden Tsai 1; Sue Felton 1; James O. Hill 1; Adam J Atherly 1. 1University of Colorado, Denver, Colorado. (Tracking ID # 78985)

BACKGROUND: Federal health care reform stipulates that services receiving an “A” or “B” recommendation from the U.S. Preventive Services Task Force will be covered without cost sharing. One such service is intensive weight loss counseling. Intensive counseling is costly ($1200 per person in the first year of the Diabetes Prevention Program). The need to provide treatment must be balanced against cost. A partial subsidy has been modeled as a cost-effective way to deliver obesity treatment. This pilot randomized trial tested the feasibility and initial efficacy of a partial versus a full in-kind subsidy during a short term weight loss program. We hypothesized that full subsidy of the program, as compared to partial subsidy, would lead to similar weight losses—i.e., delivering equal clinical benefit at lower cost.

METHODS: Participants were recruited from primary care practices at the University of Colorado. They had a body mass index of 30–49.9 kg/m2, plus one related medical diagnosis: 1) type 2 diabetes; 2) hypertension; 3) dyslipidemia; or 4) obstructive sleep apnea. They were randomized to receive 2 meals per day of portion-controlled food (“full subsidy”) or to receive 1 meal per day (“partial subsidy”) for a period of 14 weeks. Participants randomized to the partial subsidy condition were advised to purchase 1 meal per day of portion-controlled foods on their own. Weight loss counseling (8 visits) was provided without cost to all participants. Visits were led by a trained lay provider. Written materials were adapted from the Diabetes Prevention Program. The primary outcome was weight loss. Secondary outcomes were blood pressure, waist circumference, and health-related quality of life.
RESULTS: A total of 50 persons were randomized. Participants had an average BMI of 38.1 kg/m2 and were taking an average of 5.4 prescription medications; 50% were men and 25% were ethnic minority. Participants in the full subsidy and partial subsidy groups lost 5.9 and 5.3 kg, equal to 5.3% and 5.1% of initial weight (p=0.71 for difference). No significant between-group differences were seen for changes in blood pressure, waist circumference, or health-related quality of life. Post-hoc analyses showed that two measures of adherence correlated with weight loss: 1) frequency of portion-controlled food use; and 2) days of food records kept.

CONCLUSION: Participants that paid for half of their food in an obesity treatment program lost a clinically similar amount of weight (5.1%) as did participants that received all of their food for free (5.3%). As expected, individuals that were more adherent lost a greater amount of weight. These results suggest that a partial subsidy could be an effective method to lower the cost of obesity treatment, without reducing its efficacy. The estimated cost of treatment in the partial subsidy condition was less than the cost of 1 year of attending Weight Watchers. These results require replication in larger trials. If confirmed, the implications would be clear: more individuals can undergo treatment at a lower cost.

ORAL HYDRATION AND ALKALINIZATION IS NON-INFERIOR TO INTRAVENOUS THERAPY FOR PREVENTION OF CONTRAST INDUCED NEPHROPATHY IN PATIENTS WITH CHRONIC KIDNEY DISEASE

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BACKGROUND: The increased risk for contrast-induced nephropathy (CIN) in patients with chronic kidney disease (CKD) undergoing coronary angiography (CAG) has been established. Current and historical data on CIN prevention strategies have shown wide variation with respect to the optimal type, route and timing of these therapies. We hypothesize that oral hydration and/or oral sodium bicarbonate is non-inferior to intravenous hydration and/or sodium bicarbonate in the incidence of CIN in patients with CKD undergoing CAG.

METHODS: This is a prospective study randomizing patients with CKD undergoing CAG into 4 groups: 1) Intravenous normal saline, 2) Intravenous normal saline and intravenous bicarbonate, 3) oral hydration, and 4) oral hydration and oral bicarbonate. Groups 1 and 2 are defined as “standard of care” regimen. The primary endpoint is the occurrence of CIN defined as greater than 25% increase or absolute increase of 0.5 mg/dL in serum creatinine from baseline to 72 hours following exposure to radiocontrast. Secondary endpoints include the length of hospitalization and in-house mortality.

RESULTS: A total of 91 patients (p=0.05; power=0.8) were randomized into four treatment groups. There were no statistical differences in baseline demographics between the four groups.
creatine and total contrast exposure was similar among the four groups. We found no statistical significance in incidence of CIN between our intervention strategy and standard of care regimen (p=0.617 and p=0.525).

**CONCLUSION:** Oral hydration was non-inferior to intravenous CIN prevention strategies in this single center study. These findings may support oral route as a novel approach in prevention of CIN in patients with CKD undergoing CAG.

**IMPACT OF INTERNAL MEDICINE RESIDENT WORKLOAD AND HANDOFF TRAINING ON THE QUALITY OF CARE IN HOSPITALS**

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(Tracking ID # 7942)

**BACKGROUND:** Recent modifications to Accreditation Council for Graduate Medical Education (ACGME) duty hour restrictions have resulted in increased transitions of care by housestaff and variation of resident workload in clinical settings. In this study, we evaluated the association between resident workload, transitions of care training and evaluation, and patient outcomes.

**METHODS:** We linked the 2008 survey of Association of Program Directors of Internal Medicine (APDIM) to the 2008 Hospital Quality Alliance (HQA) and 2007 American Hospital Association (AHA) databases in order to assess if resident workload and training and evaluation of patient hand-offs are associated with outcomes of 30 day readmission rate and mortality rate for 3 conditions: acute myocardial infarction (AMI), congestive heart failure (CHF), and pneumonia. Predictors of interest were residency program training and evaluation of patient hand-offs (both “yes” vs. “no”) and resident workload, characterized by...
reported average maximum number of patients per intern on non-call days (maximum census) and average maximum number of patients admitted per intern on call days (maximum number of admissions) during general medicine rotations. We utilized linear regression models to examine the relationship between these predictors and each study outcome, controlling for hospitals’ geographic location, ownership, setting (urban versus rural), nursing intensity (nurses/1000 patient days), teaching intensity (resident/beds), presence of an ICU, and insurance mix, and the residency program’s board certification three-year pass rates and affiliation with a cardiology fellowship.

**RESULTS:** Of the 372 internal medicine residency programs surveyed, 268 (72%) responded. Of these, 180 (67%) programs reported training housestaff in conducting hand-offs and 133 (50%) programs reported evaluating housestaff in hand-offs. The mean maximum census was 11 patients on non-call days with a mean maximum of 5 patients admitted on call days. Results of the multivariate analysis demonstrated no association between hand-off training or evaluation or resident work load on readmission rates for any condition, or mortality rates for AMI or CHF. However, programs that evaluated their residents on patient hand-offs had a significantly increased adjusted pneumonia mortality rate (11.4% versus 10.8%, p=0.03) and programs that trained their residents on hand-offs had a significantly decreased adjusted pneumonia mortality rate (10.9% versus 11.8%, p=0.005) compared with programs that did not.

**CONCLUSION:** In this nationally-representative study of internal medicine residency training programs and their primary affiliated hospitals, we found no association between resident workload and evaluated outcomes. There were discordant findings on pneumonia mortality rates in programs that evaluate and programs that train their housestaff on patient hand-offs. Programs that evaluate their residents on care transitions have significantly higher pneumonia mortality rates than programs that do not, possibly suggesting programs with poorer outcomes are more likely to evaluate housestaff on hand-offs. Conversely, programs that provide hand-off training show significantly decreased mortality rate for pneumonia than programs that do not. This association between care transitions training and outcomes is particularly important in today’s climate of further duty hour restrictions necessitating increased hand-offs. Future work must further assess the impact of care transitions on quality of care, including process measures, in order to further characterize these findings.

**PHYSICIAN COMPLIANCE WITH IMMUNIZATION IN ADULTS–65 YEARS OF AGE IN AN ACADEMIC SETTING: ARE WE NEGLECTING “AN OZ. OF PREVENTION”?** Petros Okonoboh 1; L. Mary Mathew1. 1Unity Health System, Rochester, New York. (Tracking ID # 8076)

**BACKGROUND:** The efficacy of vaccines in the prevention of infectious diseases is well established. Despite the obvious efficacy, the national rate of immunization remains low. In 2009, the national average for pneumococcal and Influenza vaccination were 61% and 67% respectively.

**METHODS:** We conducted a Quality Improvement (QI) project at the Unity Faculty Practice (UFP); a resident-run, faculty supervised ambulatory longitudinal clinic experience. This is an academic practice involving 40 medicine residents supervised by 7 faculty members. We looked at the rates of recommended immunizations in patients’ 65 years per ACIP guidelines, i.e. Influenza, Pneumococcal, Tetanus and Zoster Vaccinations. A retrospective review of Electronic Medical Records (EMR) of eligible patients seen at the UFP was done. The study period spanned from 2006–2010; information on 259 patients were retrieved and analyzed.

**RESULTS:** The average rate for Pneumovax vaccination was 70.4% with a range of 36.8% - 90%, for Influenza vaccination, the average rate was 53.75% (26.3% - 90%). For Tetanus vaccination the average rate was 41.25% (2.5% - 85%) while for Zoster vaccine, the average rate was 18.3% (7.5% - 35%).

**CONCLUSION:** The QI project showed a wide variation in compliance of immunizations rates among the 7 faculty members. Despite the academic setting, the rate of immunization was well below the CDC 2010 goals of 90% for both pneumococcal and influenza vaccines. This underscores the role of the teaching attendings to remind residents about the simple, inexpensive yet powerful tools of primary prevention through immunizations. The internal medicine Residency is a period where principles of prevention and their far reaching benefits need to be enforced by the faculty. The General Medicine Faculty should serve as role models in the practice of ACIP recommendations. In this day of high technology treatment that benefits an individual patient, one cannot forget the basic principles of preventive medicine that benefits large population groups.

**STUDENT HEALTH REFUGEE EDUCATION COLLABORATIVE (SHREC) Crystal A Medina1; Eva Aagaard2. 1UC Denver SOM, Denver, Colorado; 2UC Denver SOM, Aurora, Colorado. (Tracking ID # 8085)**

**BACKGROUND:** Refugees are recognized as one of the poorest and most medically underserved populations in Denver. Often fleeing as a direct result of conflict or persecution in their country of origin, refugees frequently endure malnutrition, physical violence, sexual assault, psychological trauma, and severe deprivation from basic necessities before they ever arrive in the United States. Implicit in these findings is the realization that refugee healthcare cannot be effective without comprehensive culturally appropriate care. The overall purpose of the Student Health Refugee Education Collaborative (SHREC) project is to perform a comprehensive assessment of the needs of the Denver Refugee population. To date, surveys and interviews with key informants and providers have been performed. However, information was still lacking on the perceptions of the refugees themselves. Our purpose was to assess refugee perception of their health and healthcare needs and the feasibility of a student-led service learning program within this population.

**METHODS:** Forty-five refugees participated in five focus groups from July 2009 to October 2010. Questions focused on the refugees’ understanding of illness, the challenges faced in the healthcare setting and in accessing necessary services, provider-patient relationships, and major cultural and environmental influences on their overall health and healthcare. Qualitative analysis via grounded theory was used to examine the data.

**RESULTS:** Preliminary analysis revealed several themes including difficulty with navigating the healthcare system, the need for better access to services, a lack of understanding of western medicine, and financial challenges. Many of the refugees describe not knowing how to find their way through the healthcare system as one of their primary difficulties upon transitioning to life in the US. Long waits for appointments, inadequate follow-up, scarcity of mental health services and dental care, and the eight-month expiration period of Medicaid further limit access to care. Lack of education with reference to medical issues has kept many from seeking needed care. Several refugees felt that they would not know what questions to ask or be able to
understand what the provider was telling them even with an interpreter present. These difficulties are compounded by fear of not being able to pay medical bills. Refugees consistently welcomed the idea of medical students aiding them with some of these issues.

CONCLUSION: There is a clear role for a medical student-led service learning initiative. Efforts should focus on helping refugees to better understand western medicine and the US healthcare system, including what services are available and how medical care is paid for. In addition, students can have an important role in advocating for the needs of this population with local and national government. As a next step, we will pilot a 1st and 2nd year medical student elective in which students will learn about life as a refugee. Students will also have the opportunity to teach the refugees about western medicine and the US healthcare system. The goal of the elective will be to inform medical students about the plight of refugees and ultimately, encourage future advocacy on their behalf.

A COMMUNITY BASED HEALTH ASSESSMENT OF GERIATRIC FILIPINO AMERICANS IN CHICAGO

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BACKGROUND: Limited studies have investigated Filipino American health, the second largest group of Asian Americans. Several analyses, particularly in California, have shown health disparities in cardiovascular disease and cancer among Filipino Americans compared to other Asian American ethnic groups and to other racial groups. Illinois has the sixth largest population of Asian Americans and Filipino Americans are the second largest Asian subgroup in Illinois, with 56,000 living in Cook County. With under developed research and resources dedicated to Asian Americans in the Midwest, there is a need to evaluate specific health needs and disparities within these underserved communities. To guide the implementation of health education interventions in the Chicago Filipino American community, a pilot health needs assessment of Filipino and Filipino American seniors was initiated.

METHODS: A convenience sample of Filipino and Filipino American individuals aged 60 years old and older who participated in weekly activities at a Filipino cultural center was invited to participate in a 30-minute face-to-face recorded semi-structured interview. Demographic information and self-reported general medical history including preventive care was collected. Participants were asked about their perceptions of health problems in their community, availability and utilization of health resources in their community, and willingness to participate in specific types of health education activities. Participants were asked to rate their perceptions on a Likert scale. The interviews were analyzed for common themes.

RESULTS: There have been 35 participants to date, mean age 72.6 years old with 28 of the 35 participants being female. Over eighty percent of the participants had health insurance in the last year and half of the participants were seeing a physician at least once every three months. Hypertension, ophthalmological disorders, arthritis, and hyperlipidemia were the most commonly self reported health problems. Heart disease, diabetes, hypertension and hyperlipidemia were most frequently cited as somewhat of a problem or a major problem in the community by the participants. Almost one third of the participants noted depression as at least somewhat of a problem in the community while only 5 participants reported a personal history of depression. Challenges locating or utilizing health education programs and insurance coverage was most frequently cited to be at least somewhat of a problem in the community. Almost all participants were interested in engaging in at least one of the proposed health education programs.

CONCLUSION: While this study is limited by a small sample size, cardiovascular disease has emerged as a prevalent health problem in the Chicago geriatric Filipino American community. The divergence of self reported history of depression and perception of depression as a community health problem may point to generational and cultural stigma, highlighting a significant health concern that merits further investigation and action. Although most participants were insured in the last year and seeking physician services, insurance coverage was most frequently reported as a problem in the community which needs to be explored. Community based health research in the Chicago Filipino American community supports grassroots efforts to address disparities and contributes to a growing body of literature of a traditionally understudied minority group.

PROPHYLACTIC ANTICOAGULATION IS SAFE IN PATIENTS UNDERGOING FLAP RECONSTRUCTION POST MASTECTOMY: A SINGLE-CENTER SINGLE-SURGEON RETROSPECTIVE REVIEW

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BACKGROUND: Free vascularized flap reconstruction is frequently employed in breast reconstruction after mastectomy for oncological surgery. Flap thrombosis remains a common complication occurring in approximately 5-8% of cases and often leads to flap failure. There is no consensus on the use of peri- and post-operative anticoagulation to aid in preventing thrombosis. We report the results of a single-center single-surgeon experience in which routine anti-platelet and anti-coagulation therapy peri- and post-operatively was employed for prophylaxis for flap thrombosis.

METHODS: Initially the surgeon used no anti-platelet and anti-coagulation therapy peri- and post-operatively. We retrospectively surveyed 103 patients who were operated on between 2006 and 2010. Patient details were obtained from the electronic record using the Current Procedural Terminology (CPT) billing codes for free flap breast reconstruction. Pertinent details were abstracted from the medical record.

RESULTS: Pre-operatively 40(44%) received prophylactic LMWH whilst 50(56%) did not. Post-operatively, 64(71%) received prophylaxis with either LMWH and/or aspirin whilst 26(29%) did not. No vessel thromboses were noted post-operatively. 2 patients had hematoma formation and 2 had major bleeding necessitating transfusion. Routine anti-coagulation (defined as either LMWH and/or aspirin use) was not associated with an increased incidence of bleeding events (p=0.62, Fisher’s exact test).

CONCLUSION: Flap thrombosis remains a complication with devastating consequences and prevention of thrombosis requires many factors - including the judicious use of anticoagulation. We conclude that the routine use of peri- and post-operative anticoagulation with either LMWH and/or aspirin is not associated with an increased incidence of bleeding complications post-operatively and is safe. This study was not powered to statistically prove that anticoagulation in this setting prevents flap thrombosis. A prospective randomized trial to investigate this would greatly aid in defining the optimal anti-coagulation strategy in this group of patients.
Dementia Screening in Primary Care
Becky J. Brott 1; Janet S Cellar 1; James J Lah 1.
Emory University School of Medicine, Atlanta, Georgia. (Tracking ID # 8170)

BACKGROUND: The population over age 65 is expected to double by 2030, and the prevalence of dementia will nearly triple. Diagnosing dementia by self-reported symptoms often leads to delayed and missed diagnoses. Therefore dementia screening is essential. With a declining pool of certified geriatricians to care for the growing aging population, primary care physicians (PCPs) will be increasingly called upon to diagnose dementia. The purpose of this research is to determine the rate of dementia screening and diagnosis in patients over 65 in an academic primary care clinic.

METHODS: Records of 203 patients attending a university based primary care clinic in a one month period were examined, and charts of the 49 patients over 65 were reviewed. Abstracted data included patient and caregiver characteristics, problem list, memory loss symptoms, suspicion for dementia, and dementia evaluation including screening, neuropsychological testing, specialist referral, diagnosis, and treatment. Screening tests included the Mini-Cog, Functional Activities Questionnaire (FAQ), MMSE, Clocks, and Geriatric Depression Scale (GDS).

RESULTS: Mean patient age was 72 ± 6.6, and 33 (67%) were female. None of the patients were screened for dementia. Memory loss symptoms were recorded in 11 patients (22%), 10 (20%) had suspicion of dementia, 6 (12%) were referred for neuropsychologic testing, and 8 (16%) were referred for specialists evaluation. Dementia was diagnosed by specialists in 3 patients (6%), and 1 received pharmacologic treatment. The length of the problem list correlated to symptoms of memory loss. Problem lists ranged from 1–16 problems, mean 4.5 ± 2.9. Linear regression found each additional problem increased the chance memory loss symptoms by 3.9%.

CONCLUSION: None of the patients received dementia screening or diagnosis from their PCP. Ultimately, 6% were diagnosed by specialists, well below half of the estimated prevalence. The reason for lack of screening is unclear, but the lower than expected rates of diagnosis may be due to symptoms of memory loss appearing as problem lists lengthen. Without knowledge of a quick screening tool, problem list burnout likely contributes to the lack of screening and diagnosis in complex medical patients. After expanding this baseline data set, an educational intervention is planned to introduce a simple screening tool, the Mini-Cog/FAQ, and assess its impact on screening and diagnostic behaviors.

Educating Underserved Patients About Colorectal Cancer Screening: Multimedia vs Print
Gregory Makoul 1; Denise Scholtens 2; Ashley Negrini 1; Kenzie A Cameron 2; Jason Thompson 2; Adam Williams 2; David Baker 2; Saint Francis Hospital and Medical Center, Hartford, Connecticut; 2Northwestern University Feinberg School of Medicine, Chicago, Illinois. (Tracking ID # 8326)

BACKGROUND: Colorectal cancer (CRC) is one of the most common types of cancer in the United States. Despite strong evidence and recommendations supporting CRC screening, screening rates remain low. This study focuses on comparing message-equivalent patient education programs (multimedia vs print) designed to provide patients with understandable information and motivational messages about CRC screening. Primary questions: Do messages have a different impact on knowledge and/or screening behavior when delivered by multimedia or print? Does literacy level affect response? Based on our review of the literature, we believe this study is the first to explicitly compare the effects of message-equivalent print and multimedia materials.

METHODS: In this randomized controlled trial, patients 50–80 years of age at the time of their clinic visit are assigned to one of three study arms: (1) Control/usual care; (2) Multimedia; (3) Print. The multimedia program incorporates illustrations, animations, photographs, and voice-over. Using the multimedia program as our starting point, we reverse-engineered a print version to yield materials with the same text and graphics. Lexile analysis indicates that the text is geared to a 4th grade reading level; there are English and Spanish versions of both interventions. Study sites are 3 Midwest clinics for the poor and underserved. After engaging in an IRB-approved consent process with a bilingual RA, patients engage in a structured interview, view the randomly assigned intervention, and complete a literacy assessment (S-TOFHLA). Immediately after their doctor visit, patients have a brief follow-up encounter with the RA and receive a $10 gift card. Completion of CRC screening within 3 months of the index visit is determined using the clinic registry. If there is no record of screening completion, RAs attempt to ascertain reasons by calling patients approximately 100 days after the index visit.

RESULTS: This report includes data collected for 690 patients. Mean age was 57.7 (SD=6.4), 68% of the patients were female, 58% self-identified as Hispanic/Latino, and 53% of the surveys were conducted in Spanish. Nearly half (46%) of the patients had 8th grade education or less; 35% had inadequate health literacy. Print and multimedia interventions both led to marked increases in knowledge regarding polyph, colon, stool cards and colonoscopy. While there was very little difference in evaluation of the interventions by the adequate literacy group, subjects in the inadequate literacy group found the multimedia program more informative, believable, interesting, and understandable (p<.05 for each). In terms of actual screening, completion rates are low across all three arms of the study. Telephone follow-up with 241 of the patients who did not get screened provides insight: “The doctor did not recommend it” was the overwhelming reason for not getting screened, mentioned by 61% of the patients.

CONCLUSION: The print and multimedia interventions in this study optimize message design and include parallel content to allow direct comparison. Data collected to date indicate that, despite the demonstrated quality of both interventions across literacy levels, physician recommendation is the most powerful vector for patient uptake of CRC screening. While physicians at the study sites are periodically reminded to talk with patients about CRC screening, more robust physician-directed interventions are required to achieve the ultimate goal of markedly increasing CRC screening.

Characteristics of Chronic Kidney Disease (CKD) Patients with Diabetes Who Have CKD Noted in Their Problem List in a Large Electronic Health Record Based CKD Registry: A Call to Action
Stacey Jolly 1; Sankar Navaneethan 1; Jesse Schold 1; Susana Arriggian 1; Welf Sause 1; John Sharp 1; Anil Jain 1; Martin Schreiber 1; James Simon 1; Joseph Nally 1.
Cleveland Clinic, Cleveland, Ohio. (Tracking ID # 8410)

BACKGROUND: Chronic Kidney Disease (CKD) is a growing public health problem. We developed a CKD registry from our electronic health record (EHR) at Cleveland Clinic to create programs to improve CKD management including quality of care guidelines for Diabetes Mellitus (DM). We aimed to examine if differences existed in demographics and processes of care measures among DM patients with CKD based on whether CKD was listed in their EHR problem list. The problem list is readily available in the EHR, shown during each patient encounter, maintained by providers, and has been linked to information technology tools to improve patient care in our health system.
METHODS: Patients entered the registry by having two outpatient eGFRs <60 ml/min/1.73 m² (MDRD equation) at least 90 days apart from Jan 2005 to Oct 2010. We examined a subgroup of patients who had DM and were followed for at least a year. DM was defined by having two separate DM related ICD-9 codes noted during outpatient visits prior to or at date of entry into the registry. CKD was noted in the patient’s EHR problem list if CKD (defined by ICD-9 codes) was present within 1 year after date of entry into the registry. We calculated the proportion of CKD patients with DM who had CKD noted in their problem list and examined if differences in age, sex, race, insurance, eGFR at time of entry; nephrology visit and CKD labs, or medications prescribed differed between the two groups.

RESULTS: Of the 55,000 patients in our CKD registry, 8711 (16%) had DM and been followed for at least a year. 782 (9%) had CKD noted in the EHR problem list. They were younger (66 vs 70 yrs) and more likely to have a low eGFR (<45) at time of entry (79% vs 33%). Table 1 shows additional differences found between the two groups.

CONCLUSION: Among CKD registry patients with DM, failure to include CKD in the EHR problem list was highly variable based on patient characteristics and was associated with less nephrology visits and CKD laboratory measures checked and inappropriate medication use. Targeting awareness and using the EHR problem list with novel interventions may improve CKD outcomes in the clinical setting.

PHYSICIANS ON TWITTER Katherine Chretien 1; Justin Azar 2; Terry Kind 3. 1George Washington University; Washington DC VA Medical Center, Washington, District of Columbia; 2George Washington University, Washington, District of Columbia; 3Children’s National Medical Center, Washington, District of Columbia. (Tracking ID # 8414)

BACKGROUND: Social media is transforming the way physicians communicate with the public, bringing both challenges and opportunities for medical professionalism. Hospitals, public health departments, and other medical institutions have started to use the popular social networking and micro-blogging site Twitter as a marketing tool and a way of disseminating health information. Physicians may use Twitter to extend their web presence, communicate with patients, market themselves, or informally interact with colleagues. Yet, it is unknown how physicians are using Twitter as a communication tool. The objective of this study was to describe the characteristics of self-identified physicians on Twitter and how they use Twitter, with a specific focus on professionalism.

METHODS: Descriptive characteristics were extracted from the public profile pages of self-identified physicians with 500 or more followers on Twitter in May, 2010. Content analysis of 5156 of their postings (tweets) was performed (the last 20 available tweets at time of data extraction for each Twitter user, excluding non-English tweets). Main outcome measures included: percent of physician profiles with full name, photograph, specialty, and/or geographic location on profile; percent of tweets that were health/medical, contained a hyperlink, were personal communications or re-tweets; recommended or criticized a medical product; were self-promotional; were related to medical education; contained potential patient privacy violations, profanity, sexually explicit material, discriminatory, or other unprofessional material. Three authors pilot-coded tweets together, and through an iterative cycle, refined the coding guide until kappa > 0.78 for all categories or inter-rater agreement=100% was attained. The three authors subsequently coded tweets independently, with regular team discussions. All potentially unprofessional tweets were reviewed by the entire team for consensus.

RESULTS: Of the 260 users identified, most were identified by full name (78%) and photograph (78%). 240 (92%) profiles linked to websites. Surgery (15%) and internal medicine (11%) were the most prevalent specialties represented. Of the 5156 tweets analyzed, 49% (2543) were health/medical, 21% (1082) were personal communications, 14% (703) were re-tweets, and 58% (2965) contained links. Seventy-three tweets (1%) recommended a medical product or proprietary service, 634 (12%) were self-promotional, and 31 (1%) were related to medical education. 144 (3%) were categorized as unprofessional, 38 (0.7%) tweets represented potential patient privacy violations, 33 (0.6%) contained profanity, 14 (0.3%) included sexually explicit material, and 4 (0.1%) included discriminatory statements. 55 (1%) tweets were coded “other unprofessional,” including 12 possible conflicts of interest, such as making unsupported claims about a product they were selling on their website or repeatedly promoting specific health products, and 10 statements about medical therapies that were counter to existing medical knowledge and guidelines.

CONCLUSION: Self-identified physicians on Twitter share medical information with the public. Ethical breaches and unprofessional content were observed. Greater education, guidelines, and accountability for health professionals are needed to maximize societal and professional benefit through engagement with social media.

IMPROVING PATIENT UNDERSTANDING OF THE DISCHARGE PLAN BY IMPLEMENTING A NEW PATIENT-CENTERED DISCHARGE PROCESS ON AN ACADEMIC SERVICE Jimmy Daniel Fernandez 1; Jennifer Caceres, MD 2; Katherine Chretien 1. 1University of Miami, Coral Gables, Florida; 2University of Miami at JFK, Atlantis, Florida. (Tracking ID # 8431)

BACKGROUND: According to a study funded by the Agency for Healthcare Research and Quality, patients are 30% less likely to be readmitted or visit the emergency department if they have a clear understanding of their discharge instructions. Despite the importance of the discharge process, very few medical residency training programs offer formal discharge planning education. We hypothesize that introducing a new discharge order form that is completed by a medical resident and reviewed with each patient as part of the discharge process will improve patients’ understanding of the discharge plan.

METHODS: All patients who were discharged over a 4-week period from the academic service at John F. Kennedy Medical Center were called within one week of discharge and asked if they knew their diagnosis at discharge, were clear on medications to administer, knew the side effects of any new medications, who to call with any concerns, and if a follow up appointment was made with a primary care physician prior to discharge. A new patient-centered discharge order form as part of the discharge process was introduced after the survey was completed. Medical residents were trained how to use the discharge order form during orientation to the inpatient rotation. The discharge form required a medical resident to complete and discuss each component with the patient and obtain a signature from the patient acknowledging the discussion before the order could be executed by the nursing staff. Four months after the new discharge process was implemented, the same survey was conducted over a 4-week period. Proportions before and after the intervention were compared using chi-square tests for independence.

RESULTS: Eighty-six patients were surveyed before and after the intervention (total n=172). 52.3% versus 68.6% knew their diagnosis pre-intervention and post-intervention respectively (p=0.0290). For the proportion of patients who knew what medications to take, 77.9%
versus 74.4% answered “yes” pre-intervention and post-intervention respectively (p=0.5914). For the proportion of patients who knew side effects of medications, 17.4% answered favorably before the intervention compared with 46.5% after the intervention (p=0.001). For the proportion of patients who knew who to call after discharge, there was an increase from 20.9% to 45.4% after implementation of the new discharge form (p=0.0007). For the proportion of patients who had primary care physician appointments scheduled prior to discharge, there was an improvement from 41.9% to 57.0% (p=0.0474).

CONCLUSION: Implementation of a new discharge order form as part of the discharge process allows medical residents to improve patients’ understanding of the discharge plan. There were statistically significant improvements in the following areas: knowledge of their diagnosis, side effects of medications, who to call after discharge, and appointments scheduled with a primary care physician prior to discharge.

EFFECTS OF SMOKING CESSATION AND WEIGHT CHANGE ON CARDIOVASCULAR DISEASE AMONG PEOPLE WITH AND WITHOUT DIABETES

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BACKGROUND: Smoking cessation substantially reduces the risks of cardiovascular disease (CVD) associated with smoking among people with and without diabetes. Weight gain that follows quitting smoking may weaken the benefit of quitting on CVD risk. We have tested this hypothesis in this study.

METHODS: Among participants of the Framingham Offspring Study who were free of CVD at each baseline, we estimated 4-year risk of CVD. At each 4-year exam, self-reported smoking status (non smoking, former smoking, current smoking) was verified, diabetes (defined as fasting plasma glucose >=7 mmol/l or being on diabetes treatment) was screened and body-weight and height were measured; we calculated change in weight and in body-mass index (BMI) from the previous exam. We used three pooled logistic regression models to estimate the 4-year risk of CVD associated with smoking and diabetes status at each baseline. Model 1 adjusted for age and sex; model 2 added confounders (BMI, alcohol consumption, family history of diabetes, systolic blood pressure, HDL-cholesterol, LDL-cholesterol, triglycerides, use of anti-hypertensive or lipid-lowering medication), and model 3 added change in BMI concomitant with change in smoking status to assess its potential mediating effect on CVD. Significance was p<0.05.

RESULTS: 3,142 subjects (mean age, 44 years; 52% female) were followed over 6 exams, about every 4 year, for a mean of 25 years, contributing 17,875 person-exams. Smoking prevalence decreased from 37% at the first baseline exam to 13% at the last baseline exam. Age- and sex- adjusted 4-year incidence rates of CVD were higher among smokers vs. former smokers or non smokers in people with and without diabetes (Figure 1). On average, 4-year weight gain was lower in smokers vs. non smokers (1.21 kg vs. 1.46 kg, p=0.02) whereas it was similar between former smokers and non smokers (1.45 kg vs. 1.46 kg, p=0.16). In multivariable-adjusted analysis, smokers had higher risks of developing CVD than non smokers whether or not they had diabetes. Former smokers did not have a significantly higher risk of developing CVD than non-smokers, although significant trends across smoking categories, both among people with diabetes (P=0.02) and those without diabetes (P<0.0001) suggested a dose response phenomenon. Adjusting for change in BMI did not decrease the risk estimates, suggesting that post-cessation weight change does not mediate the increase risk of CVD among both people with and without diabetes (Table 1).

CONCLUSION: Post-cessation weight gain does not alter the benefits of quitting smoking on CVD risk in people with and without diabetes.
Table 1:

|                                      | Diabetes mellitus | No diabetes mellitus | p-value* |
|--------------------------------------|-------------------|----------------------|----------|
|                                      | Non smokers (ref) | Former smokers | Smokers | | Non smokers (ref) | Former smokers | Smokers | p-value* |
| No. of cases of CVD                  | 31 | 64 | 32 | | 106 | 193 | 174 | |
| Age-Sex-adjusted OR (95% CI)         | 1 | 1.32 (0.82-2.11) | 1.96 (1.13-3.41) | 0.02 | 1 | 1.17 (0.92-1.50) | 2.83 (2.20-3.65) | <.0001 |
| Multi-adjusted? OR (95% CI)          | 1 | 1.25 (0.76-2.06) | 2.05 (1.13-3.71) | 0.02 | 1 | 1.12 (0.87-1.44) | 2.59 (1.98-3.39) | <.0001 |
| Multi- + BMI change-adjusted OR (95% CI) | 1 | 1.38 (0.82-2.32) | 2.15 (1.16-4.01) | 0.02 | 1 | 1.10 (0.85-1.43) | 2.73 (2.08-3.60) | <.0001 |

OR = Odds Ratio, CI = Confidence Interval, BMI = body-mass index, ref = reference

* P-value for trend across smoking categories

? Adjusted for baseline BMI, age (continuous), sex, alcohol consumption (continuous variable in oz/week), self reported family history of diabetes (dichotomous), HDL-cholesterol (continuous), LDL-cholesterol (continuous), Triglycerides (continuous), taking cholesterol lowering medication (dichotomous), systolic blood pressure (continuous), taking anti-hypertension treatment (dichotomous)
DO PHYSICIANS WANT THE PATIENT-CENTERED MEDICAL HOME?

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BACKGROUND: The patient-centered medical home model (PCMH) holds great promise to improve the delivery of health care. One of the many unanswered questions about the PCMH is whether physicians will accept the model. We asked physicians to identify changes they thought would improve the patient care they provide. We compared the suggested changes to the standards for the PCMH.

METHODS: We administered a 3 round iterative questionnaire to 31 faculty members practicing in an academic GIM clinic. The physicians were asked: 1) What do you do for your patients in clinic now that could be done better by someone else? 2) What do you wish could be done for your patients that is not being done now? 3) What would you like to have more time to do for your patients? 4) What information and resources would be helpful to you to care for individual patients and for your population of patients? They rated and then ranked the items generated. We received responses from 24 physicians totaling 135 items. These were sorted into 8 categories and similar items were combined into 71 items. For round 2, the physicians rated each item on a 5 point Likert scale. Those with a score of > 3.2 were listed in order of their rating, resulting in 55 items. These items were independently matched by 2 of the investigators (TH-S, LJ) to the National Committee for Quality Assurance (NCQA) Physician Patient Connection (PPC) standards for recognizing medical homes. If the 2 reviewers differed on whether an item met a standard, the other investigators resolved it. For Round 3, the 55 items were combined into 26 items in 2 categories. The physicians had the opportunity to rank-order the items and include any that had been excluded by rating score.

RESULTS: Of the 55 items in the list for round 2, 46 matched a specific PPC standard. Of the remaining 9, all were matched to a PCMH principle, i.e. patient-centered, coordination of care, etc. There were no physician-generated items that did not match to a principle or standard of the PCMH. The final list included 20 items that the physicians felt should be done for their patients by others and 6 items that physicians want more time to do for their patients.

CONCLUSION: The vast majority of physician-generated ideas on how to improve care in a GIM practice match the NCQA criteria for recognition as a PCMH. The process of letting physicians identify ways to improve practice a priori may facilitate the changes required for the development of a PCMH.

EVALUATION OF A PILOT HOSPITALIST PROGRAM AT AN ACADEMIC AFFILIATED VA HOSPITAL: IMPACT ON PATIENT OUTCOMES AND TEACHING

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BACKGROUND: Literature has emerged indicating potential benefits from separating inpatient and outpatient care between collaborating groups of internists, “hospitalists” and “non-hospitalists”. In teaching hospitals that lack hospitalist systems for inpatient care, academic physicians who do little inpatient care and teaching may be conscripted for these activities for several weeks a year. Our work group evaluated whether there was a difference in inpatient outcomes and faculty teaching evaluations between a pilot hospitalist team (Pilot) and traditional attending model (Trad).

METHODS: Patients admitted to the medicine service at the VA San Diego Health Care System (VASSDHS) are cared for by clinicians who spend the majority of their time in the outpatient setting. Four General Internal Medicine physicians volunteered for a pilot hospitalist program, with an increased percentage of time devoted to inpatient duties (25%). They rotated in 2-week periods covering a hospitalist ward team. While not on wards these physicians continued to engage in outpatient care for their established primary care panels. The Trad includes 3 inpatient teams of other internal medicine faculty rotating in 3.5-week long blocks. We extracted the following variables from the VA computerized patient record system: primary diagnosis, discharge diagnosis, admission date/time, discharge date/time, and length of stay. Variables were grouped by assignment of patients to Pilot or Trad physicians and compared using student t-tests for continuous data and chi-square for ordinal data. We compared the inpatient teaching evaluations (Likert scale) from third year students and internal medicine residents from the University of California, San Diego (UCSD) School of Medicine during the first 12 months of the pilot program, using the Kruskal-Wallis equality of populations rank test for ordinal data and student t-test for resident data.

RESULTS: There was no significant difference in length of stay by group: Pilot team patients 4.5 days +/- 7.2 days and Trad team patients 4.4 days +/- 5.4 days (p=.7). Readmission rates within 30 days did not vary, with 28/1224 (2.3%) of patients readmitted from the Trad team and 3/283 (1.1%) readmitted from the Pilot group (p = .19). There was no significant difference in patient outcomes between the Pilot and Trad. Teaching evaluations were significantly higher for the Pilot than Trad for both students and residents (p<.001).

CONCLUSION: A pilot hospitalist system was associated with improved ratings of both inpatient medical student and resident teaching. A potential explanation for these findings may be that the physicians in the pilot hospitalist group self selected to engage in those activities in which they excel. In this study, patient outcomes did not improve during the first year of a Pilot team compared to the Trad team. Benefit to many patient outcomes has been previously reported with hospitalist programs; many factors could account for failure to observe such benefits here. Whether advantages of this approach will be sustained, and/or magnified with time is a matter for ongoing study.
GAPS IN THE MANAGEMENT OF POSTHERPETIC NEURALGIA IN THE ELDERLY POPULATION: THE BASIK PHN SURVEY

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BACKGROUND: Postherpetic neuralgia (PHN) is continued pain due to herpes zoster for >3 months after resolution of the dermatomal rash. While annual incidence of PHN in the United States is 100,000-180,000, there is a lack of published information regarding the knowledge, attitudes, and practice patterns of US physicians on their management of PHN.

METHODS: To identify needs of physicians managing patients with PHN, we distributed a case-vignette survey (BASIK PHN: Behaviors, Attitudes, Skills, Identified gaps and Knowledge of Postherpetic Neuralgia) to a nationally representative sample of US-practicing primary care physicians (PCPs) and neurologists. The total sample included 150 PCPs and 76 neurologists. The survey presented case vignettes representing typical patients with PHN to assess how the patient would be managed. Additional questions assessed side effect management, adherence, monitoring, and barriers to optimal patient care. One component of the study addressed the management of an elderly patient with a 5-year history of PHN and previous negative experiences with gabapentin, amitriptyline, and acetaminophen with codeine.

RESULTS: The majority of physicians chose multiple agents; most commonly used combinations were pregabalin/lidocaine patch, duloxetine/lidocaine patch, or pregabalin/duloxetine. Nearly half of PCPs would refer this patient to a neurologist or pain specialist. If the patient developed additional side effects from this medication, the majority of neurologists would switch to a different class of drugs and PCPs would refer. To manage adherence, PCPs were more likely to prefer weekly visits until the pain is controlled (p=.048), while neurologists had differing approaches (weekly visits, family accompaniment, diary). Major barriers to managing patients with PHN include patients’ high expectations about the level of pain relief and dose-limiting side effects.

CONCLUSION: This study highlights physician uncertainty regarding management of continued PHN in a patient with prior experience with multiple agents. Support regarding available resources and current best practices of side effect management may be useful to the practicing clinician.

THE HEALTH OF SAFETY-NET HOSPITALS AFTER MASSACHUSETTS HEALTHCARE REFORM: CHANGES IN VOLUME, REVENUE AND OPERATING MARGINS FROM 2006 TO 2009

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BACKGROUND: Prior to Massachusetts health care reform many uninsured, poor and minority patients were cared for primarily in safety net hospitals (SNH). A key element of the reform altered the financing of care for vulnerable populations by shifting government payments from safety net hospitals toward financing new subsidized private insurance for low-income residents. Little is known, however, about the impact of the reform on the use and financial performance of safety-net hospitals. Such knowledge could help inform implementation of the Patient Protection and Affordable Care Act which is closely modeled on the Massachusetts reform.

METHODS: We used data from the Massachusetts Department of Healthcare Finance and Policy to assess the potential impact of the Massachusetts healthcare reform on changes in volume, revenue, and operating margins at SNH (n=7), pre (2006) and post (2009) reform and contrasted this with contemporaneous changes seen among the 58 non-safety net hospitals (NSNH). We defined SNH as those with a high level of utilization by patients with Medicaid (> 1 SD above the mean) and a low-level of utilization by patients with commercial insurance (< 1 SD below the mean). For each outcome measure we calculated the mean percentage change at SNH and NSNH from 2006 to 2009. We then estimated the absolute difference (and 95% confidence intervals) in changes between SNH and NSNH over this time, often referred to as a difference-in-differences (DD) analysis, using the student’s t-test. Estimates for DD for operating margins and revenue yield patient discharge and outpatient visit were weighted to hospital volume. Analyses using alternative definitions of SNH yielded similar results.

RESULTS: Outpatient revenue per visit declined 9.0% at SNH and increased 23.7%; at NSNH for a DD of $1,877 (95% CI, -8281 to 66, p=.004), indicating a reduction at SNH compared with NSNH. Inpatient revenue per discharge declined 10.0% at SNH and increased 20.7%; at NSNH (DD=-81,050 [95% CI, -81,455 to -64, p=<.0001]) and operating margins declined 3.5% at SNH and increased 0.8%; at NSNH (DD=-4.27% [95% CI, -6.0% to -2.5%, p<.001]). There were also substantial, but not statistically significant differences for inpatient discharges (2.3% decline at SNH vs. 3.5% increase at NSNH; DD=-598 [95% CI, -1,559-363, p=.22]), outpatient visits (14.7% increase vs 1.6% increase; DD=45,343 [95% CI, -23,640-114,325, p=.16]), inpatient revenue (2.6% increase vs. 7.7% increase; DD=-817.0 million [95% CI, -47.9 million-14.0 million , p=.27]) and outpatient revenue (4.4% increase vs. 25.6% increase; DD=-822.3 million [95% CI, -63.4 million-18.8 million, p=.28]). We also found that in 2009, patients receiving Medicaid, self-pay, and other government insurance accounted for 40.8% of all discharges at SNH and 19.1% at NSNH, while they represented 53.4% of outpatient visits at SNH and 21.8% at NSNH.

CONCLUSION: While SNH in Massachusetts continue to play a disproportionately large role in caring for disadvantaged patients, their financial performance has declined appreciably after implementation of Massachusetts health care reform compared with NSNH. If poorer financial performance lessens SNH capacity to care for vulnerable patients, this and similar reform efforts could have effects opposite to those intended.

WHITE COAT CEREMONIES: APPRECIATING THEIR FORMS AND MESSAGES

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BACKGROUND: White Coat Ceremonies (WCCs) are prevalent in North America and elsewhere as a celebration of matriculation into medical school. Critics of WCCs have questioned whether these ceremonies can successfully combine professionalism and humanism elements, the appropriateness of the white coat (WC) as a symbol, and the meaningfulness of oaths of commitment early in the educational
process. We sought to explore the merits of these critiques in an empirical study of WCC forms and content.

**METHODS:** We developed a stratified random sample of 25 US schools of medicine conducting WCCs in 2009. On request, schools submitted written WCC programs (18), audio recordings (13), videos (4) and one written transcript. A qualitative approach including triangulating different analysis methods was used to discern the core meanings expressed in these ceremonies. The analysis processes included: content analysis of artifacts (e.g., program, photos, written materials, music); semantic analysis focused on words and phrases; content analysis focused on sentences and statements within the ceremonies (specifically statements about obligations and privileges, the meaning of WCCs, the white coat, and oaths); and narrative analysis focused on the stories recounted in the WCCs.

**RESULTS:** Although all ceremonies followed the same general form (formal ceremony protocol, keynote, 2–5 other speakers, cloaking, oath recitation), their content, messages and atmosphere varied significantly, often strongly expressing a school’s mission and traditions. Ceremonies included five principal descriptions of what the WC symbolizes (commitment to humanistic professional care, a reminder of obligations and privileges, the meaning of WCCs, the white coat, and oaths); and narrative analysis focused on the stories recounted in the WCCs.

**CONCLUSION:** Analysis of WCCs revealed these ceremonies to be neither about elitism nor guild status, but an occasion marking the beginning of educational, personal and professional formation processes. The ceremonies urged matriculants to become physicians worthy of trust. They centered on the person in a vocation; affirming its calling and obligations, donning a symbolic garb, joining an ancient and modern tradition of healing and immersing oneself in the traditions of a community. The articulated construct of the white coat in the WCCs situated it as a suitable symbol of humanism. The messages of the professional oaths, while encountered early in a student’s education, still might set the stage for mindfully grappling with challenging experiences later. We conclude that WCCs embody the longer traditions of medicine as a helping profession and communicate the importance of deserving trust over having privilege. As such they are more to be commended than criticized.

**FOOD INSECURITY AND BODY MASS INDEX ARE ASSOCIATED IN YOUNG ADULT WOMEN**

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**BACKGROUND:** Food insecurity, defined by the United States Department of Agriculture as lack of “access by all people at all times to enough nutritious food for an active, healthy life,” is hypothesized to contribute to numerous health problems, including obesity. Food insecurity has been associated with an increase in weight in children and adults, although results have been inconsistent. This study sought to identify whether food insecurity was associated with an increase in body mass index (BMI) in young adults and whether this association differed by gender or was modified by food stamp use or the presence of children in the home.

**METHODS:** Cross-sectional data from Wave 4 (2007–2008) of the National Longitudinal Study of Adolescent Health were analyzed. Survey sampling weights were applied to account for the unequal likelihood of certain subpopulations being sampled. Multiple linear regression was used to investigate the association between food insecurity and BMI in gender stratified models of young adult women (n=7279) and men (n=6804) ages 24–32, controlling for age, race/ethnicity, income, education, physical activity, smoking, and alcohol use. Interaction terms were created to assess for effect modification by food stamp use or the presence of children in the home on the relationship between food insecurity and BMI.

**RESULTS:** Food insecurity was significantly more common in young adult women (14%) than young adult men (10%) (p<0.001) and in African Americans (19%) and American Indians (22%) compared to whites (11%) (p<0.001). Food insecure participants earned on average $28,500 less than those who were food secure and were more likely to report receipt of food stamps or public assistance. Individuals who reported food insecurity were significantly more likely to be current smokers (p<0.001) but less likely to consume alcohol (p<0.001), participate in physical activity (p<0.05), or have completed college (p<0.001) compared to those who did not report food insecurity. After controlling for these covariates, food insecure women had BMIs that were on average 0.9 kg/m2 units higher than women who were food secure. This result persisted after controlling for food stamp use in either young adulthood or adolescence. There was no effect modification by food stamp use, parenting children in the home, race/ethnicity, or income on the association between food insecurity and BMI. No relationship was found between food insecurity and BMI in young adult men.

**CONCLUSION:** Food insecurity is associated with increased BMI in a nationally representative sample of young adult women after controlling for age, race/ethnicity, education, income, physical activity, smoking, and alcohol use. Food insecurity is not associated with BMI in young adult men. The relationship between food insecurity and BMI is not attenuated nor modified by food stamp use or the presence of children in the household. Providers should inquire about food insecurity, especially when treating young obese females and policy initiatives should address the role of access to healthy food in addressing food insecurity.

**PREVALENCE OF RESISTANT HYPERTENSION IN THE UNITED STATES 2003–2008**

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**BACKGROUND:** Resistant hypertension has been defined as blood pressure that remains above goal in spite of the concomitant use of antihypertensive medications from 3 or more drug classes or who require 4 or more drug classes to reach blood pressure targets. This designation has been suggested in order to identify a high risk group for whom special diagnostic investigations or therapeutic considerations should be considered. The prevalence of resistant hypertension is unknown, but it is thought to be common.
METHODS: Data from the National Health and Nutrition Examination Survey from 2003 through 2008 were used. Non-pregnant examination participants at least 18 years of age were included. Blood pressures were measured according to a standardized protocol. For most participants, three measurements were taken and the mean of the second and third readings was used as the average. Participants with no recorded blood pressures were excluded. Participants were considered to have hypertension if the average blood pressure was >140/90 mm Hg (either systolic or diastolic), or they reported currently taking prescribed medication for hypertension. Blood pressure was considered uncontrolled if the average was >140/90 mm Hg (either systolic or diastolic). Medications were reviewed during home interviews and pill bottles were examined in most cases. Participants were classified as having resistant hypertension if their blood pressure was >140/90 mm Hg and they reported using antihypertensive medications from 3 different drug classes in the past month or drugs from 4 or more antihypertensive drug classes regardless of blood pressure. Drug classes included: ACE inhibitors, ARBs, beta-blockers, dihydropyridine calcium channel blockers, non-dihydropyridine calcium channel blockers, thiazide-like diuretics, loop diuretics, potassium-sparing diuretics, peripheral alpha-adrenergic receptor antagonists, central-acting and other anti-adrenergic drugs, direct vasodilators, and direct renin inhibitors. Participants with resistant hypertension were compared to drug-treated participants who were controlled receiving 3 or fewer drug classes or who were uncontrolled using 2 or fewer drug classes. Analyses used weights that account for the probability of selection, and non-response. SAS survey commands to account for the complex multistage sampling design and provide accurate standard errors and tests of significance were used to produce descriptive statistics and comparisons between groups.

RESULTS: Among U.S. adults with hypertension, 8.9 percent (standard error, SE 0.6) met these criteria for resistant hypertension. This represented 12.9% (SE 1.1) of the antihypertensive-drug-treated population. Among all uncontrolled drug-treated adults, 72.4% (SE 1.6) were taking drugs from fewer than 3 classes. Compared to those with controlled hypertension using 1 to 3 medication classes, adults with resistant hypertension were more likely to be older, to be non-Hispanic black, and to have higher mean body mass index (all p They were also more likely to have: micro and macro albuminuria, an estimated GFR of less than 60 ml/min, and self reported medical history of coronary heart disease, heart failure, stroke and diabetes mellitus (uncontrolled hypertension using 2 or fewer drug classes were similar. Most adults with resistant hypertension used a diuretic–85.6% (SE 2.4). However of this group, 64.4% (SE 3.2) used the relatively weak thiazide diuretic hydrochlorothiazide. The study has several limitations. There is no information concerning dosage (sub-optimal doses may have been used) or adherence (some medications may have been used in the past month but not regularly). Therefore the proportion with truly resistant hypertension may be lower than what was observed. Conversely, some uncontrolled individuals receiving 1 or 2 drugs would remain uncontrolled if 3 drugs were used; this would raise the proportion with resistant hypertension. Lastly, different results would be obtained had lower cut points for those with diabetes or renal disease, but this would have greatly complicated the comparisons between groups.

CONCLUSION: Though not rare, only a modest proportion of the hypertensive adult U.S. population would be currently considered to have drug-resistant hypertension. Many more individuals with uncontrolled hypertension are treated with only 1–2 classes of medication or are taking no antihypertensive drugs. Even among those classified here as resistant, inadequate diuretic therapy may be a potential modifiable target to improve hypertension control in this difficult to control group. Drug resistant hypertensive individuals on average have more cardiovascular disease, diabetes, obesity and renal dysfunction.

EVALUATION OF THE SATISFACTION OF GIM FACULTY WITH INPATIENT WARD ATTENDING SERVICE AND THE IMPACT OF INPATIENT DUTIES ON OUTPATIENT PRIMARY CARE ACCESS FOR A PILOT PART TIME HOSPITALIST PROGRAM Christine Perry 1; Michal Hose 1; Paul Jain 1; Simone Kanter 1; Tina Bronner 1; Manjulika Woytowitz 1; Jennifer Newman1. 1VA HCS SD, La Jolla, California. (Tracking ID # 8671)

BACKGROUND: General Internal Medicine (GIM) faculty members at the academically affiliated VA San Diego (VA SD) attend annually on the inpatient service. A survey was administered to the GIM faculty to evaluate their satisfaction with the ward attending experience. Our work group assessed a pilot program of faculty participating in a part time hospitalist program. We evaluated the impact of these inpatient commitments on the provider’s availability in their primary care clinic.

METHODS: GIM faculty completed an on-line survey in November 2008 and July 2010 eliciting demographic data and satisfaction with the inpatient service. Responses were tallied using Spearman rank correlation for non-parametric tests. Four GIM physicians volunteered for a pilot hospitalist program. They rotated in 2 week periods, covering one of four ward teams. When not on wards these physicians resumed outpatient care for their established primary care panels. The remaining three teams were attended in traditional fashion by internal medicine faculty rotating in 3.5-week long blocks. Information was collected on outpatient access of members of the hospitalist team from September 2009 through June 2010, as measured by days until the third next available appointment.

RESULTS: 74 surveys were completed, 36 in November 2008 and 38 in July 2010. There was no difference between the time periods regarding satisfaction of ward attending, with 26/36 faculty satisfied with ward attending (72.2%) in 2008 and 24/38 (63.2%) satisfied in 2010 (p=0.4). The most common reason for dissatisfaction was the time away from clinic (52%) and impact on outpatient access (61%). In 2008 13/36 (30%) and in 2010 12/38 (32%) of respondents cited that they felt uncomfortable or out of practice managing inpatients. All hospitalists showed a significant increase in time to 3 rd next available clinic appointments before and during inpatient service. Providers on service had peaks in their time to 3 rd next available with a maximum of 36–40 days and a minimum of 28–36 days. All providers were able to make significant reductions in these parameters within 21 days of returning to their outpatient duties, resulting in baseline 3 rd next available ranging from a maximum of 1–14 days and a minimum of 0–1 day.

CONCLUSION: Many faculty members at the VA SD are satisfied with their inpatient ward attending service. However, inpatient service impacts outpatient clinic access. The data demonstrates that time on the inpatient service results in a decline in outpatient availability for members of the part time pilot hospitalist team. Increasing emphasis is being placed by the VA SD on outpatient primary care access. The data
suggests that a dedicated hospitalist model at the VA SD, in which inpatient and outpatient responsibilities are split between distinct but collaborating groups of internists, would serve the institution’s best interests in meeting national goals in outpatient access goals. Evaluation of the impact of inpatient service on the access of both pilot hospitalist and traditional attending physicians is ongoing.

DNR DOES NOT MEAN DO NOT TREAT: DATA FROM THE FIRST US ELECTRONIC POLST REGISTRY

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BACKGROUND: The Physician Orders for Life Sustaining Treatment (POLST) form augments traditional methods for advance care planning by translating treatment preferences into medical orders. Developed in Oregon, POLST programs now exist or are developing in 33 US states and 2 other countries. POLST orders include CPR, scope of treatment, antibiotics, and artificial nutrition by tube. Scope of treatment in POLST is divided into “comfort only” meaning hospitalize only if comfort needs cannot be met in current setting, “limited additional interventions” meaning hospitalize for evaluation and treatment of medical problems but avoid ICU care, and “full treatment” including ICU care. The electronic POLST registry launched in December 2009 allowing emergency personnel and hospitals immediate and 24-hour access to patient POLST form information. Health professionals completing a POLST in Oregon are required (by legislative statute) to submit the form to the Registry unless the patient chooses to opt out. Thus the registry is both an innovation in advance care planning and a unique resource for understanding patient treatment preferences beyond resuscitation status.

METHODS: We analyzed all active forms signed and submitted from 12/3/09 to 12/2/10—the Registry’s first year of full operation. We calculated the prevalence of each POLST order to represent the ‘pre-test probability’ of each preference. We calculated likelihood ratios to examine the predictive value of knowing a patient’s preferences for each order.

RESULTS: At the end of the first year there were 25,142 active POLST forms in the registry which is currently receiving approximately 3,000 forms per month from every Oregon county. Over 84% of POLST registrants were 65 or older (mean age=77.7 years, SD=12.9 years), and 61% are female. 72.3% of registrants had a DNR order. Of these, 49.6% of also had orders for “comfort only”, 43.8% had orders for “limited additional interventions”, and 6.6% had orders for “full treatment”. Figure 1 shows how many people chose each different combination of POLST orders. Table 1 shows the prevalence for each POLST order which reflect “pre-test probabilities” and the likelihood ratios associated with a preference for each order. Only 5.4% of registrants wanted “maximum” treatment in every category and only 6.6% wanted “minimum” treatment in every category. Thus, 89.9% of those with a DNR order want more than the minimum in at least one other category and 80.8% of those requesting CPR wanted less than the maximum in at least one other category.

CONCLUSION: The Oregon Electronic POLST Registry is a new resource for ensuring that patient preferences are available and actionable across care settings. Registry data demonstrate why clinicians should not use “DNR” status to infer more about patient wishes. Even for these mostly elderly patients extrapolating from a patient with a DNR order that they would want comfort measures only was almost exactly a 50/50 proposition. POLST orders for “full treatment” or “comfort measures only” have higher predictive value. See www.POLST.org for further details.
Table 1:

| Category | Definition |
|----------|------------|
| E | Event resulted in need for treatment/intervention and temporary patient harm |
| H | Event resulted in initial or prolonged hospitalization and temporary patient harm |
| G | Event resulted in permanent patient harm |
| H | Event resulted in near death event |
| I | Event resulted in patient death |

Background: The AMA states “it is an ethical requirement that a physician should deal honestly and openly with patients.” In 2001 JCAHO added “requirement to disclose unanticipated outcomes” to accreditation standards. Full disclosure increases patient satisfaction and trust in physicians. Though studies suggest elements of complete disclosure, there are no national standards.

Purpose: 1) Look for documentation of various elements of UMEs disclosure 2) Survey healthcare providers (HCPs) for their perceptions regarding UMEs disclosure.

Methods: Chart review for following disclosure elements: who made and received disclosure; were persons documenting and reporting disclosure same; event facts; time from event to disclosure and documentation; locations of error and disclosure. An anonymous survey then was sent to all HCPs.

Results: 230 charts with reported UMEs Category E to I (derived from MERP medication scale), at a hospital system in Southeastern U.S. between 7/1/08-6/30/09 were reviewed for documentation of minimum disclosure elements suggested by prior studies. Documentation was considered complete if it had all the elements mentioned above. 192 charts were included in study - 135 adults/57 pediatrics. Overall 9.89% of reviewed charts contained any disclosure documentation. Note that the absence of documentation in the chart does not mean that disclosure did not occur. This review was limited to the examination of charts for documentation of disclosure. (See table) Separate survey data was collected from a sample of physicians (n=65) and non-physicians (n=48) working within the same hospital system (total N=113, response rate 29%).

1) 68% physicians and 48% non-physicians indicated awareness of disclosure recommendations. 2) Physicians and non-physicians reported learning about disclosure recommendations from different sources. 3) 57% physicians and 35% non-physicians reported not being aware/informed of policy or guidelines for disclosure in this hospital.

Conclusion: There is an incomplete understanding of “unintended” medical events, various levels of unintended medical events. This may lead to a lack of disclosure and its documentation. Developing explicit policies and structured templates coupled with multisource education of health care providers will assist in improving and promoting professional responsibility, decreasing litigation payouts and improving patient satisfaction.
THE IMPACT OF DIABETES MELLITUS ON SEXUAL FUNCTION IN ETHNICALLY DIVERSE WOMEN Kelli Copeland 1; Jennifer Creasman 1; Leslee Subak 1; Jeanette Brown 1; Stephen Van Den Eeden 2; David Thom 1; Alison Huang 1. 1University of California San Francisco, San Francisco, California ; 2Kaiser Permanente Division of Research, Oakland, California. (Tracking ID # 8736)

BACKGROUND: Diabetes mellitus is a common chronic condition that can affect multiple dimensions of functioning and quality of life. While previous studies have indicated an over three-fold increased risk of sexual dysfunction in men with diabetes, the effect of diabetes on sexual function in women is poorly understood.

METHODS: Sexual function was examined in an ethnically-diverse cohort of 2,270 women aged 40 to 85 years enrolled in the Kaiser Permanente Medical Care Program of Northern California, including 20% women with diabetes. Sexual function was assessed using self-administered questionnaire measures adapted from the validated Female Sexual Function Index. Diabetic end-organ complications were assessed by interviewer-administered questionnaires, with peripheral neuropathy assessed by the Michigan Neuropathy Screening Instrument, and kidney function assessed by measurement of serum creatinine. Use of medications, including insulin and oral diabetes medications, was assessed by direct review of medication bottles. Multivariable logistic regression models compared sexual function outcomes (i.e., sexual desire/interest, frequency of sexual activity, overall sexual satisfaction, and specific problems such as difficulty with lubrication, arousal, orgasm, or pain) among diabetic women taking insulin, diabetic women not taking insulin, and non-diabetic women, adjusting for age, race, relationship status, menopause, body mass index, hysterectomy, oophorectomy, other medication use, and smoking. Additional multivariable models assessed relationships between diabetes-specific complications and worse sexual function among diabetic women.

RESULTS: Of the 2,270 women, 139 (6%) had diabetes and were taking insulin, 347 (15%) had diabetes but were not taking insulin, and 1,784 (79%) did not have diabetes. The mean (±SD) age of participants was 65±9.2 years and 44% (N=1006) were white, 18% (N=401) Latina, 20% (N=443) African-American, and 18% (N=401) Asian or Pacific Islander. Approximately half of women overall were at least moderately interested in sex (42% of diabetic women taking insulin, 38.1% of diabetic women not taking insulin, and 48% of non-diabetic women [P=0.02 for heterogeneity]). Of the diabetic women taking insulin, 61% reported less than monthly sexual activity, compared to 58% of diabetic women not taking insulin and 48% of non-diabetic women (P<0.05 for heterogeneity). Neither sexual interest nor frequency of sexual activity differed by diabetes category in multivariate analyses. Women with diabetes, both on insulin and not on insulin, were more likely to report low sexual satisfaction compared to diabetic women not taking insulin (OR=2.04, 95%CI=1.32-3.24 for those taking insulin; OR=1.41, 95%CI=1.03-1.93 for those not taking insulin), independent of other factors. Among sexually active women, diabetic women taking insulin were more likely to report problems with lubrication (OR=2.48, 95% CI=1.40-4.41) and orgasm (OR=1.84, 95% CI=1.03-3.29). Among all diabetic women, end-organ complications such as heart disease, stroke, retinopathy, decreased kidney function, claudication, and peripheral neuropathy were associated with increased risk of decreased sexual function in one or more domain.

CONCLUSION: Compared to non-diabetic women, women with diabetes are more likely to report low sexual satisfaction, independent of other demographic and clinical factors. Diabetic women taking insulin may also be at higher risk of specific sexual problems such as difficulty with lubrication or orgasm. Multiple diabetic complications are associated with worse sexual functioning, suggesting that prevention of these complications may be important in preserving sexual function in diabetic women.

HYPERTENSION CONTROL IN DIABETICS IN A FEDERAL QUALIFIED HEALTH CARE CENTER Nephertiti Efeovbokhan 1; Venu Gourineni 1; Yan Xie 2; Manjunath Raju 1; Maria Bevilacqua 3; Ade Olomo 1. 1Michigan State University, Department of Internal Medicine, East Lansing, Michigan ; 2Michigan State University, East Lansing, Michigan. (Tracking ID # 8742)

BACKGROUND: Cardiovascular disease and not hyperglycemia is the leading cause of death in patients with diabetes mellitus (DM). Hypertension is particularly burdensome in diabetic patients particularly in low income groups, where the prevalence of uncontrolled hypertension is increased. Federal Qualified Health Centers (FQHCs) are designed to provide care for low income and medically underserved populations. Objectives: 1) to determine the rate of Blood Pressure (BP) control in patients with diabetes and hypertension, and 2) to determine the predictors of BP control in this population.

METHODS: Retrospective analysis of charts of all consecutive patients with cardiovascular disease, hypertension and diabetes mellitus (DM) seen in a FQHC in Michigan from January 1, 2006 to December 31, 2008 was performed. Uncontrolled hypertension was defined as Systolic BP >130 mm Hg and diastolic BP >80 mm Hg. Multivariable logistic regression was used to assess predictors of BP control.

RESULTS: Of 212 patients identified, 154 had hypertension, 122 had DM, and 88 had hypertension and DM. Of the diabetic population, 53.28 % were men, mean (SD) age was 51.0 (12.9) years, HbA1C was 8.04 (2.29), LDL was 106.42 (35.52). 61.32% had a BMI > 30, 38.68% had a BMI >35, 36.89% were smokers, 72.95% had Medicaid insurance, 13.93% had Medicare, and 13.11% had no insurance. We found 68.18% of Diabetics with hypertension were on ACE inhibitors/ARBs, 40.91% were on BB, and 45.45% were on Diuretics. BP control was achieved in only 31.15% of patients with DM. In the cohort of patients whose BP was controlled, 42.86% had HBA1c <7, while in those with uncontrolled BP, 63.16% had HBA1c ≥7 (p-value 0.22). A logistic regression model controlling for age, race, gender, type of insurance, BMI, number of medications used for BP control, number of clinic and emergency room visits found age to be associated with BP control (estimates=−0.0540, p-value <0.05)

CONCLUSION: We found that significant number of diabetic patients with hypertension do not have their BP controlled in a FQHC. There is underuse of ACE inhibitors/ARBs for BP control in this population. Our study revealed older diabetics are less likely to have their BP controlled. This underscores the urgent need for strategies to improve BP control in diabetics in FQHCs, especially among elderly patients who have a higher risk for cardiovascular and renal complications.

URBAN WOMEN’S PREFERENCES FOR LEARNING OF THEIR MAMMOGRAM RESULT: A QUALITATIVE STUDY Erin N. Marcus 1; Darlene K. Drummond2. 1University of Miami Miller School of Medicine, Key Biscayne, Florida ; 2University of Miami School of Communication, Miami, Florida. (Tracking ID # 8755)
BACKGROUND: Research suggests that communication of mammogram results is suboptimal for many ethnic minority women. The goals of our project were 1. To improve understanding of low-income inner-city English-speaking women’s experiences learning of their mammogram result; 2. To elicit their preferences as to how the communication of mammogram results could be improved; and 3. To gather information to help inform the development of a new tool for communicating mammogram results.

METHODS: A convenience sample of 34 women was recruited in the community to participate in 4 focus groups, each of which was led by an African-American female moderator. Themes discussed included how each woman had learned of her result, how result reporting could be improved, and what types of interventions might be effective to improve women’s understanding of their results. The investigators also showed the women a typical mammogram result letter and asked for their opinions. Two investigators separately performed a thematic analysis of the transcripts using an immersion and crystallization approach.

RESULTS: 36 women participated in the study. 85 % (n=29) self-identified as African-American. 39 % (n=14) qualified for Medicaid; 36% (n=13) reported that they lacked insurance. 56 % (n=20) reported an annual income of less than $10,000. Salient themes included general dissatisfaction with how results were reported, with some women saying that they did not recall receiving a letter or receiving a call informing them of their results. Several women reported anxiety simply learning of their results, even if they were normal. Many of the women said that the result notification letter contained words they could not understand, was vague, and did not effectively convey the need for follow-up. Women expressed a preference for learning of the result directly from their physician. Women were unaware of how common it is to be called back for a repeat imaging study, and wanted to be prepared for this possibility in advance, through informational videos and pamphlets. Women expressed a preference for print materials that included pictures, testimonials, and an action plan including a hotline to call with questions.

CONCLUSION: This qualitative study of a predominantly African-American, low-income population of inner city women suggests that current methods for reporting mammogram results are flawed. Advance education about what occurs after a mammogram may improve patients’ understanding of their results and reduce anxiety. To increase patient satisfaction, print materials informing women of their results should incorporate photographs and testimonials and include information about where to obtain a more detailed explanation about specific results.

MEASURING BLOOD PRESSURE FOR DECISION MAKING AND QUALITY REPORTING: WHERE AND HOW MANY MEASURES?

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BACKGROUND: There is uncertainty about the optimal setting and number of blood pressure (BP) measurements that should be used for clinical decision making and quality reporting. We sought to compare different strategies using home or clinic BP on the certainty with which patients could be classified as in or out of control.

METHODS: We analyzed 444 veterans with hypertension receiving primary care through the Durham Veterans Affairs Medical Center and enrolled in a telephone self-management trial over 18 months. Blood pressure was measured repeatedly by three methods: standardized research BP measurements at 6 month intervals; clinic BP measurements obtained during outpatient visits; and home BP using a monitor that transmitted values electronically. Separate random effects models were fit to all available SBP measurements during the study period for research, home, and clinic values. The models included an overall mean (i.e., no change in SBP over time), an individual-level random effect which yielded an estimated between-person variance, and a measurement error which yielded an estimated within-individual variance. Assuming a bivariate normal distributions, we calculated the probability that an individual’s “true” SBP was out of control according to guideline recommendations (SBP >140 mmHg for clinic or study measurements, SBP >135 for home measurements) given a range of observed mean SBP. We estimated these probabilities separately based on one SBP measurements or the average of 2, 5, or 10 measurements.

RESULTS: Patients provided 111,181 SBP measurements (3218 research; 7121 clinic; and 100,842 home) over 18 months. SBP control rates at baseline (mean SBP Short-term variability was large and similar across all three modes of measurement with a mean within-individual coefficient of variation of 10% (range: 1%-24%). No single clinic SBP between 120 mmHg and 160 mmHg allowed correct classification of a patient as in or out of control with >80% certainty (Figure 1). The impact of within-individual variability could be reduced significantly by averaging multiple measurements, with most benefit accrued at 5–6 measurements (Figure 2).

CONCLUSION: Physicians who want to be >80% certain they are correctly classifying patients’ blood pressure control should use the average of multiple measurements. Hypertension quality metrics based on a single clinic measurement misclassify a large proportion of patients and could be significantly improved with the incorporation of home blood pressure.

Figure 1. Probability of correct SBP classification based on clinic measurement.
TREATMENT EFFECTS OF LINACLOTIDE ON BOWEL AND ABDOMINAL SYMPTOMS OF CHRONIC CONSTIPATION: POOLED EFFICACY AND SAFETY RESULTS FROM 2 RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED PHASE 3 TRIALS

Bernard J Lavins¹; Anthony J Lembo²; Harvey A Schneier³; Steven J Shiff³; James E MacDougall¹; Xiwei D Jia³; Caroline B Kurtz¹; Mark GCurrie¹; Jeffrey M Johnston¹. ¹Ironwood Pharmaceuticals, Cambridge, Massachusetts; ²Beth Israel Deaconess Medical Center, Boston, Massachusetts; ³Forest Research Institute, Jersey City, New Jersey. (Tracking ID # 8757)

BACKGROUND: Chronic constipation (CC) affects between 12 and 19% of the US population and can negatively impact patients’ health-related quality of life. The symptoms of CC include infrequent bowel movements (BMs), hard stools, straining during defecation, a sense of incomplete evacuation, abdominal discomfort and bloating. Many patients are dissatisfied with current treatment options, primarily due to inconsistent efficacy and associated side effects. Linacotide is a minimally absorbed, guanylate cyclase type-C receptor agonist currently being evaluated for the treatment of CC and irritable bowel syndrome with constipation. In two multicenter, randomized, double-blind, placebo-controlled, dual-dose, parallel-group Phase 3 trials, linacotide improved measures of bowel and abdominal symptoms in patients with CC. Here, pooled results from the two Phase 3 CC trials are presented.

METHODS: Patients included in the trials reported a history of <3 spontaneous BMs per week (SBM: a BM occurring in the absence of any laxative, suppository, or enema use during the preceding 24 hours) plus at least one of the following symptoms during at least 25% of defecations: straining, hard or lumpy stools, or a sense of incomplete evacuation, for at least 12 weeks (which need not have been consecutive) in the preceding 12 months. In addition, patients also had to report during the 2-week baseline period: <3 complete SBMs (CSBM: an SBM accompanied by a sensation of complete evacuation)/week and <6 SBMs/week. Patients meeting these criteria were randomized to oral once daily linacotide 133 or 266mcg, or placebo for 12 weeks. The primary efficacy endpoint was the 12-week overall CSBM responder rate (≥3 CSBM/week with increase of ≥1 CSBM/week from baseline for 9 of 12 weeks). In a post-hoc analysis, the change from baseline in abdominal discomfort and bloating in patients with at least moderate abdominal pain at baseline (score ≥3 on a 1 [none] to 5 [very severe] point severity scale; 23% of the Intent-to-Treat [ITT] population) was assessed. P values were calculated using a Cochran Mantel Haenszel test controlling for study and geographic region for CSBM responder rates and an Analysis of Covariance model with study, treatment group, and geographic region as factors and baseline value as covariate for change from baseline endpoints.

RESULTS: In these two Phase 3 trials, a total of 1272 patients with CC were included in the ITT population and were randomized to placebo (n=424), linacotide 133mcg (n=430), and linacotide 266mcg (n=418). Baseline demographic and clinical characteristics were similar across treatment groups. Across both trials, approximately 70% of patients did not have a CSBM during the baseline period. For the 12-week treatment period, the overall CSBM responder rates were 4.7%, 18.6%, and 20.3% for placebo, linacotide 133mcg, and linacotide 266mcg, respectively (p<0.0001 for both comparisons). The weekly mean CSBM rate is displayed in Figure 1. Statistically significant separation from placebo for CSBM and SBM rates was observed within 24 hours of treatment. Secondary endpoints, including change from baseline in CSBMs, SBMs, stool consistency, straining, and constipation severity were statistically significantly improved with linacotide 133 and 266mcg compared to placebo (Table 1). Abdominal symptoms were also significantly improved, with decrease in...
bloating severity more than 2-fold greater than the placebo response; in addition, in the subpopulation with at least moderate abdominal pain at baseline, the improvement in abdominal discomfort and bloating was nearly one full unit on the 1–5 severity scale (Table 1, bottom). Diarrhea was the most commonly reported treatment-related adverse event, resulting in discontinuation rates of 0.5%, 4.4%, and 3.8% in placebo, linaclotide 133mcg, and linaclotide 266mcg patients, respectively, in the ITT group; discontinuation rates in the moderate to very severe abdominal pain subpopulation were even lower, 0%, 2.0%, and 2.1% for placebo, linaclotide 133mcg, and linaclotide 266mcg, respectively.

**CONCLUSION:** In two large Phase 3 trials, linaclotide treatment statistically significantly improved measures of bowel and abdominal symptoms, as well as constipation severity, in patients with CC. Abdominal symptoms of discomfort and bloating were also statistically significantly improved in patients with at least moderate abdominal pain at baseline. Diarrhea was the most common adverse event.

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**Table 1:**

| ITT Population | Linaclotide |  |
|----------------|-------------|---|
| Baseline (n = 1272) | Placebo (n = 424) | Linacotide 133mcg (n = 430) | Linacotide 266mcg (n = 418) |

---

**Figure:**

Weekly CSBMs

P-value <0.0001 for all comparisons of linaclotide versus placebo at each of the 12 weeks in the Treatment Period
RACIAL DISPARITIES IN BREAST CANCER STAGE AT DIAGNOSIS IN THE MAMMOGRAPHY ERA Neal Chatterjee¹; Yulei He²; Nancy L. Keating³.
¹Department of Medicine, Massachusetts General Hospital, Boston, Massachusetts; ²Department of Health Care Policy, Harvard Medical School, Boston, Massachusetts; ³Department of Health Care Policy, Harvard Medical School and the Division of General Internal Medicine, Brigham and Women’s Hospital, Boston, Massachusetts. (Tracking ID # 8760)

BACKGROUND: The efficacy of mammographic screening is related to its ability to shift stage at diagnosis from distant to earlier-stage disease. Despite equivalent rates of mammography since the late-1990s, black women have higher breast cancer mortality than white women. Since stage at diagnosis is the strongest predictor of survival in breast cancer, we sought to assess dynamic changes in stage at breast cancer diagnosis for black and white women since mammography became available.

Table 1:

| Least Squares Mean Change from Baseline for Secondary Endpoints |
|---------------------------------------------------------------|
|                                                              |
|                                                              |

| CSBM/week | Placebo (n = 424) | Linaclotide (n = 430) | 133µg (n = 430) | 266µg (n = 418) |
|-----------|-------------------|-----------------------|-----------------|-----------------|
| Baseline  | 0.29              | 1.91 ***              | 2.30 ***        |
| SBBM/week | 1.96              | 3.13 ***              | 3.24 ***        |

| Stool Consistency | BSFS: 1=hard stool, 7=watery | 1.82 *** | 1.91 *** |
|-------------------|-------------------------------|----------|----------|
| Straining         | [1=not at all, 5=extreme amount] | -1.14 *** | -1.19 *** |
| Constipation Sev. | [1=none, 5=very severe] | -0.88 *** | -0.86 *** |
| Abdominal Discomf. | [1=none, 5=very severe] | -0.47 *** | -0.46 *** |
| Bloating          | [1=none, 5=very severe] | -0.45 *** | -0.43 *** |

Subpopulation with at least moderate pain

| Abdominal Discomf. | Baseline (n = 290) | Placebo (n = 94) | Linaclotide (n = 101) | 133µg (n = 101) | 266µg (n = 95) |
|-------------------|-------------------|-----------------|-----------------------|-----------------|-----------------|
| 3.53              | -0.56             | -0.90 **        | -0.90 **              |
| Bloating          | [1=none, 5=very severe] | -0.84 * | -0.85 * |
METHODS: Population-based observational study involving 143,249 white and 13,571 black women aged 50–69 diagnosed with invasive breast cancer between 1982–2007 living in a Surveillance, Epidemiology, and End Results (SEER) region. We assessed odds of distant (versus local or regional) disease at diagnosis by race, adjusted for patient demographic (age, marital status, SEER region) and socioeconomic factors (area-level estimates of insurance status, education, income) known to affect stage at diagnosis. Behavioral Risk Factor Surveillance System data were used to calculate biennial mammography rates for black and white women, aged 51–70, from 1990 to 2006 in all states where the SEER9 regions were located. We used logistic regression to assess the association of year of diagnosis and race with distant cancer diagnosis. Logistic regression was also used to compare linear trends in rates of distant cancer diagnosis for black and white women, before and after 1998 (a time corresponding to peak mammography for both races). Year was treated as a continuous variable and an indicator variable was included for pre vs. post-1998 to assess change.

RESULTS: Overall, 5.8% of whites and 10.2% of blacks were diagnosed with distant breast cancer. The black-white disparity in the proportion of distant cancers narrowed until 1998 (adjusted difference 0.65%), before increasing (Figure). Biennial mammography rates in the SEER9 states peaked in 2000 for both races; rates were lower for blacks than whites in the early 1990s, but equalized by 1996 (Figure). Between 1982 and 1997, the proportion of distant cancers decreased over time for both black women (adjusted odds ratio [AOR] per year=0.973 [95% CI=0.960-0.987]) and white women (AOR per year=0.978 [95% CI=0.974-0.984]), and the rate of decline for black and white women did not differ significantly (P for interaction=0.61). From 1998–2007, the odds of distant breast cancers increased more rapidly for black women (AOR per year=1.036 [95% CI=1.014-1.060]) than for white women (AOR per year=1.011 [95% CI=1.001-1.021]) (P for interaction=0.04). Sensitivity analyses using 1997 and 1999 as alternate time points did not change statistical associations.

CONCLUSION: After a narrowing of the black-white disparity in the proportion of distant breast cancers diagnosed until 1998, the proportion of distant-stage cancers has since increased more rapidly in black women than white women. The narrowing of the black-white disparity coincides with peak rates of mammography for black and white women. We propose two possible explanations for our findings. First, given more aggressive tumor biology in black women, the disproportionate increase of distant disease may reflect less benefit for black women at current screening intervals (every 1–2 years). Second, rates of mammography have declined for both black and white women since 2000. In a background of different tumor biology, similar decrements in screening rates may be associated with widening of the stage at diagnosis disparity. Black women may benefit more from higher absolute rates of mammography than white women. Given the marked survival difference between early and late stage breast cancer, further attention to racial disparities in stage at diagnosis is warranted.

THE METABOLIC SYNDROME IN OBESE PATIENTS WITH BINGE EATING DISORDER IN PRIMARY CARE CLINICS
Katherine C. McKenzie 1; Rachel Barnes 2; Abbe Boeke 3; Inginia Genao 4; Rina Garcia 5; Matthew Ellman 6; Peter Ellis 7; Robin Masheb 3; Carlos Grilo 8.
1Yale University School of Medicine, New Haven, Connecticut; 2Yale School of Medicine, New Haven, Connecticut; 3Yale University School of Medicine, New Haven, Connecticut; 4Yale University School of Medicine, New Haven, Connecticut; 5Yale University School of Medicine, Middletown, Connecticut; 6Yale University School of Medicine, Yale University, New Haven, Connecticut. (Tracking ID # 8779)
BACKGROUND: Obesity is a heterogeneous problem, and research has highlighted the clinical significance of the subgroup of patients with binge eating disorder (BED). BED is characterized by recurrent episodes of binge eating (overeating unusually large quantities of food while experiencing a subjective loss of control) without inappropriate weight compensatory behaviors (which characterize bulimia nervosa). The distribution and nature of the metabolic syndrome in obese patients with BED is largely unknown and requires investigation, particularly in general internal medicine settings.

METHODS: A cross-sectional analysis of 81 consecutive treatment-seeking obese BED patients. Patients with and without metabolic syndrome were compared on demographic features and current and historical eating- and weight-related variables.

RESULTS: Forty-three percent of patients met criteria for metabolic syndrome. A significantly higher proportion of men (66%) than women (35%) met criteria for metabolic syndrome; patients with versus without metabolic syndrome did not differ significantly in ethnicity or body mass index. Patients with versus without metabolic syndrome did not differ significantly in binge-eating frequency, severity of eating disorder psychopathology, or depression. ANCOVAs, controlling for gender, revealed that patients without the metabolic syndrome started dieting at a significantly younger age, spent more of their adult lives dieting, and reported more current dietary restriction than patients with metabolic syndrome.

CONCLUSION: Metabolic syndrome is common in obese patients with BED in primary care settings and is associated with fewer dieting behaviors. These findings suggest that certain lifestyle behaviors, such as increased dietary restriction, may be potential targets for intervention with metabolic syndrome.

RISK OF THIAZIDE-INDUCED HYponATREMIA IN PATIENTS WITH HYPERTENSION

Alexander A. Leung 1; Adam Wright 1; Valeria Pazo 1; Andrew Karson 2; David W. Bates 1; Brigham and Women's Hospital, Boston, Massachusetts; 3Massachusetts General Hospital, Boston, Massachusetts. (Tracking ID # 8786)

BACKGROUND: Although hyponatremia is a well-recognized and costly complication of treatment with thiazide diuretics, the risk of thiazide-induced hyponatremia has not been defined in routine care. Thus, we designed this study to assess the risk of incident hyponatremia in patients treated with thiazides.

METHODS: We conducted an inception cohort study using a multicenter clinical research registry to identify 3238 adult outpatients that were newly treated for hypertension between January 1, 2000 and December 31, 2005 at two teaching hospitals in Boston, Massachusetts, and followed them for up to 10 years. Patients with prior hyponatremia were excluded.

RESULTS: Of 152 patients exposed to thiazide diuretics (mean age 59 years), 67 (44%) developed hyponatremia, defined as serum sodium less than 133 mmol/L. Among those that developed hyponatremia with thiazides, the median time to event was 1.8 years (655 days). The adjusted rate of incident hyponatremia was 80 cases per 1000 person-years for patients treated with thiazides compared to 27 cases per 1000 person-years in those without thiazides. Patients exposed to thiazides were more likely to develop hyponatremia (adjusted rate ratio, 3.13; 95% CI, 2.34 to 4.17) and the relative risk was similar regardless of age or sex. Similarly, the risk of hospitalizations associated with hyponatremia (adjusted rate ratio, 2.94; 95% CI, 1.97 to 4.39) and all hospitalizations (adjusted rate ratio, 1.34; 95% CI, 1.05 to 1.71) were higher in those treated with thiazides. There was no significant difference in mortality.

The number needed to treat to result in one extraneous incident case of hyponatremia in 5 years was 4.55 (95% CI, 3.36 to 7.04).

CONCLUSION: Our findings suggest that the occurrence of hyponatremia and associated hospitalizations among patients receiving thiazide diuretics are common with substantial long-term risks. We found that over 4 in 10 patients exposed to thiazides develop hyponatremia when followed over a decade.

TIME-DEPENDENCY OF OUTCOME RELATIONSHIPS FOR DRUG-ELUTING STENTS VERSUS BARE-METAL STENTS

Alexander A. Leung 1; Danielle A. Southern 1; P. Diane Galbraith 1; Merril L. Knudtson 1; William A. Ghali 1. 1University of Calgary, Calgary, Alberta. (Tracking ID # 8787)

BACKGROUND: We previously reported outcomes on a population-based cohort that suggested that the early benefit from revascularization with drug-eluting stents attenuated over time, with perhaps even a shift toward poorer outcomes after one year. To better characterize this finding, we sought to investigate the long-term outcomes associated with drug-eluting stents compared to bare-metal stents with an analysis extending to 7 years of follow-up.

METHODS: We performed an extended analysis on a cohort of 6440 patients who underwent percutaneous coronary intervention between April 1, 2003 an March 31, 2005 using a prospective multicenter provincial clinical registry, and compared rates of death, and of death or repeat revascularization over 7 years of follow-up. We determined risk-adjusted hazard ratios at moments in time using spline analysis from Cox proportional hazards modeling.

RESULTS: During the 7 years of observation, the relative risks for death or the composite outcome of death or repeat revascularization varied over time. There was suggestion of early benefit associated with drug-eluting stents in the first year following implantation. Subsequently, at one year post-procedure and beyond, there was a shift in relative risks over time with a higher hazard for poor outcomes in drug-eluting stent patients (see figure). The adjusted relative risks early in the first year for death and the composite outcome of death or repeat revascularization were 0.26 (95% CI, 0.14 to 0.48) and 0.69 (95% CI, 0.44 to 1.08), respectively. By 7 years, the adjusted relative risks for death and the composite outcome of death or repeat revascularization rose to 1.52 (95% CI, 0.96 to 2.42) and 1.53 (95% CI, 0.96 to 2.42), respectively.
CONCLUSION: Revascularization with drug-eluting stents is associated with significantly better outcomes within the first year only. Thereafter, a signal for a progressively increasing risk is seen, most notably for the composite outcome of death or repeat revascularization.

DYING ON THE STREETS
Thuy Pham 1; Sara Doorley 1; Cheryl Ho 1.
1Santa Clara Valley Medical Center, San Jose, California. (Tracking ID # 8875)

BACKGROUND: The Valley Homeless Healthcare Program (VHHP) was established in 2003 to provide medical and psychiatric care to the homeless of Santa Clara County. This study aims to explore VHHP’s patients’ experiences and views on death and dying in order to implement programs that would bridge barriers to effective healthcare.

METHODS: Participants were recruited from a primary care clinic for the homeless in San Jose, California. Inclusion criteria for the study included a history of homelessness, age 18 or older, ability to speak English and give written informed consent. Participants were asked to fill out a demographic survey then join a focus group to discuss their experiences with death, experiences with memorial services, utility of a memorial service, fear of death and dying, exposure and interest in advanced directive. This data was analyzed manually using a method called content analysis.

RESULTS: There were a total of 30 participants, ages 26 to 60, 21 men and 9 women. Of the 30 participants, 19 were Caucasian, 4 were African American, 6 were Hispanic, with 1 Other. The participants knew a total of 45 homeless people who died in the past year. 69% of those deaths were caused by substance abuse or violent crime. Common themes regarding fear about death and dying included physical pain and suffering, leaving a burden for the people left behind, the afterlife, no fear, dying alone and not being found. One participant said, “At this moment, I don’t fear death. Death will be a blessing.” Another participant stated, “There are more reasons to die when you are homeless because no one cares about you. One of the women said softly, ‘I live under the freeway and am a little old woman, so it’s scary.’ Overall, 67% of the participants would want a memorial service after they die, 7% said no, and 26% were undecided. One participant said no because “there would not be anything nice said.” Others did not like funerals in general or did not care. 87% of the participants would find it helpful to have a discussion on how they want to be treated when they are too sick to make decisions for themselves and write down an advanced directive.

CONCLUSION: Homeless persons in the Valley Homeless Healthcare Program have frequent encounters with death and favor clinic-based end-of-life discussions and documentation as well as a memorial service. The variation in participants’ answers illustrates the complexity of the topic of death and dying. Therefore, further studies with more participants in different primary care clinics for the homeless are needed to validate these needs and the utility of implementing programs to address these needs.

Hypertension Control in a Federal Qualified Health Center in Michigan: How Are We Doing?
Ade Olomu 1; Nephertiti Efevokhan 1; Venu Gourineni 2; Manjunath Raju 3; Yan Xie 3; Margaret Holmes-Rovner 1; 1Michigan State University, Department of Internal Medicine, East Lansing, Michigan; 2Michigan State University, Department of Medicine, East Lansing, Michigan; 3Michigan State University, East Lansing, Michigan. (Tracking ID # 8879)

BACKGROUND: Rates of hypertension awareness and treatment have increased with recent reports from the National Health and Nutrition Examination survey (NHANES) estimating blood pressure control nationally at about 50%, does this hold true in our Federal qualified health centers (FQHCs)? FQHCs are designed to provide care for low income and medically underserved populations. Hypertension is particularly burdensome in low income groups, where the prevalence of uncontrolled hypertension is increased. Objectives: 1) to determine the rate of blood pressure control in a FQHC. 2) to determine the predictors of Blood Pressure (BP) control.

METHODS: Retrospective analysis of charts of all consecutive patients with hypertension, coronary artery disease and or, diabetes mellitus (DM) seen in a FQHC in Michigan from January 1, 2006 to December 31, 2008. Uncontrolled hypertension was defined as Systolic BP > 140 mmHg (>130 mm Hg in patients with DM) and diastolic BP > 90 mmHg (>80 mm Hg in patients with DM). Multivariable logistic regression was used to assess predictors of Blood Pressure (BP) control.

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RESULTS: Of 212 patients identified, 154 had hypertension, 122 had DM, and 88 had hypertension and DM. The mean age was 53.9 + 11.6 years, 51.3 % were men, mean BMI was 34.1 +10.5, 74.53% had Medicaid, 11.32% had Medicare, 1.42% had private insurance and 12.74% had no
TOBACCO DEPENDENCE TREATMENT INTERVENTION FOR HOSPITALIZED SMOKERS: A RANDOMIZED, CONTROLLED TRIAL UTILIZING VARENICLINE 1Michael B. Steinberg 2; Jennifer Randall 3; Shelley Greenhaus 4; 1UMDNJ-Robert Wood Johnson Medical School, New Brunswick, New Jersey. (Tracking ID # 8934)

BACKGROUND: Despite clear medical reasons to quit smoking, patients with medical illness continue to smoke at high rates. The hospital can be an important opportunity for smoking cessation interventions, but the use of tobacco treatments in this setting is limited. Previous studies indicate that intensity of treatment and quality of post-discharge follow-up are key predictors of abstinence. This study evaluates the benefit of initiating a comprehensive tobacco treatment intervention, including varenicline, during hospitalization.

METHODS: Seventy-nine smokers admitted to a 584-bed university-based hospital with various diagnoses were enrolled in a randomized, double-blinded, placebo controlled trial from August 2007 to March 2009. A comprehensive treatment intervention, including varenicline or placebo and face-to-face outpatient follow-up, was utilized. Follow-up data collection occurred at weeks 4, 12, and 24. Primary outcome was exhaled carbon monoxide confirmed 7-day point abstinence at 24 weeks following discharge. Secondary outcomes included abstinence at 4 and 12 weeks following discharge; reported withdrawal symptoms; motivation to stop smoking; utilization of outpatient treatment following discharge; and composite medical outcome or death.

RESULTS: Overall abstinence for all subjects was 27% at 24 weeks. There was no difference in abstinence rates at 24 weeks between varenicline and placebo treatment groups (23% vs. 31%). There were non-significant differences in adherence to medication treatments between the varenicline and placebo groups (56% vs. 78%; p=0.12). Among subjects who were adherent to the medication protocol, there was a non-statistically higher abstinence rate at 24-week follow up in the varenicline group compared with placebo (80% vs. 56%; p=0.2). Utilization of the outpatient treatment component was quite high with 40.5% of all subjects attending treatment at the Tobacco Dependence Clinic. Those subjects who attended treatment had significantly higher abstinence rates compared with those who did not attend treatment (53.1% vs. 8.5%, p). There were no significant differences in motivation to stop smoking or changes in withdrawal symptoms. During the follow-up period, 23 subjects were re-hospitalized or treated in the emergency department with no significant difference between treatment groups (13 varenicline vs. 10 placebo).

CONCLUSION: Varenicline used in the hospital setting and immediately following discharge for smoking cessation appears safe, but it is unclear how effective it is when initiated in this setting. The benefit of face-to-face treatment following discharge and interventions to improve these follow-up rates may be important to achieving success in tobacco cessation for hospitalized smokers.

SCHOLARLY WORK OF CLINICIAN EDUCATOR FACULTY: A NATIONAL SURVEY OF GENERAL INTERNAL MEDICINE DIVISION DIRECTORS 1Hsin-Chieh Yeh 2; Amanda Bertram 2; Frederick L Brancati 2; Joseph Cofrancesco 2; 1Johns Hopkins University, Baltimore, Maryland. (Tracking ID # 8947)

BACKGROUND: Although many medical schools expect clinician-educators (CEs) to produce external scholarship to earn promotion, the value of specific scholarly products and the availability of institutional support for scholarship are uncertain. We therefore conducted a national survey of GIM Division Chiefs concerning CE scholarship.

METHODS: A sampling frame for US GIM Division Chiefs was assembled from: (1) AAMC list of accredited medical schools; (2) SGIM membership directory; (3) ACLGIM membership directory; (4) GIM Division websites; and (5) telephone calls to GIM Division offices. For institutions with more than one GIM division, each Chief was surveyed. The survey included 4 sections: (1) general information; (2) rating of the importance of CE scholarly activities for promotion to Associate Professor; (3) availability of institutional research support for CEs; and (4) an open-ended hypothetical question “If you had $100,000 per year to spend to enhance the scholarly productivity of your CEs, how would you spend it?”.

RESULTS: Of the 134 AAMC accredited medical schools, we identified 145 Chiefs in 128 GIM divisions, excluding Johns Hopkins. To date, we received responses from 54 Chiefs (37%) from 51 institutions. There were no significant institutional differences between responders and non-responders regarding geographic region (p=0.45), number of medical students (p=0.26), or quartile of NIH research funding (p=0.47). Among responding Chiefs, median duration of service was 6 years (IQR: 3–11); 27% were women. They reported a median number of full-time CEs per GIM Division of 20 (inter-quartile range (IQR): 11–32). 73% of GIM Divisions had a separate promotion track for CEs. The Figure illustrates the distribution of perceived importance of various scholarly activities in promotion of CEs to Associate Professor. Curriculum development and administration, presentations at national meetings and other institutions, and review articles and book chapters were all rated as ‘most/very important’ or ‘important/somewhat important’ by over 90% of Chiefs. The exception was publishing original peer-reviewed articles: about half of Chiefs surveyed rated these ‘most/very important’, but slightly less than half rated these ‘not important’ at all. This difference was significantly associated with having separate promotion tracks: in Divisions with a separate track, 37% of Chiefs rated publishing original articles “most/very important” vs. 80% in Divisions without a separate track (p<0.02). Many Chiefs lacked institutional resources to promote CE scholarship, including lack of protected time (72%), project coordination (61%), overall career mentorship (46%), and statistical analysis (43%). If $100,000 per year were available to enhance the scholarly productivity of CEs, Chiefs most frequently cited the following priorities: faculty development (39%), protected time (29%), methods/statistics support (24%), project coordination/assistance (24%), and project funding (22%).
CONCLUSION: Scholarly productivity is important for promotion of CEs and there is a wide range of acceptable products. Original, peer-reviewed articles are very important in about half of GIM Divisions, but Chiefs report limited resources to facilitate original scholarship. Investment in core statistical support, faculty mentorship, and project coordination represent promising approaches to improve CE scholarly productivity.

Distribution of perceived importance of scholarly activities in the promotion of clinician educators to the rank of Associate Professor

| Activity                                      | Most/Very Important | Important/Somewhat Important | Not Important |
|-----------------------------------------------|---------------------|------------------------------|--------------|
| Original Articles                             | 10%                 | 20%                          | 30%          |
| Curriculum Development                        | 40%                 | 50%                          | 60%          |
| Leading/Workshop_National Meeting             | 70%                 | 80%                          | 90%          |
| Presentation_National Meeting                 | 0%                  | 10%                          | 20%          |
| Publishing Curricula                          | 0%                  | 10%                          | 20%          |
| Review Articles                               | 0%                  | 10%                          | 20%          |
| Curriculum Administration                     | 0%                  | 10%                          | 20%          |
| Presentation_Regional                          | 0%                  | 10%                          | 20%          |
| Lecture at Other US Institution               | 0%                  | 10%                          | 20%          |
| Book Chapter                                  | 0%                  | 10%                          | 20%          |
| External Grant                                | 0%                  | 10%                          | 20%          |
| Lecture Outside US                             | 0%                  | 10%                          | 20%          |
| Journal Editor                                | 0%                  | 10%                          | 20%          |
| Book Editor                                   | 0%                  | 10%                          | 20%          |
| Leading/Workshop_Regional                     | 0%                  | 10%                          | 20%          |
| Journal Reviewer                              | 0%                  | 10%                          | 20%          |
| Case Report                                   | 0%                  | 10%                          | 20%          |
| Letter to the Editor                          | 0%                  | 10%                          | 20%          |
| Case Vignettes                                | 0%                  | 10%                          | 20%          |
| Writing for Websites/Blogs                    | 0%                  | 10%                          | 20%          |
| Other Website Postings                        | 0%                  | 10%                          | 20%          |
| Non Peer Reviewed Article                     | 0%                  | 10%                          | 20%          |
| Magazine/Community/Patient Forum              | 0%                  | 10%                          | 20%          |

VIEWS ON END-OF-LIFE CARE AMONG SOUTH ASIANS LIVING IN THE US

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BACKGROUND: End-of-life care preferences vary across racial/ethnic groups and are likely influenced by cultural values and views. However, the way in which culture affects end-of-life care preferences among immigrant groups in the U.S. and their offspring is still poorly understood, especially among South Asians. Therefore, we sought to examine the values and views that influence end-of-life care preferences among first and second generation South Asians living in the United States.

METHODS: This qualitative study used purposive sampling to recruit 12 first generation and 11 second generation South Asians in the mid-Atlantic region. Four focus groups (two first generation groups and two second generation groups) were conducted. Audio-recordings of the focus group sessions were transcribed verbatim, independently reviewed, and coded by two investigators using Atlas.ti 6.0 to perform an editing style analysis. This process led to the generation of several themes and sub-themes.

RESULTS: First generation participants ranged in age from 41 to 76 years and were evenly split by gender. Second generation participants ranged in age from 23 to 36 years and included seven women and four men. All participants were highly educated, most were Hindu, and two thirds were studying or working in a healthcare field. Several themes emerged:

1. Attitudes toward death and suffering
   - Death: Participants attributed a greater acceptance of death in South Asian culture to cultural beliefs (e.g., reincarnation).
   - Suffering: Most felt suffering should be treated even if it resulted from one's karma.

2. Family duty: dynamics, specific roles, and expectations
   - Family dynamics: Large family sizes, geographic distances, and traditional gender roles led to complex family dynamics which complicated EOL communication and decision making.
- Special roles: Traditionally, aging parents were cared for by the eldest son, but roles are changing due to education and urbanization.

- Expectations: Strong sense of duty to care for family held by all, but first generation participants expected less from their children because of western emphasis on individuality. Second generation participants retained a sense of duty to care for aging parents but were concerned about resources to provide care at home.

3. Self-determination and sociocultural considerations:

- Information disclosure: Most preferred full disclosure. Lack of social support in the U.S. cited as a reason for preferring full disclosure in the U.S. but not in India.

- Advance care planning: Patient preferences were often not discussed with family members leading to uncertainty and misconceptions. Several participants supported the use of advance directives to reduce family member decision-making burden rather than for the traditional rationale of patient self-determination.

CONCLUSION: In this study of first and second generation South Asians in the U.S., we found that many traditional cultural values, such as filial duty, greatly influenced care preferences at the end of life and retained importance across generations. Participants also described cultural challenges due to complex family dynamics, lack of explicit discussion between patients and other family members, and a tension between wanting to meet traditional expectations and an inability to do so in the face of U.S. social realities. Clinicians caring for South Asian patients at the end of life may be better able to assess care preferences after exploring the complex interplay between traditional expectations, family duty and dynamics, and specific social realities for each patient.

DISEASE PREVALENCE AND AGE DISTRIBUTION OF NEW FEMALE PATIENTS ATTENDING A GENERAL OUTPATIENT CLINIC AT A MEDICAL SCHOOL HOSPITAL IN JAPAN

Yuta Sakaiishi 1; Yutcho Eguchi 1; Midori Nishii 2; Naoko Eguchi 2; Motoshi Fujitama 3; Hitoshi Eguchi 3; Masaki Tago 2; Satoshi Matsunaga 3; Tsuneaki Yoshioka 3; Shu Soejima 3; Sei Emura 4; Masaki Tago 3; Satoshi Matsunaga 3; Tsuneaki Yoshioka 3; N/A; 3General Medicine, Saga Medical School, Saga, N/A; 4Center for School of General Medicine, Medical School, Saga, Saga, N/A.

BACKGROUND: Information disclosure: Most preferred full disclosure. Lack of social support in the U.S. cited as a reason for preferring full disclosure in the U.S. but not in India.

RESULTS: A total of 1,166 new female patients were enrolled during the study period. Their age distribution showed bimodal peaks in their 20s and 50-60s. The prevalences of the initial diagnoses classified by ICPC code were: gastrointestinal disease (13.1%), orthopedic disorders (14.3%), and respiratory diseases (11.9%). The age distributions of new female patients with gastrointestinal disease and respiratory disease showed bimodal peaks, while that for orthopedic disorders showed a single peak at over 50 years. The prevalences of initial diagnoses in the late 30 s-40 s were similar to those in other generations.

CONCLUSION: The age distribution of new female patients attending the outpatient clinic at a university hospital showed bimodal peaks for those in their 20 s and 50-60 s. This distribution was not associated with age-related disease prevalences. These results suggest that some patients have problems visiting university hospital outpatient clinics. Further studies are needed to identify the social obstacles to accessibility inpatients in their late 30-40 s, and to improve the quality of care for initial medical visits.

THE INFLUENCE OF FINANCIAL STRESSORS ON FUTURE CAREER CHOICES OF MEDICAL STUDENTS AND RESIDENTS

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BACKGROUND: With average medical student debt surpassing $130,000 (Kerr and Brown, 2006), financial concerns are among the top stressors adversely impacting resident quality of life. Financial stress can influence ultimate career choice and may affect the quality of patient care residents provided. Financial instruction is not generally a fundamental component of medical education. This pilot study aims at assessing the need for financial education and to develop an effective, tailored curriculum to decrease resident financial stress and ultimately improve patient care.

METHODS: At one academic medical center, a pre-survey was distributed to residents and medical students to assess financial knowledge and stressors using a validated stress scale. Data was collected via an online survey after informed consent was obtained. Forty-eight residents (29%) and 17 students (33.3%) consented to participate. Identifiable data was managed by a third-party consultant to ensure confidentiality and was de-identified prior to being analyzed by the study team. Data analysis was performed with descriptive statistics.

RESULTS: Pre-survey results show similar resident and medical student demographics. The average resident and student owe $156,137.92 and $136,958 in student loans, respectively. More students than residents believe they will eventually practice in an academic position. 43.8% of students believe that their debt will/may influence their specialty choice. 42.1% of residents believe that their debt influenced their specialty choice. On a perceived pressure-stress scale pertaining to personal finances, resident scored 8.05/14 and students scored 8.27/14. On a perceived threat-stress scale pertaining to finances, residents scored 7.37/16 and students scored 6.53/16. 54% of residents and 12.5% of students have experience with financial education. Greater than 80% of students and residents believe it is important for residents to receive training in personal and professional finance and are interested in attending lectures addressing basic financial concepts.
CONCLUSION: Medical students and residents accrue considerable student loan debt that causes stress and may affect career choices. For instance, more students than residents wish to practice in an academic position. Residents and students alike experience significant student loan debt that causes stress and may affect career choices. Residents and students express a desire for more extensive financial preparation for medical practice and personal life. Structured financial training may alleviate financial stress during medical education and allow students and residents to make career choices based on interest and professional goals as opposed to financial constraints, potentially leading to better patient care. Kerr, J. R. and Brown, J. J. Costs of a medical education: comparison with graduate education in law and business. J Am Coll Radiol. 2006, 3 (2): 122–130.

A QUALITATIVE APPROACH TO ASSESSING MEDICATION-RELATED ALERTING IN ELECTRONIC MEDICAL RECORDS Shobha Phansalkar 1; Marianne Zachariah 2; Kathrin Cresswell 3; Meryl Bloomrosen 4; David W. Bates 5; Brigham and Women’s Hospital and Harvard Medical School, Wellesley, Massachusetts ; 2Partners HealthCare Systems, Wellesley, Massachusetts ; 3The University of Edinburgh, Edinburgh, N/A ; 4American Medical Informatics Association, Bethesda, Maryland ; 5Division of General Internal Medicine, Brigham and Women’s Hospital, Boston, Massachusetts . (Tracking ID # 9038)

BACKGROUND: Improving the benefits of EHR adoption represents a key initiative of the current healthcare administration. Closely tied to achieving the benefits of EHRs is the provision of clinically meaningful decision support. Medication-related decision support (MDS) has the potential to prevent harm but is often ignored by physicians due to excessive alerting. We conducted a qualitative study to explore factors related to successful adoption of medication-related alerts in EHRs.

METHODS: We conducted semi-structured interviews with 42 end-users from 6 healthcare institutions, using 4 inpatient and 8 outpatient EHRs with MDS functionalities. Thematic analysis was used to identify underlying factors which emerged from consensus between two independent reviewers.

RESULTS: Reviewers assigned 1,157 statements to 31 thematic codes associated with good inter-rater agreement [Cohen’s kappa=0.69], which fell into 4 constructs (Implementation, Workflow, Users’ Perceptions, and Alert Characteristics). Implementation considerations related to: MDS development, Implementation issues (training, users’ ability to customize alerts, and mechanisms to provide feedback), Knowledge source for obtaining MDS, and Institutional governance and leadership overseeing MDS. Workflow considerations related to the timing of receiving alerts and the expected response from the user. Attitudes that influenced users’ responses towards MDS related to alert overload and users’ trust in the relevance of alerts. Users identified characteristics of optimal alerts, such as informational content, design and display, types of alerts available, and ability to override them.

CONCLUSION: Without effective implementation strategies, MDS can be intrusive to the clinician workflow. This study provides insight into providers’ perceptions on successful adoption of medication-related alerts. Findings of the study have implications on effective design and implementation of alerts impacting provider behavior.

3-YEAR FOLLOW-UP FROM A CLUSTER-RANDOMIZED TRIAL OF A PRIMARY CARE INFORMATICS-BASED SYSTEM FOR BREAST CANCER SCREENING Steven J. Atlas 1 ; Jeffrey Ashburner 1 ; Yuchiao Chang 1 ; Richard Grant 1 ; William Lester 1 ; Henry Chueh 1 ; Michael Barry 1 ; Massachusetts General Hospital, Boston, Massachusetts. (Tracking ID # 9052)

BACKGROUND: We sought to increase screening for breast cancer in eligible women within one primary care (PC) practice-based research network (PBRN) through a novel system of integrated population-based surveillance that linked patients to primary care providers (PCPs) and used an informatics tool to let providers review overdue patients and initiate outreach for those selected for contact.

METHODS: We randomized 12 PC practices (4 community health centers and 8 affiliated practices) to intervention (n=8) or usual care (n=6). Women 42 to 69 years of age without prior bilateral mastectomy were eligible and linked to a specific PCP or practice (if not PCP linked). Patients overdue for screening included 1) those who had not had a mammogram in the two years prior to the start of the trial (prevalent overdue) or 2) those who became two years overdue in the year after the study start date (incident overdue). In intervention practices, PCPs (for PCP-linked patients) and case managers (CMs, for practice-linked patients) received three periodic emails during the one year trial with a direct link to a web-based informatics tool that listed their overdue patients. Providers could select patients for contact or defer patients and provide a reason. Patients selected for contact received an automatically-generated letter with information about the value of screening and how to schedule a mammogram. The tool then transferred these patients to practice delegates who called patients to schedule tests or document exclusions. After the one year study period, the informatics tool remained active, though no reminder emails were sent and the original population was not updated. We examined time to mammography completion over a 3-year follow-up period in all overdue patients and in prevalent and incident overdue populations using Kaplan-Meier curves and Cox proportional hazards regression controlling for baseline covariates and physician/practice clustering.

RESULTS: Among 32,688 eligible women, baseline mammography screening rates in intervention and control groups did not differ (79.5% vs. 79.3%, p=0.73). Overall, 9795 women were overdue for mammograms including 6697 at the start of the study (prevalent overdue: 3045 in intervention and 3652 in control practices) and 3098 during the one year trial period (incident overdue: 1442 in intervention and 1656 in control practices). Intervention patients were younger, more likely to be non-Hispanic white, and have health insurance. Most intervention PCPs (59 of 64, 92%) and all CMs (6 of 6) used the tool. Action was taken in 3415 (76.1%) intervention patients (2865 [84%] contacted and 550 [16%] deferred). Over three years of follow-up, intervention patients were more likely to have a mammogram than control patients (hazard ratio: 1.19, 95% CI: 1.10-1.29, p<0.001).

CONCLUSION: We developed a novel system for breast cancer screening that included a non-visit-based informatics tool for providers to screen their overdue list for contact and follow-up by practice delegates. Over three years of follow-up, intervention patients were more likely to complete mammography screening.
CO-LOCATED PRIMARY CARE IN THE MENTAL HEALTH SETTING IMPROVES ATTAINMENT OF CARDIOVASCULAR RISK GOALS IN VETERANS WITH SERIOUS MENTAL ILLNESS Emily S Rowland 1; Paul A Pirraglia 2; Peter D Friedmann 2; Thomas P O’Toole 2. 1Alpert Medical School of Brown University, Providence, Rhode Island; 2Providence VA Medical Center/Alpert Medical School of Brown University, Providence, Rhode Island. (Tracking ID # 9064)

BACKGROUND: Patients with serious mental illness (SMI) are at high risk for cardiovascular complications, but may not be engaged in their medical care. The benefit of co-locating general medical services into mental health settings for those with SMI has not been determined. We examined attainment of goal lipids, systolic blood pressure, and weight among veterans with SMI prior to and after enrollment in a primary care clinic co-located in mental health.

METHODS: We studied veterans with SMI with prior poor primary care engagement who were then enrolled in a co-located primary care clinic for at least one year. The four six-month observation periods were (PRE1) 12 months to 6 months prior to enrollment, (PRE2) 6 months prior to enrollment until enrollment, (POST1) enrollment until 6 months after enrollment, and (POST2) 6 months to 1 year after enrollment. Based on VA practice guidelines, we defined uncontrolled cholesterol as average low density lipoprotein cholesterol (LDL) >100 if diabetes mellitus (DM) or coronary artery disease (CAD) or >130 if not, uncontrolled systolic blood pressure (SBP) as average during the observation window >140, uncontrolled weight as average body mass index (BMI) >30, and in those with DM, HbA1c >9. For each variable, unmeasured values within an observation period were considered uncontrolled. Repeated measures logistic regression tested whether control of LDL, SBP, and BMI differed across the observation periods.

RESULTS: We studied 97 veterans. Mean age was 55.3±10.0 years; 86.6% white, 8.3% black, 4.1% other race; 41.2% were service connected at 50-100%; 5% were female. SMIs included schizophrenic (23.7%), schizoaffective (24.7%), psychotic (4.1%), personality (7.2%), bipolar (14.4%), and major depressive (37.1%) disorders; these were not mutually exclusive. Medical comorbidities included DM (15.5%), hyperlipidemia (61.9%), hypertension (46.4%), and CAD (16.5%). There was a significant improvement in attainment of goal SBP (PRE1 55.7%, PRE2 52.6%, POST1 78.4%, POST2 63.9%, p<.03) and LDL (PRE1 24.7%, PRE2 27.8%, POST1 38.1%, POST2 65.0%, p<.0001). Improvement in BMI was borderline significant (PRE1 34.0%, PRE2 33.0%, POST1 50.5%, POST2 42.3%, p=.06). HbA1c did not appear to change.

CONCLUSION: The proportion of patients at goal for SBP and LDL increased after enrollment in a primary care clinic co-located in mental health. There was little change in the two pre-enrollment periods, suggesting the change is due to enrollment in this clinic. Our findings suggest that co-located primary care improves the cardiovascular health of veterans with SMI. As patient centered medical homes are implemented, consideration of co-located care models for vulnerable populations such as veterans with SMI is important. Future work should involve multiple sites and a contemporaneous control group.

LIKELIHOOD OF DEVELOPING DIABETES AND CARDIOVASCULAR DISEASE IN PHENOTYPICALLY OBESE METABOLICALLY NORMAL INDIVIDUALS KoKo Aung 1; Carlos Lorenzo 1; Steven Haffner 2. 1University of Texas Health Science Center at San Antonio, San Antonio, Texas; 2No institutional affiliation, San Antonio, Texas. (Tracking ID # 9070)

BACKGROUND: We previously reported that metabolically obese normal weight (MONW) individuals, despite their normal body mass index (BMI), have a higher likelihood of developing diabetes and cardiovascular disease (CVD) by the 2005 American Heart Association (AHA)/National Heart Lung and Blood Institute (NHLBI) criteria or the 2009 “harmonizing the metabolic syndrome” criteria. We also found that MONW individuals have a higher likelihood of developing CVD but not diabetes by the hypertriglyceridemic waist criteria. The objective of this study is to determine the likelihood of developing diabetes and CVD in the phenotypically obese metabolically normal (POMN) individuals among the participants of the San Antonio Heart Study.
METHODS: We analyzed the data of individuals aged 25 to 64 years who did not have diabetes or CVD at the time of enrollment in the San Antonio Heart Study. A total of 1,726 participants fulfilling this criteria completed follow-up examination. We defined normal weight as BMI below 25 kg/m2 and obesity as BMI of 30 kg/m2 and above. We defined metabolically “normal” individuals using different standard criteria: (a) fewer than 2 metabolic abnormalities by the 2005 AHA/NHBLI criteria, (b) fewer than 2 metabolic abnormalities by the 2009 “Harmonizing the Metabolic Syndrome” criteria, and (c) serum triglyceride levels < 2 mmol/l and waist circumference < 90 cm in men and < 85 cm in women by the hypertriglyceridemic waist criteria. We performed logistic regression analysis to examine the odds of developing diabetes and CVD in POMN individuals relative to the odds in metabolically healthy and normal weight (MHNW) individuals.

RESULTS: Among the participants who fulfilled inclusion criteria, 3.8 to 18.3% met the definition of POMN, using different standard criteria. The odds ratios of developing diabetes and CVD among POMN individuals relative to MHNW individuals are as shown in the following table.

CONCLUSION: POMN individuals have a higher likelihood of developing diabetes by all three criteria. However, a higher likelihood of developing CVD is only statistically significant in participants with the hypertriglyceridemic waist criteria probably because of the lower prevalence of POMN by the AHA/NHBLI and “Harmonizing” criteria.

| Criteria to define metabolically normal | Prevalence of POMN | Diabetes | Cardiovascular Disease |
|----------------------------------------|-------------------|----------|------------------------|
|                                        |                   | Unadjusted OR (95% CI) | Adjusted OR* (95% CI) | Unadjusted OR (95% CI) | Adjusted OR* (95% CI) |
| AHA/NHLBI criteria                     | 5.9%              | 6.8 (2.5-17.2)          | 5.8 (2.2-15.3)         | 2.3 (0.9-6.0)          | 2.0 (0.7-5.6)          |
| “Harmonizing” criteria                 | 3.6%              | 9.0 (3.1-25.7)          | 7.8 (2.7-22.5)         | 2.8 (0.9-8.9)          | 2.6 (0.8-8.8)          |
| Hypertriglyceridemic waist criteria    | 18.3%             | 8.2 (4.4-15.2)          | 6.7 (3.5-12.8)         | 2.8 (1.6-4.9)          | 2.1 (1.2-3.8)          |

*Results adjusted for age, gender, and ethnicity.

CONTRARY TO RESIDENT AND ATTENDING PERCEPTIONS, BEDSIDE CASE PRESENTATIONS DO NOT PROLONG ROUNDS Ithan D. Peltan 1, Hang Lee 1; Douglas E. Wright 1. 1Massachusetts General Hospital, Boston, Massachusetts. (Tracking ID # 9137)

BACKGROUND: Bedside teaching is an iconic form and key technique of medical education that many fear is on the decline. This method of instruction may be threatened further by impending work-hour limitations. We therefore studied teaching practices on a general medicine service.

METHODS: At our institution, ward attending rounds occur each weekday morning and feature presentations (in the conference room, hallway, or at patients’ bedside) of new patients admitted to the ward attending followed by bedside interviews and examination of patients by the team. A study investigator (IDP) visited each of our institution’s five ward medicine teams daily to obtain the following information from one or more team members: number of admissions, number of bedside case presentations, and total and bedside duration of rounds. Data collection occurred in three blocks of consecutive weekdays between March and November 2010, totaling 100 observations of 15 distinct ward teams. To account for potential differences in team rounding practices (interclass correlation) between data collection periods, we employed generalized estimating equations for multivariate regression modeling. Medicine attendings and residents were also surveyed regarding attitudes and perceptions of bedside rounds and bedside case presentations. Data were analyzed using paired or unpaired t-tests or Fisher’s exact test and reported as means and 95% confidence intervals.

RESULTS: Teams averaged 105 minutes (99–111 minutes) on attending rounds each day and 35 minutes (31–39 minutes) at the bedside (case presentations plus interviews and physical examinations). On average, teams spent 32% (29–35%) of rounds at the bedside and presented 34% (27–41%) of new ward admissions at the bedside. After linear regression, the number of ward admissions (p<0.0001) but not bedside case presentations (p=0.55) increased the total duration of attending rounds. By contrast, the number of ward admissions (p<0.0001) and bedside case presentations (p =0.0004) both correlated positively with the amount of time spent at the bedside. Surveys were completed by 60% of residents (N=107) and 65% of attendings (N=68). Both groups estimated the percent of attending rounds spent at the bedside (39% and 37%, respectively) fairly accurately but overestimated the percent of bedside case presentations (47% and 52%, respectively). Residents’ ideal values for the percent of rounding time at bedside (41%) and bedside presentation (51%) were similar to perceived actual practice. By contrast, attendings wanted more time at the bedside (53%) as compared to perceived reality (p<0.0001) and to residents’ ideal (p=0.0002). Attendings would also prefer to present more cases at the bedside (70%) than residents (p<0.001) or than they themselves believe is done in reality (p<0.0001). While 67% of residents agreed or strongly agreed with the statement, “Bedside presentations take longer than hallway or conference room presentations,” only 40% of attendings shared this sentiment (p=0.0003).

CONCLUSION: At our institution, the percent of time spent at the bedside during teaching rounds is stable or increased compared to published reports dating back 50 years. While residents are content with current practice, attendings want even more bedside rounding and bedside case presentation. Correcting the misconception that bedside case presentations prolong rounds might help accomplish that goal and, furthermore, help preserve the fraction of time being spent at the bedside on rounds in the face of tougher work-hour restrictions.

SUPPLEMENTING OFFICE-BASED CARE WITH A POPULATION-BASED DIRECT-TO-SMOKER OUTREACH INTERVENTION OFFERING FREE TREATMENT TO SMOKERS IN A COMMUNITY HEALTH CENTER: A RANDOMIZED CONTROLLED TRIAL Nancy A. Rigotti 1; Asaf Bitton 2; Jennifer K. Kelley 3; Bettina B Hoepner 1; Douglas E Levy 4; Elizabeth Mort 1. 1Massachusetts General Hospital, Boston, Massachusetts ; 2Brigham and Women’s Hospital, Brookline, Massachusetts ; 3Partners Health Care, Boston, Massachusetts . (Tracking ID # 9139)

BACKGROUND: Tobacco remains the leading U.S. preventable cause of death. Treating tobacco use is among the most cost-effective actions in health care. Brief office-based interventions offered to all smokers are effective but clinicians do not reliably offer them. We hypothesized that
tobacco treatment use and quit rates could be increased by offering treatment directly to all smokers, apart from office visits. We tested the effectiveness of a population-based direct-to-smoker (DTS) outreach program offering free tobacco treatment to smokers in a health care system.

METHODS: A randomized controlled trial of 590 smokers at 1 community health center compared usual care (n=177) to usual care plus DTS outreach (n=413). The DTS group was sent 3 monthly letters offering free phone consultation with a tobacco coordinator who offered fax-referral to the state telephone quit line and up to 8 weeks of free nicotine patches (NRT). Outcomes, assessed at 3 month follow-up, were the percent of smokers who used any tobacco treatment (counseling or meds), used NRT, used counseling, and self-reported 7-day and 30-day point prevalence tobacco abstinence.

RESULTS: 43 (10.4%) of 413 smokers in the DTS group accepted the treatment offer; 42 (98%) requested NRT and 30 (70%) were referred to counseling. At 3-month follow-up, in an intention-to-treat analysis adjusted by logistic regression for age, sex, race, insurance, and history of diabetes and/or coronary heart disease, a higher proportion of the DTS group, compared to controls, had used NRT (11.6% vs 3.9%, OR 3.47; 95%CI 1.52-7.92, p<.003), used any tobacco treatment (14.5% vs 7.3%, OR 1.95, 95%CI 1.04-3.65, p=.036), and reported tobacco abstinence for the past 7 days (5.3% vs. 1.1%, OR 5.35, 95%CI 1.23-22.32, p=.026) and past 30 days (4.1% vs. 0.6%, OR 8.25, 95%CI 1.08-63.01, p=.042). The treatment offer did not increase use of counseling (1.1% vs 1.7%, p=NS) or non-NRT medication use (3.6% vs 3.9%, p=NS).

Estimated marginal cost per 7-day quit at 3 months was $576.

CONCLUSION: In a real-world effectiveness study, a population-based direct-to-smoker outreach offering free tobacco treatment to smokers in a community health center is a feasible, cost-effective way to increase the reach of treatment (primarily pharmacotherapy) and to increase short-term quit rates in the population.

DO ALL DIABETICS RECEIVE EQUAL CARE IN A FEDERALLY QUALIFIED HEALTH CENTER IN MICHIGAN? Manjunath Raju 1; Venu Gourineni 1; Nephertiti Efeovbokhan 2; Keerthy Narisetty 1; Chioma Atueyi 3; Kumar Gaurav 1; Yan Xie 5; Margaret Holmes-Rovner 5; Ade Olomu 1.

BACKGROUND: Racial disparities in the quality of care of diabetic patients are well documented. Efforts to improve care of diabetes mellitus (DM) in Federally-Qualified Health Centers (FQHCs) in Michigan through the diabetes quality-improvement initiative may reduce differences in quality of care. FQHCs are designed to provide care for low income and medically underserved populations. Objectives: 1) to determine the quality of care of DM patients 2) to determine racial differences in the care of diabetic patients in a FQHC that participated in diabetes quality-improvement.

METHODS: We carried out a retrospective study of 212 consecutive patients seen in a FQHC from January 2006 to December 2008. Patients' medical records were reviewed for data regarding age, sex, race, smoking, blood pressure (BP) control (diabetics; BP <130/80 mmHg, non-diabetics; BP

RESULTS: Of 212 patients identified, 154 had hypertension, 122 had DM, and 88 had hypertension and DM. The mean age was 53.9 +11.6 years, 51.3 % were men, 74.53% had Medicaid, 11.32% had Medicare, 1.42% had private insurance and 12.74% had no insurance. We found that 117 (55.19%) were whites and 95 (44.81%) were non-whites. There were no significant differences in baseline characteristics within these groups. Our results revealed a high prevalence of smoking (37.50% in whites, 36.21% in nonwhites), morbid obesity (39.29% white, 38.00 % non-whites), uncon-trolled hypertension (68.75% whites, 68.97% non-whites), HbA1c >7 (51.02% whites, 65.38% nonwhites), LDL < 100 (50.98% whites, 40.43% non-whites), among the diabetics. There was underuse of evidence-based medications in both whites and nonwhites with no statistical significant differences between the two racial groups (see table 1). The treatment offered did not increase use of counseling (1.1% vs 1.7%, p=NS) or non-NRT medication use (3.6% vs 3.9%, p=NS).

CONCLUSION: We found no significant racial differences in the care of diabetics at the FQHC, but there was gross underutilization of evidence-based medications and poor control of blood pressure in both groups. There is an urgent need for strategies to improve diabetic care in both whites and nonwhites.

Table 1: Quality of Care in Diabetic patients:

|                          | Whites (n=64) | NonWhites (n=58) | P-value |
|--------------------------|--------------|------------------|---------|
| Aspirin users (DM + ≥ 1 risk factors) | (n=18) 28.13% | (n=16) 27.59 | 0.26 |
| ACEI-users               | (n=40) 62.5% | (n=30) 51.72% | 0.18 |
| Statin-users             | (n=26) 40.63% | (n=20) 34.48% | 0.58 |
| HbA1c <7                 | (n=24/49) 48.98% | (n=18/52) 34.62% | 0.16 |
| BP control(BP < 130/80)  | (n=20/64) 31.25% | (n=18/58) 31.03% | 1.0 |
BACKGROUND: There is little data on the impact of office-based buprenorphine therapy on criminal activity. The goal of this study was to determine the impact of office-based buprenorphine therapy on rates of criminal charges, and to evaluate the treatment outcomes of subjects with prior criminal charges.

METHODS: We collected demographic and outcome data on 252 patients who were given at least one prescription for buprenorphine. We searched a public database of criminal charges and recorded criminal charges prior to and after enrollment. We compared the total number of criminal charges and drug charges 2 years before versus 2 years after enrollment.

RESULTS: Most (80%) of the subjects had prior criminal charges. These subjects had significantly less opioid-negative months than those without criminal charges (5.1 months vs. 6.7 months; p = 0.028), and were less likely have >6 opioid-negative months (43.1% vs. 60.0%; p = 0.032). However, there was no difference treatment retention at one year (55.4% vs. 52.0%; p = 0.854). There was no difference in rates of criminal or drug charges 2 years before versus 2 years after enrollment, but subjects with >6 opioid-negative months had a significant decline in rates of criminal charges (0.67 vs. 0.43; p = 0.031).

CONCLUSION: Prior criminal charges did not affect treatment retention in primary care office-based buprenorphine maintenance therapy, but was associated with lesser likelihood of abstinence from opioids. While the rate of criminal charges did not significantly decline, it did decline in a subset of subjects who were opioid-negative for >6 months.

WHAT'S THE IMPACT? CLINICAL VALIDITY AND UTILITY OF METREE, AN ELECTRONIC FAMILY HISTORY COLLECTION AND DECISION SUPPORT TOOL FOR PRIMARY CARE

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BACKGROUND: Recently, there has been a surge of interest for incorporating tools into clinical care that stratify patients into disease risk categories and personalize healthcare recommendations. The hope is that these tools will facilitate the generation of individualized health care plans that maximize health outcomes important to providers and patients and minimize harms. Much of the focus has been on new and emerging tools, but internists have long been taught that family health history (FH) collection is a crucial component in individualizing care. In fact, it has a key role in preventive healthcare, with guidelines often stratifying recommendations based upon factors that include FH. Additionally, it is critical to assessing risk for hereditary cancer syndromes; however, evidence to date indicates that there are considerable barriers to both collecting FH and using it in medical decision making. Developing a model for integrating FH into primary care (PC) and evaluating its impact on outcomes should be the first step in testing the cost-effectiveness of a stratified care approach.

METHODS: To overcome patient, provider, and system level barriers to integrating FH into PC, we took an implementation sciences approach to develop and evaluate a computerized FH collection and decision support tool, MeTree, in a clinical trial in 2 PC practices in Greensboro, NC. A third serves as a concurrent control. MeTree collects a 3 generation FH on 48 conditions with decision support for 4 pilot conditions: breast cancer, ovarian cancer, colon cancer, and thrombosis. Decision support focuses upon risk-based prevention strategies and identification of those at high risk for hereditary cancer syndromes (genetic counseling (GC) is recommended for these individuals). All adult patients scheduled for well-visits are invited to complete MeTree prior to their appointment; providers (PCPs) receive a provider report, pedigree, and tabular format FH, while patients receive a patient report and pedigree. This abstract describes a study of MeTree's clinical validity and utility. 100 consecutive patients' FHs were reviewed by 1 PCP and 1 GC (gold standard), unfamiliar with MeTree’s algorithms. A total of 7 PCPs and 4 GCs participated. Recommendations were scored according to the following management categories: genetic counselor referral, at risk for hereditary cancer syndrome, breast MRI, breast cancer chemoprevention, ovarian cancer surveillance, early colorectal cancer screening, early and more frequent colorectal cancer screening, screening dictated by personal history of colon polyps, and genetic testing for inherited thrombophilia. Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) are calculated for MeTree and PCP by comparing their recommendations to the GC’s. Since categories are defined by treatment recommendations, we are able to estimate clinical utility, as well. The role of variables such as physician year of graduation and patient sex, family size, and % of family members with cancer are also evaluated.

RESULTS: In the table the first 4 rows reflect operating characteristics across a disease category, while the remainder reflects those specific to a given recommendation. There are a total of 23 false positives (FP) by PCP and 27 by MeTree; and 73 false negatives (FN) by PCP and 29 by MeTree. The greatest error rates were FN GC referrals by PCP. The yellow cells highlight performance differences between MeTree and PCP, in all but ovarian cancer MeTree has the higher sensitivity, an important trait for screening tests. Of the 38 patients with PCP errors, MeTree correctly reclassifies 10 (related to GC referrals and more intense CRC screening); 28 (65%) had errors by both. When comparing characteristics of patients with errors versus those without, age (57 SD 1.5 vs 52 SD 1.7), number of relatives (23 SD 1.1 vs 20 SD 0.6), and % of family with cancer (19% SD 1.1 vs 11% SD 1.2) were all greater. These were similar regardless of whether it was MeTree or the PCP who made the error. Younger physicians (year of graduation 1995 or later) performed better (64% correct) than older ones (45% correct).

CONCLUSION: We have developed a model for integrating risk-stratification into primary care practice that begins with demonstrating the impact of a computerized family history tool. MeTree, designed to overcome established barriers in the healthcare system. Earlier data has shown that MeTree implementation is a highly positive experience for patients and providers. The data described in this abstract suggests that MeTree is a clinically valid and useful tool, performing similarly to a physician in many areas. In addition, its clinical utility is suggested by its ability to correctly reclassifying individuals who need genetic counseling, are at risk for hereditary cancer syndromes, or need more intense colon cancer screening. Since a little over one-third of the time MeTree and PCP are each able to correctly reclassify individuals missed...
by the other, they appear to complement each other well. Note that this study demonstrates an “ideal” performance for providers as they were not forced to face logistical pressures such as time constraints and difficulties obtaining referrals. Future study will identify MeTree’s impact on physician and patient behaviors and health outcomes in the real world clinical environment.

IMPACT OF CAROTID PLAQUE SCREENING ON SMOKING CESSION AND OTHER CARDIOVASCULAR RISK FACTORS: A RANDOMIZED CONTROLLED TRIAL
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BACKGROUND: Few randomized studies have examined the clinical impact of atherosclerosis screening on cardiovascular risk factor (CVRF) control. Smokers may be an important target group for such screening, but it is unknown whether carotid plaque screening represents a “teachable moment” similar to acute cardiovascular events.

METHODS: We randomly assigned 536 current smokers aged 40 to 70 years to carotid plaque screening by ultrasound vs. no screening, in addition to a comprehensive smoking cessation program for all consisting of six 20-minute individual counseling sessions and nicotine replacement therapy. Smokers with at least one carotid plaque received pictures of their own plaques with a structured explanation on the significance of plaques. To ensure equal contact conditions, smokers not undergoing ultrasound and those without plaque received an equal 7-minute explanation on tobacco risks (in addition to counseling sessions). The primary outcome was one-week point prevalence abstinence at 1 year. Secondary outcomes were continuous smoking abstinence from quit date to 1 year, change in Framingham risk score (FRS) and control of CVRFs. Self-reported smoking cessation was confirmed by exhaled carbon monoxide and plasma cotinine concentration.

RESULTS: At baseline, participants (mean age: 51 years, 55% women) smoked an average of 20 cigarettes per day, with a median duration of smoking of 32 years. At 1 year, quit rates were high, but did not differ between the screened group and the unscreened group (point prevalence abstinence: 25.3% vs. 22.8%, p=0.51; continuous abstinence: 20.8% vs. 21.0%, p=0.95). In the screened group, abstinence rates did not differ according to the presence/absence of carotid plaques. The mean absolute risk change in FRS was +0.58 in the screened group vs. +0.21 in the unscreened group (p=0.45). Control of CVRFs (low-density lipoprotein cholesterol, hemoglobin A1C (if diabetes) and blood pressure) did not differ between both groups. In multivariate analysis, point prevalence abstinence was associated with female
IDENTIFYING PATIENTS AT INCREASED RISK FOR NOT COMPLETING PREVENTIVE CANCER SCREENING TESTS

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BACKGROUND: Electronic clinical data sources may be useful for identifying patients at increased risk for not completing preventive cancer screening tests. As part of an effort to design a population-based, patient-centric approach to comprehensive cancer screening, we developed an algorithm to identify high-risk individuals who might benefit from tailored interventions by patient navigators.

METHODS: Using outpatient claims and scheduling system data, patient registration data, and information drawn from electronic health records, we identified all eligible female patients within one practice-based research network (PBRN) who were overdue for breast, cervical, and/or colorectal cancer screening as of December 31, 2008. We developed an algorithm to assign points representing increased risk for not completing a screening test using total number of overdue screening exams (1–3 exams, 1 risk point for each overdue exam), language spoken (1 risk point for non-English), appointment no-show history over the prior year (1 risk point for 1 no-show visit and 2 risk points for ≥2 no-show visits in the prior year), and prior screening history (1 risk point for each exam ≥5 years overdue). We categorized patients into low (≤2 risk points), moderate (3 risk points), and high (≥4 risk points) risk for cancer screening non-compliance. We then followed this patient cohort over the next year (1/1/2009–12/31/2009) and compared cancer screening test completion rates by risk category using linear trend tests.

RESULTS: Among 19,565 women overdue for breast, cervical, and/or colorectal cancer screening, 15,563 (79.6%) were overdue for one screening exam. 3366 (17.2%) were overdue for two screening exams and 636 (3.3%) were overdue for three screening exams (mean = 1.24, SD: 0.50); 1654 (8.5%) did not speak English, 1957 (10.0%) had at least 1 no-show appointment in the prior year, 764 (3.9%) had ≥2 no-show appointments in the prior year, 6720 (34.4%) had no prior screening history for 1 exam, and 622 (3.2%) had no prior screening history for 2 exams. Based on our algorithm, 15,138 (77.4%) were classified as low risk, 2736 (14.0%) were classified as moderate risk, and 1691 (8.6%) were classified as high risk for screening non-compliance. Screening test completion rates over the following year were 17.5% for low risk patients, 15.9% for moderate risk patients and 12.1% for high risk patients (test for trend, p

CONCLUSION: Our algorithm using variables commonly available in electronic data systems was modestly effective in prospectively identifying patients at increased risk for not completing cancer screening tests. Additional efforts are needed to identify patients within primary care networks at increased risk for non-compliance.

ELIGIBLE BUT UNINSURED: PREDICTORS OF MEDICAID TAKE-UP AMONG ADULTS

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BACKGROUND: Millions of Americans are eligible for public insurance coverage through Medicaid, yet are currently uninsured. The importance of solving the puzzle of why they are eligible but not enrolled is heightened by the passage of the Affordable Care Act, which will expand Medicaid eligibility in 2014 to non-elderly adults with incomes up to 133% of the Federal Poverty Level. For the impending Medicaid expansion to be effective in improving health care access and health outcomes among low-income Americans, we need to know what factors determine whether eligible individuals actually enroll.

METHODS: Our data come from two sources—the Current Population Survey’s (CPS) Annual Social and Economic Supplement (2005-2010), and a primary dataset of state-level eligibility policies assembled from previous research. Using state and year-specific eligibility criteria, we estimated Medicaid take-up rates among eligible U.S. citizens aged 19-64, who have no other form of health insurance (n=36,013). Estimates were adjusted for underreporting of coverage in the CPS. We tested for statistical differences across states and years using survey-weighted chi-square tests. We used multivariate logistic regression to identify predictors of participation in Medicaid and then to generate adjusted predicted probabilities of enrollment for each variable. Covariates were demographic variables such as age, gender, and race/ethnicity; self-reported health status; state of residence; and category of eligibility (disabled, parent of dependent children, or non-disabled non-parent).

RESULTS: Nationally, among Medicaid-eligible adults with no other form of health insurance, 62.2% were enrolled in Medicaid (95% Confidence Interval 61.4-63.0%), leaving 37.8% who were uninsured. There was no significant time trend in take-up rates from 2005-2010, though the total number of eligible adults rose significantly in 2009-2010. Take-up rates varied significantly across states (p<0.001), and these differences remained large even after multivariate adjustment for population characteristics, with predicted enrollment rates ranging from 39.9% in Arkansas and 41.6% in Louisiana to 75.2% in Maine and 78.3% in Massachusetts. In terms of individual characteristics, Medicaid participation was most likely among disabled adults [adjusted predicted probability 72.1%], less likely among parents of dependent children (53.2%), and least likely among non-disabled childless adults (40.3%; group difference p=0.001). Participation was higher among adults with fair or poor self-reported health status than those with excellent health (63.3% vs. 54.8%, p=0.001). Racial differences existed as well, with take-up highest among blacks (62.7%) and lowest among whites (57.8%, p=0.001). Take-up was higher among younger adults, single adults, those with less education, and women.

CONCLUSION: Millions of adults who are currently eligible for Medicaid remain uninsured. There is great variability in take-up rates across states that exceeds the variation from individual-level factors such as
race and health status. Participation is particularly low among healthy adults without disabilities and without children, who comprise the majority of the individuals who will become newly eligible for Medicaid under the Affordable Care Act. The success of the impending Medicaid expansion under health reform will depend on states’ ability to design approaches that achieve high participation rates among newly-eligible adults.

HEAT RELATED DEATHS IN THE STATE OF ARIZONA: IDENTIFYING AT-RISK INDIVIDUALS

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BACKGROUND: Summer heat waves are among the deadliest environmental events, and are a serious fatality risk in the state of Arizona. Normal daily maximum temperatures in Phoenix, Arizona can exceed 100°F from June through mid-September. Medical, social and environmental risk factors for heat-related mortality may be different between different demographic populations. The primary aim of this study is to identify differences in medical co morbidity, demographics, and other risk factors among individuals who died following exposure to heat in the state of Arizona. The results of this study help in identifying at-risk individuals who are potential targets for preventive strategies.

METHODS: The target population for the study comprised individuals who had died following exposure to heat in the state of Arizona between 2002 and 2009. Data were collected from the Arizona Department of Health Services, Health Status and Vital Statistics Section. Statistical analysis was performed with SPSS 18.0. Exposure to excessive natural heat as the underlying cause of death is identified by a three-character code X 30as defined in ICD-10.

RESULTS: 975 people died following exposure to heat in last 8 years in the state of Arizona. Among the 975, 718 (73%) were male. The racial composition is as follows: non-Hispanic white 164(64%), Hispanic/Latino 561 (57%), black 27 (3%), Native American 28 (3%) and unknown race 192 (19%). Age at death was classified in 4 different groups as follows: 1–25 years (N=188; 21%), 26–45 years (N=346; 39%), 46–65 years (N=232; 27%); greater than 66 years (N=125; 15%). Victims of heat related death were divided into three subgroups, with risk factors varying markedly between groups: Individuals attempting illegal transit across the Mexican-U.S. border, Arizona residents, and visitors to Arizona from other U.S. States or Canada for duration less than 1 year. Individuals in transit across the border accounted for the majority of the total death count at 45%. Residents comprised 29% and visitors 16%. Major risk factors for the immigrant population were dehydration and polysubstance abuse, with an unknown cause for many deaths. Risk factors for Arizona residents were polysubstance abuse, dehydration, medical co morbidity, and advanced age. The primary risk factor for visitor death was dehydration. Age at time of death was heavily subgroup-dependent, with 71% of the in-transit population fairly young, 20–44 years old, at time of death. Risk factors among young and elderly residents were vastly different, with drug abuse, ethanol toxicity, and hiking contributing to deaths under age 45, and cardiovascular disease, dementia, and other neurodegenerative disease contributing to deaths over age 65.

CONCLUSION: Risk factors associated with death following heat exposure are different between individuals of different age, sex, and residency status. Clinically, these risk factors can be used to identify most at-risk individuals, as well as probably etiologic contributors to a patient’s acute heat related illness.

PERSPECTIVES ON PREVENTIVE HEALTH CARE AND BARRIERS TO BREAST CANCER SCREENING AMONG IRAQI WOMEN REFUGEES

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BACKGROUND: Since the Iraq war began in 2003, over four million Iraqis have been displaced with 13,800 Iraqi refugees admitted to the US in 2008. Little is known about preventive cancer care in this population. We identified disparities in mammography rates in eligible Arabic speaking patients (44%) compared to over 80% in English or Spanish speaking women. The majority of Arabic speaking women were refugees from Iraq. We sought to assess their perspectives on preventive care and perceived barriers to breast cancer screening.

METHODS: Patients were identified from data collected at the Massachusetts General Hospital Chelsea HealthCare Center, an urban community health center in a predominantly low-income, immigrant community. In-depth, semi-structured, one-on-one interviews were conducted with twenty Iraqi refugee women by a bilingual (English/Arabic) medical student. Interviews were performed in Arabic, transcribed, translated and coded according to established qualitative content and thematic analysis procedures.

RESULTS: The women were on average 43 years old (range 23–75). Psychosocial barriers identified included fear of pain associated with obtaining a mammogram and fear associated with receiving a cancer diagnosis. Culturally mediated beliefs that define illness as symptomatic and that do not incorporate the idea of preventive care were identified. Though modesty issues were mentioned, they were not felt to be the most significant barrier. Although some women had never heard of mammography, the majority were aware of it but believed it was necessary only when there was something wrong with the breast. Many mentioned that receiving screening was not the norm in their home countries, but they did have a heightened awareness of breast cancer, citing rising prevalence of cancer in Iraq due to the consequences of biological and chemical warfare. In addition to fear, another theme related to the health consequences of war that make day-to-day survival supersede all other concerns for these women. As one woman said: "Iraqis are living in conditions... that has (sic) forced them to forget about their own lives. Here, no. An individual will pay attention to his health more... to his food, to his health, to his sleep... all these things, here, you have the luxury to pay attention to." Most women spoke positively about the outreach, attention and reminders received from the health center and felt it encouraged them to follow up with appointments.

CONCLUSION: We identified factors that may impede Iraqi refugee women's ability and motivation to obtain breast cancer screening including not having experienced screening as normative in their home country, the belief that preventing disease is not the function of doctors and medicine, and psychosocial concerns such as fear of pain and fear of cancer, as well as consequences of the war. Women expressed interest
in education and outreach to help them obtain screening mammography and support community-based culturally appropriate health education and outreach programs.

**ACCULTURATION AND CARDIOVASCULAR BEHAVIORS AMONG LATINO SUB-GROUPS**

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**BACKGROUND:** Latinos are expected to increase from 15.5 to 25% of the US population by 2050, and represent nearly 20 countries. Despite lower socioeconomic status and worse access to health care, Latinos have better overall health outcomes and longer life expectancy than non-Latino Whites. This “Latino Health Paradox” has been partially attributed to healthier cardiovascular (CV) behaviors among Latinos. However, as Latinos become more acculturated or “Americanized,” differences in some CV behaviors disappear. Despite diversity among Latinos, few studies have examined the role of country of origin in impacting associations between acculturation and CV behaviors among Latinos.

**METHODS:** To measure acculturation, we utilized a previously validated scale to categorize Latinos as low, moderate or high acculturation based on language, citizenship, birthplace and percent of life spent in the US. Using non-Latino Whites as a reference group and controlling for demographic variables, we calculated adjusted odds ratios (ORs) by acculturation level and country of origin for: never smoking, meeting American College of Sports Medicine (ACSM) physical activity and 5-a-day fruit/vegetable recommendations, and consuming any daily fast food.

**RESULTS:** The sample included 16,000 Latinos and 60,638 non-Latino Whites. Measured demographic variables were statistically different (p < 0.0001) between acculturation groups. Among all Latinos, adjusted ORs (with 95% CIs) of never smoking were 2.73 (2.43-3.08), 2.40 (2.18-2.64), and 1.35 (1.23-1.49) for the low, moderate and high acculturation groups, respectively. We found no significant differences by acculturation level for the odds of meeting either ACSM physical activity guidelines or 5-a-day fruit/vegetable recommendations among all Latinos. Adjusted ORs of consuming any daily fast food were 0.74 (0.63-0.88), 1.35 (1.17-1.56), and 1.69 (1.48-1.93) for the low, moderate and high acculturation groups among all Latinos. These trends varied considerably by country of origin, however. Guatemalans, the subgroup skewed most toward low acculturation level (55.9%), showed the strongest association between increased acculturation and higher smoking rates and were the only subgroup with an increase in physical activity, but showed no association between acculturation and fast food consumption. Conversely, South Americans—a group of predominantly moderate acculturation (59.3%)—had high baseline smoking rates and reduced smoking with increased acculturation. Puerto Ricans, the subgroup skewed most toward high acculturation level (75.4%), showed the strongest association between increased acculturation and higher fast food consumption.

**CONCLUSION:** As the US Latino population expands dramatically, the Latino Health Paradox will become increasingly important to public health. Our results indicate that country of origin impacts associations between acculturation and CV behaviors in complex ways, finding that has implications for clinical practice and further research. Clinicians should consider both acculturation and country of origin when counseling Latino patients about CV risk to maximize cultural sensitivity and effectiveness. Although CHIS data lack generalizability to the overall Latino population, this study contributes to the limited literature on this topic and demonstrates need for further research.

**UPTAKE OF AN INTERNET-BASED PATIENT PORTAL AND ETHNIC AND EDUCATIONAL DISPARITIES: THE DIABETES STUDY OF NORTHERN CALIFORNIA (DISTANCE)**

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**BACKGROUND:** Internet-based patient portals, which allow patients to access their health care system and perform selected self-management functions, will play a growing role in chronic disease care. By increasing health access, this technology has potential to ameliorate diabetes disparities, if widely used in vulnerable groups. Prior research has demonstrated that ethnically diverse, low-income patients are amenable to technologically-delivered chronic disease self-management support. However, the same populations with worse diabetes outcomes are subject to the ‘digital divide,’ a lack of adequate computer/ internet access; thus, the diffusion of this innovation may actually widen disparities, as seen with prior health advances.

**METHODS:** We investigated uptake of an internet-based patient portal by race/ethnicity and educational attainment between January 2006 and December 2009, among an English-speaking adult, continuously insured population with diabetes receiving care in an integrated health maintenance organization. We measured the frequency of requesting a password for the patient portal, which represents intent to use the patient portal and indicates some computer access.

**RESULTS:** We studied 11,921 participants: 10% with less than high school education, 29% high school graduates, 27% some college, and 35% with college degree or higher educational attainment. They were ethnically diverse (27% non-Hispanic White, 13% Latino, 21% African-American, 10% Asian, 12% Filipino, 17% multi-racial/other ethnicity). Overall, intent to use the patient portal (i.e. requesting a password) increased markedly over the observation period across all educational levels and race/ethnicities, from 1,427 (12%) of participants in 2006 to 4,466 (37%) in 2009 (Figure A and B). In addition, the rate of uptake, or increase in registration over time, did not vary by educational attainment or race/ethnicity (p = 0.47 and 0.66, respectively) The initial modest-sized educational gradient in intent to use the patient portal widened slightly in absolute terms by 2009, but attenuated in relative terms (Figure Panel A). In 2006, 9% of those with less than a high school degree...
requested a password, compared to 13% of those with a college degree or higher (p <0.001). In 2009, 32% with less than a high school degree had requested a password compared to 39% with a college degree or more (p<0.001). Similarly, in 2006, there were small race/ethnic differences in intent to use the patient portal, with African-American, Filipino and Latino participants least likely and Asian and White participants most likely to request a password (Figure Panel B). Relative differences narrowed over time, for all ethnic groups. Absolute differences also narrowed, except among African Americans: in 2009, Whites were most likely and African-Americans least likely to request a password (40% vs. 34%, p<0.001).

CONCLUSION: We observed rapid, widespread uptake in use of the patient portal among diverse, English-speaking adults with diabetes. Those with lower educational attainment and African-Americans remained consistently less likely to register for the patient portal at each time-point, lagging in uptake by about 1 year. Expanded computer/ internet access, training in patient portal use and cultural/ educational tailoring may be required for patient-facing electronic health records to be harnessed as a means to reduce disparities.

OUTCOMES OF PREOPERATIVE EVALUATION IN PATIENTS UNDERGOING HIP FRACTURE SURGERY

Background: Preoperative evaluation in selected patients undergoing hip fracture surgery prevents complications like MI and sudden cardiac death during the postoperative period. Orthopedic surgeries are considered as intermediate risk surgeries for the development of cardiac complications. The reported cardiac risk is generally less than five percent. Patients without major risk factors with excellent functional capacity can undergo intermediate risk surgeries without any cardiac work up with little likelihood of perioperative cardiac complications. We stratified patients undergoing hip fracture surgery over a period of one year into high, intermediate and low risk groups and analyzed the outcomes of unnecessary preoperative cardiac work up in the low risk group.

Methods: Retrospective chart review of all admissions for hip fractures during the year 2007 was done. A total of one hundred and twenty one charts were reviewed. The study was approved by the institutional review board. Nine patients (7.44%) belonged to the high risk group, sixty nine (57.02%) to the intermediate risk group and forty three (35.54%) to the low risk group. The following work up was done in the low risk group: echocardiogram in twenty one (48.84%), stress test in seven (16.28%), medicine consults in twenty (46.51%) and cardiology consult in ten patients (23.26%).

Results: The results showed that an average of 38.60% patients in the low risk group received preoperative cardiac work up. Surgery was delayed by four days due to unnecessary work up in this group.
CONCLUSION: Orthopedic surgeries in low risk patients can safely be performed without preoperative cardiac work up. Unnecessary work up in the form of echocardiogram, stress test and medicine and cardiac consults in addition to causing financial burden increase the length of hospital stay further causing an increase in healthcare cost. Adhering to the ACC/AHA guidelines for perioperative cardiac risk assessment for noncardiac surgeries will help to reduce healthcare costs and improve patient satisfaction.

SIGNAL AND NOISE: APPLYING AN AUTOMATED TRIGGER TOOL TO SCREEN FOR ADVERSE DRUG EVENTS IN THE SETTING OF OUTPATIENT CHRONIC DISEASE CARE Stacey Brenner 1; Alissa Detz 2; Claire Horton 3; Andrea Lopez 2; Nancy Jianhua Jin 1; Urmimala Sarkar 1; Brett Simchowitz 1; Doug Bonacum 2; William Strull 3; Andrea Lopez 1; Leahora Rotteau 2; Kaveh Shojania 6. 1University of California, San Francisco, San Francisco, California; 2California Pacific Medical Center, San Francisco, California; 3University of California, San Francisco, San Francisco, California; 4California Pacific Medical Center, San Francisco, California; 5Kaiser Permanente, Oakland, California; 6University of Toronto, Toronto, Ontario. (Tracking ID # 9263)

BACKGROUND: The extent of outpatient adverse drug events (ADEs) remains unclear. Information about ADEs is limited by our ability to detect and monitor these events. Trigger tools are used as a screening method to identify care episodes that may be adverse drug events, but their value in a population with a high chronic-illness burden remains unclear. We sought to determine if a six-item trigger tool would successfully identify ADEs in among a chronically ill patient population.

METHODS: We used 6 abnormal laboratory values (international normalized ratio (INR) > 5, serum creatinine (Scr) > 2.5, blood urea nitrogen (BUN) > 60, alanine aminotransferase (ALT) > 84, aspartate aminotransferase (AST) > 80, thyroid-stimulating hormone (TSH) undetectable while on levo-thyroxine) because they have been shown to have a high positive predictive value for detecting ADEs among older adults in outpatient care, but have not been tested in a safety net population with high burden of chronic illness. Eligible patients were included if they were >18, sought primary or urgent care within the study period (November 2008-November 2009)and were prescribed at least one medication. We then used the clinical/administrative database to identify patients with these triggers. Two physicians conducted in-depth chart review of any medical records with identified triggers. The physicians determined 1) whether an adverse drug event did occur, 2) the stage of the medication process where the event occurred, and 3) the severity of the effect on the patient. Physician reached an inter-rate agreement of 94%.

RESULTS: We reviewed 782 triggers representing 583 patients. The mean patient age was 55 (14), 64% were male, 70% were English-speaking. The trigger tool identified 109 (14%) adverse drug events. We identified 18 ADEs that took place in the inpatient setting that were omitted from further analysis. Of the 91 ADEs included in our analysis, 49 (54%) occurred during medication monitoring, 41 (45%) during patient-self administration, and the other could not be determined. 90% posed minimal or mild harm to the patient, 8% posed moderate harm or severe harm and 1 (1%) could not be determined. 96% of abnormal INR triggers were adverse drug events, followed by 12% of abnormal BUN triggers, 9% of abnormal ALT triggers, 8% of abnormal SCR triggers, and 3% of AST triggers. While the INR > 5 successfully identified ADEs, comitant chronic disease lowered the yield for other abnormal-laboratory-value triggers. Our findings imply that other tools, such as text triggers, or more complex automated screening rules which combine data hierarchically, are needed to effectively screen for ADEs in chronically ill adults seen in primary care.

FACTORS CONTRIBUTING TO OUTPATIENT DIAGNOSTIC DELAYS: A QUALITATIVE ANALYSIS OF PHYSICIAN PERSPECTIVES Urmimala Sarkar 1; Brett Simchowitz 1; Doug Bonacum 2; William Strull 3; Andrea Lopez 1; Leahora Rotteau 2; Kaveh Shojania 6. 1University of California, San Francisco, San Francisco, California; 2Kaiser Permanente, Oakland, California; 3University of Toronto, Toronto, Ontario. (Tracking ID # 9264)

BACKGROUND: Delayed and missed diagnoses lead to significant patient harm and health care costs. The prevalence and consequence of diagnostic error remains unclear, and the complexity of the outpatient diagnostic process has left this important aspect of patient safety relatively understudied. We analyzed transcripts from physician focus groups to understand failures in the diagnostic process.

METHODS: As part of a quality improvement initiative an integrated health system conducted physician focus groups in 2004 and 2005. Regional leadership decided whether to participate in the project, and within the three participating regions, physicians were invited to participate in focus groups via a mailed letter and email. Both primary care and subspecialty providers were included in focus groups, by design, to address the breadth of the diagnostic process. The focus groups included questions about the process of diagnosis, specific factors contributing to missed diagnosis, use of guidelines, atypical vs. typical presentations of disease, diagnostic tools, and follow-up all with regards to delays in the diagnostic process. Focus groups were audio-taped and transcribed verbatim, and subsequently de-identified. Two investigators (BS, US) read through all six transcripts and assembled a coding scheme and a list of codes. Two investigators (BS and AL) blindly reviewed 2 transcripts achieving an inter-rater reliability score of 0.81. The rest of the transcripts were coded by one investigator (BS).

RESULTS: Six focus groups were conducted with 3–7 participants representing 30 physicians. A number of themes were identified that described clinicians’ perceptions of diagnostic delay, difficulty, and missed diagnosis (Table). These were (1) concerns about the organization of the health system, including information availability and work flow/processes involved in ordering diagnostic tests; (2) the effect of interactions amongst providers, including communication and shared responsibility; (3) the importance of the patient’s role in the diagnostic process, including factors such as language barriers and non-adherence; (4) physician characteristics affecting the diagnostic process, including cognitive factors and interpersonal responsiveness and (5) the intrinsic variability of disease presentation.

CONCLUSION: Organizational factors, interactions among health care providers, patient characteristics, provider attributes, and the intrinsic variability of disease presentation, all contribute to missed and delayed diagnosis in this focus-group study of ambulatory providers practicing in an integrated care system. In order to improve the diagnostic process, multi-modal interventions that address organizational factors, physician education and work flow, and patient barriers, are needed.
THE MANAGUA CARDIOVASCULAR HEALTH INITIATIVE: A COMMUNITY HEALTH WORKER INTERVENTION TO IDENTIFY AND MANAGE HYPERTENSION IN URBAN NICARAGUA

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BACKGROUND: Chronic illnesses are emerging as the leading cause of death in developing countries. In Nicaragua the prevalence of hypertension (HTN) is 25% and poorly controlled. HTN is a major public health problem. Community health workers (CHW) are robust components of their health system but are primarily deployed to address infectious illnesses and maternal child health issues. In this feasibility study we determine if CHWs can 1) identify community patients with uncontrolled HTN, and 2) help address the emerging crisis of cardiovascular disease in this resource-limited country.

METHODS: We recruited 32 CHWs from a health district in Managua of 110,000 residents, of whom 50% are unemployed. After a comprehensive training, CHWs used standardized protocols and an automated BP device to do home screening in their local community. As part of our agreement with the leadership of the local health district, CHWs would also be assigned medically indigent patients treated at the local health centers or hospital with a diagnosis of "hypertension crisis" and in need of outpatient follow-up.

To test the feasibility of our proposed intervention, we planned to enroll 32 patients from both referrals sources. The CHW intervention consisted of a 10 day period of home health education, assistance navigating the health system, assistance obtaining prescribed medications, and when needed, directly observed therapy. The primary outcome was change in systolic blood pressure from baseline to a measurement taken 2 months later. Although this was primarily a pilot feasibility study, we used a two-sample t-test to determine if any observed changes were statistically significant.

RESULTS: During a one-week period, our CHWs screened 185 individuals. The mean age was 49 years and 78% were female. Of these, 42% had BP >=140/90 on 2 consecutive visits and 17% had BP >=160/100. Over 90% were aware of their diagnosis, but only 70% were taking medications. For the intervention, 31 patients were selected; 12 identified by home screenings and 19 from health facility referrals. At two months we found a median decrease of 11 mmHg in SBP in these 31 patients (P=0.052). CHWs noted that a baseline most patients had poor understanding of hypertension, low adherence to lifestyle modification, and most needed assistance in obtaining medications.

CONCLUSION: We recruited and trained 32 CHWs who in one week identified 117 persons with uncontrolled BP. We showed our CHWs intervention has the potential to improve BP in this resource limited setting. The findings from this feasibility study support the need for a larger RCT.
MEDICAL STUDENT ATTITUDES TOWARDS FINANCIAL INCENTIVES IN HEALTHCARE SETTINGS

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IN HEALTHCARE SETTINGS

MEDICAL STUDENT ATTITUDES TOWARDS FINANCIAL INCENTIVES

RESULTS: In a class on the impact of financial incentives in healthcare, all students felt that physicians were influenced by financial pressures, and all agreed that other students were influenced in their choice of careers by salary. The students were divided on the influences of finances on their own careers. Most were unsure of that physicians should be able to invest in pharmaceutical or medical device companies. Most were also unsure of the role that financial disclosures in either patient care settings or in the evaluation of research journals.

CONCLUSION: Medical students consistently under-value the impact of financial incentives in healthcare settings. With the push towards pay for performance, the enacting of rules requiring financial disclosures in patient care, and in the evaluation of medical research, more educational opportunities should be created for medical students to be exposed to and discuss these important topics.

CALCIUM SUPPLEMENTS RAISING THE RISK OF MYOCARDIAL INFARCTION: IS THE RISK CLINICALLY SIGNIFICANT?

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BACKGROUND: Much publicity has been given to the finding in a recent meta-analysis that individuals who took calcium supplements (without coadministered vitamin D) are associated with 27% more myocardial infarctions than those who did not. One of the limitations of conventional frequentist statistics is that even when statistically significant change of outcome is detected, we may still know little about its clinical significance. In such circumstances, Bayesian analysis provides a useful interpretation by setting the findings in the context of cautious and enthusiastic prior beliefs. The objective of this study is to determine whether calcium supplements increase the risk of myocardial infarction and cardiovascular events at the clinically significant level.

METHODS: We analyzed the data from meta-analysis using a formal quantitative algorithm using Bayes’ theorem. The outcome measures were myocardial infarction, stroke, composite outcome (combined myocardial infarction, stroke and sudden death) and death. We defined clinical significance as the probability of smallest clinically harmful values of the effect. We set various thresholds for clinical significance as relative risk increase of 1%, 10%, 20%, and 27% for each outcome. We estimated the probabilities of clinically significant increased risk for each outcome from posterior probabilities for skeptical and enthusiastic priors in Bayesian model. Statistical analyses were performed using BayesLine 9.1, version 010108 (Diamond & Kaul, Los Angeles, CA).

RESULTS: In the context of skeptical or cautious prior belief of calcium supplements increasing cardiovascular risk, the probabilities of 10% relative risk increase are 35%, 17%, 23% and 9% for myocardial infarction, stroke, composite outcome (myocardial infarction, stroke or sudden death) and death respectively. In the context of enthusiastic prior belief of calcium supplements increasing cardiovascular risk, the probabilities of 10% relative risk increase are 75%, 51%, 54% and 27% respectively. When the threshold of clinical significance was raised to 20% relative risk increase, the corresponding probabilities became 27%, 5%, 3% and less than 1% for skeptical prior and 54%, 15%, 9% and less than 1% for enthusiastic prior. The probability of 27% relative risk increase in myocardial infarction, as estimated by frequentist statistical methods in the original meta-analysis, is only 12% in the context of skeptical prior belief and 27% in that of enthusiastic prior belief.

CONCLUSION: There is a reasonable suspicion of calcium supplements (without coadministered vitamin D) increasing the relative risk of myocardial infarction by at least 10-20%, stroke by at least 10% and combined myocardial infarction, stroke or death by at least 10%. There is insufficient evidence of calcium supplements (without coadministered vitamin D) increasing the relative risk of death by at least 10% or increasing the relative risk of myocardial infarction by at least 27%. Reassessment of the role of calcium supplements in prevention and treatment of osteoporosis is warranted. On a broader note, we would encourage a wider use of Bayesian methods in reports of clinical research to integrate statistical significance and clinical significance.

EFFECTS OF AN AUTOMATED ELECTRONIC REMINDER IN IMPROVING DIABETES CARE QUALITY IMPROVEMENT

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BACKGROUND: The rates of periodic hemoglobin A1c (HbA1c) and urine microalbumin testing, which are considered standard quality indicators for diabetic patients, were relative low in internal medicine and family practice clinics of an academic health center. The aim of this quality improvement project is to increase the HbA1c and urine microalbumin testing rates in diabetic patients in the internal medicine and family practice clinics using a computerized reminder system of the electronic medical records.

METHODS: Overall improvement plan was to increase relative testing rates of HbA1c and urine microalbumin testing rates by using a computerized reminder system. Proposed change was implemented by educating all key stakeholders including faculty physicians, clinic administrative personnel, clinic nurses and medical assistants about the purpose of the project and methods of implementation during weekly meetings and by sending e-mails to the physicians describing the details related to the project. The change was anticipated within 10 weeks after initiation of the alert system. This is the first pilot quality project using a computerized reminder system of electronic medical records in our institution.

RESULTS: There was an absolute mean difference of 15.5% and 24.7% increase in HbA1c and microalbumin testing rates after implementation
of the intervention (p=0.02 for HbA1c; p=0.0001 for microalbumin). This represents a relative increase of 40% in HbA1c testing rate and 226% in urine microalbumin testing rate after initiation of computerized reminder system. The return on investment for the computerized reminder system includes cumulative savings for physician time, cumulative reduction in operational expenses by reducing the need of support staff to manually tract the tests and potential increase in patient care revenues.

**CONCLUSION:** Computerized reminder system through electronic medical records improved HbA1c and urine microalbumin testing in outpatient setting. Integrating computerized reminder alert system to routine outpatient care in diabetes population not only improves the quality of care but also saves the manpower utilization by saving the time spent by physicians and support staff in tracking previous test results and determining when the tests are due.

**HOMEBOUND: ACUTE CARE USE AND HEALTH CHARACTERISTICS FOR A COHORT OF CHRONICALLY ILL ELDERLY**

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**BACKGROUND:** Over three million community-dwelling seniors have functional impairments that leave them homebound and limit their access to routine healthcare services. Functional impairments, along with poor health status, tenuous socioeconomic status, and relative difficulty accessing outpatient care, likely increase emergency department (ED) visits and hospital admissions. We conducted a study of homebound older adults to characterize their health status, functional dependence, and quality of life, as well as recent acute care usage.

**METHODS:** We recruited homebound patients newly enrolled in two home-based care programs, the Mount Sinai Visiting Doctors (MSVD) program and the Visiting Nurse Service of New York Long-term Home Health Care Program (Lombardi). We included patients age >65 years who were English or Spanish speaking and were able to provide written consent or had a proxy to provide consent. Homebound status, extrapolated from the Medicare guideline, was defined as leaving the home infrequently and requiring assistance when leaving the home. We first characterized homebound patients with respect to number of dependencies in activities of daily living (ADL) and instrumental activities of daily living (IADL), Quality of Life in Alzheimer’s Disease Scale (QoL-AD), General Health Status (SF-1), and Cornell Scale for Depression (CSD). In addition, we collected self-reported visits to primary care physicians (PCP), specialist physicians, and the ED, as well as hospitalizations within the 3 months prior to MSVD or Lombardi enrollment. Finally, we examined bivariate associations between patient demographic and health characteristics and hospitalizations or ED visits.

**RESULTS:** We recruited 65 patients; the majority was over 80 years of age (51%) and female (86%). Approximately a third were white (39%), black (37%), and Latino (35%). Forty (62%) had household income < $1000/month; 33 (51%) had received some high school education or less, and all had a home attendant or aide. The mean number of ADLs and IADLs requiring assistance was 4.1 (STD 2.2) and 5.7 (STD 1.8) respectively. For health related quality of life the mean score was 31.4 (STD 6.8) on the QoL-AD (range from 13 [least quality] to 53 [highest quality]). Patient reported a mean health status score of 3.6 (STD 1.1) on the SF-1. CSD mean score was 11.7 (STD 7.3) and 32 (49%) met criteria for probably major depression (score >10). In the three months prior to program enrollment, 32 (51%) had more than one PCP visit and 29 (47%) had visited a specialist more than once. During those three months, rates of acute care use were high: 33 (51%) reported making a visit to the ED and 30 (46%) were hospitalized. In bivariate analysis, greater ADL impairment was associated with greater likelihood of hospitalization (4.7 mean ADLs impaired for hospitalized patients vs. 3.6 mean ADL impairment for non-hospitalized patients p=0.05). There was no association between age, gender, race, income, household support, PCP involvement, depression, general health status, or quality of life on either ED visits or hospitalizations.

**CONCLUSION:** Homebound older adults in this study have substantial physical limitations, depression, and experience high rates of acute care use. Except for increased ADL dependence, our analysis-focused on explanatory variables shown in other elderly populations to be correlated with acute care usage—did not reveal any associations. The homebound reflect a growing group of chronically medically ill elderly. To better care for these patients and control rising costs, understanding how to prevent them from utilizing acute care services will be a health policy priority.

**GROUP MEDICAL VISITS FOR ALZHEIMER’S DEMENTIA PATIENTS AND THEIR CAREGIVERS**

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**BACKGROUND:** Alzheimer’s Dementia is a growing terminal disease that affects not only the patients but also their loved ones and caregivers. Caregiver burden is common and can manifest as mental and/or physical illness as well as social and financial problems. Current outpatient models of care poorly address dementia-related issues. Outpatient group visits for a variety of chronic diseases (such as diabetes) have been studied with variable effects on costs and utilization of health care resources but with positive patient and physician satisfaction. We applied a similar model to a group of Alzheimer’s Dementia patients and their caregivers. Our hypotheses were that patients’ behavioral problems and caregiver burden would be more adequately managed and improved with a structured group medical visit facilitated by a physician and medical social worker.

**METHODS:** Ten patients diagnosed with Alzheimer’s Dementia and their caregivers from a community geriatric clinic agreed to participate in this observational study. Participants met monthly for 1.5 hours throughout the course of a year. Group medical visits began with an educational talk of interest to the group followed by a series of interval histories focused on one patient-caregiver dyad at a time facilitated by the physician and medical social worker. Caregivers filled out the Zarit Caregiver Burden Interview and Neuropsychiatric Inventory Questionnaire before and after the year-long intervention to assess caregiver stress and the severity of patient’s behavioral problems, respectively. Paired t-tests were employed.

**RESULTS:** Five patient-caregiver dyads had complete data sets. There was a trend toward decrease in caregiver burden and stress as well as in severity of patients’ behavioral problems at the conclusion of the outpatient group meetings although the results were not statistically significant (p=0.43 and p=0.09, respectively). 4 of the 5 dyads experienced improvement in caregiver stress and patient’s neuropsychiatric score. If the remaining outlier dyad was excluded, scores became statistically significant (p=0.05 and p=0.02, respectively). Even though that particular dyad experienced worsening of behavior and caregiver stress, the caregiver expressed an appreciation for the support from the group and staff. Caregivers also felt more knowledgeable about Alzheimer’s Dementia and about resources in the community.

**CONCLUSION:** Outpatient group medical visits focusing on Alzheimer’s Dementia education and care may be beneficial for reducing both patient behavioral problems and caregiver stress. Future directions include focusing on specific ethnic groups and assessing for differences in health care usage and medical costs (financial feasibility).
Linear regressions were used to assess whether EtBM scores were associated with the patient’s feelings regarding the hospitalization or his or her illness. EtBM score for each physician was characterized as percentages derived by dividing the number of times EtBM behaviors were performed by number of opportunities to carry them out. Physician activities were recorded at 30 second intervals and categorized as “direct patient care” (e.g. time spent with patients or their families), “indirect patient care” (e.g. documentation, coordinating care, writing orders), “other activities” (e.g. walking, administrative meetings, scholarly work), and “personal activities” (e.g. meals, restroom breaks, personal calls). Linear regressions were used to assess whether EtBM scores were associated with physician characteristics.

RESULTS: The 24 observed hospitalists collectively saw 226 unique patients and had 389 patient encounters. The average shift length was 9.9 hours (SD 1.9), and the average length of each patient encounter was 12 minutes (SD 9). Overall, 18% of hospitalists’ time was spent in direct patient care, 60% in indirect patient care, 13% in other activities, and 9% in personal activities. EtBM scores for the providers ranged from a low of 3% to a high of 44% (mean 19%). Physician age, gender, and experience were not associated with EtBM scores. Physicians in the top quartile for EtBM score spent more time with each of their patients than those in the bottom quartile (14 vs 12 minutes) and spent a greater proportion of their day in direct patient care (21% vs 16%); both p<0.05.

CONCLUSION: Higher EtBM scores were more common among physicians spending more time with patients and may represent a marker of patient-centered care. However, EtBM behaviors were infrequently practiced by every hospitalist in the sample thus indicating significant room for improvement.

COLORECTAL CANCER SCREENING: DIFFERENCES IN RURAL AND INNER CITY, LOW INCOME PATIENTS’ KNOWLEDGE, BELIEFS, PHYSICIAN RECOMMENDATION AND BEHAVIOR Daci J. Platt; Connie Lea Arnold 2; Pat Bass 2; Alfred Rademaker 3; Dachao Liu 4; Michael Wolf 4; Terry C Davis 2. 1 LSU Health Sciences Center Shreveport, Shreveport, Louisiana; 2Louisiana State University Health Sciences Center – Shreveport, Shreveport, Louisiana; 3Feinberg School of Medicine - Northwestern University/Northwestern University, Chicago, Illinois. (Tracking ID # 9451)
BACKGROUND: Substantial evidence shows that routine screening can prevent colorectal cancer (CRC) or detect it at an early stage and potentially reduce mortality. Less than half of Americans receive CRC screening, with lowest rates among racial/ethnic minorities, low-income individuals, those with fewer years of education, and those living in rural areas. The purpose of this report is to determine differences in rural and inner city patients’ CRC screening knowledge, beliefs, self-efficacy, physician recommendation and previous fecal occult blood test (FOBT) completion in Federally Qualified Health Centers (FQHCs).

METHODS: Eligible patients in six North Louisiana FQHCs (men and women aged 50 and over who had never been screened for CRC or were not up to date) were given a structured interview and a literacy test.

RESULTS: Of the 812 patients enrolled (577 rural, 235 inner city) 79% were female, 68% African American (AA), 32% white, 33% less than a high school diploma, and 50% read on less than a 9th grade level. Patients ranged in age from 50–74. Inner-city patients were more likely than rural patients to have low literacy (59% vs. 47%, p=.001) and be AA (90% vs. 59%, p<.0001). Of these, rural patients were more likely than inner-city patients to have heard of a colonoscopy (92% vs.76%, p<.0001). Yet rural patients were more likely to strongly agree they would return an FOBT kit (23% vs. 6%, p<.0001). Results remained significant after adjusting for age, race, and literacy.

CONCLUSION: Patients in rural FQHCs have more positive beliefs about the benefits of screening and greater self-efficacy about completing FOBTs than patients in inner city FQHCs, but are less likely to have been given information on FOBTs or received a physician recommendation or an FOBT kit. Greater access to CRC screening information, physician recommendations, and cost effective screening methods are needed in FQHCs, particularly those in rural areas.

SOCIAL, VOCATIONAL, AND EDUCATIONAL OUTCOMES OF OBESITY IN ADULTHOOD

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BACKGROUND: Adolescents who remain or become obese as they transition to adulthood (20–30 s) may be at risk for lower social, vocational, and educational outcomes. Minimal prior work has assessed a variety of such outcomes. We examined how changes in weight status from adolescence to early adulthood affect social, vocational, and educational outcomes.

METHODS: We examined data from the National Longitudinal Study of Adolescent Health Wave II (1996; 12–21 years old) and Wave IV (2005; 24–32 years old), Obesity was defined as age-for-sex BMI 95% or greater for those less than 20 years old and BMI 30 kg/m2 or greater for those 20 years old and up. Underweight participants were excluded from the analytic sample (BMI percentile < 5%; BMI < 18.5 kg/m2). We compared outcomes based on BMI trajectories: healthy weight adolescents who became obese (n=1,575) or healthy-obese (n=1,765) had lower odds of graduating college and greater odds of being parents and being married. There were no statistically significant differences among groups in terms of employment or high school graduation. When separated by sex, differences among groups for income and being on public assistance persisted only for female participants.

CONCLUSION: Persistence of obesity into adulthood, especially for females, is related to lower educational attainment and lower income. Those who became obese in adulthood are also vulnerable. In addition to the detrimental health effects of obesity, the notable negative social, educational, and financial effects of obesity could be impacted by the prevention and reversal of obesity in adolescence and early young adulthood (12–21 years old). As this age group has traditionally been difficult to reach, innovative interventions to target and motivate this age group are needed.

HOW MANY LIFE YEARS LOSS FOR MAJOR CANCERS COULD BE SAVED IN THE UNITED STATES IF WE SUCCESSFULLY PREVENT EACH INCIDENT CASE?

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BACKGROUND: The standard method of computing the person-years of life lost (PYLL) provides a retrospective assessment, counting years of life lost for patients who have died rather than estimating years of life lost for incident cases. Expected years of life lost (EYLL) since diagnosis of cancer would provide another valuable measure of the burden of cancer that can be applied prospectively. The purpose of this study was to estimate the EYLL for patients with one of six types of prevalent and potentially preventable cancer in the United States and to assess the validity of the extrapolation method used among subsets of the cancer cohorts.

METHODS: Patients diagnosed with cancers of the lung, colon and rectum, liver, female breast, cervix, or prostate during 1992–2005 were identified from the Surveillance, Epidemiology, and End Results registries. Mortality was assessed through 2006. The lifetime survival functions for the cancer cohorts and age- and sex-matched reference populations were generated using a novel semiparametric extrapolation method with annual life tables. The average EYLL for cancer patients was calculated by subtracting the estimated life expectancy of the cancer cohort from that of the reference population. The validation of
the extrapolation of long-term survival was performed using the subcohorts of cancer patients diagnosed during 1992–1998. We assumed they were only followed till 1998 and extrapolated their survival to an additional 8 years using the semiparametric method. Then we computed extrapolated estimates with the observed gold standard values of the real mean survival within the 15-year follow-up, 1992–2006.

RESULTS: The estimated life expectancy of a cancer patient since initial diagnosis varied by cancer site from 1.93 years to 20.66 years. Liver cancer and lung cancer had a large average EYLL, 16.7 years and 13.8 years respectively, which imply the corresponding life years saved if an incident case could have been successfully prevented. With multiplication by the annual incidence counts for each cancer in 2010, lung cancer would cause the greatest subtotal of EYLL (3,066,301 years) followed by female breast cancer (1,295,664 years) and colorectal cancer (927,009 years). Validity tests indicated the relative biases of the extrapolated estimates were <3.5%.

CONCLUSION: The potential life years saved by successful prevention, in terms of EYLL since diagnosis, would be substantial for lung cancer, breast cancer, or colorectal cancer. Identifying and improving strategies for prevention of cancer remains a priority to minimize years of life lost due to cancer in the United States. Compared with the average PYLL for a particular cancer, defined by dividing PYLL by the actual number of deaths and reported by the National Cancer Institute, the average EYLL is not a measure of burden of disease for only individuals who died from that cancer but one for populations of incident cancer. Thus the measurement of average EYLL can provide an estimate of how much life is likely to be decreased by cancer on average, allowing for clearer communication with the lay public, clinicians, and policy-makers about cancer risk and life expectancy. It can also allow estimates of the health utility gained or medical cost saved if each incident case of cancer could be prevented successfully. Moreover, the extrapolation method was valid and acceptable, given that the relative biases for the estimates on the cancer subcohorts in the validation process were all less than 3.5%.

END-OF-MONTH HYPOGLYCEMIA ADMISSIONS ARE INCREASED AMONG LOW-INCOME PATIENTS Hilary Seligman 1; Ann Bolger 1; Nancy Jianhua Jin 1; Kirsten Bibbins-Domingo 1. 1University of California San Francisco, San Francisco, California. (Tracking ID # 9590)

BACKGROUND: Almost one in seven households in the United States is food insecure (at risk of going hungry because of the inability to afford food). Because assistance benefits and paychecks are often distributed on the first of the month, food insecure households often exhaust food budgets before the end of the month. Small studies have suggested that food insecurity is associated with hypoglycemia among patients with diabetes. We hypothesized that the exhaustion of food budgets in low-income households would result in increased hospital admissions for hypoglycemia at the end of the month.

METHODS: We used administrative data on adult discharges from accredited California hospitals between the years 2000 and 2008, available from the California Office of Statewide Health Planning and Development (OSHPD). Data available included diagnosis codes, hospital admission dates, and patient demographics, including home zip code. We examined the admission date of all hospitalizations with a primary discharge diagnosis of hypoglycemia (ICD-9 251.*), and categorized them into quartiles corresponding to the first, second, third, and fourth weeks of the month. We recorded the number of hypoglycemia admissions, and the ratio of hypoglycemia admissions to total hospital admissions. We compared counts and ratios across the first, second, third, and fourth weeks of the month using logistic regression models. We looked for an interaction between week of hypoglycemia admission and patient income estimated using zip-code level data from the US Census Bureau, dichotomized at $30,000. We also looked for week-to-week variation in appendicitis (ICD-9 540.* or 541.*), which we did not expect to be influenced by exhaustion of household food budgets.

RESULTS: A total of 2,558,802 adult hospital admissions occurred in California from 2000–2008, of which 5461 had a primary diagnosis of hypoglycemia. Although there was no significant week-to-week variation in total hypoglycemia admissions (p=0.5), the association differed by income level (p for interaction=0.02). Among the 4915 admissions for high-income patients, there was no week-to-week variation in admissions. Among the 544 admissions for low-income patients, the average count of hypoglycemia admissions during the first, second, third, and fourth weeks of the month was 109, 114, 141, and 136 episodes (p=0.008), representing a 20% increase in hypoglycemia admissions in the last two weeks of the month. Similarly, the ratio of admissions for hypoglycemia increased significantly in the last two weeks of the month among the low-income patients (p=0.008, see Figure), with the last day of the month showing the highest number of hypoglycemia admissions at 27 (range of all days 9–27, mean 18). We observed no week-to-week variation in hospital admissions for appendicitis among high or low income patients.

CONCLUSION: In low-income households, there is a significant increase in hospital admissions for hypoglycemia at the end of the month. Although these data do not allow us to directly link admissions to any single underlying cause, they suggest that hypoglycemia is a critically important safety issue among patients without adequate food access, particularly since the burden of hypoglycemia is likely much larger than reflected in the number of hypoglycemia hospital admissions.
SERUM 2-METHOXYESTRADIOL, AN ESTROGEN METABOLITE, IS POSITIVELY ASSOCIATED WITH SERUM HDL IN A POPULATION-BASED SAMPLE Christopher M. Masi 1; Louise C. Hawkey 1; John T. Cacioppo 1, 2University of Chicago, Chicago, Illinois. (Tracking ID # 9601)

BACKGROUND: Serum high-density lipoprotein (HDL) is inversely associated with coronary artery disease, ischemic stroke, and atherosclerosis in men and women. HDL provides atheroprotection by promoting cholesterol efflux from peripheral tissues, transporting cholesterol to the liver for excretion as free cholesterol or bile acids, serving as an anti-oxidant and suppressing inflammation. Serum HDL levels are higher and cardiovascular disease is less prevalent among postmenopausal women compared to similarly-aged men. Among postmenopausal women, oral supplementation with conjugated equine estrogen increases serum HDL levels. Studies show that the atheroprotective effects of 17beta-estradiol (E2) are fully retained in estrogen receptor (ER) beta knockout mice and are partially retained in ER alpha knockout mice. This suggests that E2 atheroprotection may operate through receptors yet to be identified or that other factors, such as E2 metabolites, partially mediate E2 atheroprotective effects. A recent study demonstrated that subcutaneous administration of an E2 metabolite, 2-methoxyestradiol (2-MeOE2), to apolipoprotein E-deficient mice led to reductions in both total serum cholesterol and aortic atherosclerotic plaque size compared to control mice. 2-MeOE2 has no affinity for classical estrogen receptors but this metabolite inhibits HMG-CoA reductase in vitro. In vivo, HMG-CoA reductase inhibitors reduce low-density lipoprotein (LDL) and raise HDL. Given these effects, we hypothesized that serum 2-MeOE2 would be positively associated with serum HDL. Such an association could shed light on the ER-independent atheroprotective effects of E2.

METHODS: Data for this study were gathered in the fifth year of the Chicago Health, Aging, and Social Relations Study (CHASRS), which is a population-based longitudinal study designed to examine the relationships between psychosocial characteristics and health outcomes among middle-aged and older adults. Participants completed surveys regarding their demographic, dietary, and exercise characteristics, as well as their medication usage. Body mass index (BMI) was calculated as weight in kilograms divided by height in meters squared. The following medications were classified as antihyperlipidemic agents: HMG-CoA reductase inhibitors (statins), niacin, bile acid sequestrants, and cholesterol absorption inhibitors. Serum was analyzed for E2 and 14 estrogen metabolites (EM) using mass spectrometry. EM values exhibited a positively skewed distribution and were therefore subjected to natural log (ln) transformation. Fasting HDL, total cholesterol, and triglycerides were measured using the Cholestech LX-2 kit (Cholestech Corporation, USA), a system that meets CDC reference standards for accuracy and reproducibility. LDL was calculated using the Friedewald equation. In year 5, we had serum EM data from 51 men and 51 women, all of whom were postmenopausal. Four women were excluded because they were taking hormone replacement therapy. Preliminary analysis revealed no correlation between 2-MeOE2 and serum HDL in men so the current analysis includes only women (N=40) who had no missing demographic, medication, EM, or cholesterol data. Ordinary linear regression analysis was used to evaluate the relationship between serum HDL and predictor variables, including age, race/ethnicity, BMI, use of antihyperlipidemic agents, and serum 2-MeOE2. A one-way t-test of significance was used given our hypothesis of a positive association between 2-MeOE2 and HDL. Correlational analysis revealed a positive relationship between serum 2-MeOE2 and serum HDL which approached significance among women (r=0.307; p=0.051) but not among men (r=0.1, p >0.5). None of the other estrogen metabolites was correlated with HDL. Multivariate regression analysis of data from 40 women showed that 2-MeOE2 retained a positive association (p see attached table.

CONCLUSION: Consistent with our hypothesis, we found a positive association between serum 2-MeOE2 and serum HDL. This was true among postmenopausal women but not among similarly-aged men. Oral estrogen supplementation leads to increased HDL in postmenopausal women but the mechanism of E2 non-ER dependent atheroprotection is unknown. Our results are consistent with 2-MeOE2 inhibition of HMG-CoA reductase and increased HDL production. Higher levels of serum HDL may explain the ER-independent atheroprotective effects of E2. However, our results are also consistent with the opposite effect (i.e., increased 2-MeOE2 production due to HDL). Prospective studies are therefore needed to determine the causal direction of this association. If 2-MeOE2 is found to increase serum HDL levels in vivo, further investigation of E2 metabolism (especially 2-MeOE2 production) should be pursued. A better understanding of this process could lead to new therapies for cardiovascular disease, especially among postmenopausal women.

THE ASSOCIATION BETWEEN MINOR AND MAJOR ECG CHANGES AND INCIDENCE OF CORONARY HEART DISEASE EVENTS Reto Auer 1; Douglas C. Bauer 2; Pedro Marques-Vidal 1; Javed Butler 3; Lauren Kim 4; Jacques Cornuz 1; Suzanne Satterfield 5; Anne Newman 6; Nicolas Rodondi 1. 1University of Lausanne, Lausanne. N/A.; 2University of California San Francisco, San Francisco, California.; 3Emory University, Atlanta, Georgia.; 4National Institute of Aging, National Institutes of Health, Bethesda, Maryland.; 5University of Tennessee Health Science Center, Memphis, Tennessee.; 6University of Pittsburgh, Pittsburgh, Pennsylvania. (Tracking ID # 9689)

BACKGROUND: Electrocardiographic (ECG) abnormalities are common in older adults, but data on their prognostic importance to predict future coronary heart disease (CHD) are conflicting. Our goal was to determine whether baseline ECG abnormalities or development of new and persistent ECG abnormalities during follow-up are associated with increased incident CHD events in older adults, independently of traditional cardiovascular risk factors (CVRFs).

METHODS: We studied 2191 elderly men and women (age range 68–80 years, 59% Caucasian, 41% Black) from the Health, Aging, and Body Composition Study without known cardiovascular disease at baseline. During 8 years of follow-up, self-reported CHD events, defined as hospitalization for acute myocardial infarction, coronary death, angina, angioplasty of coronary arteries and coronary artery surgery, were adjudicated by review of medical records. Baseline study ECG abnormalities were classified according to the Minnesota Code as minor (ST–T changes) and major (major ST–T changes, Q–QS wave abnormalities, left ventricular hypertrophy, complete bundle branch block or intraventricular block, atrial fibrillation or atrial flutter). After 4 years of follow-up, 1670 participants had a second study ECG to determine the presence of new or persistent ECG abnormalities. We used Cox models to assess the value of adding ECG abnormalities to traditional risk factors for the prediction of future CHD events. Primary analyses were adjusted for traditional CVRF included in the current Framingham Risk Score (age, gender, total and high density lipoprotein cholesterol, systolic blood pressure, smoking status), as well as diabetes. We categorized 7.5-year estimates for incident CHD as low risk (0% to 7.5%), intermediate risk (7.5% to 15%), and high risk (15% or
more) to calculate net reclassification in the intermediate risk categories using Harrel's C index.

**RESULTS:** At baseline, 276 participants had minor and 506 had major ECG abnormalities. During 8 years of follow-up, 351 participants had CHD events. Minor ECG abnormalities at baseline were associated with an increased risk of CHD (hazard ratios (HR) and 95% confidence interval [CI] 1.45 [95% CI: 1.14 - 1.85] after adjustment for CVRFs). CHD risk was also increased among those with major ECG abnormalities at baseline (HR=1.51, 95% CI: 1.20 - 1.90) and those with any ECG abnormality defined as either minor and/or major abnormalities (HR=1.64, CI: 1.32 - 2.03). The presence of any ECG abnormality at baseline accurately reclassified 7.1% overall and 13.6% of intermediate risk participants (both p<0.005). Of the 1670 adults with a second ECG after 4 years, 208 had a new abnormality and 416 had a persistent abnormality. After adjustment for CVRFs, both new and/or persistent ECG abnormalities at 4 years were associated with an increased risk of subsequent CHD events (HR=1.67, CI: 1.31 - 2.06 and HR=1.52, CI: 1.07 - 2.16, respectively).

**CONCLUSION:** Minor and major ECG abnormalities in elderly adults are associated with an increased risk of CHD events and provide additional risk stratification information beyond traditional CVRFs. These data suggest a potential value of including ECG findings in the overall assessment of cardiovascular risk in elderly populations.

**TRAINING MEDICAL STUDENTS TO CONDUCT MOTIVATIONAL INTERVIEWING: A RANDOMIZED CONTROLLED TRIAL.** Jean-Bernard Daeppen 1; Cristina Fortini 1; Nicolas Bertholet 1; Raphael Bonvin 1; Alexandre Berney 1; Pierre-André Michaud 1; Carine 1; Jacques GaumeLayat 1. 1Lausanne University Hospital, Lausanne, N/A; 2Lausanne University Hospital Lausanne University Hospital, Lausanne, N/A; N/A. (Tracking ID # 9691)

**BACKGROUND:** Scientific evidence for the efficacy of Motivational Interviewing (MI) can assist government agencies in recommending its use in medical settings. Research indicates that barriers exist to MI implementation among physicians, thus a strategic time to begin MI training might be during medical school. Several studies have suggested that training medical students improves their MI skills, but no randomized controlled study has addressed the effectiveness when these skills are applied. The aim of our study was to examine the effectiveness of MI training among medical students when they begin counseling patients to change certain health behaviors, such as overuse of tobacco and alcohol, lack of exercise, and unhealthy diets.

**METHODS:** All students (n=131) in year 5 of a 6-year curriculum at Lausanne University Medical School Switzerland were randomized into an experimental (n=66) or a control group (n=65). An 8-hour training workshop was completed by 56 (84.8%) students in the experimental group. The objectives were to adopt the spirit of MI, to use open questions and complex reflections, to recognize and reflect resistance and to elicit and reinforce change talk. One week after the training, students in both the experimental (trained) and the control (untrained) group were invited to meet for 15 minutes with two standardized patients. One was a 60-year-old male with a history of severe nicotine dependence, hospitalized following a myocardial infarction, and the other was a 50-year-old diabetic female with an unhealthy diet, lack of exercise, and problems with medication compliance. Forty-one students in the experimental group and 48 in the control group (or 67.9% of the initial sample) completed these patient encounters which were tape-recorded: MI skills were coded by four blinded research assistants using the Motivational Interviewing Treatment Integrity 3.0 (MITI). Twenty percent of these were double-coded and had intra-class correlation coefficients between 0.49 and 0.87. Mean MITI summary scores in the experimental group were compared to those in the control group.

**RESULTS:** Superior MI performance was shown for trained versus control students, as demonstrated by higher summary scores for “MI Spirit” [4.0 (0.6) vs 3.3 (0.6), p<.001], % MI-adherent [80.3 (20.9) vs 47.3 (23.3), p<.001], % Open questions [34.5 (11.8) vs 21.1 (7.7), p<.001], % Complex reflections [25.5 (9.9) vs 21.0 (11.6), p=.04], and ratio Reflections/Questions [0.8 (0.4) vs 0.6 (0.3), p<.001], respectively.

**CONCLUSION:** An 8-hour training workshop for medical students with minimal clinical experience was associated with improved MI performance, as evidenced by MI spirit and behavior counts. This lends support for the implementation of MI training in medical schools.

**EFFECTIVENESS OF A BRIEF SCREENING TOOL TO IDENTIFY MEDICAL STUDENTS IN SEVERE DISTRESS** Lotte Dyrbye 1; Alan Schwartz 2; Steven Downing 3; Jeff Sloan 1; Taif Shanafelt 1. 1Mayo Clinic, Rochester, Minnesota 2Department of Medical Education, University of Illinois-Chicago College of Medicine, Chicago, Illinois 3Department of Medical Education, University of Illinois-Chicago College of Medicine, Chicago, Illinois. (Tracking ID # 9852)

**BACKGROUND:** Psychological distress is common among medical students and manifests in a variety of ways (e.g. burnout, depression, low QOL, stress, fatigue, etc.). As this distress can lead to potential dreadful personal and professional consequences and as students are reluctance to seek help there is a need for a practical screening instrument that evaluates multiple dimensions of distress simultaneously and identifies students in greatest need of individualized attention. In this abstract, we report the results from two large multicenter studies that provide validity data on such a brief screening instrument.

**METHODS:** The ability of the Medical Student Well-being Index(MSWBI) to identify medical students with low mental QOL(deﬁned by having a SF-8 mental component score >1/2 standard deviation below the age and gender-matched population norm), recent suicidal ideation, or recent serious thoughts of dropping out was tested using 2 separate samples of medical students, one sample stemming from a 2007 survey completed by 2230 medical students attending 7 US medical schools and a conﬁrmatory sample of 2682 students surveyed in 2009.

**RESULTS:** Students with low mental QOL, recent suicidal ideation, or recent serious thoughts of dropping out were more likely to endorse each individual MSWBI item and a greater number of total items than students without such distress (all p less than 0.001). Mean mental QOL scores declined as the number of index items endorsed increased (p<0.0001 for both genders). The likelihood ratio(LR) for low mental QOL among students with a MSWBI score less than 4 was 0.47 as compared to a LR of 4.79 for those with a score 4 or greater. At a MSWBI threshold score of 4 or greater the LR for low mental QOL, stress, fatigue, etc.). As this distress can lead to potential dreadful personal and professional consequences and as students are reluctance to seek help there is a need for a practical screening instrument that evaluates multiple dimensions of distress simultaneously and identifies students in greatest need of individualized attention. In this abstract, we report the results from two large multicenter studies that provide validity data on such a brief screening instrument.

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**CONCLUSION:** Among two large cohorts of medical students the MSWBI can identify students at risk for clinically relevant outcomes (low mental QOL, suicidal ideation, or serious thoughts of dropping out
of medical school) that warrant recognition and individualized attention. The MSWBI is a useful tool to help medical schools identify students with severe distress which may help schools allocate resources to students in greatest need of assistance.

SELF-AWARENESS OF CULTURAL COMPETENCY IN INTERNAL MEDICINE RESIDENTS: RESULTS OF A TEACHING STANDARDIZED PATIENT ENCOUNTER

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BACKGROUND: Cultural competency is a necessary skill for all health care professionals. Despite a profusion of cultural competence curricula in health professionals’ education, there are few validated measures of a trainee’s cultural competence. We describe here the results of a teaching standardized patient encounter with a behavioral checklist and self-assessment of competence that was used for PGY-1 internal medicine residents.

METHODS: 110 interns from the Johns Hopkins Hospital internal medicine residency program completed the standardized patient (SP) encounter from July 2006 to July 2010. In the 20-minute encounter, the patient was portrayed by an African-American, who expressed both a deep spirituality and a distrust of hospice care, in the context of planning care for the terminal stage of pancreatic cancer. Residents and SPs separately evaluated the encounter using behavioral checklists, derived from literature review of both cultural competence and palliative care communication. Descriptive statistics were used to summarize performance scores. Separate one-way ANOVAAs were conducted on test scores for intern year and training month; a 2 (student gender) x 2 (SP gender) ANOVA was conducted on test scores to assess gender effects.

RESULTS: Cronbach’s alpha for the 16-item SP checklist was 0.78. Total scores ranged from 5.50 to 16.00 with a mean of 12.59 (SD=2.28). We found no correlation between performance on the SP checklist and cohort year, month of training, intern gender, or intern-SP gender interaction. Most interns had had prior exposure to cultural competency training, but on average rated themselves 4.44 out of 8 total points for cultural competence skill. When compared with SP scores, 88% of interns underpredicted their cultural competence ability. There was a significant difference in performance between those who overpredicted and those who underpredicted their ability. Interns who underpredicted their ability had an average checklist score of 13.17 (SD=1.66) vs. those who overpredicted their ability, average checklist score of 8.35 (SD=1.94), p<0.001.

CONCLUSION: The use of an end-of-life scenario enhanced our ability to teach cultural competence in a new context. The checklist proved to be a reliable instrument. In addition to communications skills training, cultural competency education efforts should focus on self-awareness and situational awareness skills, which appears to be in need of development at least through the PGY1 year.

HEALTH NUMERACY AND LITERACY INFLUENCE MOTIVATIONAL IMPACT OF DIABETES GENETIC RISK TESTING

Jason L. Vassay 1; Kelsey E. O’Brien 1; Jessica Wader 1; Elyse R. Park 1; Linda M. Delahanty 1; Jose C. Florez 2; James B. Meigs 1; Richard W. Grant 1. 1MGH General Medicine Division, Boston, Massachusetts; 2MGH Endocrine Division, Boston, Massachusetts. (Tracking ID # 10013)

BACKGROUND: Type 2 diabetes (T2D) genetic risk testing has been proposed as a tool to motivate lifestyle modification (LM) for T2D prevention. We hypothesized that health literacy and numeracy influence the interpretation of individual T2D genetic risk.

METHODS: We recruited 129 primary care patients at high risk for T2D and assessed their health literacy [Rapid Estimate of Adult Literacy in Medicine (REALM)], genetic literacy [Realistic Estimate of Adult Literacy in Genetics (REAL-G)], and health numeracy (Schwarz, et al. 1997). We assessed participants’ current motivation to adhere to LM and asked them how these attitudes might change in response to hypothetical “higher” and “lower” T2D genetic risk results, using a 5-point Likert scale ranging from “much less motivated” to “much more motivated.” We used Fisher exact testing to examine whether anticipated response to genetic risk results varied with literacy and numeracy.

RESULTS: Participants had a mean age of 58 years, 59% were male, 89% were Caucasian, and 81% had greater than high school education. Sixty-seven percent reported very high motivation to prevent T2D. Despite high prevalence of health literacy (93% at high school reading level), many participants had limited numeracy (32%) and genetic literacy (37%). They uniformly reported that “higher genetic risk” results would increase their motivation for LM (98% reporting increased motivation). In contrast, response to “lower genetic risk” results varied by participant numeracy and literacy (Figure). Participants with limited numeracy were more likely to predict increased motivation by “lower genetic risk” results than those with adequate numeracy (65% vs. 44% reporting increased motivation, p=0.009). We observed a similar difference in response to “lower genetic risk” results when contrasting lower vs. higher genetic literacy (p=0.05) and lower vs. higher health literacy (p=0.08) but not high school or less vs. college education (p=0.28).

CONCLUSION: Health numeracy plays a key role in the interpretation of personal genetic risk information. In this fairly educated and motivated patient sample with high health literacy, limited health numeracy was prevalent and influenced how subjects interpreted “lower genetic risk” results. Numeracy assessment may help tailor the motivational counseling accompanying the delivery of “personalized” genetic risk information.
BACKGROUND: Variation in the use of critical care for patients at the end of life has been described and identified as a major source of rising health care costs. However, such patients make up only a fraction of all hospital admissions, and hospital triage practices are central to appropriate resource use for all patients. No prior work has examined variation in hospital triage practices within a national healthcare system, and among a broad array of medical patients. In this context, we examined three questions using Veterans Administration (VA) data: 1) on average, does the probability of triage to the intensive care unit (ICU) increase as a patient's predicted mortality on admission increases? 2) among patients with high predicted mortality, how much do hospitals vary in their use of the ICU? and 3) among patients with low predicted mortality, how much do hospitals vary in their use of the ICU?

METHODS: We used retrospective data from the VA Inpatient Evaluation Center (IPEC), which collects clinical information for inpatient hospital admissions, and hospital triage practices are central to assessing risk of mortality using this data. We constructed a cohort of adult admissions to any VA acute care hospital between July 2009 and June 2010. We included the first admission for all non-surgical patients who were admitted from the Emergency Department or Outpatient Clinic. We excluded VA hospitals with less than 10 ICU admissions. For each admission, we estimated predicted mortality using the IPEC validated inpatient severity score (ISS), based on clinical, laboratory, and demographic variables collected in the 24 hours surrounding admission. We measured the proportion of patients that each hospital admitted directly to the ICU, stratified by categories of ascending mortality risk.

RESULTS: During the study period, 283,976 unique non-surgical patients were admitted to 120 VA hospitals. Of these patients, 31,073 (10.9%) were admitted initially to the ICU and 252,903 (89.1%) were admitted elsewhere. Predicted mortality varied by initial triage assignment: direct ICU admissions (ISS=0.082, 30-day mortality=7.7%), and non-ICU ward admissions (ISS=0.042, 30-day mortality=3.5%). Increased predicted mortality was directly associated with an increased likelihood of ICU admission (ascending categories of predicted mortality: 9%, 12%, 14%, 19%, and 28%). At all levels of predicted mortality, hospitals varied significantly in the proportion of patients directly admitted to the ICU. In the lowest category of predicted mortality, 1-49% of patients were admitted to the ICU; in the next highest, 3-50%, then 0-55%, 0-52% and 0-72%.

CONCLUSION: For a broad array of patients at all levels of predicted mortality, hospitals vary widely in their use of critical care, suggesting that there are opportunities for improved efficiency. The causes and consequences of this variation remain to be explored.

PAIN AND DISABILITY IN ELDERS James Andrews 1; Irena Stijacic Cenzer 2; Ed Yelin 3; Kenneth Covinsky 2; 1University of California, San Francisco, Burlingame, California; 2San Francisco VA Medical Center, San Francisco, California; 3University of California, San Francisco, San Francisco, California. (Tracking ID # 10056)

BACKGROUND: Pain is a risk factor for functional disability in elders. Cross-sectional studies have demonstrated strong relationships between pain and disability. This prospective study aimed to determine if pain predicted the development of disability over time.

METHODS: Our subjects included 12,739 participants over 60 years-old in the 1998 wave of the Health and Retirement Study, a nationally representative sample of community-living adults who are interviewed biannually. Our primary predictor variable was significant pain (report of often being troubled by pain that is moderate or severe most of the time). Our primary outcome was time to development of disability in activities of daily living (ADL) or death over 10 years. ADL disability was defined as needing help performing an ADL: bathing, dressing, transferring, toileting, eating, or walking across a room. All participants were free of ADL disability in 1998. We used a discrete time survival model to adjust for these potential confounders at baseline: demographic factors (age, race, gender, marital status, education, income), baseline functional status (ADL difficulty, difficulty walking up stairs or more than several blocks), and comorbidity (7 chronic health conditions).

RESULTS: At baseline, 2,303 (18.1%) subjects had significant pain. Subjects with pain differed markedly from those without at baseline. Subjects with pain were more likely (all p values: P<0.001) to be female, report lower income, to have more chronic health conditions, and to have diagnosed diabetes. After adjusting for baseline functional status, pain does not predict the development of ADL disability.

PHYSICIAN PATIENT-SHARING NETWORKS ARE ASSOCIATED WITH COST AND INTENSITY OF CARE IN US HOSPITALS Michael Lawrence Barnett 1; Nicholas A Christakis 2; Alistair James O Malley 2; Jukka-Pekka Onnela 2; Nancy Lynn Keating 2; Bruce Evan Landon 2; 1Harvard Medical School, Brookline, Massachusetts; 2Harvard Medical School, Boston, Massachusetts. (Tracking ID # 10060)

BACKGROUND: Substantial variation exists in the cost and intensity of care received by patients treated by physicians affiliated with different US hospitals. There is currently no consensus on the mechanisms that underlie such marked variation in health care delivery across the US. Using measures from the discipline of network science, we assessed how the organization of patient-sharing networks of physicians affiliated with hospitals might contribute to this variation. We hypothesized that network measures reflecting poorer coordination of care within hospital-affiliated networks would be associated with higher costs and care intensity.

METHODS: We performed a cross-sectional analysis of Medicare administrative data from 2006 for patients in 51 hospital referral regions (HRRs), resulting in a sample of 61,461 physicians affiliated with 528 hospitals caring for 2.6 million Medicare patients. We constructed hospital-affiliated physician networks based on shared patients and measured aspects of the structure of these hospital networks including the median number of connections per physician and the relative centrality of primary care or specialist physicians in the hospital network. We then used multivariate linear regression to assess the relationship between network structural measures and total health care spending and care intensity (including both inpatient and ambulatory care) in the last 2 years of life for Medicare patients, controlling for a number of hospital characteristics.

RESULTS: The typical physician in an average-sized hospital was connected to 187 doctors for every 100 Medicare patients shared with other doctors. In larger hospitals, the typical physician was connected to 281 other doctors per 100 Medicare patients. An increase of one
standard deviation (SD) in the median number of connections per physician was associated with a 17% increase in total Medicare spending, 17% more hospital days, 36% more ICU days, and 37% more specialist visits (all p

CONCLUSION: Hospital-affiliated physician network structure has a significant relationship with care patterns for Medicare patients. Hospitals with more specialist-focused networks and those with doctors who have higher numbers of connections to other physicians have higher costs and more intensive care. These results highlight the importance of physician relationship networks and provide support for the hypothesis that poorer coordination of care is associated with greater spending and care intensity.

MAPPING PHYSICIAN NETWORKS WITH SELF-REPORTED AND ADMINISTRATIVE DATA Michael Lawrence Barnett 1; Bruce Evan Landon 2; Nancy Lynn Keating 2; Alistair James O’Malley 2; Nicholas Alexander Christakis 2; 1Harvard Medical School, Brookline, Massachusetts; 2Harvard Medical School, Boston, Massachusetts. (Tracking ID # 10061)

BACKGROUND: Relationships between healthcare providers are essential to a functioning health care system and form the basis for the referral and information exchange networks in health care. These networks can be analyzed using tools from the discipline of network science, yielding potentially valuable insights into the emergence of local health care practice patterns and diffusion of health care practices. However, network data are not readily available and require meticulous collection of information on hundreds or thousands of relationships between providers. Potentially, administrative claims data can be used to infer physician networks by linking physicians if they share patients. We designed and implemented a novel web-based survey to assess if connections between physicians based on shared patients in administrative data correspond with professional relationships between physicians.

METHODS: We performed a web-based survey of physicians affiliated with a large academic and community physicians’ organization. We used 2006 Medicare data from a 100% sample of patients in the Boston hospital referral region to measure patient sharing between physicians in our sample. Physicians were eligible for the survey if they were members of the physicians’ organization, filed claims for Medicare patients in 2006, and practiced in an office-based patient care specialty. The survey asked respondents about referral and advice relationships with physician colleagues. Respondents were asked to give names of physicians they referred to in addition to being presented with an informative “diagnostic test” to predict any relationship between physicians was 0.73 (95% CI: 0.70–0.75). Primary care physicians (PCPs) were more likely to recognize relationships than medical or surgical specialists (p<0.001).

CONCLUSION: Patient sharing identified using administrative data is an informative “diagnostic test” for predicting the existence of relationships between physicians. In addition, we find that primary care physicians are more likely to recognize relationships with other providers than specialists, a finding consistent with PCPs’ role as care coordinators. These findings validate a method that can be used for future research to map and study networks of physicians.

HIV AND THE HOMELESS: THE EFFECTS OF HOUSING STATUS ON HIV DISEASE PROGRESSION AND HEALTHCARE ACCESS Sarah Shelby 1; Cheryl Ho 1; Edward Brooks 1; Dean Winslow 1; Ahmad Kamal 1; Sara Doorley 1; 1Santa Clara Valley Medical Center, San Jose, California. (Tracking ID # 10072)

BACKGROUND: The question of how housing status influences HIV control and healthcare access has yielded conflicting results. Several studies have shown that homeless HIV positive patients tend to have more poorly controlled CD4 counts and viral loads while other studies have shown no difference. Prior studies have also demonstrated variability in healthcare access patterns. This study was performed to compare CD4 count, viral load, and health care utilization patterns of the homeless and housed HIV positive patients who attend the Partners in AIDS Care and Education (PACE) Clinic, which is the HIV primary care clinic for Santa Clara County in San Jose, CA.

METHODS: This study was a retrospective, observational study of patients who attended PACE Clinic in 2009. Of the 1200 patients who attend PACE clinic, 33 patients were identified as being homeless and 66 patients were chosen by a random number generator from the remaining stably housed patients at PACE clinic as a control. Data was obtained from the AIDS Regional Information and Evaluation System ARIES database of California as well as county medical records regarding clinic attendance, ED visits, CD4 counts, viral load, and number of lab tests in 2009. SPSS was used to test for significant differences between the homeless and the housed population of HIV positive patients.

RESULTS: Homeless subjects had a lower mean CD4 count than housed subjects (351 vs. 494, p=0.007 by the t-test) as well as a lower rate of undetectable Viral Load (36% vs. 65%, p=0.007 by the chi-square test). Homeless patients had more ED visits by the Wilcoxon Rank Sum Test (p=0.002) and a lower retention rate in the PACE Clinic (33% vs. 59%, p=0.02 by the chi-square test). However the total number of clinic visits per patient was not different between the homeless and housed populations at PACE (p=0.09 by Wilcoxon Rank Sum Test).
CONCLUSION: In our patient population, housing status significantly influenced HIV control (estimated by CD4 count and viral load) and healthcare access. In the homeless patients, CD4 counts were lower and viral loads were less likely to be undetectable. Increased ED visits in the homeless patients, coupled with similar number of clinic visits, may indicate that these patients have a more complicated HIV course for socioeconomic reasons, and that this population may benefit from an increased frequency of clinic visits. Perhaps these patients had more difficulty making their scheduled appointments and would benefit from the walk-in clinic model that has worked for local homeless clinics. Further research is needed to determine what barriers to better HIV control exist for the homeless HIV positive patients of Santa Clara County, and what could be done to overcome these barriers in the future.

TARGETING SCARCE CLINICAL RESOURCES IN REAL-TIME: AN EMR-BASED INTERVENTION TO REDUCE HEART FAILURE READMISSIONS Ruben Amarasingham 1; Parag Patel 2; Kathy Toto 1; Timothy Swanson 1; Lauren Nelson 1; Billy Moore 1; Ying Ma 1; Christopher Clark 1; Kashundra Foreman 1; Kristin Alvarez 1; Anita Rahman 1; Ethan Halm 1; 1Parkland Health & Hospital System, Dallas, Texas; 2University of Texas Southwestern Medical Center, Dallas, Texas. (Tracking ID # 10078)

BACKGROUND: 30-day readmission for heart failure (HF) has gained widespread attention as a federal pay-for-performance measure. Current approaches to improve readmission performance recommend intensive clinical and case management interventions for all patients admitted with HF, an organizational posture difficult to sustain for many institutions, particularly safety net hospitals. In this study, we test a novel, multi-disciplinary approach to reduce HF readmissions that tailors the intensity of the intervention to the risk of the patient using a real-time electronic predictive model.

METHODS: We conducted a prospective cohort study to assess the impact of the intervention on rates of readmission for adult inpatients admitted with HF between December 1, 2008 and December 1, 2010 at Parkland Memorial Hospital, an 800-bed safety net hospital in Dallas, TX. During the intervention period (December 1, 2009 to December 1, 2010), a software platform we developed stratified all admitted HF patients on a daily basis according to their risk for 30-day readmission using a previously published electronic predictive model. The electronic platform calculated the risk of readmission using clinical, social, behavioral, and utilization data that it self-extracted from the hospital electronic medical record (EMR) within 24 hours of admission. HF patients in the 2 highest quintiles of risk were immediately assigned to an intensive set of evidence-based interventions designed to reduce readmission including: a) detailed clinical assessments, patient coaching and discharge planning by a HF nurse practitioner, pharmacist, nutritionist, and case manager; b) a follow-up nurse phone call within 48 hours of discharge (D/C); c) outpatient case management for 30 days including home visits; d) a cardiology appointment with a HF specialist within 7 days of D/C; e) and a primary care appointment within 30 days of D/C. HF patients in the lower 3 quintiles of risk received less intensive discharge planning, and no involvement of the HF clinicians, case managers, or home visit nurses. Readmission for any cause and to any hospital within 30 days of discharge was collected for all patients. We calculated both crude and adjusted readmission rates before and after the intervention. Adjusted analyses controlled for: 1) patient clinical and SES factors, and 2) the change in readmission rates among patients hospitalized for 2 concurrent control conditions (acute myocardial infarction [AMI] and pneumonia [PNA]), allowing for adjustment of secular readmission trends at the institutional level.

RESULTS: There were 779 HF admissions (1435 for AMI or PNA) in the pre-intervention period and 753 HF admissions (1446 for AMI and PNA) in the post-intervention period. The pre- and post-populations were similar across clinical and socio-demographic variables. Although the clinical and case management interventions were restricted to patients in the top 2 quintiles of calculated risk, the overall unadjusted readmission rate for HF declined from 20.2% in the pre-intervention period to 16.0% in the post-intervention period (p=.04). In contrast, the readmission rate for PNA and AMI did not change (12.0% vs. 13.9%; p = 0.34). In the final adjusted analysis, the readmission rate for patients with HF was significantly lower in the intervention period (15.7% vs. 21.5%; adjusted incidence rate ratio, 0.72 [95% CI, 0.55 to 0.95]; p=.02). A sub-group analysis revealed that the intervention was especially effective among Medicare recipients, with a decline in overall adjusted readmission rates from 24.5% (similar to the mean incidence nationally) to 13.5% (within the top decile nationally; aIRR=0.57, CI, 0.55-0.99; p=.05). There was no corresponding change in readmissions among Medicare patients with AMI and PNA (12.0% vs 13.0%; p=.80).

CONCLUSION: A novel, electronic strategy that carefully directs scarce clinical resources to highest risk patients significantly reduced 30 day readmission rates among patients with HF at a large, safety net hospital. Real-time electronic predictive models may allow institutions to concentrate resources more effectively, enabling more powerful interventions in an era of constrained resources.

REDUCTION OF CATHETER-ASSOCIATED URINARY TRACT INFECTIONS THROUGH A BUNDLED INTERVENTION IN A COMMUNITY HOSPITAL Karen Ann Clarke 1; Bonnie Norrick 2; Kirk Easley 1; Yi Pan 1; David Tong 1; Alan Wang 1; Pennie Hill 2; Jason Stein 1. 1Emory University, Atlanta, Georgia; 2West Georgia Health, LaGrange, Georgia. (Tracking ID # 10083)

BACKGROUND: Urinary tract infections (UTIs) are the most common type of hospital-acquired infection, and 80% are associated with indwelling urinary catheters. The relatively high frequency of catheter-associated UTIs (CAUTIs) leads to clinical and financial concerns for both patients and hospitals. Since Medicare and other payers no longer cover the costs of treating CAUTIs, the development of cost-effective strategies to reduce their incidence has received increased attention.

METHODS: We retrospectively examined the effect of a bundle of four evidence-based interventions, introduced in staggered fashion, upon the incidence of CAUTIs in a 276-bed community hospital. Rates of CAUTI per 1000 catheter days were estimated and compared using exact methods based on the Poisson distribution. The first intervention was the exclusive use of silver alloy catheters in the acute care areas of the hospital, the use of which had been sporadic in the hospital over the previous 3 years. The second intervention was a new securing device to limit movement of the indwelling catheter after insertion. The third intervention consisted of repositioning the catheter tubing if it was found to be touching the floor. A two-month run-in period began when the first intervention was started in January 2009, and ended when the routine use of the second and third interventions was introduced the following month. The fourth intervention, which was implemented in October 2009, was the removal of indwelling urinary catheters on postoperative day 1 or 2, for most surgical patients.

RESULTS: For the 3 month baseline (October 1-December 31, 2008) before the run-in period, the mean rate of CAUTI per 1000 catheter days was 5.2, and that for January 1-February 28, 2009 was 6.5. For the
7 months after full implementation of the first three interventions (March 1 - September 30, 2009), the mean rate of CAUTI per 1000 catheter days was 3.1, which was a nonsignificant reduction compared to January 1-February 28, 2009 (p=0.09). For the seven months after the implementation of the fourth intervention (October 1, 2009 - April 30, 2010), the mean rate of CAUTI per 1000 catheter days decreased further to 1.5, which was significantly lower than the rate for January 1-February 28, 2009 (p=0.009).

**CONCLUSION:** A bundle of four evidence-based interventions reduced the incidence of CAUTIs by two-thirds in a community hospital. These relatively simple interventions should be easily sustainable and could be readily transferable to other hospitals.

### Table 1:

| Time interval | Oct-Dec 2008 | Jan-Feb 2009 | Mar-Sep 2009 | Oct 2009-Apr 2010 |
|---------------|--------------|--------------|--------------|--------------------|
| CAUTI rate (per 1000 catheter days) | 5.2          | 6.5          | 3.1          | 1.5                |

**UTILITY OF SELF-REPORT AND ELECTROCARDIOGRAM Q-WAVES FOR ESTIMATING MYOCARDIAL INFARCTION PREVALENCE: AN INTERNATIONAL COMPARISON STUDY**

**Daniel Turner-Lloveras** 1; Aayla Khan 2; Walter Palmas 3; Dirk De Bacquer 3; Andrew Moran 1.

1CUMC, New York, New York; 2CUMC, New York, New York; 3CUMC, New York, New York. *(Tracking ID # 10088)*

**BACKGROUND:** Self-report of physician diagnosis and electrocardiogram (ECG)-Q waves are common survey measures of prior myocardial infarction (MI) prevalence but each has limited accuracy. Both represent low-cost methods for assessing ischemic heart disease burden, especially in low resource settings. The objective of this study is to assess relative prevalence of self-reported prior MI and ECG Q-waves (ECG-MI) in populations and population sub-groups with varying MI incidence.

**METHODS:** Prior MI self-report and ECG-MI (Minnesota ECG codes 1.1 and 1.2) were analyzed in men and women age 45–74 years in two large population-based samples: pooled Belgian surveys (1976–1988, N=29,419) and U.S. National Health and Nutrition Examination Surveys (1976–1994, N=11,107). Self-reported MI and ECG-MI were also compared in men and women aged 40–59 years among U.S. and Belgian surveys and in selected eligible studies representing seven other nations (United Kingdom, Russia, Lithuania, Belarus, India, Turkey and Ghana).

**RESULTS:** Self-reported prior MI prevalence was 1.5-2.6 times higher than ECG-MI in Belgian and U.S. men aged 45–74 years and women 55–74 years. Self-reported MI was less prevalent than ECG-MI in women lower than ECG-MI in U.S. African American men aged 45–74 years (1.2 compared with 1.7 in Whites). In the nine nation comparison, there was no consistent relationship between self-reported MI and ECG-MI (Figure). ECG-MI was generally highest relative to self-report in lower ischemic heart disease incidence nations.

**CONCLUSION:** Self-reported MI and ECG-MI prevalence may only be reliable in higher ischemic heart disease incidence groups. Limited accuracy of self-report and ECG-MI should lead to a search for better MI prevalence measures. In assessing the burden of ischemic heart disease, current survey prevalence measures cannot substitute for population incidence and mortality surveillance.

**MULTI-SESSION SELF-CARE TRAINING IMPROVES KNOWLEDGE, SELF-EFFICACY AND SELF-CARE BEHAVIORS FOR LOW AND HIGH-LITERACY PATIENTS WITH HEART FAILURE**

**George Mark Holmes** 1; Darren Andrew DeWalt 2; David Baker 3; Dean Schillinger 3; Victoria Hawk 3; Bernice Ruo 4; Kirsten Bibbins-Domingo 2; Aurelia Macabasco-O’Connell 6; Kathleen Grady 6; Kimberly Brouckson 2; Brian Erman 2; Michael Pignone 5.

1University of North Carolina, Chapel Hill, North Carolina; 2UNC, Chapel Hill, North Carolina; 3Northwestern University, Chicago, Illinois; 4UCSF, San Francisco, California; 5Northwestern University, Evanston, Illinois; 6UCLA, Los Angeles, California. *(Tracking ID # 10092)*

**BACKGROUND:** Heart failure (HF) self-care training reduces heart failure-related hospitalizations but the optimal amount of support is not clear. We conducted a multi-site randomized trial comparing a single session only (SS-only) vs. a “teach to goal” (TTG) multisession educational and self-care support program for improving key knowledge and skills for effective heart failure self-management.

**METHODS:** We randomized ambulatory patients with symptomatic HF from 4 academic medical centers to: 1) a single face-to-face one hour educational session with a focused self-care curriculum (SS-only) or 2) TTG: the same single session plus 5–8 telephone education sessions over the next month and continued calls every 2 to 4 weeks for 12 months that taught to knowledge and behavioral goals. Educational sessions were designed to overcome literacy-related barriers to effective self-care. We stratified randomization by literacy status (adequate or inadequate/marginal). Outcomes were assessed at baseline (pre-randomization) and 1, 6, and 12 months, for measures of three key domains: disease-specific knowledge, self-efficacy, and self-care. Generalized estimating equations (accounting for within-individual correlation across the different collection periods) were used to estimate the difference in changes due to the intervention.

**RESULTS:** 605 participants were randomized: 302 to the SS-only group and 303 to the TTG group. The mean age was 61 years; 48% were female; 38% African-American and 16% Latino; 26% had less than a high school education; 69% had ejection fraction less than 0.45; 31% were NYHA class III or IV; 37% had low literacy. Response rates were approximately 88%, 90% and 83% in the 1, 6, and 12-month follow-up surveys respectively and did not differ between 2 study arms. Members...
of the SS-only group experienced improvements in all three measures between baseline and the 1-month follow up. The TTG group improved all three measures 60% to 136% more than the SS-only group at 1 month (all p-values less than 0.05), and these differences were preserved at 6 and 12 months (Figure). Although those with low literacy had lower scores for all four measures at baseline, the improvements were similar for both low and high literacy groups.

CONCLUSION: A literacy-sensitive, multi-session “teach to goal” self-care training intervention appeared to improve the knowledge and skills considered necessary for effective self-management of heart failure more than a single educational session, and did so similarly for low and high literacy groups.

DRUG-RELATED RISK FACTORS FOR DEATH AFTER RELEASE FROM PRISON: A NESTED CASE CONTROL STUDY Ingrid A Binswanger 1; Patrick J Blatchford 1; Traci E Yamashita 1; Marc F Stern2. 1University of Colorado Denver, Aurora, Colorado; 2University of Washington, Tumwater, Washington. (Tracking ID # 10117)

BACKGROUND: International studies have shown former prisoners to be at high risk for death after release from prison, particularly from drug-related causes such as overdose. Despite this, little is known about whether substance use-related factors, identified in prison, are associated with death after release from prison. Thus, the objective of this study was to examine the substance use-related risk factors for all-cause and overdose death after release from prison.

METHODS: We conducted a case control study nested within a retrospective cohort study of inmates released from the Washington Department of Corrections from 1999–2003. Cases (n=443) were individuals who died after release from prison, based on matching with the National Death Index. Controls (n=443) were selected using risk set sampling (i.e. at risk at the time the case died relative to release), and matched to cases by age and gender. Correctional medical, pharmacy, and substance abuse records were abstracted using a structured data abstraction tool. We compared cases and controls in the following factors, as recorded in prison charts prior to the release: lifetime substance dependence based on DSM-IV criteria, history of injection drug use, narcotic prescriptions received in the 60 days prior to release, and known HIV or AIDS. Data were analyzed using conditional logistic regression. Analyses were adjusted for race/ethnicity and length of release, and known HIV or AIDS. Data were analyzed using conditional regression models to determine whether an association existed between food insecurity and glycemic control. We subsequently determined whether difficulty following a diabetic diet, diabetes-specific self-efficacy, or diabetes distress mediated observed associations.

RESULTS: The prevalence of food insecurity in our sample was 46%. Food insecure participants were younger than food secure participants (53 vs 56 years, p < 0.05). Food insecure participants were also more likely to report difficulty following a diabetic diet (OR 1.76, 95% CI 1.25–2.47, p < 0.01). Food insecurity was associated with lower diabetes-specific self-efficacy (OR 0.85, 95% CI 0.76–0.96, p < 0.01)

CONCLUSION: Food insecurity is a strong predictor of glycemic control and thus may contribute to inequities in diabetes-related complications.

FOOD INSECURITY AND GLYCEMIC CONTROL AMONG PATIENTS WITH DIABETES Hilary Seligman 1; Elizabeth Jacobs 2; Nancy Jianhua Jin 1; Andrea Lopez 1; Alicia Fernandez 1. 1University of California San Francisco, San Francisco, California; 2Rush, Chicago, Illinois. (Tracking ID # 10128)

BACKGROUND: Food insecurity refers to the inability to reliably afford safe and nutritious food. Almost 15% of households in the US are food insecure. In addition to reductions in the quantity of food consumed, food insecurity is also associated with a reduction in the quality of food consumed, with a shift in intake toward inexpensive, calorically-dense foods (added fats/sugars, refined carbohydrates) which raise blood glucose. We hypothesized that food insecurity would therefore be associated with poor glycemic control among adults with diabetes.

METHODS: We examined the association between food insecurity and glycemic control in a cross-sectional, observational study of 711 English- and Spanish-speaking patients with type 2 diabetes. All patients were receiving ongoing care in safety-net health clinics in San Francisco or Chicago. Participants were enrolled and completed questionnaires between June 2008 and July 2009. We assessed food insecurity using the short form of the Food Security Survey Module. Our main outcome measure was poor glycemic control, which we defined as a priori as HA1c greater than or equal to 8.5%. We compared baseline characteristics using chi-square tests and used generalized regression models to determine whether an association existed between food insecurity and glycemic control. We subsequently determined whether difficulty following a diabetic diet, diabetes-specific self-efficacy, or diabetes distress mediated observed associations.

RESULTS: The prevalence of food insecurity in our sample was 46%. Food insecure participants were younger than food secure participants (53 vs 56 years, p < 0.05). Food insecure participants were also more likely to report difficulty following a diabetic diet (OR 1.76, 95% CI 1.25–2.47, p < 0.01). Food insecurity was associated with lower diabetes-specific self-efficacy (OR 0.85, 95% CI 0.76–0.96, p < 0.01)

CONCLUSION: Food insecurity is a strong predictor of glycemic control and thus may contribute to inequities in diabetes-related complications. Translation of diabetes interventions into low-income settings should specifically address participants’ limited financial ability to afford diabetes-appropriate foods.

THE USE OF LOWER QUALITY ENDPOINTS AND OF RELATIVE (VERSUS ABSOLUTE) RISK REPORTING IN PUBLISHED RANDOMIZED TRIALS Michael Hochman 1; Danny McCormick2. 1Dana-Farber Cancer Institute, Boston, Massachusetts; 2UCLA, Santa Monica, California; 3Cambridge Health Alliance, Cambridge, Massachusetts. (Tracking ID # 10131)

BACKGROUND: Because of their potential to generate erroneous conclusions and distort study findings, concerns have been raised about the use of surrogate endpoints, composite endpoints, multiple primary endpoints, disease-specific mortality as an endpoint, and relative (rather than absolute) risk reporting in clinical studies.

METHODS: We analyzed of all randomized medication trials published in the six highest impact general medicine journals between June 1, 2000 and 2011.
2008 and September 30, 2010 to determine the prevalence of the use of surrogate endpoints, composite endpoints, multiple primary endpoints, disease-specific mortality as an endpoint, and of relative risk reporting.

In addition, we examined whether a trial's funding source and outcome (i.e., positive vs. negative results) is associated with the use of these endpoints or with relative risk reporting.

**RESULTS:** We identified 316 medication trials, of which 116 (37%, 95% CI, 31%-42%) used a surrogate primary endpoint, 106 (34%, 95% CI, 28%-39%) used a composite primary endpoint, and 48 (15%, 95% CI, 11%-20%) used multiple primary endpoints. Among 118 trials in which the primary endpoint involved mortality, 32 (27%, 95% CI, 19%-36%) used disease-specific mortality rather than all-cause mortality. Among 157 trials with positive results, 69 (44%, 95% CI, 36%-52%) reported these results in the abstract exclusively in relative terms. Trials using surrogate endpoints and disease-specific mortality as an endpoint were more likely to be commercially funded compared to those not using these endpoints. In addition, trials using surrogate endpoints were more likely to report positive results while those using mortality endpoints were less likely to be positive.

**CONCLUSION:** Trials published in high impact medical journals frequently use surrogate endpoints, composite endpoints, multiple primary endpoints, and disease-specific mortality as an endpoint, and frequently report results exclusively using relative numbers.

**PERSISTENCE WITH ADJUVANT HORMONAL THERAPY IN OLDER BREAST CANCER SURVIVORS**

**TYLER HEDIN 1; CHANGBIN GUO 1; ANN NATTINGER 1. MEDICAL COLLEGE OF WISCONSIN, MILWAUKEE, WISCONSIN.**

**BACKGROUND:** Breast cancer survivors with hormone receptor positive disease are typically prescribed tamoxifen or an aromatase inhibitor (AI) as adjuvant hormonal therapy for a 5-year course to reduce the likelihood of recurrence. Despite its benefit in breast cancer patients, prior studies on tamoxifen have found sub-optimal rates of adherence to the prescribed 5-year course. Less is known about adherence rates in patients using an AI. This study aims to identify the extent of non-persistence to adjuvant hormonal therapy among older breast cancer survivors as well as examine self-reported reasons for non-persistence.

**METHODS:** We recruited 3083 Medicare breast cancer patients who underwent initial surgery in 2003 and resided in California, Florida, New York, or Illinois. Four survey waves between 2005 and 2008 assessed receipt of hormonal therapy (HT) as well as demographic, social, and treatment factors. Stage 1 or 2 subjects who initiated HT within 1 year of surgery (n=1402) were included. In accordance with the International Society for PharmacoEconomics and Outcomes Research Medication Compliance and Persistence Work Group, patients were defined as “persistent” if HT was utilized for at least 5 years from the initiation of therapy without a gap in treatment of more than 60 days. A multinomial model was constructed to determine which demographic factors were associated with which self-reported reasons for non-persistence.

**RESULTS:** Of the 1402 breast cancer survivors studied, 325 (23%) discontinued their HT within 5 years of their surgery. Reasons for non-persistence were provided by 280 (86%) of those discontinuing therapy early. The most common reason for non-persistence was side effects (47% of subjects), followed by belief they had finished therapy (17%), physician-directed discontinuation (15%), and cost (8%). Thirteen percent had other reasons for discontinuation and were excluded from the multinomial analysis. Factors associated with reasons for non-persistence were age (p=0.025), marital status (p=0.015), household income (p=0.045), and supplemental insurance in addition to Medicare (p=0.047). The multivariat model concurrently controlled for each of these factors, enabling comparisons to those discontinuing due to side effects. Older subjects (>75 years) were more likely to discontinue treatment due to physician direction (p=0.01) or completion of treatment (p=0.04) than due to side effects. Married subjects were less likely to discontinue due to cost (p=0.05) than due to side effects. Higher income subjects were less likely to discontinue due to cost or completion of treatment (p=0.04) than due to side effects. Subjects with no supplemental insurance were more likely to discontinue due to cost (p=0.06) than due to side effects. Race, marital status, education, stage of disease, co-morbidities, and type of surgery were not significantly associated with specific reasons for non-persistence.

**CONCLUSION:** This study confirms that a substantial minority of patients are failing to remain on adjuvant HT for the standard duration of 5 years. Most women discontinued due to perceived side effects. Cost was a particular issue for those who were older, unmarried, poorer, and with poorer insurance coverage. Some women believed they had completed treatment prior to 5 total years of therapy. Identifying the predictors and reasons for early discontinuation of treatment is essential to formulating intervention strategies to improve persistence.

**PAGE ME IF YOU NEED ME** - DYSFLUENCY ON ROUNDS (THE WRONG MESSAGE) LAWRENCE LOO 1; NISHANT PURI 2; DOUGLAS HEGSTAD 1; ANAS KAWAYEH 1; DANIEL KIM 1. LOMA LINDA UNIVERSITY SCHOOL OF MEDICINE, LOMA LINDA, CALIFORNIA. (Tracking ID # 10138)

**BACKGROUND:** Effective July 1, 2011, the Accreditation Council for Graduate Medical Education’s (ACGME) new common program requirements call for enhanced supervision and communication to ensure patient safety while maintaining a humanistic training environment. The Institute of Medicine’s (IOM) report on “Resident Duty Hours” stresses that resident supervision is key to achieving these goals. Discrepancies exist between what residents and attending physician perceive as adequate supervision. Part of this discrepancy is attributable to the differences among attending physicians and the mixed messages sent to residents that result in “dysfluency” on rounds and the establishment of an organizational hidden curriculum. We sought to illuminate these differences among attending physicians and characterize the variety of messages sent to resident physicians in order to assess their impact on resident supervision and communication.

**METHODS:** To document the current practices in a University based categorical Internal Medicine (IM) residency, 79/88 categorical IM residents (90% response rate) and 35/82 (43% response rate) attending physicians were surveyed about their current attitudes and routine behaviors regarding resident supervision. Using an audience-response system for immediate feedback and discussion, resident and attending physicians were polled separately and asked to respond to three different measures of resident supervision including: (1) six commonly encountered clinical care situations that involved patient safety issues; (2) nine frequently used phrases by attending physicians before leaving the hospital on call days; and (3) six sets of different personality types of attending physicians encountered in the training program. Results comparing and contrasting the differences and similarities were presented at a departmental academic affairs meeting to facilitate discussion and highlight discrepancies as preparatory background in developing a uniform residency policy to meet the ACGME’s call for enhanced supervision.

**RESULTS:** Clear differences in the perception of resident supervision were found between resident physicians and attending physicians in commonly encountered clinical care situations that involved patient safety. For example, notification of the attending physician of an unexpected pneumothorax requiring chest tube placement was desired by 85% of the attendings but only 31% of residents said they would call
their attending (see Figure 1). Common phrases such as “page me if you need me” resulted in 50% of residents “rarely” or “never” calling their attending physicians, 41% “sometimes” calling and only 9% of residents responding to “mostly” or “always” calling their attending physician. Any reference made by the attending physician to having other activities to do while on call (e.g., dinner engagement) or when they slept, only lessened the frequency of calls by the residents. While personality types of the attending physicians (e.g., “friendly” versus “strict and intimidating”) affected communication frequency, the phrase “I want to be called on all patients you admit or have a change in status” significantly changed the behavior of the resident physician to call their attending. (see Figure 2)

CONCLUSION: Our results confirm prior studies that attending physicians generally would like more communication and closer supervision than routinely perceived by resident physicians. Significant discrepancies exist among attending physicians regarding the need for communication and frequency of resident supervision. The accompanying mixed messages create an organizational hidden curriculum that creates “dysfunction” on call days and confusion among residents. These differences must be brought to light, acknowledged, and vetted before developing a uniform departmental approach to meet the ACGME’s enhanced supervision policy to ensure patient safety while maintaining quality resident education. Our simple and easy to use tool highlights these differences and serves as a basis for this initial and fundamental discussion to occur. Clear and unambiguous phrases such as “I want to be called on every patient admission” should be included in departmental policies designed to ensure patient safety and consistent resident supervision.

A MULTISITE RANDOMIZED TRIAL OF A SINGLE-VERSUS MULTI-SESSION LITERACY SENSITIVE SELF-CARE INTERVENTION FOR PATIENTS WITH HEART FAILURE. Darren A DeWalt 1; David W Baker 2; Dean Schillinger 2; Victoria Hawk 1; Bernice Ruo 2; Kirsten Bibbins-Domingo 3; Morris Weinberger 1; Aurelia Macabasco-O’Connell 4; Kimberly Brouckson 1; George Mark Holmes 1; Kathleen L Grady 5; Brian Erman 1; Michael Pignone1. 1University of North Carolina, Chapel Hill, North Carolina; 2Northwestern University, Chicago, North Carolina; 3University of California, San Francisco, San Francisco, North Carolina; 4University of California, Los Angeles, Los Angeles, California; 5Northwestern University, Chicago, Illinois. (Tracking ID # 10142)

BACKGROUND: Heart failure (HF) self-care training reduces HF-related hospitalizations and appears to do so more for patients with low literacy. However, the optimal components and structure of the training are not clear. We conducted a multisite randomized trial comparing a literacy sensitive single educational session only (SS-only) with a multi-session “teach to goal” (TTG) educational and self-care support program, and tested whether the effects differed by literacy.

METHODS: We randomized ambulatory patients from 4 academic medical centers who had symptomatic HF (NYHA class II-IV) to: 1) a single session, face-to-face one hour educational session with a health educator and a focused curriculum of key self-care information alone (SS-only); or 2) the same single session plus a multi-session phone-based support (5-8 sessions over the next month and continued calls every 2 to 4 weeks for 12 months) that reinforced learning goals and behaviors (TTG). The education tools and strategy were designed to reduce literacy-related barriers to self-care. We stratified randomization by literacy using the short Test of Functional Health Literacy in Adults with inadequate and marginal defined as low literacy. The primary outcome was combined all-cause hospitalization or death. The secondary outcome was HF-related hospitalization determined by blinded adjudication of medical records. We used negative binomial regression to examine the differences between groups. We adjusted for differences in baseline HF quality-of-life, social status, and use of ACE/ARB, and tested for effect modification by literacy. We present incidence rate ratios (IRR) for all patients and stratified by literacy with IRRs less than 1 favoring TTG.

RESULTS: 605 participants were randomized: 302 SS-only and 303 TTG. Mean age was 61 years; 48% were female; 38% African-American and 16% Latino; 26% had less than a high school education; 69% had ejection fraction less than 0.45; 31% were NYHA class III or IV; and 37% had low literacy. Overall the number of all-cause hospitalizations and deaths and HF-related hospitalizations did not differ between the two groups (SS-only=224 hospitalizations and 16 deaths, with 87 HF-related; TTG=244 hospitalizations and 11 deaths, with 83 HF-related) (Table). However, low literacy was a statistically significant effect modifier for HF-related hospitalization (p=0.014), with fewer HF-related hospitalizations observed among those in the TTG group; effect modification by literacy was more modest for the combined incidence of all-cause hospitalization or death (p=0.131).

CONCLUSION: Overall, the multi-session TTG intervention and the SS-only intervention had similar effects on the incidence of all-cause hospitalization and death. However, TTG appeared to be more effective than SS-only in reducing the incidence of HF-related hospitalization for patients with low literacy, but not for those with higher literacy. A single training session may be sufficient for those with higher literacy, but more sustained and intensive support may be required to reduce HF hospitalizations for patients with low literacy.
BACKGROUND: The prevalence of non-AIDS comorbid conditions in HIV-infected individuals is rising in the United States. To-date, prevalent non-AIDS conditions have been described in specific HIV-infected populations (U.S. Veterans, for example) and factors associated with incidence of several non-AIDS conditions (for example pulmonary disease, non-AIDS malignancies) have been identified. This study defines the prevalence and incidence of several non-AIDS conditions, including cardiometabolic comorbidities, in a unique urban cohort of older men, and compares factors associated with developing these conditions in subjects with well-controlled HIV, poorly-controlled HIV and those uninfected but at-risk for HIV.

METHODS: We analyzed prospective, standardized interview and laboratory data from The Cohort of HIV At-risk Aging Mens Prospective Study (CHAMPS), a study of HIV-infected and at-risk men, 49 years of age and older, conducted from 2001–2006 in the Bronx, New York (n=643). HIV status was defined as negative if participants reported never having a diagnosis of HIV at study entry, well-controlled if patients were HIV-positive with an undetectable HIV viral load at study entry, and poorly-controlled if patients were HIV-positive with a detectable HIV viral load at study entry. Study outcome diagnoses of hyperlipidemia, hypertension, chronic liver disease and diabetes were self-reported. Baseline prevalence of these outcomes was calculated using cross-sectional frequency analysis. Kaplan-Meier analyses were performed to determine diagnosis incidence and unadjusted hazard ratios across all three HIV status groups. Cox proportional hazard regressions were performed to determine significant differences in and factors associated with the probability of developing outcome diagnoses, adjusting for baseline age, race and use of HAART.

RESULTS: Mean age of participants was 55 years (SD 5), 53% identified as Black, mean highest grade completed was 12th (SD 3), 78% had Medicaid. Fifty-six percent (n=360) were HIV-infected at study entry. Of these, 39% had well-controlled HIV. At baseline, participants with well-controlled HIV were more likely than poorly-controlled to have had an AIDS diagnosis (53% vs. 32%, p Baseline prevalence of non-AIDS diagnoses varied significantly across study groups only for hyperlipidemia: 28% of HIV-negative participants reported hyperlipidemia vs. 33% of well-controlled HIV-infected participants and 18% of poorly-controlled participants (p=0.015). Cumulative incidence rates of hyperlipidemia were 36%, 39% and 29% (HIV at-risk group, the well-controlled group and the poorly-controlled group respectively). Cumulative incidence rates of hypertension were 20%, 22% and 21% of chronic liver disease: 20%, 21% and 26%; and of diabetes: 15%, 16% and 13%.

At 1 year, the unadjusted probability of developing hyperlipidemia was 22% (95% CI 16%-29%), 29% (95% CI 19%-68%) and 25% (95% CI 17%-32%) in the HIV at-risk group, the well-controlled group and the poorly-controlled group respectively; of developing hypertension: 10% (95% CI 4%-11%), 10% (95% CI 3%-17%) and 10% (95% CI 4%-16%); of developing chronic liver disease: 17% (95% CI 11%-28%), 12% (95% CI 5%-19%) and 22% (95% CI 15%-29%); and of developing diabetes: 10% (95% CI 5%-14%), 8% (95% CI 3%-14%), 10% (95% CI 5%-14%).

| Table. Incidence Rate Ratios (IRR) | Unadjusted IRR | Adjusted IRR |
|-----------------------------------|----------------|--------------|
| All-cause hospitalization or death |                |              |
| Low Literacy                      | 0.78 (0.45,1.36) | 0.81 (0.48,1.36) |
| Higher literacy                   | 1.29 (0.85,1.94) | 1.29 (0.85,1.94) |
| HF-related hospitalization        |                |              |
| Low Literacy                      | 0.99 (0.60,1.63) | 0.94 (0.58,1.52) |
| Higher Literacy                   | 1.47 (0.74,2.91) | 1.51 (0.76,2.99) |

ASSOCIATION OF HIV STATUS AND NON-AIDS COMORBID DIAGNOSES IN A COHORT OF OLDER HIV-INFECTED AND AT-RISK MEN

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There were no statistically significant differences in the probability of developing any non-AIDS comorbidity across study groups over total study follow-up. In Cox regression models, black race was associated with probability of developing a diabetes diagnosis (HR 2.9, 95% CI 1.2-7.3, p 0.024) and age was associated with incident diagnosis of chronic liver disease (HR 0.95, 95% CI 0.9-1.0, p 0.049).

**CONCLUSION:** Chronic non-AIDS comorbidities were common in the HIV-infected older men in this study. HIV status, control and baseline use of HAART were not associated significantly in this cohort with incidence of reported hyperlipidemia, hypertension, chronic liver disease or diabetes. These findings support generally recommended standard screening and interventions for non-AIDS conditions in patients with poorly-controlled as well as well-controlled HIV infection, and thus highlight the growing complexity of providing effective primary care for HIV-infected individuals. These results also suggest that additional work should explore the interplay of factors beyond medication effects that contribute to the development of non-AIDS conditions in HIV-infected adults.

**POTENTIAL PREVENTABILITY OF ADVERSE DRUG EVENTS INVOLVING MULTIPLE DRUGS USING PUBLIC CLINICAL DECISION SUPPORT RULES**

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**BACKGROUND:** Medications represent a major source of potential harm to patients. Dosing errors, medication interactions, allergies and supratherapeutic effects can all lead to adverse drug events (ADEs). Unfortunately, ADEs occur frequently, negatively affecting both the quality and efficiency of medical care. The burden of ADEs is substantial; they are associated with increased length of stay, increased costs and increased mortality. The goal of this study was to determine the frequency of potential and actual ADEs involving multiple drugs in the community hospital setting.

**METHODS:** In a prior multi-center, retrospective cohort study, records were reviewed for 1,200 randomly selected hospitalizations (200 per site). This sample was drawn from 109,641 hospitalizations (January 2005 through August 2006) at six 100-300 bed community hospitals in Massachusetts without CPOE. Overall, 180 ADEs and 552 potential ADEs were identified. We re-analyzed these data to determine the frequency of potential and actual ADEs involving multiple drugs. We defined an ADE involving multiple drugs as an injury or adverse response resulting from the administration of a combination of two or more medications. Specific categories of ADEs analyzed include those resulting from drug-drug interactions (DDIs), therapeutic duplications (TDs), drug duplication (DDs) and combined nephrotoxicity (CN). One reviewer assessed the dataset to identify ADEs involving multiple drugs and another reviewer assessed the dataset for pADEs involving multiple drugs. The primary outcome measure of this study was the frequency and type of both actual and potential ADEs involving multiple drugs.

**RESULTS:** During the study period there were 17 ADEs involving multiple drugs (1.4 per 100 admissions). We identified instances of therapeutic duplication, drug duplication, and drug-drug interaction, including two instances where both TD and DD occurred. Seven multi-drug ADEs involved opioids, 5 involved benzodiazepines, and 5 involved cardiovascular drugs (Table 1). In addition, 146 potential ADEs (12.2 per 100 admissions) involving multiple drugs were identified (Table 1). In contrast with ADEs, most pADEs (85.6%) involved drug duplication. Notably, 110 out of 146 potential ADEs (75.3%) involved an excess dose of acetaminophen and, of these, 105 (95.5%) involved the use of a combination drug containing acetaminophen with an opioid. The single most common pADE was a combination of acetaminophen and acetaminophen/oxycodone (n=51).

**CONCLUSION:** Multi-drug adverse events represent a notable proportion of all ADEs and pADEs and a significant threat to patient safety. Actual multi-drug adverse events most commonly involved interactions between different drugs (especially opioids, benzodiazepines and cardiac medications). In contrast, the vast majority of ADEs were related to drug duplication. In addition, a very high proportion of multi-drug pADEs were associated with acetaminophen, especially acetaminophen-containing opioids. More robust measures for detection and prevention, such as computerized provider order entry (CPOE) with medication decision support are needed to identify such errors before they can result in ADEs.

**Table: 1**

| Category                  | ADEs | PADEs |
|---------------------------|------|-------|
| Drug-drug interaction     | 11   | 17    |
| Therapeutic duplication   | 7    | 3     |
| Drug duplication          | 1    | 125   |
| Combined nephrotoxicity   | 0    | 2     |
| Total                     | 19   | 147   |
| Unique Events             | 17   | 146   |

**CONTINUITY OF CARE: ASSURING POST-DISCHARGE WARFARIN MONITORING**

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**BACKGROUND:** Warfarin is among the drugs most frequently associated with adverse effects. The interface between inpatient status and discharge to home is a transition point where coordination of follow-up for patients discharged on warfarin is essential. Successful coordination of this transition is also relevant to the emphasis on improved anticoagulation care as a national patient safety goal. Errors at this transition of care can have catastrophic results.

**METHODS:** We reviewed the records of all adult patients discharged our hospital over a 6-week period with warfarin listed as a discharge medication. At eight days or more after discharge, we searched the hospital’s laboratory test database to see if the patient had been back to a hospital clinic where prothrombin time/INR testing had been conducted. When such test results were not found, we contacted the patient’s follow-up provider (using a telephone script for systematically collecting data) to determine if the patient had been tested for prothrombin time/INR within seven days following discharge and if the result was available.

**RESULTS:** A total of 323 patients were reportedly discharged on warfarin. Of these, 72 were excluded (22 who were discharged to rehab, long-term care or prison, 19 whose providers’ offices did not return our calls, 13 who were not actually discharged on warfarin, 10 who had died, 5 whose follow-up provider was not adequately identified in the record, and 3 international patients who had returned to their foreign countries). Of the remaining 251 patients, 147 (59%) had a documented INR result within seven days of discharge. Of the 104 patients who did not have an INR within seven days of discharge, 39 (38%) failed to make a follow-up appointment and 18 (17%) failed to keep their appointment for follow-up testing. Therefore, 59% of failures were related to patient-
controlled factors. For 43% of the failures, either the clinic visit occurred without an INR being checked or it occurred more than seven days after discharge. An unintended benefit of the telephone contact was improved without an INR being checked or it occurred more than seven days after controlled factors. For 43% of the failures, either the clinic visit occurred

**BARRIERS TO BREAST CARE FOR UNDERSERVED WOMEN**

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**BACKGROUND:** Underserved women are at increased risk for diagnostic delays during evaluation of breast abnormalities. Patients’ perceptions of reasons for these delays are poorly understood. The objective of this study was to identify patients’ perceptions of evaluation time and barriers to care, and to examine the association between identified barriers and delay time, among women with suspicious breast findings who use a safety-net health care system.

**METHODS:** We conducted a prospective study of 270 predominantly English- and Spanish-speaking women (minimum age 30 years) undergoing non-operative breast biopsy between 2006 and 2009 at a large public hospital. The hospital receives referrals from over 210 affiliated primary care clinics serving uninsured and under-insured patients. At the time of biopsy or before disclosure of results, in-person interviews were conducted to gather information on demographics, socioeconomic status, clinical history, self-reported personal and system reasons for delays in care, and patients’ perceptions of their evaluation time. “Time to biopsy” was defined as the time from initial detection of the breast abnormality to initial biopsy and “evaluation time” was defined as the time from first contact with the health care system to the date of initial biopsy. The clinical history including date and mode of detection (e.g., self- or image-detected) and all healthcare visits for the breast problem were verified through medical record abstraction. We used a CDC recommended 60-day benchmark for defining appropriate evaluation time. Univariate and multivariate analyses with backwards elimination were performed using quantile regression to examine differences in median time to initial biopsy by patient characteristics, mode of detection, and personal and system reasons for not seeking evaluation sooner.

**RESULTS:** The mean age was 51 years; 49% were Black, 36% were Hispanic, 74% were uninsured, and 39% reported no access to a regular provider. Among the 270 women, 47% had self-detected breast abnormalities and 53% had abnormalities detected by imaging. Median time to biopsy was 120 days (IQR: 62–202) and median evaluation time was 92 days (IQR: 42–174). These median times did not differ significantly by mode of detection. For 64% of women, evaluation was delayed by > 60 days and over 50% of these women did not perceive this as too long. The most common personal reasons for delays were fear of having breast cancer (46%), fear of evaluation or treatment (46%), financial concerns or lack of insurance (43%), and belief that the problem was not serious (37%). The most common system reasons reported were difficulties obtaining a clinic appointment (40%) and having one or more appointments rescheduled by the doctor or clinic (36%). After controlling for covariates, only the system reason of “having appointments rescheduled by the doctor or the clinic” was associated with a statistically significant increase in the median time to initial biopsy of 54 days (95% CI: 31–77 days; p<0.001). Having a family history of breast cancer was associated with a statistically significant decrease in the median time to biopsy of 36 days (95% CI: 12–60 days; p=0.004).

**CONCLUSION:** Significant diagnostic delay times persist among underserved women with breast abnormalities. While many barriers to care were reported by women, few were associated with a longer time to biopsy. Potential interventions to decrease delay times include alleviating system factors that lead health care facilities to reschedule patient appointments and increasing patient awareness of acceptable evaluation times for breast problems through messaging and education.

**SERUM CALCIUM LEVELS ARE ASSOCIATED WITH NOVEL CARDIOMETABOLIC RISK FACTORS IN THE POPULATION-BASED COLAUS STUDY**

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**BACKGROUND:** Increased serum calcium concentration has been associated with high blood pressure, impaired glucose tolerance, and dyslipidemia. More recently, increased serum calcium concentration has been described as a feature of the metabolic syndrome. Cardio-metabolic components not classically included in the metabolic syndrome have been associated with the risk of cardiovascular disease and include components related to adiposity, blood lipids, and insulin resistance. In addition, factors related to inflammation and oxidative stress have been recently associated with the metabolic syndrome. For example, observations suggest that serum levels of uric acid, homocysteine or gamma-glutamyltransferase might be linked to the metabolic syndrome. While associations of serum calcium with the conventional components of the metabolic syndrome on one hand, and of non-conventional cardio-metabolic risk factors with the metabolic syndrome on the other hand have been explored, the relationship between serum calcium and non-conventional cardio-metabolic risk factors has not been characterized in the general population. We analyzed the association of albumin-corrected serum calcium with conventional and a broad range of non-conventional cardio-metabolic risk factors in the Swiss population-based CoLaus study.

**METHODS:** The CoLaus study is a population-based study including Caucasians from Lausanne, Switzerland. The metabolic syndrome was defined using the Adult Treatment Panel III criteria. Cardio-metabolic components that are not included in the metabolic syndrome were defined as non-conventional cardio-metabolic risk factors and classified into the following four groups: (i)Adiposity: fat mass (kg), leptin (ng/mL); (ii)Blood lipids: LDL-cholesterol (mmol/L), LDL size (angström), apolipoprotein B (mg/dL); (iii)Insulin resistance: fasting insulin (microU/mL), adiponectin (microg/mL); (iv)Inflammation-oxidative stress: ultra-sensitive CRP (mg/L), serum uric acid (micromol/L), homocysteine (micromol/L), gamma-glutamyltransferase (UI/L). For the non-conventional cardio-metabolic risk factors score, subjects in the upper tertile of the risk factor were assigned a value of 1, whereas subjects in the first and second tertiles were assigned a value of 0 for each non-conventional
cardio-metabolic risk factor positively correlated with cardiovascular disease, and vice versa for non-conventional cardio-metabolic risk factors negatively correlated with cardiovascular disease. Positive and negative correlations were based on the existing literature. Only non-conventional cardio-metabolic risk factors that showed a statistically significantly trend with calcium in quintiles analyses were entered into the non-conventional cardio-metabolic risk factors score. We used adjusted standardized multivariable regression to compare the association of each cardio-metabolic risk factor with albumin-corrected serum calcium. We assessed associations of albumin-corrected serum calcium with the cumulative number of non-conventional cardio-metabolic risk factors.

RESULTS: We analyzed 4,231 subjects aged 35 to 75 years. Albumin-corrected calcium levels increased linearly with the number of conventional cardio-metabolic risk factors (p for linear trend <0.001) (figure 1), independently of BMI. Respectively 465 (11.0%), 783 (18.5%), 837 (19.8%), 750 (17.7%), 592 (14.0%), 443 (10.5%), 249 (5.9%), and 112 (2.6%) had 0, 1, 2, 3, 4, 5, 6, or 7+ non-conventional cardio-metabolic risk factors. The mean number of non-conventional cardio-metabolic risk factors per subjects was 2.7 (SD=1.83). Albumin-corrected calcium levels increased linearly with the number of non-conventional cardio-metabolic risk factors (p for linear trend <0.001) (figure 2), independently of the metabolic syndrome and BMI. Among conventional and non-conventional cardio-metabolic risk factors, the strongest positive associations were found for factors related to oxidative stress (acid uric, homocysteine and gamma-glutamyltransferase). Adiponectin had the most important negative association with albumin-corrected serum calcium.

CONCLUSION: Serum calcium was associated with the metabolic syndrome and with non-conventional cardio-metabolic risk factors independently of the metabolic syndrome. Associations with acid uric, homocysteine and gamma-glutamyltransferase were the strongest. Although the associations with blood pressure, insulin resistance and dyslipidemia have been previously described, we are not aware that this was reported for serum uric acid, homocysteine, or gamma-glutamyltransferase levels in a large-scale population-based sample. These novel findings suggest that serum calcium levels may be associated with cardiovascular risk via oxidative stress.
trust (Cronbach alpha=.77), and health promotion (Cronbach alpha =.72). Three domains showed reliability below our a priori cut point—equitable treatment (Cronbach alpha =.69), alternative medicine (Cronbach alpha =.52), and shared decision-making (Cronbach alpha =.51) but these were all 2-item scales for which lower scores are expected. The provider communication and equitable treatment domains had adequate reliability among English speakers but poor reliability among Spanish speakers. CAHPS-CC domains accounted for 5.9% (alternative medicine) to 26.2% (positive communication behavior) of the variance in global physician ratings.

**CONCLUSION:** CAHPS-CC is suitable for broad-scale administration among patients, particularly English-speakers, receiving care in safety-net settings. The provision of culturally competent care is instrumental to patient satisfaction in this population, as demonstrated by the high impact of CAHPS-CC subdomains on global physician ratings. CAHPS-CC may be used to target quality-improvement efforts focused on providing culturally competent care.

**DEVELOPMENT AND VALIDATION OF THE SAFETY NET MEDICAL HOME SCALE**

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**BACKGROUND:** Existing tools to measure patient centered medical home (PCMH) adoption are not designed for longitudinal research evaluations in safety-net health centers. Therefore, we developed the Safety Net Medical Home Scale (SNMHS).

**METHODS:** The study sample included 65 safety net clinics in 5 states (ID, CA, MA, OR, PA). To create our scale, we began with the “Commonwealth Fund Organizational Survey of Federally Qualified Health Centers”. Surveys were completed by clinic leadership with help from other clinic staff. The survey includes 92 items covering access to care, language services, quality improvement, and patient information systems. Using a consensus process, we mapped survey items onto the domains of the NCQA Physicians Practice Connections®-PCMH™ instrument and an External Coordination domain. Next, we identified core items representing greater importance to the PCMH concept. Core items were differentially weighted by rescaling these items to have potential range of 0 to 2, while all other items were rescaled with a potential range from 0 to 1. Rescaled weighted items in the domain were summed, and the total was rescaled to have a potential range 0 to 100 (worst to best). The total SNMHS score was the mean of the 6 domain scores. To test for reliability, we calculated Cronbach’s alpha within each domain and for the total scale. We tested for convergent validity with two survey tools. The Assessment of Chronic Illness Care (ACIC) measures adoption of the Chronic Care Model. The Patient Centered Medical Home Assessment (PCMH-A) measures PCMH readiness. We correlated the total SNMHS score with the total ACIC and PCMH-A scores.

**RESULTS:** Response rate was 100%. The conceptual mapping yielded 52 items (16 core items) organized into six domains: Access and Communication (12 items, 4 core), Patient Tracking and Registry (7 items, 3 core), Care Management (8 items, 2 core), Test and Referral Tracking (4 items, 2 core), Quality Improvement (10 items, 2 core), External Coordination (11 items, 3 core). The mean SNMHS score was 61±SD 13. Among the subscales, External Coordination (66±16) and Access and Communication (65±14) had the highest mean scores, while Quality Improvement (55±17) and Care Management (55±16) had lower mean scores. The SNMHS demonstrated high internal consistency reliability: Total Score (Cronbach’s alpha=0.84), Access and Communication (alpha=0.68), Patient Tracking and Registry (alpha=0.89), Care Management (alpha=0.60), Test and Referral Tracking (alpha=0.73), Quality Improvement (alpha=0.73), External Coordination (alpha=0.78). Total SNMHS score correlated with the total ACIC score (R=0.64, p<0.001) and the total PCMH-A score (r=0.56, p<0.001).

**CONCLUSION:** The Safety Net Medical Home Scale provides a comprehensive measurement of medical home adoption and demonstrated reliability and convergent validity.

**MANAGEMENT OF UNCONTROLLED HYPERTENSION IN THE OUTPATIENT SETTING**

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**BACKGROUND:** Hypertension is an important cause of morbidity and mortality. Approximately 65 million Americans are affected. It causes increased disease burden including stroke, myocardial infarction, heart failure and chronic kidney disease. The JNC guidelines recommend strict blood pressure control especially in patients with diabetes and chronic kidney disease. Although weight loss, exercise and diet modification is encouraged medical therapy is frequently required. Up to one fourth of American adults are on medications to treat hypertension.

**METHODS:** We retrospectively collected data from our office electronic medical records (EMR). We screened and included all patients seen between January 2008 and March 2010 with a diagnosis of hypertension and one uncontrolled blood pressure measurement (>140/90) during a single office visit. Patients with a normal blood pressure, newly diagnosed hypertension and patients in the EMR, not seen by our practice were excluded.

**RESULTS:** 207 charts were reviewed and 161 patients included. 59% were female and 41% were male. Mean BMI was 34.1. Out of 161 patients 69 (43%) had stage 2 hypertension, 25% (n=40) had diabetes, 9% (n=15) had chronic kidney disease and 7% (n=11) had congestive heart failure. 87% of diabetics, 80% of patients with chronic kidney disease and 82% of patients with congestive heart failure were on Angiotensin Converting Enzyme-Inhibitors or Angiotensin Receptor Blockers. 64% patients with congestive heart failure were on beta-blockers. Blood pressure was not re-checked by a physician in 54% of all patients and 33% of stage 2 hypertensives. Hypertension was not addressed in 19% of the total study group and in 12% of patients with stage 2 hypertension. Of the 81% of patients in whom hypertension was addressed, 24% were non compliant, 7% had life style modification recommendations, 40% had no intervention documented and only 17% had a follow up appointment within 2 months. On reviewing charts of patients with stage 2 hypertension (n=69), it was noted that 17 patients were inappropriately on 1 (n=15) or zero (n=2) medications for their blood pressure and 52 were on 2 or more antihypertensive medicines.

**CONCLUSION:** We conclude that blood pressure is not re-checked at each visit by physicians. Stage 2 hypertensives were not identified, received in inadequate therapy and were not followed up appropriately. Appropriate anti-hypertensive medications were being used for the co-morbid conditions, but not all the time.
SUBSTANCE ABUSE TREATMENT OUTCOMES IN PATIENTS WITH OPIOID DEPENDENCE AND CHRONIC PAIN IN AN OFFICE BASED BUPRENORPHINE TREATMENT PROGRAM Aaron Fox1; Nancy L. Sohler 2; Angela Giovannelli 3; Chizano Cunningham1; 1Division of General Internal Medicine, Albert Einstein College of Medicine/Montefiore Medical Center, Bronx, New York; 2Sophie Davis School of Biomedical Education, City University of New York, New York, New York; 3Department of Family and Social Medicine, Albert Einstein College of Medicine/Montefiore Medical Center, Bronx, New York. (Tracking ID # 10228)

BACKGROUND: Patients with substance use disorders report high levels of physical pain. However, current data is conflicting as to whether chronic pain affects substance abuse treatment outcomes. Office based buprenorphine therapy is a new paradigm for treatment of opioid dependence, and the impact of co-morbid chronic pain on buprenorphine treatment outcomes is not well understood. Clinical guidelines cite chronic severe pain as a relative contraindication to buprenorphine treatment, since buprenorphine is a partial opioid agonist. Instead, treatment with methadone, a full opioid agonist, is recommended for patients with chronic severe pain. However, evidence supporting these recommendations is lacking. To examine the association between pain and buprenorphine treatment outcomes, we compared the proportion of treatment failures in opioid dependent patients with and without chronic pain who received primary care based buprenorphine treatment.

METHODS: We conducted a longitudinal cohort study of opioid-dependent individuals who initiated buprenorphine treatment at an urban community health center. Participants were interviewed at baseline, and 1, 3, and 6 months after initiating buprenorphine treatment. Questionnaires included demographic information, substance use, depressive symptoms, health status, and presence and severity of pain. The primary outcome was treatment failure, defined as self-reported use of opioids (heroin, methadone, or opioid analogues) in the 30-day period preceding the 6 month follow-up visit. The main predictor variable was presence of chronic pain, defined as a score of 5 or greater on a scale from 1–10 on the Brief Pain Inventory at every study visit. We used logistic regression models to test whether treatment failure was associated with chronic pain, adjusting for baseline opioid use.

RESULTS: Of 84 participants, the median age was 44, and most were male (73%), Hispanic (69%), unstably housed (61%), and had used heroin in the 30 days prior to initiation of buprenorphine (67%). These characteristics were similar in the 31 (37%) participants with chronic pain and the 53 without chronic pain. The groups with and without chronic pain differed on a number of factors measured at baseline, including history of injection drug use (68% vs. 42%, p<.05), problematic alcohol use (50% vs. 15%, p<.01), sedative use (29% vs. 8%, p<.01), and opioid analgesics use (48% vs. 15%, p<.01). Of these covariates, only sedative use was associated with treatment failure in bivariate analysis. At 6 months of follow-up, 25 participants (30%) experienced treatment failure. Adjusting for baseline opioid use, there was no difference in opioid use at 6 months between those with and without chronic pain (OR=1.05, 95% CI: 0.37 – 3.00). Further adjustment for other covariates associated with treatment failure, such as sedative use at baseline, did not alter this finding.

CONCLUSION: Over one-third of participants in this cohort of opioid dependent patients receiving buprenorphine treatment at an urban health center experienced chronic pain. Despite greater use of other substances at baseline and additional factors that may predict treatment failure, substance abuse treatment outcomes did not appear to differ between patients with chronic pain and those without chronic pain. Our study was limited by its lack of a comprehensive measure of pain severity, relatively small sample size, and limited power to detect small difference between groups. While these findings are exploratory, they suggest that buprenorphine treatment for opioid dependence may be effective even in patients with chronic pain. Future research that examines buprenorphine treatment outcomes among patients with chronic pain is warranted.

A METHOD AND KNOWLEDGE BASE FOR AUTOMATED INFERENCE OF PATIENT PROBLEMS FROM STRUCTURED DATA IN AN ELECTRONIC MEDICAL RECORD Adam Wright 1; Justine Pang 1; Joshua Colin Feblowitz 1; Francine Maloney 1; Allison Wilcox 2; Harley Ramelson 1; Louise Schneider 1; David Bates1. 1Brigham & Women’s Hospital, Boston, Massachusetts; 2Partners HealthCare, Boston, Massachusetts. (Tracking ID # 10232)

BACKGROUND: An accurate and up-to-date problem list represents the cornerstone of the modern electronic health record (EHR). Problem lists serve a wide variety of roles in facilitating care by providing a succinct clinical picture of each patient, facilitating communication, and enabling the delivery of clinical decision support (CDS). Yet, despite their importance, problem lists are often inaccurate, incomplete and poorly maintained. Given this fact, researchers have turned to a variety of alternate sources for problem information, using natural language processing (NLP) techniques to interpret free-text patient information and data mining strategies to identify data predictive of patient problems. The primary goal of this study was to develop and validate methods of automatically inferring problems from clinical and billing data and to generate a knowledge base designed for this purpose.

METHODS: We identified target conditions and designed and validated a set of rules for identifying patient problems based on medications, laboratory results, billing codes and vital signs. In designing these rules, we incorporated a previously-developed database of medication-problem and laboratory-problem associations created using data mining techniques. A preliminary list of problems was chosen on the basis of several criteria including: 1) pay-for-performance (P4P) initiatives at the study site, 2) problem-dependent CDS rules in the site’s EHR and 3) relevant medication-problem and laboratory-problem associations identified during the previous project. A preliminary set of rules was then developed for testing with input from a physician panel. We then tested multiple versions of each rule on a training set of 100,000 patient records to assess their performance and calculated the specificity, sensitivity and positive and negative predictive values for each. Based on these results, the panel selected a set of final rules, which was validated on an independent sample of 100,000 records.

RESULTS: Seventeen rules were developed for inferring patient problems. Final rules used coded and free-text problem recognition as well as: billing codes, medications, laboratory data and/or vitals to infer patient problems. When applied to the training set, the average specificity and PPV for all seventeen rules was 86.4% and 91.1% respectively. Subsequent analysis using an independent validation set showed high sensitivity (average: 83.9%) and PPV (average: 91.7%) for
most rules. For each problem, we also assessed the accuracy of two simpler classes of rules: problem list-only and billing code-only rules. The results of this analysis showed that these rules were more sensitive than the problem list alone and had better PPV than billing codes alone. **CONCLUSION:** We developed and validated a set of rules that identifies patients likely to have a particular problem. These data show that problems can be accurately inferred, and that the performance of the rules exceeds that of standard sources. These rules had high sensitivity and specificity and, in our population, also high PPV and NPV. Problem inference rules such as ours have a variety of potential applications, including: alerting clinicians to potential gaps in the problem list, identifying research cohorts, calculating quality measures, selecting patients for care management programs and designing clinical decision support.

### Performance analysis of problem inference rules

|                      | Training Set | Validation Set | Problem-Only | Billing-Only |
|----------------------|--------------|----------------|--------------|--------------|
|                      | Sens | PPV  | Sens | PPV  | Sens | PPV  | Sens | PPV  |
| ADHD                 | 67.8 | 99.1 | 62.8 | 96.6 | 45.0 | 100.0 | 73.7 | 91.3 |
| Asthma/COPD          | 78.1 | 92.7 | 79.5 | 96.7 | 44.8 | 100.0 | 91.5 | 89.8 |
| Breast Cancer        | 95.1 | 99.0 | 95.8 | 99.6 | 78.5 | 100.0 | 97.9 | 97.7 |
| CAD                  | 83.0 | 95.7 | 86.4 | 98.5 | 58.9 | 100.0 | 99.2 | 83.5 |
| CHF                  | 71.7 | 79.1 | 70.8 | 79.8 | 9.9  | 100.0 | 83.3 | 70.2 |
| Diabetes             | 94.6 | 90.1 | 91.3 | 94.9 | 61.9 | 100.0 | 89.4 | 89.8 |
| Glaucoma             | 93.8 | 95.0 | 94.4 | 96.2 | 73.4 | 100.0 | 90   | 96.7 |
| Hemophilia           | 89.7 | 97.7 | 86.5 | 97.8 | 73.7 | 100.0 | 100  | 87.2 |
| Hypertension         | 80.6 | 92.9 | 81.0 | 89.0 | 50.7 | 100.0 | 86.7 | 87.5 |
| Hyperthyroidism      | 83.6 | 87.7 | 86.3 | 88.1 | 59.3 | 100.0 | 95.7 | 64.4 |
| Hypothyroidism       | 91.9 | 97.5 | 91.0 | 93.5 | 51.8 | 100.0 | 81.6 | 76.4 |
| Myasthenia Gravis    | 87.4 | 89.4 | 82.4 | 85.9 | 48.6 | 100.0 | 97.3 | 53.3 |
| Osteoporosis/Osteopena| 73.9 | 94.0 | 70.8 | 90.7 | 45.1 | 100.0 | 80.5 | 87.4 |
| Renal Insuf/Renal Fail| 100.0 | 69.2 | 100.0 | 77.5 | 4.7  | 100.0 | 43.3 | 86.7 |
| Rheumatoid Arthritis | 94.8 | 88.2 | 66.5 | 91.7 | 23.8 | 100.0 | 90.5 | 84.1 |
| Sickle Cell          | 95.6 | 90.3 | 96.8 | 91.0 | 76.2 | 100.0 | 98.4 | 67.4 |
| Stroke               | 85.8 | 97.4 | 87.3 | 97.9 | 72.4 | 100.0 | 100.0 | 86.8 |

**TEMPORO-SPATIAL SURVEILLANCE OF INFLUENZA-LIKE ILLNESS: PRELIMINARY RESULTS FROM THE IDAHO INFECTIOUS DISEASE REPORTING NETWORK** Andy Wilper 1; William Weppner 2; Kai Elgethun 3; Denny Stevens 4. 1University of Washington School of Medicine, Boise, Idaho; 2Boise VAMC, Boise, Idaho; 3Boise State University, Boise, Idaho. (Tracking ID # 10243)

**BACKGROUND:** Current influenza like illness (ILI) monitoring in Idaho is based on syndromic surveillance using laboratory data combined with periodic person-to-person reports collected by state workers. This system also relies on voluntary reporting from physicians, schools and other institutions. Electronic medical records (EMRs) offer a method of obtaining data in an automated fashion. The Veterans Administration EMR (CPRS) captures real-time visit information, vital signs, ICD-9, pharmacy and lab data. EMR surveillance has been utilized for syndromic surveillance on a regional level. Funds supporting expansion of EMRs offer increased ability for use in biosurveillance. The addition of temporo-spatial modeling may improve identification of clusters of cases. This abstract reviews our efforts to develop a real time system of identifying ILI in Idaho using VA data and temporo-spatial techniques.

**METHODS:** The Boise Veterans Affairs Medical Center (VAMC) provides care to over 20,000 veterans living in Idaho with clinics in Boise, Caldwell, Twin Falls, Salmon, ID and Burns, OR. Using retrospective data from the Veterans Integrated Service Network 20 (VISN 20) data warehouse for the 2008–2009 influenza season, we identified ILI cases from these clinics using ICD-9 codes collected as weekly counts. Duplicates and incompletes were removed; zip code was extracted; clusters less than 5 per zip code were suppressed. We used SatScan v9.0.1 for cluster analysis with MonteCarlo simulation for an expected incidence based on distribution of sample over time and space; geographic extent of cluster was not limited. We used ArcMap 10 for visualization based on US Census Map data. The VA Puget Sound IRB approved this study.

**RESULTS:** We identified one primary and one significant secondary cluster (p<0.05) of ILI (Figure 1). The relative risk was 7.8 for ILI in the primary cluster identified in southeast Idaho over a month-long period 7/17/09 to 8/20/09. The secondary cluster in west central Idaho occurred over a shorter two week period in January. These results were
shared with Idaho Public Health District directors, who confirmed the existence of an ILI cluster in southeast Idaho; the site of the primary cluster. We sampled a small percent of the state population; women and children are underrepresented.

**CONCLUSION:** Retrospective data obtained from VA electronic health records appears to be useful in locating ILI outbreaks in space and time. Further work is needed to evaluate the ability of our system to identify outbreaks in real time, and to determine the extent to which our system may complement existing surveillance techniques. Temporo-spatial modeling may also have applications in monitoring the spatial distribution of the incidence and control of chronic diseases.

**WHAT ACCOUNTS FOR THE GAP: THE CONTRIBUTION OF DIFFERENCES IN PATIENT PREFERENCE AND CLINICAL APPROPRIATENESS TO RACIAL DIFFERENCES IN PERFORMANCE ON AMBULATORY CARE QUALITY MEASURES** Muriel Jean-Jacques 1; Stephen Persell 1; Jason Thompson 1; Romana Hasnain-Wynia 1; David Baker 1, 2Northwestern University, Chicago, Illinois. (Tracking ID # 10248)

**BACKGROUND:** The Institute of Medicine has defined healthcare disparities as racial or ethnic differences in healthcare that are not due to differences in clinical appropriateness or patient preferences. However, it is usually impossible to distinguish healthcare differences from true disparities in clinical practice because we lack sufficient data on clinical appropriateness and patient preferences. As part of the UPQUAL (Using Precision Performance Measurement to Conduct Focused Quality Improvement) initiative, simple tools were introduced into the electronic health record [EHR] at an urban academic general internal medicine practice to allow physicians to efficiently enter medical or patient reasons why quality measures are not satisfied (medical and patient exceptions) into coded fields of the EHR. This provided a unique opportunity to examine the contribution of patient preference and clinical appropriateness to racial differences in the receipt of healthcare services.

**METHODS:** We examined differences in the percentage of black and white patients with documented medical or patient exceptions for 12 ambulatory care quality measures as of January 1, 2011. The quality measures addressed coronary heart disease, hypertension, diabetes, and the receipt of preventive services. Medical exceptions included medical contraindications to care guidelines (e.g. drug intolerance). Patient exceptions included patient refusals. We calculated performance for each quality measure with and without the incorporation of data on medical and patient exceptions. Comparisons between white and black patients were done using Pearson’s chi-square test.

**RESULTS:** Among black patients, the rates of documented medical or patient exceptions ranged from 1.1% (screening or treatment for diabetic nephropathy) to 11.9% (pneumococcal vaccination if > or =65 years old). Among white patients, the range was 0.8% (screening for cervical cancer) to 5.6% (LDL control in patients with diabetes). The percentage of patients who declined recommended care differed between black and white patients for 2 measures: cervical cancer screening (1% vs. 0.5%, respectively; p=.03) and pneumococcal vaccination (11% vs. 3%; p<.001). The percentage of patients with documented medical exceptions differed between black and white patients for 2 measures: antiplatelet therapy for patients with coronary heart disease (4% vs. 2%; p=.03) and pneumococcal vaccination (0.7% vs. 0.1%; p=.003). Without the incorporation of data on clinical appropriateness and patient preference, performance for pneumococcal vaccination was significantly lower for black vs. white patients (82% vs.
whether these negative attitudes influence physicians' health disparities by impairing patient-physician communication. However, blacks were much more likely to decline pneumococcal vaccination, and accounting for this significantly affected the measured racial difference in performance. A set of simple tools can facilitate the capture of data on clinical appropriateness and patient preference into coded fields of the EHR, and this approach may help us to better understand whether apparent differences in care are due to either of these factors.

RELATIONSHIPS BETWEEN SOCIAL RESOURCES AND HEALTHFUL BEHAVIORS: DOES AGE MATTER? Kristina Lewis1; Matthew Gillman2; Elaine Puleo3; Mary Greaney2; Gary Bennett4; Karen Emmons2. 1Harvard Medical School, Department of Population Medicine, Reading, Massachusetts; 2Harvard University, Boston, Massachusetts; 3University of Massachusetts, Amherst, Massachusetts; 4Duke University, Durham, North Carolina. (Tracking ID # 10251)

BACKGROUND: The benefits of healthful eating and physical activity accrue to people of all ages. While greater access to social resources is associated with these behaviors, whether the associations differ by age is unknown.

METHODS: We analyzed data on 2440 participants, age 18-93 years, using baseline survey data from 'Healthy Directions,' an urban primary care-based multiple risk behavior intervention trial. We examined cross-sectional relationships between participants' social resources and their self-reported total weekly physical activity and daily fruit and vegetable intake. We measured social resources using responses to 9 items (each on a 5-point Likert scale) from the Chronic Illness Resources Survey (CIRS), representing the survey's "organizational," "friends and family" and "neighborhood" subscales. We measured physical activity using items from the CDC's Behavioral Risk Factor Surveillance Survey, and fruit and vegetable intake using the National Cancer Institute's "5 A Day for Better Health" tool. We then used multivariable linear regression, adjusted for sex, race, education, income, BMI and self-reported health status, and evaluated associations overall and within 4 age groups: 18-34, 35-49, 50-64 and 65+ years.

RESULTS: Among the 2440 participants, 66% were female: 45% were non-white, and 60% had at least a college degree. Mean (SD) for age was 49.4 (15) years, for physical activity was 346 (304) minutes/week, for daily fruit and vegetable intake was 3.4 (2.4) servings, and for CIRS score was 9.8 (5.7) on a 0–36 point scale. CIRS scores were slightly lower among older than younger adults (see Table, p=.04). In multivariable analyses, CIRS score was directly associated with total physical activity (14.8 additional minutes of exercise/week per 1-point increment in CIRS score [95%CI 12.6-17.0]) and with fruit and vegetable intake (0.11 additional servings/day [95% CI 0.09–0.13]). We did not observe effect modification of the association of total CIRS score with physical activity by age group (interaction p=0.83), but the association for fruit and vegetables did differ by age group (see Table, interaction p=.04).

CONCLUSION: Greater support from local organizations, friends, family members, and neighbors was associated with higher physical activity levels and fruit and vegetable intake. Among older participants, CIRS scores were lower and associations of CIRS score with fruit and vegetable intake were stronger. Thus a need may exist for more health promotion programs that improve access to social resources, especially in middle-age and older adults.

Table: Multivariable Associations of CIRS Score with Physical Activity (PA) Level and Fruit and Vegetable (F&V) Intake, by Age Group.

| Age Group | PA Level (min/wk) | F&V Intake (servings/d) | CIRS Score (0-36 pt scale) | CIRS-PA Association | CIRS-F&V Association |
|-----------|-------------------|-------------------------|-----------------------------|---------------------|---------------------|
| 18-34 y (n=494) | 338 (293) | 3.0 (2.1) | 10.5 (5.6) | 13.0 (8.3, 17.7) | 0.06 (0.02, 0.09) |
| 35-49 y (n=679) | 324 (293) | 3.2 (2.6) | 9.7 (5.9) | 17.2 (13.3, 21.1) | 0.13 (0.09, 0.17) |
| 50-64y (n=921) | 364 (315) | 3.5 (2.4) | 9.6 (5.7) | 13.8 (9.9, 17.7) | 0.11 (0.08, 0.14) |
| 65+y (n=345) | 354 (307) | 3.8 (2.6) | 9.6 (5.6) | 14.6 (8.2, 21.0) | 0.13 (0.08, 0.18) |

PHYSICIAN COMMUNICATION BEHAVIORS DIFFER BY BMI Kimberly A. Godzune1; Mary Catherine Beach1; Lisa A Cooper1. 1The Johns Hopkins University School of Medicine, Baltimore, Maryland. (Tracking ID # 10253)

BACKGROUND: Physicians' weight bias may contribute to obesity-related health disparities by impairing patient-physician communication. However, whether these negative attitudes influence physicians' interpersonal communication during patient encounters is unknown. Previous studies have shown that patient-centered communication behaviors are positively associated with adherence and satisfaction, while more paternalistic or biomedical behaviors demonstrate the opposite. In this study, we examined the relationship between patient body mass index (BMI) and physician communication behaviors. Given the psychosocial origins of obesity bias, we hypothesized that higher patient BMI would be associated with decreased patient-centered communication behaviors including rapport building and patient counseling, while biomedical behaviors like data gathering would not be influenced by a patient's weight status.

METHODS: We used baseline data from the Patient-Physician Partnership Study. The study sample included 40 urban primary care physicians and 226 of their patients. Each patient had a patient-physician encounter audio-taped, which was then analyzed using the Roter Interaction Analysis System to determine counts of communication behaviors. These encounters were a part of ongoing care. The outcomes were physician behaviors including data gathering, rapport building and patient counseling. The independent variable was measured patient BMI. In order to account for clustering of patients by physician, we used multilevel Poisson regression models to calculate incidence rate ratios evaluating the association between BMI and the physician communication behaviors. All models were adjusted for...
patient age, patient sex, patient race, number of co-morbidities, as well as physician’s number of years in practice and specialty. Given the multiple comparisons, we defined a significant p-value to be 0.05.

**RESULTS:** The mean (SD) patient BMI was 32.8 (8.0) kg/m2. Patients’ mean (SD) age was 61.7 (12.2) years with 65% female and 60% black, while physicians were 54% female and 53% white. Mean (SD) visit length was 15.5 (7.2) minutes and did not vary significantly by BMI. Table 1 shows that physicians’ data gathering behaviors were similar across BMI groups. However, physicians demonstrated less rapport building with the overweight and obese groups. Physicians also provided less patient counseling for these higher BMI groups as compared to the normal range group, especially in the lifestyle/psychosocial realm.

**CONCLUSION:** We found that physicians demonstrated fewer patient-centered behaviors including rapport building and counseling to patients with overweight and obesity. As these patient encounters were part of ongoing clinical care, the limited rapport building and counseling may suggest an impaired patient-physician relationship and reduced quality of care for a variety of health outcomes between obese patients and their primary care physicians.

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**Table 1. Incidence rate ratios (95% confidence intervals) for physician communication behaviors by BMI group**

| BMI            | Data gathering | Rapport building | Patient counseling |
|----------------|----------------|------------------|-------------------|
| Normal Range   | 1.00           | 1.00             | 1.00              |
| Overweight     | 0.99 (0.90-1.07)| 0.68 (0.58-0.79)* | 0.89 (0.85-0.94)* |
| Obese          | 1.03 (0.95-1.12)| 0.69 (0.59-0.80)* | 0.92 (0.88-0.96)* |

**THE IMPACT OF HEALTH INSURANCE REFORM ON INSURANCE SWITCHES: ARE WE CHURNING?**

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**BACKGROUND:** The intent of health insurance reform is to improve care through the expansion of access to care. In 2006 the Massachusetts Health Reform Legislation sought to improve access to care by increasing insurance coverage. In order to address the impact of the 2006 legislation on access to care, we must first characterize the impact of the legislation on insurance coverage and stability. To this end we compared 6 categories of insurance coverage (Private, Medicare, Medicaid, Commonwealth Care, other Government, uninsured) and the frequency of insurance switches between these categories before and after insurance reform.

**METHODS:** We analyzed billing data from 4 Community Health Centers around a specific health care event that required ongoing health care utilization, namely an abnormal breast or cervical cancer screening exam from 2004-05 (pre reform) and again from 2007–2008 (post reform). We observed insurance claims for eighteen months before and after the abnormal screening exam, and then evaluated insurance coverage and frequency of health insurance switches. Aggregating number of switches at the patient level, we compared rates of insurance switches between pre and post reform periods using a Poisson regression model, adjusted for the number of months of patient care observed, age, and health center. As the Massachusetts health reform resulted in a new subsidized insurance program (CommonwealthCare), and as this was unavailable in the pre reform period, switches involving CommonwealthCare complicate pre and post reform comparisons of rates. For a clearer assessment we performed two analyses: first, where switches involving CommonwealthCare were counted as a unique change and second, where these were not counted as a unique change. Defining switches to uninsured status as an unfavorable outcome, we also compared the rates of unfavorable switches pre and post reform.

**RESULTS:** We examined 776 women, 269 women in the pre reform period and 507 women in the post reform period. Subjects had an average age of 35 (± 13) years and were 60% white, 27% black, 9% Hispanic, and 3% Asian. The mean period of documented patient observation in health center records was 23 months and included on average 14 visits. At the time of the abnormal screening exam in the pre reform period, 40% of women were uninsured, 32% had private and 28% had public insurance. In the post reform period the percent uninsured declined from 40% to 18%. In the combined pre and post reform periods, 353 (45%) had at least one switch in insurance. The adjusted annual rates of insurance switches were 0.44 (95% CI=[0.39, 0.50]) in the pre reform period and 0.57 (95% CI=[0.52, 0.62]) in the post reform period when CommonwealthCare was a unique category. Under this definition, the post reform rate of switches was 29% higher than that for pre reform (p<0.002). When CommonwealthCare was not counted as a unique category, the adjusted annual rate of insurance switches was 0.45 (95% CI=[0.41, 0.50]) and the post reform rate of switches was 5% higher (p=0.57). The adjusted annual rate of unfavorable switches with pre reform=0.17 (95% CI=[0.13, 0.20]) and post reform=0.19 (95% CI=[0.16, 0.21]), indicated no significant difference.

**CONCLUSION:** Limitations of the study include the inability to assess the length of non coverage between switches or to identify switches which occurred between health care visits. We are also unable to adjust for temporal confounding in insurance status due to the economic downturn and loss of employer based coverage. Overall our results show a major increase in the proportion of women with insurance at the time of cancer screening after insurance reform but no reduction in the instability of insurance coverage as indicated by the number of women switching to an uninsured state.

**AVOIDING THE AVOIDABLE: QUALITY CARE FOR COMORBID CONDITIONS IN CANCER SURVIVORS**

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**BACKGROUND:** Previous research has demonstrated differences in the quality of preventive care received by cancer survivors. Building on this research, we analyzed the occurrence of avoidable outcomes in cancer survivors compared to non-cancer controls.
METHODS: Using the SEER-Medicare linked database, we used 7 avoidable outcome indicators of quality care established by Asch et al. (2000) and previously implemented by Earle et al. (2004) to compare the quality of care received by cancer survivors and non-cancer controls. Cancer patients diagnosed with breast, prostate, or colorectal cancer in 2004, who were age >=66 at diagnosis, enrolled in fee-for-service Medicare during the study period, and survived at least 3 years from diagnosis were eligible. We frequency matched controls who met the same eligibility criteria as cases, with the exception of a cancer diagnosis. The avoidable outcome indicators were evaluated during the first part of the transition to survivorship (days 366–1095 from diagnosis). Logistic regression compared rates of avoidable outcomes between cases and controls, while adjusting for sociodemographic characteristics.

RESULTS: A total of 8,661 cancer cases (53% prostate, 22% breast, 26% colorectal) were matched with 17,322 controls. In analyses combining all three cancer types, no differences were found on 3/7 indicators, and cancer cases were less likely than controls to experience avoidable outcomes on 4/7 indicators (p<0.05) [see Table]. The differences were most pronounced for colorectal cases were less likely than controls to experience avoidable outcomes on 4/3 indicators, but less so for breast (2/7 indicators). There were no differences between colorectal cases and controls.

CONCLUSION: These data suggest that follow-up for a cancer diagnosis no differences between colorectal cases and controls. prostate (3/7 indicators) but less so for breast (2/7 indicators). There were 7 indicators (p<0.05) [see Table]. The differences were most pronounced for cases were less likely than controls to experience avoidable outcomes on 4/3 indicators, but less so for breast (2/7 indicators). There were no differences between colorectal cases and controls.

Table: 1

| Avoidable Outcomes for All Cancer Types Combined | % of Eligible Controls | % of Eligible Cases | Adjusted p-value |
|-----------------------------------------------|------------------------|--------------------|------------------|
| >=3 cardiovascular ED visits among patients with angina | 8.1 | 5.3 | 0.03 |
| Respiratory admission for patients with COPD | 46.9 | 39.0 | <0.0001 |
| Respiratory admission for patients with emphysema | 56.8 | 48.4 | 0.03 |
| Non-elective admission for CHF | 36.9 | 32.1 | 0.002 |
| Perforated gallbladder among patients with cholelithiasis | 0.4 | 0.3 | 0.99 |
| Lung abscess or emphysema in pneumonia patients | 1.6 | 0.9 | 0.33 |
| Admission for hyperosmolar or ketotic coma among diabetic patients | 0.2 | 0.3 | 0.79 |

PHYSICIAN INCENTIVES TO IMPROVE QUALITY AND DELIVERY OF HIGH QUALITY AMBULATORY MEDICAL CARE

BACKGROUND: Financial incentives for quality and public reporting are mechanisms used to promote high quality medical care. We sought to determine the association between incentives for quality and high quality ambulatory care.

METHODS: We performed a cross-sectional study using data from the 2006 and 2007 National Ambulatory Medical Care Survey. We included ambulatory visits by adult, non-pregnant patients to generalists and internal medicine specialists practicing in non-federally funded, non-hospital-based ambulatory practices in the U.S. We examined the association between 3 physician incentives for quality (financial compensation partially based on quality, financial compensation partially based on satisfaction, and public reporting of performance measures) and 12 measures of high quality ambulatory care. The 12 measures of high quality care were categorized by patient diagnosis and visit type. We examined 4 measures during preventative care visits: smoking cessation counseling for smokers, body mass index (BMI) screening, weight reduction counseling for overweight patients, and urinalysis not performed or ordered. We examined 1 measure of high quality diabetes care: blood pressure measurement of less than 130/80 mmHg. We examined 2 measures of high quality heart failure care: prescription of either angiotensin converting enzyme inhibitor (ACE-I) or angiotension receptor blocker (ARB) therapy and beta-blocker therapy. We examined 2 measures of high quality coronary artery disease care: prescription of oral antiplatelet therapy and beta-blocker therapy. Finally, we examined 3 additional measures: no prescription of antibiotic therapy for upper respiratory infection, prescription of anticoagulation therapy for patients with atrial fibrillation, and 3 prescription of bronchodilator therapy for patients with COPD. For each measure, we excluded patients for which the quality measure might be contra-indicated or not applicable. We used multivariable logistic regression to assess the independent effect of physician incentives on the delivery of each of the 12 quality indicators.

RESULTS: Overall, 20.8% of visits were to physicians whose financial compensation was partially based on quality. 17.7% of visits were to physicians whose financial compensation was partially based on patient satisfaction, and 10.0% of visits were to physicians who publicly reported performance measures. Quality of ambulatory care varied: weight reduction counseling occurred in 12.0% of preventative care visits by obese patients whereas urinalysis was not performed in 93.0% of preventative care visits. In multivariable analyses, there were no statistically significant associations between financial incentives for quality and delivery of high quality care for any of the 12 measures, nor for 11 of the 12 measures when examining the association with financial incentives for satisfaction; the exception was an association with BMI screening in preventative visits (Adjusted Odds Ratio (aOR)=2.45, 95% confidence interval [CI] 1.3–4.6, p=0.005). There was also no statistically significant association between public reporting of performance measures and delivery of high quality care for 11 of 12 measures; the exception was weight reduction counseling for overweight patients (aOR=2.05, 95% CI 1.2–3.4, p=0.007).

CONCLUSION: We found no consistent association between incentives for quality and 12 measures of high quality ambulatory care. Our finding that on a national level financial incentives and public reporting were not associated underscores concerns about the potential impact of current quality incentive programs for improving health care quality in the U.S.
COMPARATIVE EFFECTIVENESS AND SAFETY OF MEDICATIONS FOR TYPE 2 DIABETES: AN UPDATED SYSTEMATIC REVIEW INCLUDING NEW DRUGS AND TWO-DRUG COMBINATIONS

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BACKGROUND: Given the increase in medications for type 2 diabetes, clinicians and patients need information about their effectiveness and safety to make informed choices. We conducted an update and expansion of a systematic review to include new medication classes and 2-drug combinations.

METHODS: We searched the MEDLINE, EMBASE, and Cochrane Central Register of Controlled Trials databases from inception through April 2010 for original English-language articles and sought unpublished data from the FDA and others. Our search strategy combined terms for type 2 diabetes and medications. We selected studies in adults with type 2 diabetes that assessed intermediate outcomes (hemoglobin A1c (HbA1c), lipids, weight), long-term clinical outcomes (e.g., cardiovascular disease) and harms (e.g., hypoglycemia) in head-to-head comparisons. We included FDA-approved diabetes medications (metformin, 2nd-generation sulfonylureas, thiazolidinediones, meglitinides, DPP-4 inhibitors and GLP-1 agonists) used as monotherapy or in 2-drug combinations with either metformin or a thiazolidinedione, as well as insulin in combination with oral medications. Two reviewers serially extracted data from each article using standardized protocols. We conducted random-effects meta-analyses when there were at least 3 trials sufficiently homogenous.

RESULTS: 140 RCTs and 26 observational studies from 166 articles were included. Evidence was graded as low or insufficient for long-term clinical outcomes of all-cause mortality, cardiovascular disease, nephropathy and neuropathy. Metformin alone relative to the combination with rosiglitazone, was associated with a lower risk of fatal myocardial infarction (pooled RR 0.50, 95% CI 0.1-3.0), but event rates were low (3 cases), with imprecise estimates. Most medications lowered HbA1c by about 1%, but metformin was more efficacious than the DPP-4 inhibitors by about 0.4%. Combinations of metformin, sulfonylureas, and thiazolidinediones had similar efficacies in lowering HbA1c. Metformin decreased weight relative to thiazolidinediones (mean difference 2.6 kg) or sulfonylureas (mean difference 2.7 kg). Metformin lowered LDL relative to pioglitazone, sulfonylureas, and DPP-4 inhibitors by about 14, 10 and 5 mg/dL, respectively. Pioglitazone increased HDL more than rosiglitazone, metformin, or sulfonylureas. A higher risk of mild to moderate hypoglycemia was seen with sulfonylureas compared with metformin alone (RR 2.6, 95% CI 1.3-5.4), metformin plus a premixed insulin compared with metformin plus basal insulin and combination of metformin plus a sulfonylurea compared with metformin plus a thiazolidinedione (RR of 6.4, 95% CI 3.3-12.5). Thiazolidinediones were associated with a non-significant increased risk of congestive heart failure relative to sulfonylureas (pooled 1.6, 95% CI 1.0-2.8), and bone fractures relative to metformin. Diarrhea occurred more often for metformin compared with thiazolidinedione users and risk of lactic acidosis was not increased for metformin compared with sulfonylurea users.

CONCLUSION: Comparisons of 2-drug combinations showed little to no difference in HbA1c reduction, but some combinations increased risk for adverse events, like hypoglycemia with sulfonylureas and weight gain with thiazolidinediones. DPP-4 inhibitors improved HbA1c to a lesser extent than metformin, but when added to metformin, improved HbA1c without additional hypoglycemia. Long-term benefit and harms of diabetes medications are unclear. Results of our meta-analyses can be used to give patients more specific estimates of the comparative effectiveness and safety of the drug choices.

EFFECTIVENESS OF A PRIMARY CARE PHYSICAL ACTIVITY INTERVENTION FOR OBESE, MIDDLE-AGED WOMEN: 12-WEEK RESULTS FROM THE HEALTHY BODIES, HEALTHY HEARTS STUDY

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BACKGROUND: Physical inactivity is a significant risk factor for cardiovascular disease and remains highly prevalent in women, especially in middle-age and beyond. Healthy Bodies, Healthy Hearts (HBHH) is a randomized, controlled physical activity (PA) intervention delivered in coordination with primary care and intended to increase leisure physical activity levels and decrease weight and waist circumference (WC) in obese, inactive middle-aged women.

METHODS: We recruited 99 inactive women aged 45-65 with BMI greater than or equal to 30 from 3 primary care clinics and randomized them to a 12-week, in-person activity intervention program (IP) or to an education-only, at-home(AH) group. Weekly IP sessions were 30 minute discussions followed by 30 minutes of moderate group PA; AH group received a 12-week self-guided manual based on the American Heart Association’s Choose to Move program. Assessments were conducted at baseline and 12 weeks. Leisure physical activity levels were measured with the one-month version of the Modifiable Activity Questionnaire. Weight and waist circumference were measured by a trained research assistant following a standardized protocol. Differences in measures by group between baseline and 12 weeks months were analyzed with a t-test or rank-sum test using an intention-to-treat principle. Missing data was imputed with the last observation carried forward method.

RESULTS: Data from 98 women was available for analysis. At baseline, mean (SD) age was 53.9 (5.4) years and 37% were black. Mean weight was 92.3 (17.7) kg, mean BMI was 34.7 (5.9), and mean WC was 105.7 (11.4) cm. Median leisure PA level was 2.8 MET-hr/week (IQR 12.0), 68 (69%) women attended 12-week follow-up visit, with black women and women in AH group being more likely to be lost to follow-up. At 12 weeks, women in the IP group had significantly greater increases in PA levels (6.3 vs. 0 MET-hr/week; p=0.001) than those in AH group. Women in IP group had modest decreases in weight (~1.5 vs. ~0.9 kg; p=0.19) and waist circumference (~2.2 vs. ~1.2 cm; p=0.15) that were not significantly different when compared to those in the AH group.

CONCLUSION: The HBHH intervention was successful in increasing the physical activity levels of obese, inactive middle-aged women. However, no significant changes in weight or waist circumference were observed. It remains to be seen whether the increases in PA will be sustained in longer-term follow-up and whether the HBHH intervention could be replicated in other primary care settings.

CHRONIC DISEASE AND THE MEDICAID EXPANSION UNDER HEALTH REFORM: UNMET MEDICAL NEEDS AMONG UNINSURED ADULTS

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Tracking ID # 102979
SYSTEMATIC REVIEW OF CLINICAL PRACTICE GUIDELINES ON THE PHARMACOLOGIC TREATMENT OF TYPE 2 DIABETES MELLITUS: ARE GUIDELINES EVIDENCE-BASED? Wendy L Bennett 1; Olaide Odelola 1; Lisa Wilson 1; Shari Bolen 2; Eric B Bass 1; Deepan Dalal 1; Milo Puhan 1. 1Johns Hopkins University, Baltimore, Maryland; 2MetroHealth Medical Center/Case Western Reserve University, Cleveland, Ohio. (Tracking ID # 10299)

BACKGROUND: With eleven classes of glucose-lowering medications available for the treatment of type 2 diabetes, clinical practice guidelines help inform treatment decisions. We conducted a systematic review of clinical practice guidelines addressing glucose-lowering pharmacologic therapies for type 2 diabetes to assess the quality of methods and whether they incorporate available evidence.

METHODS: We searched 2 general electronic databases (MEDLINE and Cumulative Index to Nursing & Allied Health Literature), 3 guideline-specific databases from the U.S., Canada and United Kingdom, and hand-searched the websites of 15 professional and guideline development organizations from July 2007 to March 2010. We chose this time frame because the field of diabetes is rapidly evolving and in July 2007, the Agency for Healthcare Research and Quality published a large comparative effectiveness systematic review on diabetes medications. Titles and abstracts were assessed by 2 independent reviewers, and data abstracted sequentially by 2 reviewers. Using the 2007 review, we developed a list of 7 evidence-based conclusions and then assessed whether the guidelines addressed and endorsed these conclusions. We also assessed the basis for their recommendations. Two independent reviewers rated guideline quality using the “Rigor of Development” (“Rigor”) and “Editorial Independence” (“Independence”) domains from the Appraisal of Guidelines for Research and Evaluation (AGREE) instrument. The kappa score for agreement on quality items was 0.60.

RESULTS: Of the 609 titles identified, 12 guidelines, including 3 updates, contained in 20 different publications, met our inclusion criteria. Six guidelines were peer reviewed and the majority used a combination of expert opinion and literature review, including use of published systematic reviews to make recommendations. Eight guidelines agreed with the conclusion from the 2007 review that “metformin is favored as first line agent.” However, the two guidelines from the Joslin Clinic did not favor any one drug over another. Ten guidelines endorsed the conclusion that “thiazolidinediones are associated with higher rates of edema and congestive heart failure.” Two guidelines did not address any of the 7 evidence-based conclusions, and 3 guidelines endorsed all seven conclusions. In the “Rigor” domain, two guidelines received the highest score (4 on a scale of 1–4) for the item, “systematic methods used to search for evidence” and three for the item, “clearly described methods for formulating recommendations.” The range in the “Rigor” domain summary scores (0%=lowest to 100%=highest) was 14–100%. The National Institute for Health and Clinical Excellence guideline was the only guideline to receive the maximum score. In the “Independence” domain, 5 guidelines received the highest score for the item, “conflicts of interest of...members have been recorded.” The range in this domain’s summary scores was 8–100%. The Canadian Diabetes Association was the only guideline to receive the maximum score.
CONCLUSION: Clinical practice guidelines on pharmacologic treatment of type 2 diabetes were generally consistent with available evidence. Few guidelines used rigorous guideline development methods, including systematic searches for evidence, peer review prior to publication, and recording of conflicts of interest by group members. Professional organizations need to advocate for more consistent standards to improve guideline quality.

DECLINES IN PHYSICIAN ACCEPTANCE OF MEDICARE AND PRIVATE COVERAGE. Tara F. Bishop 1; Alex Federman 2; Salomeh Keyhani2. 1Weill Cornell Medical College, New York, New York; 2Mount Sinai Medical Center, New York, New York. (Tracking ID # 10315)

BACKGROUND: A number of anecdotal reports assert that physicians are accepting fewer Medicare patients. Using data from a national survey of physicians we examined trends in physician acceptance of new patients with different types of insurance.

METHODS: Using data from the National Ambulatory Medical Care Survey (NAMCS) we examined trends in physician acceptance of new patients by insurance type from 2005 to 2008. The NAMCS is a nationally representative survey administered by the Centers for Disease Control's National Center for Health Statistics (NCHS). It contains information about physicians practicing in non-federally-funded, non-hospital-based offices throughout the United States. The fields of anesthesiology, radiology, and pathology are excluded. Our sample included all physicians who accepted new patients. We excluded obstetricians and pediatricians from our analysis of Medicare acceptance. The outcome variable was percentage of physicians who accepted new patients with Medicare, Medicaid, private capitated insurance, and private non-capitated insurance. We used multivariable linear regression to look at trends in physician acceptance of new patients by insurance type while controlling for physician and practice characteristics. We also examined acceptance of insurance stratifying physicians by specialty and practice type.

RESULTS: During the study period, there was a decline in the percentage of solo practices from 39.5% in 2005 to 32.1% in 2008 (p=0.007 for trend across years). Similarly, the number of practice owners declined over the time period (73.5% in 2005 vs. 67.4% in 2008, p=0.006 for trend across years). There were no other significant changes in practice characteristics over the study period. Almost 95% of ambulatory care physicians accepted new patients in 2005. This ratio did not change between 2005 and 2008. Among physicians who accept new patients, there was a small but significant decline in acceptance of new Medicare patients (95.5% in 2005 to 92.9% in 2008, p=0.01 for trend across years). In analyses stratified by physician characteristics, this decline remained significant for physicians in private practice (95.5% in 2005 vs. 93.0% in 2008, p=0.01). There was a larger decline in acceptance of privately insured non-capitated patients (93.3% in 2005 vs. 87.8% in 2008, p between 2005 and 2008). In stratified analyses, this decline in acceptance of privately insured patients remained significant for primary care physicians (97.3% in 2005 vs. 89.9% in 2008, p<0.01). Rates of acceptance of new Medicaid and private capitated patients were lower overall but also showed a decline over the study period.

CONCLUSION: While reports in the literature and press highlight physicians' dissatisfaction with Medicare, we found only a small decline in physician acceptance of Medicare patients between 2005 and 2008. In contrast, the decline in physician acceptance of non-capitated privately insured patients was more pronounced. These findings suggest that even patients who have health care coverage may have difficulty accessing care. It is likely that improvements in reimbursement and expansion of primary care capacity will be needed to reverse these trends.

PHYSICIAN PERSPECTIVES ON THE ROLE OF MENTAL ILLNESS IN THE CARE OF COMPLEX PATIENTS - IT MAKES EVERYTHING MORE DIFFICULT! Danielle F Loeb 1; Elizabeth A. Bayliss 2; Carey Candrian 3; Ingrid Binswanger4. 1University of Colorado Denver, Denver, Colorado; 2Kaiser Permanente, Institute for Health Research, Denver, Colorado; 3University of Colorado Boulder, Boulder, Colorado; 4University of Colorado Denver, Aurora, Colorado. (Tracking ID # 10332)

BACKGROUND: Patient complexity is often defined by the presence of multiple chronic conditions. Mental illness, specifically, has not been emphasized in current definitions of complexity used in research and policy initiatives. Although mental illness is known to have negative effects on comorbid medical illness such as diabetes or heart disease, the contribution of mental illness to patient complexity has not been examined closely. Since primary care physicians are largely responsible for the care of complex patients, we sought to explore the perceptions of internal medicine primary care physicians regarding the role of mental illness in patient complexity.

METHODS: This qualitative study utilized open-ended in-depth interviews that explored physician perceptions of patient complexity in their clinical practices and the significance of mental illness in the care of complex patients. We recruited 15 physicians from 2 university clinics and 3 community health clinics using email notices sent to all physicians in the practices. We then sampled physicians to achieve an even distribution with respect to gender, years in practice, and practice site. Physicians brought de-identified notes from 3 patients they considered complex and were asked to refer to these notes in the interview. Interview transcripts were coded and analyzed utilizing a team-based general inductive approach.

RESULTS: Emerging themes included: 1) mental illness plays a major role in patient complexity; 2) poorly controlled mental illness greatly impacts treatment of medical illness; 3) physicians perceive inadequate resources for the diagnosis and treatment of serious mental illness; and 4) physicians expressed a feeling of being overwhelmed in providing care for patients with active mental illness. Physician quotations that illustrate themes are described in Table 1.

CONCLUSION: General internists perceived that mental illness contributes significantly to patient complexity. Current definitions of complexity may not adequately account for the role of mental illness in patient complexity. This study was limited by its small sample size, but these results nonetheless suggest the need to re-evaluate the role of mental illness in definitions of complexity that are employed in clinical, research and policy initiatives.
| Theme                                                                 | Illustrative Quote                                                                 |
|----------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Mental illness plays a major role in patient complexity              | "It [mental illness] makes everything more difficult...All things are magnified...All things..." (participant # 11) |
| Poorly controlled mental illness greatly impacts treatment of medical illness | "But I think mental illness...is very interwoven into how patients kind of adopt the sick role...because their ability to really...take the reins of their illness can be curtailed by their mental issues...patients like that, when they develop a chronic disease - even something like obesity, their ability to kind of say I'm going to really kick this and I'm going to start exercising. I'm going to change my diet. Sometimes the activation energy to embark on that is so high for them..." (participant #13) |
| Inadequate resources for the diagnosis and treatment of serious mental illness | "[E]ven if I had 70 minutes on that one patient...who has the paranoid problem, I still wouldn't know what's going on...Every appointment I send these urgent referrals to psychiatry. 'Please see this patient. Help me. Tell me what's going on. Cause I just don't know...'" (participant # 5) |
| Physicians expressed a feeling of being overwhelmed in providing care for patients with active mental illness | "And...it made me realize that all of her other complaints probably were actually due to her schizophrenia...and the reason she hadn't taken her blood pressure medication, the reason she hadn't followed up with her specialist is all actually because she had untreated schizophrenia for about 10 years. So that was a little scary." (participant # 6) |
"THERE’S MORE TO THIS PAIN THAN JUST PAIN": HOW PATIENTS UNDERSTAND THE MANAGEMENT OF CHRONIC PAIN

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BACKGROUND: Pain is among the most commonly reported symptoms in primary care, with over half of adults suffering from chronic or recurrent pain. In this study we sought to elicit primary care patients’ experiences with a stepped-care intervention for chronic musculoskeletal pain.

METHODS: We conducted in-depth qualitative interviews with veterans who participated in the intervention arm of a randomized controlled trial for chronic pain management at a VA Medical Center. The stepped-care intervention consisted of analgesic treatment coupled with pain self-management strategies in step 1, followed by 6-sessions of cognitive behavioral therapy (CBT) in Step 2. A nurse care manager delivered all aspects of the intervention via telephone. For this study, patients were asked open-ended questions about the intervention and their experiences during the trial. Interviews were audio-taped, transcribed, and checked for accuracy. Sampling continued until theoretical saturation was reached. We used emergent thematic analysis to understand and interpret the data. The analytic team met weekly to identify and discuss salient themes. Discrepancies were resolved by consensus.

RESULTS: Patients (N=17) were 24 to 58 years old; two were women, and all had moderate to severe chronic musculoskeletal pain. Through participation in the intervention, particularly CBT, patients described a process of “figuring out” their pain. Patients reported developing a greater awareness of factors that alleviate or exacerbate their pain, and the relationship between their psychological state and pain. As an example of the latter, one participant commented that he learned to recognize “Okay, I’m in pain. How do I feel? Am I stressed? Am I anxious? Am I down about something? Am I feeling good?...I think there’s probably a relevant relationship between the way we feel and our pain. Through controlling your feelings and your thought process, you could probably have an influence on your pain level.” Another patient noted, “There’s more to this pain than just pain. There’s the mental part of it, the part that makes you depressed, ‘cause when you’re depressed it’s like you have pain inside and out.” Patients also described learning that successful pain management takes time. One patient explained how CBT helped him to understand the longitudinal nature of pain management: “I didn’t think I was showing improvement but...I just was in too much of a hurry...I wanted things right now and I didn’t realize it was gonna take time. So that is where I had somebody that refocused me back on what I needed to work on.”

CONCLUSION: This study illustrates that how patients understand and think about pain can have an important influence on their experience of pain. By increasing patient awareness of situational and psychological triggers of pain, and understanding that controlling chronic pain is oftentimes a gradual process, patients may be better positioned to cope with and self-manage their pain.

PHYSICIAN UTILIZATION OF SMOKING CESSATION TREATMENTS IN A PRIMARY CARE SETTING

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BACKGROUND: Even brief interventions by physicians increase patients’ smoking cessation, but physician treatment remains sub-optimal. Electronic medical records (EMRs) have the potential to increase physician adherence to health guidelines and could improve tobacco dependence treatment.

METHODS: A cross-sectional EMR chart review was conducted at a University internal medicine practice from January 2001 to June 2009. Data were collected regarding gender, age, tobacco consumption, comorbidities, office counseling, referral to tobacco programs, and prescription of pharmacotherapies.

RESULTS: 277 patient charts were evaluated, with slightly more women (53%) and ages ranging from 20 to 93 (mean 52). Patients smoked a mean of 15 cigarettes per day for 27 years. In terms of treatment delivered, 89% of smokers received counseling in the office. 41% were referred to cessation services, 11% received nicotine replacement therapies (NRT), and 12% received non-nicotine cessation medications. Women had a higher trend to be referred to cessation programs than men (46% vs. 35%; p=0.06). Smokers age 51–64 were referred more (56%) while those 35 or younger (28%) and 65 and older (32%) were referred less (p Smokers of 20 or more cigarettes per day were more likely than those who smoked less than 10 cigarettes per day to be referred to cessation programs (51% vs. 28%; p Smokers with hypertension were prescribed NRT non-statistically less often (6.5%) than smokers without hypertension (13%) (p=0.095).

CONCLUSION: While physicians in this setting had fairly high rates of counseling and referral, treatment was lower among younger and older smokers, smokers of fewer cigarettes per day, and those without comorbid psychiatric conditions. Having an EMR system may have facilitated documentation of patient smoking status and provision of counseling and referral. Primary care providers should continue to be encouraged to utilize proven tobacco treatment resources in all groups of smokers.

PREDICTORS OF WEIGHT LOSS SUCCESS IN PRIMARY CARE: AN EVALUATION OF THE “FRESH START” PROGRAM

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BACKGROUND: Despite data suggesting that modest weight loss, between 5-10% of body weight, can prevent or delay the onset of diabetes and hypertension, few primary care practices have the resources to adequately manage obesity. To serve the needs of our obese, primary care patients, we developed a weight loss-focused practice as an extension of our primary care services in 2009. We evaluated predictors of 3-month weight loss success, defined as at least 5% weight loss.

METHODS: The generalist-led “Fresh Start” program used a combination of behavioral skills training and goal setting along with pharmacotherapy to promote patient weight loss. At their initial visit, obese patients were asked to choose 2–3 obesogenic behavior change goals that were concrete and easily self-monitored, such as “Walk 10,000 steps every day,” “Avoid sugar-sweetened beverages,” and “Eat breakfast every day.” Every 2–4 weeks thereafter, patients returned for monitoring of goal adherence and weight change. The addition of FDA-approved weight loss drugs and calorie counting were based on physician clinical judgment and patient preference. 104 patients were seen at our practice in urban Philadelphia and eligible for 3-month follow-up between July 1, 2009 and July 31, 2010. We reviewed sociodemographic and weight data from 51 (49%...
patients who returned for 3-month follow-up; the remaining 53 (51%) patients were lost to follow-up and therefore not included in this analysis. Using chi-square tests and multivariable logistic regression, we identified patient characteristics that were associated with a 3-month weight loss of at least 5%.

RESULTS: The majority of patients were female (82%), privately insured (73%), non-smokers (90%), non-depressed (63%), and previously participated in a weight loss program (88%). Mean age was 50.1 (SD 12.6) years and baseline BMI 41.4 kg/m² (SD 8.5). 25% (n=13) lost at least 5% of initial body weight. Compared with those who did not achieve weight loss success at 3 months, successful losers had fewer previous weight loss attempts (1.4 vs. 2.3, p=0.07), came to more visits (3.7 vs. 3.3, p=0.27), and were less likely to be female (69% vs. 87%, p=0.15), current smokers (0% vs. 13%, p=0.17), or have had bariatric surgery (0% vs. 16%, p=0.13). We did not find differences in weight loss success by insurance type, baseline BMI, depression history, or initial behavior change goals. Multivariable analyses revealed similar results. Mean weight loss was 8.4 kg (SD 3.8) among successful losers, whereas it was only 1.6 kg (SD 2.8) among those who did not achieve weight loss success at 3 months (p<0.0001).

CONCLUSION: Primary care-based weight loss programs show promise for clinically significant weight loss among participants with 3 months of follow-up. Consistent with clinical trials for weight loss, novice dieters and male patients were more likely to achieve weight loss success. Overall attrition rates at 3 months were high, however, illustrating the need for greater efforts to expand program reach.

COMORBIDITY AND OUTCOMES IN SEVERE SEPSIS

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BACKGROUND: Sepsis is a major health concern with increasing incidence, being the 10th leading cause of death in the US and a source of racial, gender and regional health disparities. We sought to determine the impact of acute illness severity and co-morbid medical conditions (CMMC’s) on outcomes in severe sepsis patients in an urban intensive care unit.

METHODS: Prospective cohort study of adult patients receiving intensive care at Grady Memorial Hospital between 2007 and 2010 who met the ACCP/SCCM definition of severe sepsis. Data collected included demographics, APACHE and SOFA scores, sources of sepsis, CMMC’s and clinical outcomes during hospitalization. Univariate analyses were performed with alpha=0.05.

RESULTS: 225 patients with severe sepsis were identified, 75% of whom had septic shock. 80% were black, 18% were white, and 63% were males. The mean APACHE II and SOFA scores were 24.9 (+/- 7.82) and 10 (+/- 3.84), respectively. Blacks had higher APACHE and SOFA scores than whites (26 vs. 22, p=0.02 and 10 vs. 8, p=0.006); there were no differences by gender. The mean number of comorbid conditions was 1.35 (SD+/- 1.15), with 76% having at least one CMMC and 37% of patients having >1 CMMC. The most common CMMC’s were diabetes (31%), chronic alcohol abuse (24%), and HIV (21%). White patients had a higher rate of alcoholism and cirrhosis compared to blacks (21% vs. 39% and 17% vs. 6%, p=0.01, respectively). Females had a higher incidence of diabetes (41% vs. 23%, p=0.006) and a lower incidence of alcoholism (24% vs. 29%, p=0.05) compared to males. There were no differences in the number of comorbid conditions when stratified by gender or race. The 28-day mortality for the entire cohort was 23%, with a greater mortality observed in males when compared to females (27% vs. 16%, P=0.04). There was no difference in mortality by race. The presence or number of CMMC was not associated with ICU or hospital length of stay (LOS), development of acute lung injury, or mortality, when compared to patients without CMMC.

CONCLUSION: Although other disease states are known to be associated with co-morbid medical conditions, in our cohort of patients, the presence of comorbidity did not influence mortality, hospital or ICU LOS, or the incidence of development of respiratory organ dysfunction. Further studies are needed to evaluate other factors that may explain the disparities in sepsis-associated mortality.

PATIENT RACE, PERCEPTIONS OF RACISM IN HEALTHCARE SETTINGS, AND PHYSICIAN TRUST

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BACKGROUND: Discrimination in health care is more often perceived by African Americans than by whites and could underlie race differences in physician trust. We examined whether perceived institutional racism alone or in combination with personal experiences of racial discrimination in healthcare settings contributes to differences in physician trust between African American (AA) and white patients.

METHODS: The sample included AA (N=127) and white (N=303) patients being treated for osteoarthritis in Veterans Affairs orthopedic clinics. We used surveys to assess perceptions of racism in the healthcare system (institutional racism), personal experiences with racial discrimination in healthcare settings (personal racism), and patient demographic and clinical characteristics. Physician trust was assessed after patients met with an orthopedic surgeon. We used linear regression to examine whether race was associated with physician trust and whether institutional racism, personal racism, or the two combined explained the association between race and trust.

RESULTS: AA patients reported lower physician trust compared to white patients (Beta=-1.20, 95% CI=-2.30-0.10). In separate models, perceptions of institutional racism (Beta=-0.94, 95% CI=-1.71-0.17) and personal racism (Beta=-2.78, 95% CI=-4.59-0.97) each predicted lower trust and removed the association between race and trust. Additional analyses indicated that only patients who perceived both types of racism reported lower trust than those who perceived neither type of racism (Beta=-3.10, 95% CI=-5.07-1.83), and that institutional and personal racism combined explained the relationship between race and trust.

CONCLUSION: In this sample, lower physician trust among AA versus white patients was explained by perceptions of institutional racism and personal experiences of racism in healthcare settings. Efforts to foster minority patients’ trust in physicians may need to address issues of perceived and/or actual racial discrimination in the healthcare system.

QUALITY OF CARE OR QUALITY OF REPORTING? CHALLENGES FOR CANCER TREATMENT REPORTING.

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BACKGROUND: Complete and accurate data are essential to inform quality improvement initiatives. In 2007, the American College of
Surgeons (ACoS) began to request that hospitals report adjuvant treatments delivered beyond their walls. Yet, there is little incentive for community-based physicians to supply this information to hospital registries. We undertook this study to ascertain differences in level of treatment reporting by community vs hospital-based oncology practices to the hospital tumor registry in hospital applying for ACoS accreditation.

METHODS: We compared adjuvant breast cancer treatments reported to a hospital tumor registry (TR) during 2007–09, the same years a research study at that academic center collected adjuvant treatment data. Radiation (RT) for women undergoing lumpectomy, chemo- & hormonal therapy (HT) for women with a stage 2 or 3 breast cancer were obtained from the tumor registry (N=550) and the research study (N=116). Community vs hospital-based status was determined from directory searches and consultation with active members of the faculty. Bivariate comparisons were performed with chi square analyses.

RESULTS: Treatment rates from Tumor Registry vs research study were: RT post lumpectomy (BCS) 22% vs 81%; chemotherapy 18% vs 79%; & HT 1% vs 89%. The table below compares treatment rates reported from community vs hospital-based oncologists to the TR and from the research study:

| TR Data | Research Study Data |
|---------|---------------------|
|         | Community-Based | Hospital-Based | p   | Community-Based | Hospital-Based | p   |
| RT post lumpectomy | 24/199 (12%) | 55/173 (32%) | <0.0001 | 24/27 (89%) | 17/26 (68%) | 0.07 |
| Chemotherapy for ≥ stage 2 | 13/158 (8%) | 36/126 (29%) | <0.0001 | 24/27 (89%) | 17/26 (68%) | 0.07 |
| HT for ER+ ≥ stage 2 | 0/108 (0%) | 3/93 (3%) | 0.09 | 20/23 (87%) | 19/21 (90%) | 0.87 |

CONCLUSION: Our findings suggest that the quality of breast cancer care is good but the quality of reporting is poor. Reporting rates to the tumor registry are uniformly low for adjuvant treatments, especially hormonal therapies, delivered in community-based sites. As payment is increasingly tied to performance, hospitals must overcome barriers to cancer treatment measuring & reporting, particularly among community-based physicians who have little incentive to report.

FACTORS ASSOCIATED WITH EASE OF IMPLEMENTATION IN A STATEWIDE INTERVENTION

Marshall Fleurant 1; Rachel Kell 2; Chelsea Jenter 3; Lynn A. Volk 4; Fang Zhang 1; David Bates 3; Steven R. Simon 5; 1Harvard Pilgrim Health Care Institute, Boston, Massachusetts; 2Massachusetts eHealth Collaborative, Waltham, Massachusetts; 3Brigham and Women’s Hospital, Boston, Massachusetts; 4Partners HealthCare System Inc., Wellesley, Massachusetts; 5VA Boston Healthcare System, Boston, Massachusetts. (Tracking ID # 10353)

BACKGROUND: The Federal government has set 2014 as a target date for widespread electronic health record (EHR) adoption and meaningful use. However, many are skeptical that we can successfully achieve meaningful use by this time. Prior studies have consistently identified a set of factors associated with higher rates of EHR adoption: larger practice size, hospital association, presence of computerized systems other than EHR, availability of financial resources, physician ownership of the practice, and younger physician age. Between 2005 and 2009 the Massachusetts eHealth Collaborative (MAeHC) installed EHRs into oncology practices to the hospital tumor registry in hospital applying for ACoS accreditation. We also calculated an EHR usage score and used it as a predictor in our model. The usage score was calculated as the proportional use of a specific EHR function divided by the number of available EHR functions. We included self-reported elements of organizational culture into our analysis. (See Table A.) All variables found significant at p

RESULTS: The overall response rate for the baseline and follow-up surveys was 77% and 68% respectively. Most physicians reported that the EHR implementation process was very difficult (35%), or somewhat difficult (54%), while 12% indicated that it was not difficult. On bivariate testing we found that the ease of implementation was associated with mean EHR usage score (p=.05) and baseline physician ownership (p =.02). Physicians who felt that the office staff are innovative (p=.02) and physicians who indicated that their office evaluated quality improvement efforts (p =.02) were also significantly associated with perceived ease of EHR implementation in 2009. In our adjusted analysis we found that the physicians who were owners of the practice (odds ratio [OR] 0.5, 95% confidence interval [CI] 0.2-1.0) and physicians who felt the office were innovative (OR 0.4, 95% CI 0.2-0.8) were significantly less likely to view the implementation process as difficult. (See Table B)

CONCLUSION: Physicians who reported that their office staff is innovative and those who had ownership of the practice were more likely to view the EHR implementation process as not difficult. Interventions to promote EHR adoption may consider targeting practices that do not perceive themselves as innovative and those without physician ownership with special attention and tailored support.
HEALTH CARE RENOUNCEMENT FOR ECONOMIC REASONS IN SWITZERLAND

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BACKGROUND: Most societies elaborate ways to contain increasing health care expenditures. Switzerland, which ranks second in the list of the most expensive health care systems in the world, has universal health-insurance coverage, permitting access to a broad range of services. Patients are largely satisfied with the health care they receive. However, out of pocket payments and cuts in the catalogue of reimbursed services are used as cost-containment measures in Switzerland. Ensuring socioeconomic equity and responsiveness of the health care system is often considered a high priority in health policy making, as lack of access and responsiveness may cause or at least reinforce any socioeconomic gradient in health. Health care renouncement for economic reasons may worsen chronic diseases and increase the risk of complications and hospitalization. Aims of the study were to estimate the extent of health care renouncement for economic reasons in Switzerland and to identify associated factors.

METHODS: A population-based cross-sectional survey (2008–2009) of a representative sample in the canton of Geneva, Switzerland (Bus Sante study). Health care renouncement, income level categories, education, occupation, insurance status and cardiovascular co-morbidities were collected using self-rated questionnaires. Because dental care was not part of the compulsory health care insurance, associations were also assessed after excluding dental care from the definition of health care renouncement.

RESULTS: Seven-hundred sixty five men and 814 women aged 35–74 years participated for this survey, corresponding to participation rates of the 2008–2009 population samples of 51% and 54%, respectively. 14.5% (229/1579) (95%CI 12.7-16.2) renounced health care for economic reasons. Among those who renounced health care (N=229), 74% renounced dental care, 37% physician consultation (22% specialist, 15% general practitioner), 26% health devices (e.g. glasses or hearing device), 13% medication, and 5% surgery. Income was negatively correlated with health care renouncement (r=−0.18, p-value<0.0001; table 1): each decrease in income level category provided a 48% increased risk of renouncing health care for economic reasons (OR 1.48, 1.31-1.65), while it was also associated with a significantly increased burden of cardiovascular disease or risk factors (r=−0.12, p<0.0001; figure 1). This association remained when dental care was excluded from the definition of health care renouncement. During the previous 12 months, 5% of the participants were not able to pay at least once their health insurance premiums.

CONCLUSION: Renouncing care for economic reasons is not uncommon in Switzerland and concerns almost one sixth of the population. More than 30% of the lowest income group renounced health care for economical reasons in the previous year. The poorest are 13 times more likely to renounce health care than the richest. Health care renouncement may worsen health status of a substantial part of the Swiss society.

Table A: Questions Related to Organizational Culture and Physician Satisfaction

| The office staff are innovative (Innovation) |
| The physicians are innovative |
| Among my colleagues, I am usually the first to find out about a new diagnostic test or treatment |
| We are actively doing things to improve quality of care |
| After we make changes to improve quality we evaluate their effectiveness (Evaluation) |
| We have quality problems in our office |
| Our procedures and systems are good at preventing errors |

Table B: Multivariate Analysis: Correlates of Electronic Health Record Implementation

| Variable | Effect Estimate | Odds Ratio [CI] | p-value |
|----------|-----------------|-----------------|---------|
| Innovation | -0.435 | 0.4 [0.2 – 0.8] | 0.01 |
| Evaluation | 0.008 | 1.0 [0.5 – 2.1] | 0.96 |
| Ownership | -0.385 | 0.5 [0.2 – 1.0] | 0.05 |
| Male | 0.040 | 1.0 [0.5 – 2.4] | 0.92 |
| Age > 50 years old | 0.264 | 1.3 [0.6 – 2.6] | 0.45 |
| Mean EHR Score | -0.895 | 0.4 [0.1 – 1.3] | 0.13 |
PREVALENCE OF LOW HDL AND ITS ASSOCIATION WITH BMI IN A NON-DIABETIC VA POPULATION Wei Gu 1; Ronna Mallios 2; Sean McFarland 3; Jian Huang 4. 1UCSF Fresno education program, Fresno, California; 2UCSF, Fresno, California; 3VACCHCS, Fresno, California; 4UCSF Fresno education program, Fresno, California. (Tracking ID # 10362)

BACKGROUND: Low HDL value is an independent predictor of cardiovascular disease (CVD). Recent evidence suggests the association between CVD and elevated triglycerides (TG). However, the contribution from low HDL with co-existing high TG is not well studied. We determined the prevalence of low HDL (less than 40 mg/dl) with normal and elevated TG (less than versus more than or equal 150 mg/dl) in a VA population, its association with BMI and other lipid components, including total cholesterol (TC) and LDL.

METHODS: A retrospective chart review was conducted on 10107 non-diabetic patients at VACCHCS. Patients were divided into three groups: 1) normal HDL (more than or equal 40 mg/dl) and normal TG. 2) isolated low HDL with normal TG; 3) low HDL with elevated TG. Comparisons of the mean BMI, lipid components and the ratios of TC/HDL and TG/HDL among three groups are shown in the table. Anti-lipid agents did not affect the lipid analysis.

RESULTS: Mean values were: age 54.7; BMI 28.9; TC 186.8; LDL 108.2; HDL 42.4; TG 133.5; 98% males; 38% on anti-lipid medications. BMI, lipid components and the ratios of TC/HDL and TG/HDL among three groups are shown in the table. Anti-lipid agents did not affect the lipid analysis.

CONCLUSION: There was more isolated low HDL than low HDL with high TG in our non-diabetic population. Increasing BMI was significantly associated with both low HDL groups. Compared to normal group, the ratios of TC/HDL and TG/HDL were significantly higher in patients with low HDL, especially those with low HDL and high TG. TC values were significantly different in normal HDL and low HDL groups, but did not correspond well to TG values. We may need to include TG value when studying the impact of low HDL on CVD. Prospective studies in an age and gender diverse population are warranted.

PROSPECTIVE COMPARISON OF SCORES AND CLINICAL JUDGMENT TO PREDICT MAJOR BLEEDING IN PATIENTS RECEIVING ORAL ANTICOAGULANTS Jacques Donze 1; Nicolas Rodondi 2; Pierre Monney 3; Gerard Waerber 4; Jacques Cornuz 2; Drahemir Ajuesky 4. 1Brigham and Women’s Hospital, Boston, Massachusetts; 2Department of ambulatory and community care, Lausanne, N/A; 3University of Lausanne, Lausanne, N/A; 4University of Bern, Bern, N/A. (Tracking ID # 10370)
BACKGROUND: The benefit of oral anticoagulant therapy in preventing thromboembolism must be weighed against the risk of bleeding. Clinicians often use subjective clinical judgment to estimate a patient’s bleeding risk. As a decision aid, several objective clinical scores that predict the risk of bleeding in patients treated with oral anticoagulants have been developed. These include the Outpatient Bleeding Risk Index (OBRI) for unselected patients and the Shireman, HEMORR2HAGES, and HAS-BLED scores for patients with atrial fibrillation, the most common indication for oral anticoagulation. We sought to compare the performance of these 4 clinical scores and clinical judgment in predicting the risk of major bleeding in a cohort of patients receiving oral anticoagulants.

METHODS: We prospectively enrolled consecutive patients receiving oral anticoagulants at the department of medicine and ambulatory and community care of a Swiss university hospital (January 2008 to March 2009). The outcome was the first major bleeding event within 12 months of enrollment. We classified patients into three classes of bleeding risk (low, intermediate, and high) according to each score and the treating physician’s clinical judgment with regard to bleeding risk. The treating physicians had an average clinical experience of 4 years (SD 3.4). We assessed the discriminatory power to predict major bleeding by calculating the area under the receiver operating characteristic (ROC) curve of each score and clinical judgment.

RESULTS: We enrolled a total of 515 anticoagulated patients (mean age 71.2 years; female gender=36.1 %). The incidence of major bleeding was 6.8% (35/515) at 12 months. The major bleeding rates varied from 3.0% to 6.2% among patients at low-risk of bleeding and from 4.5% to 16.7% among patients at high-risk of bleeding using the various scoring systems and clinical judgment. The discriminative power of the 4 clinical scores and clinical judgment to predict major bleeding did not differ significantly and was generally poor, with areas under the ROC curve ranging from 0.54 to 0.58 (P=0.89; Table). In the subgroup of 314 patients with atrial fibrillation, the 12-month incidence of major bleeding was 6.4% (20/314). The discriminative power of the 4 scores and clinical judgment was similarly poor, with areas under the ROC curve from 0.51 to 0.59 (P=0.82; Table).

CONCLUSION: Our results indicate that neither clinical judgment nor clinical scores have sufficient power to discriminate between anticoagulated patients who are at high-risk of major bleeding and those who are not. New, accurate risk stratification methods with sufficient discriminative power to predict the risk of bleeding in patients under oral anticoagulants are needed.

Table 1

| Clinical score | All patients (n=515) | Patients with atrial fibrillation (n=314) |
|---------------|-------------------|-------------------------------------|
| Area under the ROC curve (95% CI) |                  |                                    |
| Outpatient Bleeding Risk Index | 0.56 (0.50, 0.62) | 0.58 (0.50, 0.66) |
| Shireman score | 0.57 (0.48, 0.55) | 0.56 (0.44, 0.67) |
| HEMORR2HAGES score | 0.58 (0.50, 0.67) | 0.59 (0.48, 0.70) |
| HAS-BLED | 0.54 (0.46, 0.61) | 0.58 (0.48, 0.67) |
| Clinical Judgment | 0.55 (0.46, 0.65) | 0.51 (0.38, 0.64) |

RACIAL VARIATION WITH FACTOR V LEIDEN MUTATION Rosa M Michel Ortega 1; Amy Hughes 1; Javier Munoz 1; Adepeju Jinadu 1; Amr Hanbali 1; Philip Kuriakose 1; 1 Henry Ford Hospital, Detroit, Michigan. (Tracking ID # 103775)

BACKGROUND: A mutation in the factor V gene (factor V Leiden) has been shown to be related to abnormal blood clotting. The factor V Leiden allele is present in about 5% of Caucasian individuals and even less commonly found in people of African and Asian descent, suggesting a single origin of the mutation. Despite the low prevalence of the mutation (near 1%) in African-Americans, the test is frequently performed by internists and specialists during the work-up of thrombophilia. We examined the associations between factor V Leiden mutation and venous thrombosis among African-Americans at our tertiary care center in the city of Detroit, with particular emphasis on whether a positive test resulted in a change in the patient’s management.

METHODS: This retrospective chart review descriptive study comprised a population of 1,850 patients with venous thromboembolism (VTE) obtained by ICD code at our institution from January 2008 to January 2009.

RESULTS: Out of 1,850 patients with VTE, 104 patients comprising all ethnicities were tested for factor V Leiden mutations. Out of those 104 patients tested for factor V Leiden, 94 patients (90.3%) were negative for the mutation and 10 patients (9.6%) were positive (Table 1). Patients across all ethnicities with positive test results exhibited a heterozygous factor V Leiden mutation with no cases of homozygous mutations being seen. Most of the cases (70%) were not requested by a hematologist and were instead more commonly ordered by the internist. Of note, the immediate management of each particular patient did not change based on the results of the factor V Leiden testing (100%). We then further examined the patient population in regards to ethnic distribution. The ethnic distribution of our patient population (Algorithm 1) included 1060 African-Americans, 682 Caucasians, 30 Asians, 18 Hispanics and 12 Middle Eastern patients. Race was documented as “other” or “not specified” in 48 patients. Out of 1,060 African-Americans with VTE, 53 patients were tested for factor V Leiden gene mutation and only 3 cases (0.2%) were heterozygous for such mutation. As noted above, no homozygous factor V Leiden cases were detected irrespective of the ethnic group studied.

CONCLUSION: Ethnic stratification is important in developing cost-effective selective screening programs to identify individuals at risk for thrombophilia. There is little evidence that the identification of inherited thrombophilias, such as factor V Leiden gene mutation, dictates a change in management of duration of anticoagulant therapy for patients with VTE. This fact seems to be particularly true in the African-American population due to its very low incidence. Careful history and physical exam remain the most important tools to decide the management of patients with VTE surpassing any laboratory testing including factor V Leiden gene mutation.

Table 1

| Patient Race | Setting | Request by |
|--------------|---------|------------|
| 1 Caucasian  | Outpatient | Hematology |
| 2 Caucasian  | Outpatient | Internist  |
| 3 Caucasian  | Inpatient | Internist  |
| 4 African-American | Outpatient | Hematology |
| 5 Caucasian  | Inpatient | Neurology  |
| 6 African-American | Outpatient | Internist  |
| 7 African-American | Inpatient | Nephrology |
| 8 Caucasian  | Outpatient | Hematology |
| 9 Middle-Eastern | Outpatient |          |
INTEGRATING PATIENT-REPORTED INFORMATION INTO AN ELECTRONIC MEDICAL RECORD TO ENSURE SAFE PRESCRIBING TO WOMEN OF CHILDBEARING POTENTIAL  Sanithia Williams 1; Rachel Hess 1; Sara M Parisi 1; Steven Handler 1; Grant Shevchik 2; Wishwa Kapoor 1; Eleanor Bimla Schwarz 1. 1University of Pittsburgh, Pittsburgh, Pennsylvania; 2UPMC, Pittsburgh, Pennsylvania. (Tracking ID # 10376)

BACKGROUND: Certain medications should not be used by women who are pregnant or breastfeeding. Primary care providers are charged with counseling women about the risks that may be posed by medication use, however, it is challenging for clinicians to routinely assess women’s pregnancy intentions, use of contraception, and lactation status.

METHODS: We developed a system that uses wirelessly-networked tablet computers to allow women to enter pregnancy, contraception and lactation information which is then automatically extracted and transferred into the patient’s electronic medical record prior to their visit with a primary care provider. We implemented this system at two community-based primary care practices in Western Pennsylvania.

RESULTS: Over a 7-month period, 962 female patients entered pregnancy, contraception, and lactation information that was extracted from a tablet computer into their patient record prior to their visit with a provider at two community-based primary care practice in Western Pennsylvania. On average, these female patients were 35 (+/- 10) years old. Introduction of this system did not significantly increase wait times at the clinic’s front desk. Information that might affect prescribing decisions was entered by 360 (37%) women. Current pregnancy or an effort to conceive was reported by 40 (4%) of women, while another 33 (3%) stated they wouldn’t mind becoming pregnant. Among the 856 (89%) who stated they were not trying to become pregnant, 60 (7%) were using no method of contraception while 214 (25%) were relying on relatively ineffective, behavioral or barrier methods of contraception. Thirteen women (1%) reported currently breastfeeding an infant. Notably, only 10 women (<1%) selected the “prefer not to answer” option when the tablet stated, “Some of the medicines that your doctor may prescribe can be harmful during pregnancy. We feel it is important to understand each patient’s plans and risks for pregnancy. Are you currently pregnant or trying to become pregnant?”

CONCLUSION: Systematic collection of patient-reported reproductive health information in the primary care setting is feasible, acceptable to women, and has the potential to reduce unsafe prescribing to women of childbearing age.

MULTISOURCE EVALUATIONS OF RESIDENTS FROM THE VIEWPOINT OF THE EVALUATORS  Susan Michelle Nikels 1; Suzanne Brandenburg2. 1University of Colorado Hospital, Denver, Colorado; 2University of Colorado, Denver, Colorado. (Tracking ID # 10385)
BACKGROUND: Multisource evaluations of residents are required by the Accreditation Council for Graduate Medical Education (ACGME), but there are no previous studies indicating the best way to collect this data from a range of healthcare professionals with varying amounts of contact and diverse types of interactions with residents. The purpose of this study is to gather input from non-physician continuity clinic staff (nurses, medical assistants and administrative staff) regarding their comfort with and ability to assess various aspects of resident performance and behavior.

METHODS: Based on the input of a focus group, we prepared and distributed an anonymous survey to the non-physician staff at 6 Internal Medicine Residency Continuity Clinic sites all associated with the University of Colorado Internal Medicine Residency program. The survey was designed to gather opinions on what competencies the staff members think they are qualified to assess and have adequate opportunity to observe in the residents with whom they interact. Respondents completed a 16-question survey about their participation in resident evaluations. They were asked about their perceptions of resident evaluations using a 4-point response scale (1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree). Questions addressed respondents' age, degree, position, years experience, experiences providing feedback to residents and preferences regarding frequency and method of providing feedback. One item asked respondents how well they could evaluate 12 resident behaviors using a 3-point response scale (1 = not able to evaluate; 2 = somewhat able; 3 = very well). Based on an exploratory factor analysis of these behaviors (principal axis extraction with varimax rotation) we developed three scales: Professional Behavior, Medical Knowledge and Judgment, and Patient Interaction. Because the number of items differed for each scale, item means were calculated. Descriptive analyses were conducted to characterize the sample, beliefs about participation in resident evaluations and experiences providing feedback to residents. To examine whether respondents differed in their ability to evaluate the three types of resident behavior, paired t-tests comparing nurses and other clinic staff were estimated.

RESULTS: There were 61 responders to our survey consisting of nursing staff, medical assistants and administrative staff of the 6 participating internal medicine outpatient clinics. Among the responders, nurses tended to be older and have more job experience. Overall, the clinic staff agreed that it was important to formally evaluate the residents (86.9% agree or strongly agree), although the nurses tended to more strongly agree. When asked how well they could evaluate 12 resident behaviors, all staff were more likely to feel they could evaluate professional behaviors very well (62.1% respect to staff; 61% professional dress/attire; 54.2% communication skills with staff; 43.9% ability to work as part of a team). Although overall respondents were not comfortable evaluating medical knowledge and judgment (45.6% felt not at all able to assess adequacy of medical knowledge; 41.1% not at all able to evaluate clinical judgment), nurses were more comfortable than other staff members in evaluating these competencies. Limited contact with the residents was cited by 85.7% of respondents as the biggest barrier to evaluating the residents. Lack of confidentiality was not a significant concern in the evaluation process (1.8%). Significant feedback is still given verbally rather than on formal written evaluations.

CONCLUSION: Non-physician clinic staff members agree that it is important to evaluate residents and they feel secure that evaluations are handled confidentially. Clinic staff members are most comfortable providing feedback on professional behaviors and significantly less comfortable giving feedback on medical knowledge. Nurses are more confident providing feedback on clinical judgment and medical knowledge than other staff members. How much of this is related to age and job experience is unclear. A significant amount of feedback is provided verbally to residents and/or to the attending physicians supervising the residents but not necessarily captured in a formal written evaluation process as required by the ACGME. Future work should look at ways to capture “real time” verbal feedback and attempt to standardize the competencies we ask our non-physician staff members to evaluate.

INFLUENCE OF DEBT AND ANTICIPATED INCOME ON MEDICAL STUDENT CAREER CHOICE IN INTERNAL MEDICINE

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BACKGROUND: Recent studies suggest that increasing debt and desire for higher incomes may be influencing medical student career choice. This study examines career decisions of students who begin medical school intending to pursue careers in Internal Medicine. The objectives were to determine how debt, the self-rated importance placed on income, and future income projections relate to intentions to pursue a subspecialty in Internal Medicine (IMSS) rather than General Internal Medicine (GIM). The anticipated salary changes were also examined for those students switching out of Internal Medicine.

METHODS: Students at New York Medical College and Brody School of Medicine at East Carolina University were surveyed annually at matriculation (M1) and just prior to graduation (M4). The data set included 17 consecutive years of M1 surveys and 16 years of M4 data. The overall response rate was 81%. The responses of students who expressed an interest in Internal Medicine at either M1 or M4 were analyzed. Additional analyses focused on the subset of students who expressed an interest in Internal Medicine at M1 and subsequently completed a follow-up survey at M4, yielding paired data that enabled the investigation of trends over time. Overall, the analyses examined the relationships among the following factors: reported debt (in dollars), anticipated income 5 years after residency (in dollars), student reported influence/importance of income on career choice (Likert scale rating), association of self-rated importance of income with anticipated income, and stated career choice.

RESULTS: 239 M1 students expressed interest in GIM; 404 in IMSS. By graduation, these numbers changed to 277 and 343 respectively. The trends in Table 1 were identified. Longitudinal changes in anticipated income were also documented. Students aspiring to GIM at M4 expected $139 K ($14 K more than what they anticipated at M1); those aspiring to Internal Medicine subspecialties expected $179 K (up $43 K from what they anticipated at M1); those who switched out of Internal Medicine expected $207 K (up $62 K from M1).

CONCLUSION: Both debt and expected income may push medical students initially interested in General Internal Medicine towards a career in a subspecialty of medicine or to a career in another specialty outside of Internal Medicine. Changes in the payment system to more properly reimburse general internists may be needed to attract talented students whose financial concerns may otherwise discourage them from pursuing a generalist career. Since concern about debt is associated with career choice, new loan forgiveness programs linked to practice in General Internal Medicine should also be developed as a method to assist in sustaining the numbers of students choosing this career path.
A POSITIVE PHQ-2 DEPRESSION SCREEN AMONG HOSPITALIZED HEART FAILURE PATIENTS IS ASSOCIATED WITH LOWER LEVELS OF QUALITY OF LIFE AND PREDICTS ELEVATED 12-MONTH MORTALITY RISK
Bruce L. Rollman 
Bea Herbeck Behnap 
Fanyin He 
Sati Mazumdar 
Herbert C Schulberg 
Charles F. Reynolds

BACKGROUND: Heart failure (HF) affects over 5.7 million Americans, with over 660,000 newly diagnosed cases, 290,000 deaths, and $837 billion in treatment costs incurred yearly. One potential contributor to poor outcomes is unrecognized depression. An American Heart Association (AHA) Science Advisory has advocated routine screening of cardiovascular disease patients for depression to identify those who may require further assessment and treatment with use of the two-item Patient Health Questionnaire (PHQ-2) ‘at a minimum’ (Circulation, 2008; 118:1768). Yet, the value of a positive PHQ-2 screen among HF patients is unknown.

METHODS: We administered the PHQ-2 to HF patients (ejection fraction (EF) <40%) with NYHA class II-IV symptoms prior to discharge from 4 Pittsburgh-area hospitals. We defined a positive depression screen as one or both PHQ-2 items endorsed affirmatively (In the past two weeks have you: (a) had little interest or pleasure doing things; or (b) felt down, depressed or hopeless; PHQ-2 (+)), and a negative screen as both items endorsed negatively (PHQ-2 (-)). According to prespecified sample size calculations, we oversampled PHQ-2 (+) to PHQ-2 (-) patients. Then, at baseline, we collected sociodemographic and clinical data, and later contacted patients or their designated secondary contacts (e.g., spouse, adult child) via telephone to ascertain vital status. Later, a study physician blinded as to subjects’ baseline PHQ-2 status reviewed each report of death, including hospitalization records and death certificate, and assigned a cause of death. We evaluated differences between study cohorts defined by PHQ-2 status for statistical significance using t- and chi-squared tests for baseline data, and log-rank tests for 12-month incidence of all-cause and cardiovascular mortality calculated from Kaplan-Meier analyses with Cox models to adjust for baseline covariates.

RESULTS: Over a 16-month period ending 4/09, 610 HF patients consented to our screening procedure; 526 (86%) were both NYHA and PHQ-2 eligible; and 473 (90%) met all other study requirements. Compared to PHQ-2 (-) patients (n=101), PHQ-2 (+) patients (n=372) were younger (65 vs. 70), more likely to have NYHA III/IV symptoms (67% vs. 39%), and reported lower levels of physical (SF-12 PCS: 30.7 vs. 34.3) and mental health-related quality of life (SF-12 MCS: 44.4 vs. 58.5) (all p<0.002). However, they were similar on other baseline clinical and sociodemographic characteristics (e.g., 65% male, 85% White, 41% diabetic, 25% mean EF). We confirmed vital status on all 473 study patients (100%) as of 12/31/09 and identified 83 deaths, including 55 (66%) for cardiovascular causes. At 12-months follow-up, 20% of PHQ-2 (+) vs. 8% of PHQ-2 (-) patients had died (p=0.007), and PHQ-2 (+) status remained associated with both increased all-cause (hazard ratio (HR): 3.0 (95% CI: 1.4-6.4); p=0.004) and cardiovascular mortality (HR: 2.6 (1.1-6.3); p=0.03) even after adjustment for age, gender, EF, NYHA class, diabetes, hypotremia, ACE-I/ARB use, antidepressant use, and a variety of other baseline covariates.

CONCLUSION: Among hospitalized HF patients, a positive PHQ-2 depression screen prior to discharge home is associated with lower levels of HRQoL and elevated mortality risk at 12-month follow-up. While our findings support the AHA Science Advisory for HF patients, clinical trials remain necessary to determine whether effective depression treatment can improve health-related quality of life and reduce mortality in this medically ill population.

PATIENT AND SERVICE LEVEL ASSOCIATIONS WITH THE QUALITY OF END OF LIFE CARE AT AN ACADEMIC MEDICAL CENTER
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BACKGROUND: Little is known about what influences the quality of end of life care. We evaluated the relationship between patient clinical and demographic characteristics and inpatient clinical service with the quality of end of life care among patients dying in the hospital.

METHODS: Medical records were abstracted for 496 adult decedents hospitalized for at least 3 days between April 2005 and April 2006. Sixteen of the Assessing Care of Vulnerable Elders (ACOVE) quality indicators (QIs) that focus on end of life care (communication and symptom management) were measured and an overall patient-level quality score was calculated. Because patients triggered different QIs with varying pass rates, the observed quality score for each decedent was compared against the expected score of a hypothetical patient who had triggered the identical QI pattern to compute an observed-minus-expected score. Bivariate relationships between quality and patient characteristics (age, sex, race, ethnicity, religion, insurance status, marital status, pre-hospital venue, mental status on admission, and presence of end stage disease on admission) and clinical service were studied. Because specific end stage disease was highly correlated with clinical service (cancer and oncology service, liver disease or transplant with liver service, all ns>0.6 and ps<0.001), we evaluated the association of quality with patient characteristics and clinical service in separate regression equations. Published literature suggests that a minimally clinically significant difference in quality is approximately 5–10%.

RESULTS: In bivariate analyses, patients with advanced cancer and patients admitted to the oncology service received significantly higher quality scores and lower quality was associated with Hispanic ethnicity, being considered for transplant, not having religion documented in the medical record, admission to the liver service, and admission to a

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| Factor                                | M1                          | p    | M4                          | p    |
|---------------------------------------|-----------------------------|------|-----------------------------|------|
| Debt (amount)                         | IM SS > GIM                 | <.05 | IM SS > GIM                 | <.05 |
| Self-rated importance of income       | IM SS > GIM                 | <.01 | IM SS > GIM                 | <.001|
| Expected income                       | IM SS > GIM                 | <.001| IM SS > GIM                 | <.001|
| Association of self-rated importance | Greater importance rating   | <.001| Greater importance rating   | <.001|
| of income with expected income        | associated with higher      |      | associated with higher      |      |
|                                       | expected income             |      | expected income             |      |
surgical intensive care unit. In a linear regression model that included all patient characteristics, patients who were considered for transplant during the admission received lower quality end of life care. Adjusting for all other variables, patients considered for transplant received 7% lower quality score compared to patients not considered for transplant \(p=0.02\). Lack of documentation of a patient’s religion in the medical record was associated with a 10% lower quality score compared to Christian/Protestant patients \(p=0.02\). In a linear regression model that included all patient services, patients cared for by a surgical intensive care unit received 9% lower quality compared to patients on a medical service \(p=0.03\).

CONCLUSION: This analysis identified factors associated with lower quality inpatient end of life care that can be targeted for quality improvement. Potential organ transplant recipients and patients admitted to the surgical intensive care unit at the facility studied are at particular risk for lower quality treatment at the end of life. The role of attention to religion and whether similar influences exist at other hospitals merits study.

THE ROLE MODELS OF BEDSIDE TEACHERS: A QUALITATIVE ANALYSIS Jed Gonzalo 1; Briar Leigh Duffy 2; Dario Torre 3; David Elnicki 4. 1Beth Israel Deaconess Medical Center, Boston, Massachusetts ; 2University of Pittsburgh/VA Pittsburgh, Pittsburgh, Pennsylvania ; 3University of Pittsburgh, Pittsburgh, Pennsylvania ; 4University of Pittsburgh, Wexford, Pennsylvania . (Tracking ID # 10422)

BACKGROUND: The attributes of excellent physician role models include teaching that is focused on the importance of the doctor-patient relationship, competence in the clinical setting, and spending time with learners while conducting rounds on the wards. Although bedside rounds have traditionally been integral to teaching services, their frequency has decreased, despite learner and patient preferences for this method of rounding. In a changing healthcare environment, where pressure for clinical productivity leads to reduced teaching time at the bedside, it is important to explore the opinions of experienced bedside teachers about what constitutes a quality bedside teacher. Therefore, we sought to identify characteristics perceived by bedside teachers to be associated with quality bedside teachers.

METHODS: Using purposeful sampling, we identified 11 academic institutions and a site principal investigator at each location to identify physicians who perform “bedside rounds” according to a pre-determined definition and actively serving as inpatient attending on teaching services. From February to November of 2010, 2 investigators conducted digitally-recorded, semi-structured, one-on-one telephone interviews, each lasting 1 hour, and consisting of open- and closed-ended questions pertaining to prior education on bedside rounds and the role models whom they identified as “quality bedside teachers.” Each interview was transcribed verbatim and an inductive thematic qualitative analysis was completed coding the transcripts for emerging themes. Participant comments were reviewed multiple times, coded into themes, and reduced to 5 categories. Quality control was maintained with 2 independent researchers coding the data, verifying codes, and developing the category system. The Institutional Review Boards at all institutions approved the study.

RESULTS: Ten institutions completed IRB submission and identified a minimum of 3 participants for inclusion. We completed thirty-four interviews, the majority with assistant professors (44%). The participants averaged 13.7 years of academic experience and 18 weeks on the teaching services with housestaff over the previous 2 years. Most participants did not receive formal education on bedside rounds during residency (85%), fellowship (79%), or faculty time (65%). All participants identified a physician whom they labeled as an “equality bedside teacher.” In response to why they were considered an “equality bedside teacher,” 5 thematic categories were identified: modeling of clinical actions, modeling compassionate patient-physician interactions, interactive teaching by engaging all participants, patient-centered teaching, and integration of knowledge and clinical practice.

CONCLUSION: The professional development of the bedside teachers was positively impacted by physicians who taught at the bedside, as all participants identified a quality bedside teaching role model. The characteristics of excellent role models have been shown to include spending time on rounds with housestaff and demonstrating the physician-patient relationship, both of which were reiterated in our study. In addition, the specific attributes identified in quality bedside teaching role models embody the integration of the patient and learner at the bedside. With the downward trend in bedside rounds, the opportunities to model humanistic, patient-centered learning, which are more difficult to demonstrate in the classroom, are being lost. Faculty development efforts to promote bedside skills with these patient-centered attributes may assist in developing the next generation of quality bedside teachers.

ASSESSING VARIATION IN PPI DISCONTINUATION IN VA LONG-TERM CARE Amy Linsky 1; John A. Hermos 2; Michael Shwartz 3; James L. Rudolph 4. 1Beth Israel Deaconess Medical Center, Boston, Massachusetts ; 2Boston Medical Center and Center for Organization, Leadership, and Management Research, VA Boston Healthcare System, Boston, Massachusetts ; 3Massachusetts Veterans Epidemiology Research and Information Center, VA Cooperative Studies Program, VA Boston Healthcare System, Boston, Massachusetts ; 4Center for Organization, Leadership, and Management Research, VA Boston Healthcare System, Boston, Massachusetts . (Tracking ID # 10429)

BACKGROUND: Proton pump inhibitors (PPI) are commonly prescribed medications that are often initiated and continued without clear indication, contributing to overmedication. We previously determined that within Veterans Affairs (VA) long-term care facilities, patient characteristics were only weakly associated with PPI discontinuation within 180 days of admission, but we did not account for variability between facilities. Our current objective is to analyze PPI discontinuation across these VA facilities and to determine the amount of variability accounted for at the patient- and facility-levels.

METHODS: We linked national VA administrative and pharmacy data with Minimum Dataset patient assessments to identify patients admitted to VA long-term care in 2005 who were prescribed an oral PPI within seven days of admission, stayed a minimum of seven days, and were not receiving hospice care. This yielded 9,589 patients ("baseline PPI users") across 115 facilities. Our primary outcome was PPI discontinuation within 180 days of admission, with an intermediate assessment at 28 days. Facility-level characteristics included annual admissions and average daily census ("size"). Patient-level characteristics included age, sex, pre-admission PPI prescriptions and hospitalizations, number of medications, functional status, and comorbidities. Facility-level prevalence of baseline PPI use equaled the number of baseline PPI users relative to number of admissions. Facility-level PPI discontinuation equaled the number of discontinuations relative to the number of baseline PPI users. Descriptive statistics summarized facility-level characteristics. Separate simple linear regressions associated both baseline PPI prevalence and discontinuation with both facility admissions and size. Hierarchical linear models, which account for the clustering of patients within facilities, partitioned the variation in PPI discontinuation across patients and facilities.

RESULTS: The 115 facilities had a mean of 311 annual admissions (SD 221) and an average daily census of 104 patients (SD 64). At the facility-
RESULTS: Of the 16,613 beneficiaries who died with heart failure in 2007, 6,436 (38.7%) received hospice care during the last six months of life. Hospice care was more common in women, older patients, residents of the South or Midwest regions, and in patients with cancer or dementia. The mean total medical expenditures during the last six months of life were $31,793 (SD 25,691) among beneficiaries with hospice care, in comparison to $34,067 (SD 40,561) among beneficiaries without hospice care. However, after adjustments for covariates, hospice care was associated with 4% higher expenditures (cost ratio 1.04, 95% CI 1.01-1.07; p=0.02). The most important confounders appeared to be age, race, and geographic location. Expenditures related to hospice services accounted for 23% (mean $7,462) of total expenditures among individuals who had received hospice care. Hospice use was associated with lower rates of hospitalization (adjusted incidence rate ratio (aIRR) 0.87, 95% CI 0.84-0.89) and ICU days (aIRR 0.68, 95% CI 0.63-0.73). Hospice use was also associated with performance of fewer medical procedures, including cardiac catheterization (adjusted prevalence ratio (aPR) 0.63, 95% CI 0.52-0.75), noninvasive ventilation (aPR 0.67; 95% CI 0.57-0.79), and mechanical ventilation (aPR 0.33; 95% CI 0.29-0.37).

CONCLUSION: Despite lower rates of hospitalization, ICU days, and invasive procedures, hospice care was associated with higher expenditures for heart failure patients following adjustment for covariates. Within Medicare, financial savings related to reduced intensive medical care appears to be offset by the expenditures related to hospice care itself. Hospice for heart failure patients should focus on quality of life and patient preferences; cost savings should not be expected.

MOVING INTO TEAM-BASED CARE: FIRST STEPS TOWARDS THE PATIENT-CENTERED MEDICAL HOME IN A UNIVERSITY-BASED PRACTICE Rita S. Lee 1; Kelly J. White 1; Susanne Felton 1; Amy G. Huebschmann 1. 1University of Colorado, Denver, Colorado. (Tracking ID # 10442)

BACKGROUND: There is a national movement to transform primary care practices into patient-centered medical homes (PCMH). One of the 7 joint principles of the PCMH is that “the personal physician leads a team of individuals at the practice level to collectively take responsibility for the ongoing care of patients." Thus, a necessary step to become a PCMH is to organize physician-led teams. Academic general internal medicine practices struggle to achieve team-based care due to a lack of dedicated funding or protected time to develop this infrastructure. We piloted a model of team-based care in a University-based general internal medicine practice. Our goals were to increase provider, staff, and patient satisfaction, and to improve patients’ continuity of care.

METHODS: Our team-based care pilot included 9 providers (8 physicians, 1 physician assistant), 1 nurse (RN), and 2 medical assistants (MA)–approximately 1/3 of the practice. We held 1-hour team meetings twice per month for the first 3 months and monthly thereafter. The team identified areas for improvement and devised strategies to achieve organized team-based care. To optimize team efficiency, we increased RN and MA duties within the scope of their practices. Ten months after initiating the team pilot, we assessed provider, staff, and patient satisfaction. All providers (n=29) and staff (n=27) were surveyed anonymously regarding overall job satisfaction, time spent on paperwork and phone calls, and collaboration with RNs, MAs, or clinic administrative staff. Telephone surveys of a random sample of 40 patients were also conducted–with half followed by providers in the team-based pilot. Survey questions addressed ease of appointment scheduling, availability of appointments, and seeing the provider of their choice. Differences between team and non-team provider, staff, and patient satisfaction were analyzed using the Cochran-Mantel-Haenszel test. Continuity of care measures were assessed as the percentage of visits with a single provider or only team providers over comparable pre-intervention and post-intervention time periods and analyzed using the Chi-Square test.

RESULTS: We found no statistically significant differences between team and non-team providers for overall job satisfaction, amount of time spent doing paperwork, time spent on phone calls, control over work environment, and collaboration with nurses or clinic administrative staff. Team-based providers reported a greater level of satisfaction in collaborat-
ing with medical assistants as compared to non-team providers (p=0.01). There were no significant differences in any patient satisfaction measures in team vs. non-team patients. There was no significant difference in continuity of care measures pre- and post-intervention.

**CONCLUSION:** Moving from a clinical practice that is autonomously provider-driven to provider-led team-based care is feasible in a University-based general internal medicine practice without adversely impacting patient, provider, or staff satisfaction. Using the lessons learned from the team pilot and the data gathered, we expanded the team model to the entire practice. The transition into teams has been facilitated by moving in a thoughtful, staged, and data-driven manner.

**A COMMUNITY-BASED, CULTURE-CENTERED APPROACH FOR DEVELOPING EFFECTIVE HEART DISEASE PREVENTION MESSAGES FOR RACIAL/ETHNIC MINORITIES**

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**BACKGROUND:** Despite increasing calls for coronary heart disease (CHD) prevention efforts to target minorities, little is known about how best to target CHD prevention messages to different racial/ethnic groups. We used a community-based, culture-centered approach to develop a multimedia CHD prevention education program (PEP) targeted to South Asian (Asian Indian and Pakistani) immigrants, a group that has higher rates of CHD than other U.S. racial/ethnic groups.

**METHODS:** The PEP included six, 5-minute video modules (brief text, narration, simple graphics, and photographs) about CHD, risk factors, and prevention. The PEP content was developed from formative qualitative and quantitative interviews with South Asians, health communication and behavior theory, and CHD prevention guidelines. Both surface structures (e.g., language, foods) and deeper structures (e.g., health beliefs, values) of South Asians' socio-cultural context were integrated into the PEP. Prototype modules were shown in focus groups to English and Hindi-speaking community members recruited from a Federally Qualified Health Center and 2 South Asian community centers in Chicago. Participants commented on the content, clarity, and cultural-appropriateness of each module. Twenty focus group discussions (n=120) were conducted. Audio-taped discussions were transcribed, translated, and back-translated. In this iterative process, emergent thematic categories were organized using theoretical constructs underlying the PEP; the PEP was revised based on focus group themes, and then re-shown in focus groups. Here, we present focus group data related to the first module, “What is Heart Disease?”

**RESULTS:** Participants mean age was 51 years (range 20–75), and 66% were women. All were immigrants and had lived in the U.S. an average of 13 years. Sixty percent spoke English, and 66% were college graduates. To capture audience attention and increase perceived susceptibility to CHD, the initial opening statement in the first module was, “Heart attack is the number one killer of Indians and Pakistanis.” Most participants said this statement was too strong and direct; one participant stated, “This looks like a bold attack because you are pinpointing one community.” Others agreed, noting, “Heart attacks happen in all communities.” The opening statement has now been modified to: “Heart attack is the number one killer of people around the world. Studies show that Asian Indians and Pakistanis are more likely to have heart attacks than people from other communities.” Participants also said that the opening image, of an older South Asian woman, did not capture the heterogeneity among South Asians and therefore, made them feel that they were not at risk. To address this, we added a diverse montage of South Asians to the PEP. This image was more positively received and as one participant said it conveyed, “Anyone of us can have a heart attack.”

Finally, the prototype PEP briefly addressed the belief that stress causes CHD because this theme had been important in formative interviews; the PEP tried to emphasize that CHD is caused by clogged blood vessels, not stress. Focus group participants said this was ineffective: “You are trying to address the myth here, but since the myth is so deep rooted and strongly believed, that just one sentence will not take it away.” The revised PEP explains the relationship in more detail, acknowledges the role that stress can play in CHD, and now also includes an additional seventh module on stress management and health.

**CONCLUSION:** A community-based, culture-centered approach to developing CHD prevention messages for South Asians led to key lessons that can guide the development of health messages for other minorities: the community’s negative reaction to the opening statement illustrates the potential tension between how researchers and communities conceptualize cultural-targeting; the importance of capturing the heterogeneity within a minority group; and incorporating, rather than negating community beliefs about disease etiology. As a next step, we will be testing whether or not the PEP can engage South Asian patients and motivate CHD prevention behaviors.

**REHOSPITALIZATION RATES AND ASSOCIATED COSTS IN US MANAGED CARE PATIENTS WITH ATRIAL FIBRILLATION/ATRIAL FLUTTER**

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**BACKGROUND:** Atrial fibrillation (AF) and atrial flutter (AFL) affect ~3.2 million individuals in the US, and are the leading cause of hospitalization for cardiac arrhythmia. AF/AFL impose high costs on the US healthcare system, with inpatient care being the principal cost driver. Novel antiarrhythmics show promise in reducing the risk of cardiovascular (CV) hospitalization in AF/AFL patients. However, the cost burden of AF/AFL is due not only to the initial CV hospitalization, but also to subsequent readmissions.

**METHODS:** In this retrospective cohort study, patients hospitalized with a primary diagnosis of AF/AFL were identified from the IMS PharMetrics® Patient-Centric database (Jan 2007–March 2008). Non-AF/AFL controls were matched (1:1) to AF/AFL patients on age, gender, region, and health plan enrollment status. The date of the first qualifying (index) hospitalization of the AF/AFL patient served as the index date for the control patient. All patients had to have ~12 months’ continuous pre- and post-index enrollment. Rehospitalization patterns were assessed over the 12-month post-index period, and costs of initial and subsequent AF/AFL-related hospitalizations were compared.

**RESULTS:** Overall, 5,091 patients (mean age 67.1 years; 56.8% men) were included in each cohort. AF/AFL patients had higher rates of CV comorbidity than controls. Compared with the control cohort, the AF/AFL cohort had a significantly higher rate of all-cause rehospitalization (OR 6.4, 95% CI 5.5-7.5; P<0.0001) and CV-related rehospitalization (OR 9.2, 95% CI 7.6-11.0; P<0.0001), after adjusting for differences in comorbidity. Cumulative readmission rates for the AF/AFL cohort over the post-index period are summarized (Table). The first readmission with a primary diagnosis of AF/AFL involved a longer hospital stay than the index hospitalization (mean 4.5 vs 3.9 days; P<0.05) and higher costs (mean total charge US$ 32,132 vs 26,669; P<0.001).

**CONCLUSION:** Hospitalized AF/AFL patients experience high rates of CV and AF/AFL-related readmission, particularly within the first 30 and 90 days. Subsequent AF/AFL-related readmissions incur higher costs than the initial AF/AFL hospitalization.
PROVIDING SHELTER FROM THE STORM: CHARACTERISTICS OF INFORMAL CAREGIVERS FOR THE HOMEBOUND ELDERLY

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ABSTRACTS

BACKGROUND: Informal caregivers, defined as “unpaid friends or family members who arrange or oversee needed services because of functional disabilities,” provide the majority of support for homebound adults. Caring for homebound adults may expose informal caregivers to considerable physical and emotional stress. We therefore conducted a survey of informal caregivers of the homebound elderly to examine their level of caregiver burden, depression and satisfaction with care.

METHODS: Between June and November 2010, we recruited homebound patients newly enrolled in two home-based care programs, the Mount Sinai Visiting Doctors (MSVD) program and the Visiting Nurse Service of New York Long-term Home Health Care Program (Lombardi). We included patients aged >65 who were English- or Spanish-speaking, were able to provide consent, and had difficulty leaving their homes. All enrolled homebound patients were screened for the presence of an informal caregiver. Caregivers were surveyed and characterized with respect to socio-demographic characteristics, employment status, and time spent in the caregiving role. Caregiver burden was measured using the Zarit Burden Scale with severe burden defined as a total score >24 points; presence of depression was measured using the Center for Epidemiologic Studies Depression scale (CES-D) with definite depression defined as a total score greater than 9. Caregiver level of satisfaction was measured using the Patient Satisfaction Questionnaire 18 (PSQ-18).

RESULTS: Of 65 homebound patients interviewed, 37 (52%) identified informal caregivers and we recruited 34 caregivers (92%) for interviews. Of the caregivers interviewed, a large majority were female (74%) and were adult children of the patient (77%). Twenty three (68%) lived with the patient. Fifteen (44%) were working full time (>40 hours/week), and 4 (12%) worked part time. Six (18%) were retired, and 6 (18%) were unemployed. Eighteen (53%) had been caring for their relative/friend for over 5 years and 11 (32%) for 2–5 years. The majority (61%) reported spending over 20 hours per week caring for their relative/friend. On the Zarit burden scale, 12 (35%) met criteria for severe caregiver burden, and on the CES-D, 32% met criteria for definite depression. In terms of satisfaction with medical care for their relative/friend, the mean score was 63 (SD 13, range 38–88) on the PSQ-18 (range from 18 [least satisfied] to 90 [most satisfied]).

CONCLUSION: A high proportion of caregivers of homebound elderly patients meet criteria for severe burden and depression. As the number of homebound seniors grows, it will be increasingly important to identify interventions for caregivers that can decrease burden and lessen the societal impact of illness and unemployment in the caregiving population.

ELECTRONIC PRESCRIBING WITH FORMULARY DECISION SUPPORT REDUCES PATIENT COPAY AMOUNTS

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BACKGROUND: Given the many types of health insurance that a patient may have, and the different preferred medications that each insurance company may offer, it can be difficult for a prescribing physician to know which medication will be least expensive for a given patient. Such knowledge is particularly important because lower out-of-pocket medication costs are associated with improved patient medication adherence. Several commercially available electronic prescribing (e-prescribing) systems include formulary decision support that provides physicians with patient-specific formulary information. This information can be used to reduce patients’ out-of-pocket costs. Prior studies have shown that usage of e-prescribing with formulary decision support (EWFDS) is associated with increased prescribing of generic and lower formulary tiered medications. In this study, we examine actual copay data to measure the effect of EWFDS on patient copays. Furthermore, this analysis concentrates on smaller physician practices, which face the greatest challenges in the drive to increase health information technology (HIT) use.

METHODS: We analyzed pharmacy claims for drugs dispensed during 1/1/03-7/31/06. After examining the distribution of copays, we conducted bivariate analyses to measure the associations between patient copays and several physician, patient, and claim-level characteristics. We then used a difference-in-differences robust regression (DDIRR) approach to examine changes in copay amounts before and after PCPs began to use EWFDS. Adopting PCPs were categorized into three levels of e-prescribing usage (0–20%, 20–50%, and >50%); a fourth group was comprised of non-participating PCPs. Because there was no

| TABLE. Cumulative Rehospitalisation Rates for the AF/AFL Cohort Over the Post-Index Period |
|----------------------------------------|------------------|------------------|------------------|------------------|
| Cause of Rehospitalisation            | Cumulative Absolute Readmission Rate (% patients) |
|                                       | 30 days | 90 days | 180 days | 365 days |
| All-cause                             | 9.9     | 17.9    | 26.6     | 36.9    |
| CV-related                            | 8.9     | 16.5    | 24.5     | 33.8    |
| CV-related: primary diagnosis         | 6.5     | 12.1    | 17.6     | 24.2    |
| AF/AFL-related                        | 7.3     | 13.4    | 19.7     | 27.0    |
| AF/AFL-related: primary diagnosis     | 4.0     | 7.5     | 11.1     | 15.2    |

AF/AFL=atrial fibrillation/atrial flutter; CV=cardiovascular
date of e-prescribing adoption for non-participating PCPs, we assigned each non-participating PCP a ‘synthetic’ adoption date by random sampling with replacement from actual adopting PCPs’ adoption dates. Finally, we constructed a multivariate model using pharmacy claims as the unit of analysis. Because the intervention was not randomized, a participation variable was included to account for otherwise unmeasured baseline and persistent differences between the participating and non-participating PCPs. To measure the effect of EWFDS, we included extent of e-prescribing usage as the covariate of interest in the model. Robust regression was used to reduce sensitivity to outlying data points, which are common in cost analyses. Furthermore, several drug classes with extremely high costs were excluded. The analysis was adjusted for MD-level and patient-level covariates.

RESULTS: Of the 297 participating PCPs, 287 had a total of 19,907 primary care patients, who had a total of 0.5 million pharmacy claims. Of the 1892 non-participating PCPs, 1798 had 115,823 primary care patients with 2.9 million claims. 88% of PCPs practiced in groups of 5 or fewer physicians. The median copay was $10 (IQR range 5-85). The distribution was positively skewed (mean $29.53, SD $272.58). Bivariate analyses showed copays to be negatively correlated with usage of EWFDS, later dates, extent of PCP prescribing with this insurer, and patient age, but positively correlated with median incomes of zip codes of patient homes and PCP offices (p<0.0001 for each correlation). The DIDRR analysis showed that copays of non-participating PCPs’ primary care patients were $2.04/claim lower during the period after the synthetic start date of EWFDS, compared with decreases of $2.12/claim for patients of 176 PCPs with 0-20% usage (p=0.11 when compared to non-participating PCPs before/after change), $2.93/claim for patients of 63 PCPs with 20-50% usage (p<0.0001), and only $1.80/claim for patients of 48 PCPs with 50-100% usage (p=0.01). This model did not include other covariates.

The multivariate model estimated that a change from 0 to 100% EWFDS usage was associated with a copay decrease of $0.76. This decrease was mildly tempered by an estimate that copays were $0.06 higher for PCPs who participated in the e-prescribing intervention. Copays decreased by $0.13 for each later month during the time period studied. Although each 10 years of increasing patient age was associated with an $0.83 decrease in copay, primary care patients of pediatric PCPs had copays that were $2.34 less than those of internist and family medicine PCPs. Patients from zip codes with >50% Black residents had copays $0.01 less than other patients (p<0.01 for all estimates cited above).

CONCLUSION: For the 239 PCPs who used EWFDS 0-50% of the time, it was associated with copay decreases beyond secular trends. Paradoxically, for the 48 PCPs who used EWFDS 50-100% of the time, it was associated with a relative increase in copays, when compared to the secular trend. Multivariate linear regression of EWFDS usage showed an association with decreased copays overall. The latter finding, when combined with prior studies of EWFDS that showed increased use of generic and other lower-tiered medications, suggests that EWFDS is effective overall in achieving its goal, but that it may not be effective among technophobe PCPs. One possible explanation for this difference is that technophobe PCPs may be as enamored of the newest medication technology as they are of HIT. Most other findings were consistent with expectations. Copays decreased overall during this time period, consistent with known increased use of lower-tiered medications. Higher levels of PCP-prescribing likely increased familiarity with the insurer’s formulary, such that these PCPs had lower copays than PCPs with fewer pharmacy claims from the insurer. Estimates of higher patient and physician income were associated with increased copays, suggesting that resource scarcity may drive the use of less expensive medications. Further supporting this idea was the finding that patients with more claims during the study period, which represent direct costs but are also likely indicative of other healthcare costs and decreased wealth, had lower copays. One other possible explanation for the latter finding could be increased patient familiarity with generic medications and the concept of formularies. Lower copays among primary care patients of pediatricians and among elderly patients may be explained epidemiologically. Given that African-Americans are known to place less faith in the medical profession than other groups, lower copays may be explained by consequent higher price elasticity for medical care.

**ABSTRACTS**

**COLORECTAL CANCER SCREENING IN PATIENTS WITH HIV**

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**BACKGROUND:** As HIV positive patients live longer, they become susceptible to the development of chronic diseases and cancers. Since the introduction of antiretroviral therapy (ART) in 1995, the incidence of AIDS-defining malignancies (ADMs) has declined tremendously, whereas the frequency of non-ADMs has risen disproportionately compared to the general population. Currently, there are only two published studies describing the use of CRC screening in HIV positive patients. In both, CRC screening was found to be significantly lower in HIV positive patients compared to HIV negative patients. These studies however, did not evaluate in detail factors associated with CRC screening. There is strong evidence that quality measures for HIV care are better met when compared to non-expert general practitioners, patients are seen by infectious disease (ID) specialists or expert generalists. There are very few studies however, looking at quality of primary care in these patients. Whether having a primary care physician (PCP) improves non-ADM screening in HIV positive patients is unknown. In this study we evaluate whether having a PCP is associated with higher CRC screening rates in a population of HIV positive patients.

**METHODS:** Study sample. Patients included in this study were selected from a larger study called the Medical Monitoring Project (MMP) led by the Pennsylvania Department of Public Health and the Center for Disease Control (CDC). MMP participants were selected based on a three-stage sampling design described elsewhere and consists of HIV patients seeking care from a diverse pool of providers in Philadelphia. Patients were included in our study if they were MMP participants aged 50 or older.

**DATA SOURCE:** The data were collected by means of chart abstraction. We used the National Health and Nutrition Examination Survey (NHANES) template to determine if CRC screening had been performed.

**OUTCOMES:** The primary outcome of interest was CRC screening defined as having a documented colonoscopy, sigmoidoscopy, barium enema, or Fecal Occult Blood Test after the age of 50.

**INDEPENDENT VARIABLES:** Patient and provider related factors were collected. Patient factors of interest included age, gender, race, lowest and most recent CD4 counts, lowest and most recent HIV viral loads, presence of co-morbid conditions, insurance status, and history of substance abuse or alcohol use. Provider factors of interest included provider specialty (ID or Generalist) and practice type (primary care practice, single versus multispecialty care practice).

**STATISTICAL ANALYSIS:** Standard descriptive statistics were used to describe all potential factors associated with ever having at least one CRC screening. All variables were dichotomized. Statistical differences for CRC screening (yes/no) based on clinical and demographic factors were assessed using the I² test. A multivariable logistic regression model was created to assess the relative strength of the various associations. All variables associated with CRC screening at p

**RESULTS:** Out of 123 chart abstractions performed, 115 had a complete clinical record from MMP to be fully analyzed. The majority
of the population was male (71.3%), non-white (73.8%) and between the age of 50 and 59 (71.3%). Most patients had a recent CD4 count greater than 350 (69.6%), an undetectable viral load (75.6%), and no history of opportunistic infections (69.5%). 45.2% did not have a PCP. In accordance with other studies, we found that the rate of CRC screening among patients with HIV was low (49%) compared to the national rate of 62.9%. Having a documented PCP was the only variable strongly associated with CRC screening. Rates of screening were 66.7% among those with a PCP versus 28.5% among those without a PCP (p<0.001). After adjusting for race, substance use, and alcohol use, the odds of getting CRC screening in those without a PCP was 0.2 (95% CI 0.09-0.51, p<0.001).

CONCLUSION: Patients with HIV who lack a PCP are significantly less likely to receive CRC screening. Given the improved survival among patients with HIV and the increased risk of dying of non-ADMs, it is imperative that all persons be managed with standard preventive practices regardless of HIV status. Having PCPs working in collaboration with ID specialists might help improve CRC screening rates in this population.

CORRELATION OF BLEEDING RISK WITH THE USE OF ANTICOAGulant prophylaxis in hospitalized medical patients Sunay Shah1; S h i t a l P a t e l 1; H a n i s h S i n g h 1; Jatin Rana 1; E i a d S a b i a 1; David Paje 1; Scott Kautz 1. 1Henry Ford Hospital, Detroit, Michigan. (Tracking ID # 10495)

BACKGROUND: Anticoagulants have been shown to be very effective at preventing venous thromboembolism (VTE) in hospitalized medical patients. However, the risk of bleeding inherent with these medications has been a significant cause of concern for most clinicians, particularly in patients whose other clinical attributes make them more likely to bleed. There is currently no standard tool to stratify the bleeding risk in patients who are being considered for anticoagulant prophylaxis. The purpose of this study is to determine if the bleeding risk, as defined by the Decousus model, predicts the use of anticoagulant prophylaxis.

METHODS: Adult patients newly admitted to the general medical service were assessed, and were categorized as low or high-risk for bleeding based on the Decousus model. The rates of anticoagulant prophylaxis in these categories were then compared using the chi square test.

RESULTS: 167 patients were assessed for bleeding risk; 155 (93%) were found to be low-risk and 12 (7%) were high-risk. Clinical data required to calculate the risk was available for all the patients. 5% (7/155) of the low-risk group and 25% (3/12) of the high-risk group did not receive anticoagulant prophylaxis, p=0.03.

CONCLUSION: Patients who are at high risk of bleeding based on the Decousus model are less likely to receive anticoagulant prophylaxis. This risk assessment tool may be useful in evaluating patients who are being considered for anticoagulant prophylaxis.

| Type of VTE Prophylaxis | Decousus Bleeding Risk | Totals |
|-------------------------|------------------------|--------|
|                         | Low-Risk N = 155 | High-Risk N = 12 | N= 167 |
| No Prophylaxis          | 4 (2.6%)          | 2 (16.7%)        | 6 |
| Mechanical Prophylaxis Only | 3 (1.9%)      | 1 (8.3%)         | 4 |
| Anticoagulant Prophylaxis Only | 147 (94.8%) | 9 (75%)          | 156 |
| Both-Mechanical and Anticoagulant | 1 (0.6%) | 0 (0%)          | 1 |
| Totals                  | 155              | 12              | 167 |

WHAT PREVENTS ADMITTING TEAMS FROM LEAVING ON TIME? PREDICTORS OF 8-HOURS OFF IN A LARGE ACADEMIC MEDICINE RESIDENCY. Jed Gonzalo 1; Shoshana Herzig 1; Eileen Reynolds 1; Julius Yang 1. 1Beth Israel Deaconess Medical Center, Boston, Massachusetts. (Tracking ID # 10496)

BACKGROUND: The ACGME duty hour regulations have compelled some programs to consider modifying inpatient resident staffing models to ensure compliance. Such changes, which are limited by financial resources and a fixed resident supply, may have unintended consequences on both care delivery and educational outcomes. Identifying key operational factors that predict non-compliance is an important step in structure redesign. We sought to investigate our residency program’s compliance rate with the 16-hour shift/8-hours off between shifts rule and to identify workflow factors associated with non-compliance.

METHODS: For our residency program, duty hour limits as applied by the Internal Medicine Residency Review Committee mandate 8 hours off between shifts. Our medicine ward teams consist of three housestaff, completing call shifts every 4th day, admitting patients from 7 am until 8:30 pm, and working until 11 pm to complete call-related duties. A night-float team admits patients overnight. Post-call shifts start at 7 am, requiring an 11 pm departure time the night prior to ensure 8-hours off. Between August and December of 2010, we sent an online survey to all on-call ward residents immediately after each call night during four inpatient medicine call rotations. The survey was developed to identify reasons for extended shifts, including call day characteristics, such as number of short call and total admissions, number of admissions after 5 pm, and hospital departure time. We used logistic regression to identify the independent predictors of having less than 8-hours off between shifts (departure after 11 pm).

RESULTS: One-hundred and eighty-eight on-call surveys (94% response rate) were collected. Overall, 77 of 188 on-call shifts (77 of 800 total shifts, call and non-call) were followed by less than 8-hours off. Factors associated with less than 8-hours off between shifts were >3 patients admitted per team after 5 pm (adjusted OR 6.6, 95% CI 2.5-18.0) and >6 total long call admissions per team (adjusted OR 3.4, 95% CI 1.7-7.0). A team census >6 prior to a call day (adjusted OR 1.5, 95% CI 0.7-2.9), number of short call admissions on a call day (adjusted OR 1.4, 95% CI 0.7-3.0), and having an intern in clinic that day (adjusted OR 2.2, 95% CI 0.9-5.5) were not significantly associated with having less than 8-hours off between shifts.
CONCLUSION: The ACGME duty hour standards were implemented in 2003 but residency programs have struggled to comply with all recommendations. Few studies have investigated the factors contributing to extended shifts. We found multiple late-day admissions and a moderate number of long call admissions are significant predictors of extended shifts, revealing vulnerabilities to be both workload and timing-specific. The relatively low number of admissions predicting non-compliance in a 16-hour day model is cause for concern and may be compromising resident education. The 2010 mandate of 16-hour-only shifts for interns may lead to non-traditional daily admitting structures, rather than the standard “long-call” days. In our current 16-hour model, we have struggled to contain our number of admissions and ensure an 11 pm hospital departure time. The predictors identified will be used to inform ward model redesign.

ACCCULTURATION AND PROGRESSION OF LATE-LIFE DISABILITY IN HISPANICS Jose Delgado 1; Elizabeth A Jacobs 2; Kyriakos S Marquides 3; Carlos F Mendes de Leon4. 1Georgetown University Hospital, Washington, District of Columbia ;2University of Wisconsin - Madison, Madison, Wisconsin ;3University of Texas Medical Branch, Galveston, Texas ;4University of Michigan School of Public Health, Ann Arbor, Michigan . [Tracking ID # 10502]

BACKGROUND: Disability disproportionately affects the elderly. Aged Hispanics have a higher prevalence of disability than non-Hispanic whites. Little is known about the potential role of acculturation in Hispanic health. The aim of this study was to examine the relationship between acculturation and the progression of late-life disability in Hispanics.

METHODS: Data came from the Hispanic Established Populations for the Epidemiological Study of the Elderly (H-EPSE). Interviews were performed in six consecutive waves between 1993 and 2007. Data included measures for disability (Activities of Daily Living [ADLs], Instrumental Activities of Daily Living [IADLs], and a summary measure of three performance tests of basic physical functions), acculturation and socioeconomic status (income, education). Longitudinal models were used to determine the association of acculturation at baseline with each disability outcome.

RESULTS: In the 3050 participants, higher acculturation was associated with both lower ADL (p=0.004) and IADL disability (p less than 0.001) and higher physical function (p less than 0.001) at baseline. Acculturation was not associated with increase in either ADL disability (p=0.40) or IADL disability (p=0.37) over time. Higher acculturation was associated with less decline in basic physical functions (p=0.03). This association remained significant after adjustment for education and income (p=0.02).

CONCLUSION: In contrast to the relationship between acculturation and other chronic conditions, our study suggests that higher acculturation may have an important protective effect on late-life disability and on decline in basic physical functions in older Hispanics.

EFFECT OF PATIENTS’ AWARENESS OF CAD RISK FACTORS ON HEALTH RELATED BEHAVIORS Naweed Alzaman 1; Siddharth Wartak 2; Jennifer Fridrici 1; Michael Rothberg 1. 1Baystate Medical Center, Springfield, Massachusetts ; 2Cleveland Clinic, Cleveland, Ohio. [Tracking ID # 10511]

BACKGROUND: Coronary artery disease (CAD) is the leading cause of morbidity and mortality in the United States. Although many patients are aware of modifiable CAD risk factors, it is not known whether awareness of risk factors will translate into better health behaviors and control of these factors. We surveyed patients at risk for CAD and hypothesized that knowledge of a risk factor would be associated with better control of that risk factor.

METHODS: We administered a cross-sectional, anonymous survey to 2200 patients aged >40 years attending 4 general medicine practices and a cardiology clinic in Western Massachusetts. The paper and pencil survey consisted of the following sections: demographics, co-morbidities associated with CAD, health maintenance behavior, and awareness of 5 risk factors (smoking, obesity, hypercholesterolemia, hypertension [HTN] and diabetes [DM]), and 1 protective factor (exercise). Patients with specific risk factors were asked about control of that risk factor as follows: diabetes (AIC).

RESULTS: A total of 1702 subjects completed surveys (response rate 77%); 1504 patients had sufficient data for multivariable analysis. The sample was predominantly female (61.6%) and white (57.5%). The median age was 55 years, 78% had at least a high school degree, and 15% had CAD. No patient factors, including a history of CAD, were consistently associated with better control of all risk factors. Awareness of each risk factor was positively associated with control of that factor, but the association only reached statistical significance for exercise. The adjusted proportions of those who reported good control among those who were aware compared to those who were not aware for each factor were as follows: HTN (76.4% versus 68.6%, p=0.33), DM (32.5% versus 19.5%, p=0.28), high cholesterol (79.2% versus 79.1%, p=0.61), obese or overweight (76.4% versus 62.2%, p=0.24), smoking (61.0% versus 62.3%, p=0.28), and exercise (48.4% versus 44.0%, p value=0.028). For patients with a history of CAD, awareness was not associated with better control of any of the factors.

CONCLUSION: Awareness that sedentary lifestyle increase the risk for CAD was positively associated with exercising 3x/week. For other risk factors, awareness was not associated with better behavior or control, even for patients with CAD. Taken alone, educational efforts to increase awareness may have limited impact on risk factor control.

THE ASSOCIATION OF ELECTRONIC HEALTH RECORD-BASED REMINDERS WITH HYPERTENSION SCREENING AND BLOOD PRESSURE CONTROL AT US PRIMARY CARE VISITS Lipika Samal 1; Jeffrey A Linder 1; Stu Lipsitz 2; LeRoi Hicks 1. 1Harvard Medical School/Brigham and Women’s Hospital, Boston, Massachusetts ; 2Harvard School of Public Health/Brigham and Women’s Hospital, Boston, Massachusetts. [Tracking ID # 10514]

BACKGROUND: Electronic health records (EHRs) with guideline-based reminders may improve screening and treatment for hypertension in primary care practices.

METHODS: We examined adult visits to primary care physicians using the 2007 and 2008 National Ambulatory Medical Care Survey. We assessed the association of EHR-based reminders with two outcomes 1) hypertension screening and 2) blood pressure control (BP<140/90 mmHg). We used multivariable logistic regression to adjust for confounding by patient factors (age, sex, race/ethnicity, diabetes), insurance type, and practice type, and used SUDAAN software to account for the complex survey design.

RESULTS: Patients had a mean age of 50 years, 33% were male, 15% had diabetes, 64% were White, 14% were Black, and 15% were Latino. Hypertension screening was performed at 91% of visits and blood pressure was controlled at 76% of visits. Screening rates were higher at visits to Latino patients than at visits by White patients (93% vs. 90%; p<0.05), at visits by patients with diabetes (93% vs. 90%; p<0.05), and at visits to community health centers compared to visits to physician-owned practices (94% vs. 90%; p<0.05). Rates of blood pressure control were higher at visits by White patients compared to visits by Black patients (76% vs. 72%; p<0.01), at visits by patients without diabetes
(77% vs. 69%; p<0.001), at visits by women (79% vs. 70%; p<0.001), at visits paid for by private insurance compared to visits paid for by Medicare/Medicaid (78% vs. 71%; p<0.001), and at visits to practices owned by an HMO compared to visits to physician-owned practices (82% vs. 76%; p<0.05). About one-third of providers (37%) reported use of EHR-based reminders. Screening was associated with EHR-based reminders (92% vs. 90%; odds ratio [OR], 1.49; 95%CI 1.10-2.03), even after adjusting for potential confounders (93% vs. 90%; adjusted OR [AOR], 1.56; 95%CI 1.15-2.12). Blood pressure control was also associated with EHR-based reminders (78% vs. 74%; OR, 1.28; 95%CI 1.08-1.52), even after adjusting for potential confounders (78% vs. 74%; AOR, 1.22; 95%CI 1.04-1.44).

CONCLUSION: In primary care, EHR-based reminders were associated with improved hypertension screening and blood pressure control. Since small improvements in blood pressure control are associated with reductions in cardiovascular morbidity and mortality, EHR-based reminders should be incorporated into intervention studies aimed at improving cardiovascular outcomes.

DIAGNOSTIC DIFFICULTY IN PRIMARY CARE: RESULTS FROM A PHYSICIAN SURVEY
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BACKGROUND: Missed and delayed diagnoses lead to significant patient harm and costs, but difficulties in diagnosing patients are not well studied in primary care where most diagnoses are made. We surveyed primary care physicians (PCPs) about diagnostic difficulty and assessed barriers to timely diagnosis in the outpatient setting.

METHODS: We conducted a survey of all general internists and family physicians practicing in a large integrated health system across 10 geographically dispersed states in 2005. The survey instrument was iteratively developed and pre-tested through interviews with a sample of PCPs. An independent research firm administered the final 54-item confidential survey via mail to participants, and de-identified results for analysis. Our primary outcome (% of their patients that respondents considered difficult to diagnose), included 5 ordered responses (0%, 1%, 5%, 6%-10%, 11%-15%, >15%); for study purposes, we defined diagnostic difficulty as >5%. We categorized barriers in 3 conceptual domains that included: (1) information processing (information availability and time to review it); (2) subspecialty referral processes, and (3) patient characteristics (e.g. non-adherence to recommended follow-up). Cronbach’s alpha scores for the domains were 0.70, 0.81 and 0.72 respectively. For each domain, we summed the individual item responses such that higher scores indicated more optimal processes. We also collected information on respondent characteristics and explored whether physician characteristics and their ratings of information processing, referral processes, and patient barriers, were associated with perceived diagnostic difficulty.

RESULTS: Of 1817 surveys mailed, 1054 were completed (response rate 58%). Because some physicians were mostly hospital-based, we restricted our sample to 848 (80%) respondents who reported primarily practicing in the outpatient setting and had a patient panel. Respondents had been in practice for mean of 13 years and 62% were male. Half (50%) reported >5% of their patients were difficult to diagnose. Physicians with more experience reported less frequency of diagnostic difficulty (OR per 1 year decrease in experience 1.04, CI 1.02-1.06). In adjusted analyses, problems with information processing (OR 1.29, CI 1.04-1.60) and referral processes (OR 1.43, CI 1.16-1.78), were associated with greater (>5%) difficulty to diagnose, but patient barriers were not (OR 1.07, CI 0.89-1.28). Analysis of specific constructs within the two significant domains revealed that physicians who reported insufficient time to integrate clinic information and insufficient time to think carefully about diagnosis reported more frequent diagnostic difficulty. Similarly, physicians who reported that subspecialists do not provide recommendations for next steps after consultation were more likely to report diagnostic difficulty (p=0.05 for difference between PCPs reporting vs. not reporting diagnostic difficulty for all constructs).

CONCLUSION: Diagnostic difficulty is not uncommon among PCPs and appears to correlate with inadequate time to process diagnostic information and insufficient guidance from subspecialists. Although our study was performed prior to comprehensive electronic health record (EHR) implementation at this health system, barriers we found associated with perceived difficulty might not necessarily be mitigated by EHRs. Practice-level interventions that address these factors are needed to reduce diagnostic difficulty in primary care.

THE EFFECT OF THE NUMBER OF ADMISSIONS TO INPATIENT MEDICAL TEACHING TEAM ON PATIENT SAFETY OUTCOMES
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BACKGROUND: An estimated 44,000 to 98,000 preventable deaths caused by medical errors occur each year in the U.S. In teaching institutions, house staff members are involved in over half of the cases of medical errors. Excessive workload and inadequate supervision are among most commonly cited reasons for resident error. First in 2003 and then in July 2010 the Accreditation Council for Graduate Medical Education (ACGME) enacted new limits on the number of patients residents were allowed to care for with the hope that lower workload would improve the quality of care and patient safety. However an observational study of 8,529,595 Medicare recipients admitted to acute care hospitals showed that duty hour reform was not associated with any consistent improvements or worsening in mortality. In 2009 ACGME also called for Internal Medicine programs to ensure for 4:1 ratio of the learner to faculty and need for sufficient supervision and teaching during each rotation or major learning experience. In spite of the growing body of evidence suggesting that inadequate supervision of house staff is associated with sub optimal safety and care outcomes for the patients, there is very little evidence on how medical team workload affects quality of supervision and patient safety outcomes. To address this we examined the associations between the number of patients seen by a teaching team and length-of-stay, 30-day readmission, and 60-day mortality.

METHODS: In this retrospective observational study we examined all admissions to the medicine teaching service of an urban academic medical center from March 1st 2009 to June 30th 2010. Each month, approximately 18 teaching teams provide care at 2 hospitals within the medical center. First, we examined the total number of admissions seen by each team each month. Next, we defined each team as “less busy” (total admissions <49). Admissions were assigned to the teams without bias according to an on-call schedule. The primary outcome measures were length-of-stay, 30-day readmission, and 60-day mortality. The two patient groups were compared with respect to demographic characteristics, co-morbidities (Charlson score), severity of illness (Laboratory-based Acute Physiology Score, LAPIS), and length of stay using t tests, chi-squared, and rank sum tests, as appropriate. Logistic regression models were constructed to determine the independent association between assignment to a busy team and readmission and mortality, after adjustment for demographic and clinical characteristics.
additional analysis, teams were placed in quintiles of number of admissions, and the readmission rate for each quintile was determined.

**RESULTS:** Of 12,119 admissions examined, 6,398 (52.8%) were assigned to the less busy teams and 5,721 (47.2%) were assigned to busy teams. Patients assigned to busy teams were older, were more likely to be female, white, have Medicaid, and had higher LAPS score. Mean length-of-stay was not statistically different between the groups (5.2 vs 5.3 days, p=0.08). After adjustment for demographic (race, sex, ethnicity, insurance type) and clinical characteristics (LAPS and Charlson score), care by a busy team was associated with greater 30-day readmission rate (OR 1.21, 95% CI 1.10-1.34). After adjustment for demographic and clinical characteristics, care on a busy team was not associated with increased risk of mortality (OR 1.05, 95% CI 0.88-1.27). There was a significant linear association between the number of monthly admissions to teams and readmission rate (Figure 1).

**CONCLUSION:** Admission to a busier medical teaching team is associated with 21% increased odds of 30-day readmission. We found no association between admission to a busy team and length of stay or 60-day mortality. Further research is needed to determine if controlling for the number of monthly admissions to inpatient teaching teams will improve readmission rates.

### Table 1. Characteristics of Patients in Study

|                      | All (n=12,119) | Less Busy Team (n=6,398) | Busy Team (n=5,721) | p value |
|----------------------|----------------|--------------------------|---------------------|---------|
| Age                  | 58.9 ± 18.2    | 57.6 ± 17.8              | 60.3 ± 18.4         | <0.001  |
| Male (no.%)          | 5269 (43.5)    | 2821 (44.1)              | 2448 (42.8)         | <0.042  |
| Race/Ethnicity       |                |                          |                     |         |
| White                | 1796 (14.8)    | 785 (12.3)               | 1011 (17.7)         | <0.001  |
| Black                | 4070 (33.6)    | 2190 (34.2)              | 1880 (32.9)         | 0.111   |
| Latino               | 5547 (45.8)    | 3021 (47.2)              | 2526 (44.2)         | 0.001   |
| Other/Unknown        | 706 (5.8)      | 402 (6.3)                | 304 (5.3)           | 0.023   |
| Insurance            |                |                          |                     |         |
| Medicare             | 5421 (44.7)    | 2679 (41.9)              | 2742 (47.9)         | <0.001  |
| Medicaid             | 4511 (37.2)    | 2584 (40.3)              | 1927 (33.7)         | <0.001  |
| Commercial           | 2042 (16.8)    | 1064 (16.6)              | 978 (17.1)          | 0.495   |
| Self Insured         | 130 (1.1)      | 62 (1.0)                 | 68 (1.2)            | 0.241   |
| Charlson             | 2.50 ± 2.60    | 2.51 ± 2.65              | 2.48 ± 2.54         | 0.571   |
| LAPS                 | 20.8 ± 17.1    | 20.0 ± 16.8              | 21.7 ± 17.3         | <0.001  |
| Length of Stay       | 5.2 ± 8.1      | 5.3 ± 8.2                | 5.2 ± 8.0           | 0.082   |

**POST-OPERATIVE HIP FRACTURE CARE IN AN ACUTE CARE FOR ELDERS (ACE) UNIT**

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**BACKGROUND:** Over 300,000 Americans suffer a hip fracture each year, the majority over age 65. The Acute Care for Elders (ACE) model of hospital care for older adults can improve function at discharge and reduce nursing home admission for medical patients. The efficacy of this...
model of care has not been evaluated in patients after hip surgery. An ACE unit at San Francisco General Hospital, a public hospital serving a low-income, diverse population has cared for post-operative hip surgery patients since July, 2007. We describe patient characteristics and ambulation status at discharge, length of stay, and discharge location of patients receiving care in an ACE unit to those receiving usual care.

METHODS: Retrospective chart review of patients age 65 or greater admitted to general medical-surgical wards after hip fracture repair from July 2007 to June 2010. Patients with multiple fractures, multiple injuries secondary to trauma, or who were transferred or managed non-operatively were excluded. We compare 56 patients admitted to an ACE unit and 96 admitted to usual care.

RESULTS: The average age of patients admitted to an ACE unit was 80 years and 79 for those admitted to non-ACE units. Seventy-six percent of ACE patients were female compared to 63% admitted elsewhere. The ethnicity of patients was 48% Asian, 31% White, 9% Latino and 12% African-American, compared to 33%, 38%, 13%, and 9%, for ACE and non-ACE units, respectively. Forty percent of patients on the ACE unit had an open reduction and internal fixation, 34% a closed reduction and internal fixation, and 26% a partial total hip replacement, compared to 51%, 24%, and 24%, respectively. At discharge, compared to baseline, 50% of ACE patients had declined in ability to ambulate, whereas 73% of non-ACE patients declined in ability to ambulate. (p=0.03) The average length of stay was 10.0 days and 10.5 days (p=0.70) in the ACE and non-ACE units, respectively. Patients in the ACE unit were discharged home 26% of the time compared to 17% for patients discharged from non-ACE units (p=0.23).

CONCLUSION: In post-operative hip fracture patients, an ACE model of care serving a low-income, diverse population resulted in increased ability to ambulate and trends toward increased discharge to home.

COMPARISON OF POSITIONAL SYMPTOMS AND PREFERRED SLEEPING ANGLE WITH THORACIC FLUID CONTENT IN PATIENTS WITH HEART FAILURE Anne S. Kemble 1; Bruce A.G. Soll 2; Khung Keong Yeo 3; James W. Davis 4; Todd B. Seto 2; Irwin J. Schatz 2.

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BACKGROUND: Orthopnea and paroxysmal nocturnal dyspnea (PND) are among the cardinal manifestations of heart failure. The number of pillows a patient sleeps on indicates a preferred angle of recumbency, and is thought to be a measure of orthopnea severity. These symptoms are believed to result from position-related redistribution of fluid from the splanchnic circulation and lower extremities into the thoracic circulation, leading to pulmonary alveolar and interstitial edema, yet there is little data to support this assumption. This study compares symptoms of orthopnea, PND, and preferred sleeping angle to thoracic fluid content measured by Impedance Cardiography (ICG) in patients with systolic heart failure.

METHODS: 25 patients with stable heart failure and ejection fraction less than 40% completed a questionnaire that included screening for orthopnea and PND. Overnight polysomnography was performed. Each patient fell asleep at their preferred sleeping angle and then slept at 0, 15, 30, and 45 degrees in random order. Thoracic fluid content (TFC, a surrogate marker of total thoracic fluid) was recorded continuously using ICG. Pearson correlation was used to compare continuous variables, and nonparametric one-way analysis of variance was used to compare continuous variables with groups.

RESULTS: 4 patients reported a history of orthopnea, and 6 patients reported PND. Preferred sleeping angles ranged from 0° to 32° (mean 12°). The thoracic fluid content index (TFCI, a calculation adjusting for body surface area) was found to have a statistically significant decrease with increasing angle in only 3 of the 25 patients (slope −0.05, −0.043, and −0.039 with p=0.011, 0.028, and 0.0001 respectively). Yet all 3 of those patients selected 0° as their preferred sleeping angle, indicating that the changes in TFCI were not likely clinically significant. The other 22 patients had no significant change in TFCI with angle. Overall there were no significant correlations between TFCI and preferred sleeping angle (p=0.18), preferred sleeping angle and orthopnea (p=0.93), TFCI and PND (0.42), or TFCI and orthopnea (p=0.93). The primary study had been powered to assess respiratory events with changes in sleeping angle, and was not designed to have statistical power for this secondary study.

CONCLUSION: Symptoms thought to result from position-related redistribution of fluids into the thoracic circulation did not show the expected correlation with levels of TFC measured by ICG. Furthermore, TFC did not change significantly with angle of recumbency. Recent studies suggest that ICG measurement of TFC is a sensitive indicator of chest fluid changes, net thoracic fluid levels, and rales on pulmonary exam. This study challenges the assumption that positional symptoms in patients with heart failure are solely the result of redistribution of fluids into the thoracic space. Given the impact of these symptoms on patient assessment and clinical decision making, further research is needed on the relationship between body position and symptoms of heart failure.

BURNOUT IN INTERNAL MEDICINE RESIDENTS IS ASSOCIATED WITH DECREASED WELLNESS AND LACK OF MINDFUL AWARENESS Rachel Swigris 1; Allan Prochazka 2; Ravi K Gopal 3; Debra Sorensen 2; Michael Craine 2; Jessica Campbell 1; University of Colorado, Denver, Colorado; 2Veteran Affairs Medical Center, Denver, Colorado; 3Denver VAMC, Denver, Colorado; 4Denver Health Medical Center, Denver, Colorado. (Tracking ID # 10539)

BACKGROUND: Burnout is prevalent among internal medicine residents (IMR) and has been linked to self-reported suboptimal patient care, perceived medical errors and deferred clinical decision-making. In practicing physicians, training in mindfulness improves well-being. There is a paucity of data on interventions to prevent or decrease burnout in residents and no published data on mindfulness training in IMR. We hypothesized that burnout is associated with impaired mindfulness and decreased well-being among IMR.

METHODS: We administered a postal survey to 1st-, 2nd- and 3rd-year IMRs at the University of Colorado Denver School of Medicine. The Maslach Burnout Inventory was used to assess two components of burnout, emotional exhaustion (EE) and depersonalization (DP). We defined burnout as EE > 26 or DP > 9. We assessed mindfulness using the Baer Five Facet Mindfulness Questionnaire (FFMQ), for which the Nonreact facet is scored 7–35, the other 4 scored 8–40, and for all 5 facets, higher scores=greater mindfulness. We measured wellness using the 6-item Brief Resident Wellness Profile (BRWP) scored 1–5; higher scores=greater wellness. We used Pearson product moment correlation and multivariable linear regression (MVLR) to examine the relationship between burnout and wellness or mindfulness. For the MVLR, we built a model for each of the two burnout facets (EE and DP) and included as potential predictors in each model all variables with p < 0.15 on bivariate analysis. Backward elimination was used to yield the most parsimonious models.

RESULTS: The response rate was 60.9% (98/161). Respondents were evenly distributed among PGYs, and 48% of respondents were female.
Survey results are shown in Table 1. 46.9% of respondents were burned out. Various facets of mindful awareness and wellness were associated with burnout (Table 2). In the MVLR analyses, wellness and the Act aware Facet of Mindfulness were independent predictors of both EE and DP.

| Table 1. Survey Results |
|-------------------------|
| Masiach Burnout Inventory | EE (21.2 (0.4)) | DP (9.2 (5.2)) |
| BRWP | 22.0 (2.9) |
| Mindfulness |
| Observe | 22.7 (5.2) |
| Labeling | 23.3 (2.4) |
| Nonjudge | 15.0 (5.5) |
| Nonreact | 22.5 (4.4) |
| Actaware | 20.4 (4.7) |
| Data= mean (standard deviation) |

| Table 2. Correlations between Outcomes |
|---------------------------------------|
|                                      |
| BRWP | -0.57** | -0.48** |
| Observe | 0.06 | -0.04 |
| Labeling | -0.007 | -0.003 |
| Nonjudge | 0.34* | 0.29* |
| Nonreact | -0.35** | -0.18 |
| Actaware | 0.50** | 0.45** |
| Values = correlation coefficient (above), **p<0.001, *p<0.01 |

**CONCLUSION:** Nearly half of our IMR were burned out. IMR burnout was associated with impairments in well-being and mindfulness. Wellness and mindfulness were independent predictors of burnout. Prospective studies are needed to determine whether interventional programs in mindfulness training will decrease burnout and improve wellness.

**IATROGENIC PNEUMOTHORAX: ANALYSIS OF A NEW AHRQ MEASURE** Debra Lurns 1; Tracey Smith 1; Brent Petty 2. 1Johns Hopkins Hospital, Baltimore, Maryland; 2Johns Hopkins University School of Medicine, Baltimore, Maryland. (Tracking ID # 10544)

**BACKGROUND:** CMS introduced nine safety measures via AHRQ as part of its pay-for-performance (P4P) program for FY10. One of the measures was iatrogenic pneumothorax (IP). At our institution, the observed/expected rate for IP had been unexpectedly high. The objective of this project was to identify the causes for IP and to determine whether these cases had been accurately identified through the coding and electronic selection process.

**METHODS:** The University Health Consortium (UHC) database identified cases coded as having IP at our hospital in CY08, FY09 and FY10. Each identified case was extensively reviewed (including progress notes, operative and procedure notes, radiology reports and discharge summary) by two quality improvement specialists and a physician to determine the presence and cause of IP. Our strict definition required verification that pneumothorax (PTX) was not present on admission but later was reported by a radiologist in a formal x-ray report. Additional provider input was elicited on specific cases when needed to clarify events surrounding the PTX.

**RESULTS:** For CY08, 62 cases were identified. Of these, 12 (19%) were excluded because they were lung lobectomies, 4 others related to cardiovascular surgery, 4 related to surgery with expected PTX because of the surgical approach, 3 because no radiology report documented PTX, 3 present on admission, and 1 was a pleural effusion (excluded per AHRQ policy). That left, at most, 35 patients (56%) who actually had IP. Of these, 12 were related to central line (CL) placement and 6 were related to scalenectomy (S), a surgery done frequently at our hospital with a 20-35% rate of PTX. For FY09, 64 cases were identified. Of those, 15 (23%) were excluded because they were associated with lung lobectomies, 5 because of pleural effusion, 2 related to thoracoscopic procedures (per AHRQ policy), 3 related to surgeries expected to have PTX, and 3 because no radiology report documented PTX. Thus, at most, 36 patients (56%) had IP. Of these, 10 were related to CL and 9 were related to S. For FY10, only 36 cases were identified, a 59% reduction from FY09. With improved software for searching discharge records, no cases were excluded for lobectomy, thoracoscopy or pleural effusions. Of these 36 cases, 2 were excluded because there was no radiographic confirmation of PTX. 1 was a hospital coding error, and 6 were surgical cases with expected PTX, leaving, at most, 27 cases of IP, of which 8 were related to CL and 7 were related to S. In each time period, there were several surgical procedures likely related to PTX but not expected to have this complication in large numbers. Examples included thoracic spinal surgery, open right partial nephrectomy and peritoneal stripping of metastatic cancer.

**CONCLUSION:** Relying on software searches of coded discharge information can overestimate the incidence of IP. Improvement of both software and coding practices can reduce this error. For patients with true IP, central line placement was the most common cause, but accounted for 12 or fewer cases during each period, with a downward trend over time. Scalenectomy may put our institution at risk for inflated observed/expected IP if that unusual surgical procedure (without its own ICD code) is not adjusted for in observed/expected calculations. The rare but explicable incidence of IP in other surgical procedures near to or involving the diaphragm must also be adjusted for in those calculations. Without rigorous methodological intervention, IP will continue to be overestimated and will make inter-institutional comparisons potentially invalid.
ARE HEALTH CARE PROFESSIONALS ADVISING A LOW-FAT DIET TO PATIENTS WITH DIABETES OR DIABETES RISK FACTORS?
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BACKGROUND: Over 17.5 million people are diagnosed with type 2 diabetes mellitus (DM) in the U.S. and >90% of U.S. adults with DM have type 2 DM. Maintaining low cholesterol levels is a key aspect of cardiovascular prevention for people with type 2 DM or risk factors for type 2 DM (e.g., hypertension, overweight). The American Diabetes Association (ADA) recommends health care providers counsel their patients with or at risk for type 2 DM to follow a low-fat diet (Despite this recommendation, the extent to which populations with or at risk for type 2 DM receive low-fat diet advice from health care providers remains unclear. We assessed this issue using data from the federally sponsored, nationally representative survey of the non-institutionalized U.S. population (Medical Expenditure Panel Survey, MEPS).

METHODS: MEPS collects data on sociodemographic information and chronic health conditions, among other endpoints. Survey data are obtained from patient self-report and insurance claims. Between 2001 and 2007, all MEPS participants were asked the following question: "Has a doctor or other health professional ever advised you to eat fewer high-fat or high cholesterol foods?" We designated participants’ DM status as + DM or no DM using MEPS self-report (data on diabetes type were unavailable). We also quantified participants’ ADA-designated risk factors for type 2 DM. ADA-designated type 2 DM risk factors measured in MEPS included: age >45 years, BMI >25 kg/m2, physical inactivity, members of a high risk ethnic population (non-Caucasian), hypertension, hyperlipidemia, and a history of cardiovascular disease. We first measured the unadjusted prevalence of low-fat diet advice by DM status and presence or absence of DM risk factors. Next, we performed a multivariate logistic regression analysis to determine the odds of advice to eat a low-fat diet for MEPS participants with DM vs. no DM. Finally, we performed separate multivariate logistic regression analyses to determine the odds of advice to eat a low-fat diet for participants with incrementally higher numbers of type 2 DM risk factors (e.g. 1 risk factor, 2 risk factors). Each regression analysis also controlled for gender, education, income, census region, smoking status, and the generalized chronic illness morbidity index.

RESULTS: Unadjusted rates of advice to eat a low-fat diet were lowest in individuals reporting no risk factors or DM (7.5±0.3%), intermediate in the presence of type 2 DM risk factors (32.3±0.3%), and highest for participants reporting DM (71.1±0.7%). In multivariate regression analysis, participants reporting DM had 1.98 greater odds of receiving low-fat dietary advice as compared to participants reporting no DM. As the number of risk factors for type 2 DM increased, the adjusted odds of receiving advice to eat a low-fat diet increased in an accelerated fashion (reference: OR=1.0 for no type 2 DM risk factors; 2 risk factors, OR=2.41 [95% CI=2.16-2.70]; 3 risk factors, OR=7.78 [95% CI=6.98-8.69].

CONCLUSION: In keeping with national guidelines, the majority of patients with DM receive low-fat dietary advice from health care professionals. However, only 1/3 of patients with type 2 DM risk factors report receiving low-fat dietary advice. Health care professionals should provide low-fat dietary counseling more often to their patients with risk factors for type 2 DM.

A NOVEL CLINICAL DECISION SUPPORT TOOL IMPROVES PRIMARY CARE TREATMENT OF CHRONIC KIDNEY DISEASE

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BACKGROUND: Twenty six million Americans suffer from chronic kidney disease (CKD). Early intervention can prevent complications and delay progression to end stage renal disease. Despite the high prevalence and associated morbidity, patients are not receiving evidence-based care for the treatment and prevention of CKD. Clinical decision support (CDS) can improve guideline adherence and quality of care. The objectives of this study were to develop a CKD clinical decision support tool (Kidney Care) that improves primary care providers’ adherence to CKD guidelines and test its feasibility in primary care clinics.

METHODS: Kidney Care is a web-based CDS tool designed to support primary care providers (PCPs) care of CKD patients. Kidney Care was designed using human factors principles and tested for usability. The tool is comprised of four components: 1) patient specific guideline recommendations; 2) brief point of care clinician informational resources; 3) electronic Nephrology consultation; and 4) patient educational materials. Twenty PCPs and their medical assistants from six Wisconsin clinics were trained to use Kidney Care. The PCPs and medical assistants used Kidney Care for 2-5 of their patients with stage 3 CKD over a six month period. Kidney Care use was recorded. The number of unmet guideline criteria for each patient was recorded at enrollment and completion of the six months. PCPs completed a 19 item multiple choice CKD knowledge test and a 44 item CKD self-efficacy survey prior to training and at study completion. Each self-efficacy item was rated on a scale of 0 (not at all confident) to 10 (extremely confident) with the total score being the sum of all items. Changes in the number of unmet guideline criteria were analyzed using the Wilcoxon-signed rank test. Spearman correlation coefficient was used to determine the effect of frequency of PCP and medical assistant access to a patient’s guideline page on changes in unmet guidelines. Changes in overall CKD knowledge and self-efficacy were analyzed using paired T-tests. Spearman correlation coefficients were calculated for effect of PCP tool usage on changes in PCP CKD knowledge and self-efficacy.

RESULTS: Eight (40%) of the PCPs were trained in Internal Medicine and 12 (60%) in Family Medicine. PCP clinics were urban (35%), suburban (20%) and rural (45%). Sixteen (80%) PCPs completed pre and post CKD knowledge and self-efficacy questionnaires. Sixty seven patients were enrolled in the study and had a median of 6 (Interquartile Range (IQR) 4-7) unmet guideline criteria on enrollment. The median unmet guideline criteria at study conclusion was 4 (IQR 1.5-6) with a median decrease in unmet guidelines of 0 (IQR –3-0) (p<0.001). Tool usage correlated with a decrease in unmet guidelines (Rho =0.581, p<0.001). PCP CKD knowledge test scores improved by a mean of 1.2 questions (SD 2.3, p=0.06). Tool usage correlated with improvement in test scores (Rho 0.584, p<0.02). Overall self-efficacy scores increased by an average of 37.9 (95% CI: 15.3-60.4, p=0.003). However, tool usage did not correlate with self-efficacy score changes (Rho =0.11, p=0.75).

CONCLUSION: The implementation of a CKD clinical decision support tool was feasible in a range of primary care clinics. This novel tool was able to decrease the number of unmet guidelines per patient. Tool usage was associated with an increase in PCP knowledge about CKD, but not self-efficacy. This is an important step in providing PCPs with tools to care for their patients with CKD. Future studies will determine if Kidney Care can improve patient outcomes.

GENDER AND RISK OF HOMELESSNESS AMONG OPERATION ENDURING FREEDOM/OPERATION IRAQI FREEDOM VETERANS

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BACKGROUND: Compared to men, women are disproportionately underrepresented among homeless persons and, more specifically, among homeless Veterans. We sought to determine risk of homelessness by gender among Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) Veterans, the Veteran cohort with the largest proportion of women.

METHODS: OEF/OIF Veterans with at least one Veterans Health Administration (VHA) visit were compared by gender. Cox proportional hazards models were used to determine the relative risk of homelessness by gender, adjusting for relevant demographic and clinical variables. Time to homelessness was defined as the time from military separation to the first VHA visit at which the Veteran used specialized VA home program services or received a V60.0 ICD-10 diagnostic code, indicating lack of housing.

RESULTS: Of 462,098 Veterans, 9,170 (2.0%) were identified as homeless by gender, adjusting for relevant demographic and clinical variables. Time to homelessness was defined as the time from military separation to the first VHA visit at which the Veteran used specialized VA home program services or received a V60.0 ICD-10 diagnostic code, indicating lack of housing. For the entire group of physicians, the assumption that a patient's apparent health status correlates with their actual state of health. However, the evidence for this component of the physical examination is limited. The goal of this study is to determine if the assessment by a physician that a patient "appears chronically ill" is a sensitive or specific sign for the detection of poor health status.

METHODS: This cross-sectional study involved 126 adult outpatients recruited from four primary care clinics and one general internal medicine clinic at an academic medical institution. The health status of each patient participant was determined using the self-administered version of the 12-Item Short Form Health Survey (SF-12). A photograph was taken of each participant, showing a frontal view of the person's face with a neutral facial expression. Physician participants (n=71 internal medicine residents and general internal medicine faculty) viewed the patients' photographs using an online program. The order of presentation of the photographs was randomized for each physician. With the patient's age provided, physicians were asked to assess whether or not the patient appeared chronically ill. For each physician participant, we determined the sensitivity and specificity of "appearing chronically ill" for the detection of poor health. We examined linked SEER-Medicare claims data to identify 51,905 patients ages 65+ who received chemotherapy for lung cancer. We included those who were diagnosed with lung cancer between 1995 and 2005 and had traditional Medicare parts A and B coverage for at least 12 months prior to first lung cancer diagnosis and until three years after diagnosis or until death. We calculated rates of chemotherapy use within 30 and 14 days of death among those who received any chemotherapy. We then used logistic regression to identify the predictors of end of life chemotherapy treatment. The model predictors were race, sex, age, U.S. birth, year of diagnosis, Medicaid enrollment any time after diagnosis, marital status, time since diagnosis, and comorbidity, controlling for fixed effects of geographic SEER site.

RESULTS: Among 126 patient participants, 42 (33%) had an SF-12 physical health score > 1 SD below age group norm, and 22 (18%) had a score > 2 SD below the age group norm. Physicians rated a mean of 29% of patients as appearing chronically ill (range, 4-52%). When poor health status was defined as an SF-12 physical score > 1 SD below age group norms, the median sensitivity was 35.7% (IQR 28.6-47.6%), median specificity 77.4% (IQR 69.0-83.3%), median positive likelihood ratio 1.57 (IQR 1.33-2.13), and median negative likelihood ratio 0.82 (IQR 0.74-0.89). When poor health status was defined as an SF-12 physical score > 2 SD below age group norms, the median sensitivity was 40.9% (IQR 31.8-54.5%), median specificity 74.0% (IQR 66.3-82.7%), median positive likelihood ratio 1.67 (IQR 1.46-2.10), and median negative likelihood ratio 0.75 (IQR 0.68-0.87).

CONCLUSION: A physician's assessment of whether a patient "appears chronically ill" has limited accuracy and modest specificity for the detection of poor health status. The likelihood ratios associated with "appearing chronically ill" indicate that this assessment has a high discriminatory value.

BACKGROUND: Adverse effects of chemotherapy in lung cancer, when administered near the end of life, often overshadow any benefits and are associated with considerable direct and indirect economic cost. Variation in rates and predictors of chemotherapy administration in lung cancer patients are not well understood, but have significant implications for the societal and individual patient costs and benefits of health care delivered near the end of life.

METHODS: We examined linked SEER-Medicare claims data to identify 51,905 patients ages 65+ who received chemotherapy for lung cancer. We included those who were diagnosed with lung cancer between 1995 and 2005 and had traditional Medicare parts A and B coverage for at least 12 months prior to first lung cancer diagnosis and until three years after diagnosis or until death. We calculated rates of chemotherapy use within 30 and 14 days of death among those who received any chemotherapy. We then used logistic regression to identify the predictors of end of life chemotherapy treatment. The model predictors were race, sex, age, U.S. birth, year of diagnosis, Medicaid enrollment any time after diagnosis, marital status, time since diagnosis, and comorbidity, controlling for fixed effects of geographic SEER site.

RESULTS: Among the 46,603 (89.8%) who died within three years of diagnosis, 31.5% received chemotherapy within 30 days of death and 15.9% received chemotherapy within 7 days of death. Marriage (OR=1.12, p=0.014), diagnosis from 1997 through 2004 (OR=1.17 to 1.48, p<0.001 to 0.034 for each year), and recency of diagnosis (OR=3.9 to 24.8, decreasing each 6 months past diagnosis, p<0.001 for each interval) were significant predictors of higher rates of chemotherapy receipt during the last 30 days of life, whereas female sex (OR=0.90, p=0.001), black race (OR=0.85, p=0.001), Medicaid coverage (OR=0.70, p<0.001), and older than 75 (OR=0.88 age 75–79, 0.79 age 80–84, 0.67 age 85+, p<0.001 for each cohort) predicted lower rates. Divorce, widowhood, unknown marital status, Asian, Hispanic, or other race, US birth, comorbidity score, and age (70–74) were not significant predictors. Pseudo-R2 was 0.14. ORs for chemotherapy within 2 weeks of death are similar, although marriage and diagnosis in 1998 no longer achieve significance while diagnosis in 1996 does.

CONCLUSION: Despite the high mortality rate of lung cancer and considerable side effects associated with chemotherapy, a substantial...
proportion of Medicare patients continue to undergo treatment even in their last days of life. Although rates decline with age, this is true even among the oldest old (85+). Whereas expensive therapies generate difficult questions at the nexus of medical economics and ethics if treatment has measurable benefit, the question should be moot at the stage of illness when treatment has very limited or no benefit and when resources ought to be directed toward improving comfort and the quality of the final days of life. It is unclear why such aggressive treatment is continued so often in end-stage lung cancer. Altogether the variables examined here account for little of the variability in chemotherapy use near the end of life. The impact of physician factors, including demography and preferred practice habits, while not examined here may be an important source of variations in care.

HOW SAFE IS YOUR NEIGHBORHOOD? PERCEIVED NEIGHBORHOOD SAFETY AND FUNCTIONAL DECLINE IN OLDER ADULTS

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BACKGROUND: Perception of living in an unsafe neighborhood could lead older adults to limit their physical activity, leading to deconditioning and functional or mobility decline (“Functional decline”). Functional decline is a strong predictor of health care costs, health care utilization, poor quality of life, and mortality in older adults. While perception of living in an unsafe neighborhood is associated with baseline physical inactivity and 8-year mobility impairment in older adults, these studies were small, geographically limited, or did not assess other forms of functional decline such as impairment in the Activities of Daily Living (ADL). Our goal was to assess the relationship between perception of neighborhood safety and long-term functional decline in older Americans.

METHODS: Our cohort included 18,043 adults aged 50 or older who participated in the 1998 Health and Retirement Study, a nationally representative study of older people. Our predictor was perception of neighborhood safety (“Would you say the safety of your neighborhood is excellent, very good, good, fair or poor?”). categorized into 3 groups: “very safe” (excellent/very good), “moderately safe” (good), and “unsafe” (fair/poor). Our primary outcome was 10-year functional decline, defined as any new difficulty or dependence in an ADL (eating, dressing, transferring, toileting, and/or bathing); any new difficulty in walking several blocks and/or climbing one flight of stairs; or death. We assessed the relationship between perceived neighborhood safety and functional decline, whether sociodemographics and health status confounded the relationship, and whether the association between perceived neighborhood safety and functional decline differed by baseline functional status.

RESULTS: The mean age was 67 years (range 50–105). 44% were men, 77% white, 71% received a high school education or higher. At baseline, 63.7% of participants were independent in all ADL and mobility measures. Overall, 65.1% perceived their neighborhood to be very safe, 24.8% perceived it as moderately safe, and 10.1% perceived it as unsafe. Subjects in the “very safe” group were more likely to be male, white, have higher wealth, fewer chronic conditions, and lower baseline functional impairment (all P<0.001). Over 10 years, 57.3% experienced functional decline, including 53.4% of subjects who perceived their neighborhood to be very safe, 63.4% who perceived their neighborhood to be moderately safe, and 67.6% unsafe, P<0.001. After adjustment for age, race, gender, marital status, education, income, net worth, baseline medical conditions and functional status, there was still a significant association between perceived neighborhood safety and 10-year functional decline for those who considered their neighborhood moderately safe (OR 1.22; 95% CI 1.11-1.34) or unsafe (OR 1.27; 95% CI 1.10-1.46) compared to the “very safe” group. The association between perceived safety and functional decline was strongest for those who were independent at baseline (“moderately safe” group OR 1.32 [95% CI 1.18-1.48], “unsafe” group OR 1.70 [95% CI 1.42-2.04] compared to the “very safe” group).

CONCLUSION: Overall, 1 in 3 older Americans reported that their neighborhood was unsafe or moderately safe and this perception was associated with increased 10-year functional decline, especially for those who were independent at baseline. Our findings suggest that asking older patients about their neighborhood safety may provide important information about risk of functional decline that is not captured by sociodemographics, health conditions, and baseline functional status. Moreover, public health interventions to promote physical activity while addressing safety concerns could help to reduce long-term functional decline in independent older adults.

SEVERITY-OF-ILLNESS STRONGLY PREDICTS DEVELOPMENT OF VENOUS THROMBOEMBOLISM IN MEDICAL IN-PATENTS

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BACKGROUND: A major national quality improvement initiative is the prevention of venous thromboembolism (VTE) in hospitalized patients. The Joint Commission’s core VTE measure includes assessing the risk of VTE shortly after hospital admission and at the time of entry into an intensive care unit. Unfortunately, data regarding risk factors for VTE events that develop during a medical hospitalization (Hosp-VTE) are meager. Most reviews cite single risk factors such as older age or specific disease states, such as cancer or heart failure. A proprietary measure of severity-of-illness (SOI) has been developed by 3 M that uses administrative discharge data coupled with the present-on-admission (POA) indicator, allowing the calculation of a SOI score both at the time of admission, and at the time of discharge. Calculation of the score is highly complex with many interactions between risk factors, but the factors most strongly relate to SOI are diagnoses that reflect physiologic impairment.

METHODS: We used linked State of California Hospital Discharge data from 2005–2009, to identify, for each linked record/case, the last medical hospital discharge of 3 or more days before Sept 30, 2009 and this hospitalization was used in our analysis. An in-hospital VTE event was defined using the highly specific ICD-9-CM codes 415.11 or 415.19 for pulmonary embolism (PE) and 453.41 or 453.42 for proximal and distal deep vein thrombosis in the legs (DVT) coupled with a present-on-admission (POA) indicator = No, which means the VTE developed after hospital admission. Cases were excluded if there was a VTE event within 91 days before the index admission, or if there was a surgical hospitalization within 31 days of the admission date. Severity of Illness (SOI) at the time of admission was calculated using 3 M software. Other risk factors included age, race, sex, and the number of chronic co-morbidities using the non-cancer terms in the Elixhauser co-morbidity index. The number of days from the index medical admission to the occurrence of VTE was modeled using multivariable Cox regression, stratifying by presence of cancer (ICD-9-CM=140–209.9) or no-cancer.

RESULTS: Among 1855398 cases hospitalized, 8979 cases had an in-hospital VTE that met the case definition; 1742 with cancer and 7237 without. For non-cancer cases, SOI was mild in 20.2%, moderate in 42.1%, major in 30.2% and extreme in 7.5%. The corresponding mean 30 day mortality rates from the day of admission were 0.9%, 3.7%, 11.2% and 29.2% .VTE risk factors with a relative hazard of >2.0
TRENDS IN THE FINANCIAL BURDEN OF PRESCRIPTION DRUGS AMONG THE NON-ELDERLY, 1999–2007

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BACKGROUND: Prescription drug expenditures and pharmacy benefit design have changed substantially over the last decade, yet little is known about the impact of these changes on the financial burden faced by consumers. We used nationally representative data to assess how the out-of-pocket financial burden for prescription drugs changed from 1999–2007.

METHODS: We use data on individuals less than age 65 from the nationally representative Medical Expenditure Panel Survey (MEPS) to measure the financial burden for prescription drugs annually from 1999–2007. Following previous literature, financial burden was calculated for each individual using total out-of-pocket drug costs for all family members in a given year divided by family income. The financial burden measure was adjusted to 2007 dollars using the consumer price index and excluded premium costs. We examined the proportion of individuals living in families that spent more than 10% of their income on out-of-pocket drug costs. We analyzed how this measure of financial burden differed by insurance and income groups. Because of the potential role of increasing generic drug use on financial burden, we calculated the percentage of all prescriptions in each year that were for generic drugs.

RESULTS: In 1999, there were 7.1 million people (2.9%) who lived in families spending more than 10% of their family income on out-of-pocket costs for prescription drugs. There was a steady increase in this percentage each year until 2003, when 10.8 million individuals (4.3%) lived in families spending more than 10% of family income on drugs. From 2003 to 2007, however, the financial burden steadily decreased, and in 2007, 7.4 million individuals (2.8%) lived in families spending more than 10% of their income on drugs. Similar trends were seen in each insurance and income group, although the likelihood of high financial burden differed substantially. In 2007, 1.1% of individuals with private employer-related insurance lived in families spending more than 10% of family income on drugs, compared to 4.4% in private nongroup insurance, and 7.4% in public insurance. The financial burden for drugs was highest for the poor; 14.2% of those with income less than 100% of the poverty line lived in families spending more than 10% of their income on drugs in 2007. Between 1999 and 2003, the percentage of prescriptions filled as generics was steady between 36% to 39%, but started to increase in 2004 (40%) until in 2007, 52% of all prescriptions were filled as generics.

CONCLUSION: The financial burden for prescription drugs in those under 65 peaked in 2003 and steadily decreased from 2003 to 2007. The decrease in financial burden since 2003 is important evidence of the success of the various strategies used to lower drug costs, such as the increased use of generic drugs. This financial burden remains high, however, for low-income individuals; whether this problem will be addressed when the Medicaid expansions and insurance exchanges authorized under health reform are fully implemented is unknown. Whether rising premiums, which are not measured here, overshadow these decreasing out-of-pocket costs is also unknown.

HIV RISK AFTER RELEASE FROM PRISON: A QUALITATIVE STUDY OF FORMER INMATES

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BACKGROUND: Human Immunodeficiency Virus (HIV) infection and hepatitis C (HCV) are more prevalent among prison inmates than in the general population. The post-release period is a highly vulnerable time for former inmates and may be associated with increased risk behavior for these infections. Few studies have examined the health perceptions, risks and health-care seeking experiences of former inmates as they pertain to HIV and HCV, nor have they focused on the high-risk immediate post-release period. We sought to understand the experiences of former inmates during the post-release period which put them at risk for HIV or HCV transmission, acquisition, and disease progression, as well as failure to link with health care.

METHODS: This was a qualitative study of 29 former inmates 18 years and older within two months after their release from prison to the Denver, Colorado area. Trained interviewers conducted and recorded individual, in-person, semi-structured interviews exploring participants’ perceptions of risk, circumstances that put them at risk for HIV and HCV acquisition and transmission, and barriers to engaging in medical care after release. Interview transcripts were coded and analyzed utilizing a team-based general inductive approach to analysis. Atlas.ti software was used to code transcripts and organize data.

RESULTS: Twenty men (69%) and nine women (31%) with a mean age of 39 years (range 22–57 years) participated. The participants were racially and ethnically diverse. Four major themes emerged from the interview transcripts: 1) risk behaviors, including unprotected sex, transactional sex, non-consensual sex, and drug and alcohol use, were commonly described in the immediate post-release period; 2) engagement in risky behavior often occurred within the first few days to weeks after release; 3) former inmates had important educational needs about risk behaviors as they pertained to HIV and HCV; and 4) former inmates faced major challenges in accessing health care and medications after release. Based on analysis of interview transcripts, we created a conceptual model of the multiple factors impacting rates of HIV and HCV infection, progression and transmission among former inmates (see Figure 1).

CONCLUSION: Risk factors for acquiring and transmitting HIV and HCV were described as pervasive among former inmates in the immediate post-release period. Prevention efforts should be concentrated in this time period and should focus on health education, promotion of safe sex and needle practices, improved access to substance abuse treatment, and provision of safe transitional housing free of drug use. Improved coordination between correctional staff, parole officers and community health care providers may lead to improved continuity of health care and health outcomes related to HIV and HCV.
FACTORS ASSOCIATED WITH ADMISSION AND DISCHARGE MEDICATION RECONCILIATION ERRORS AT 2 TEACHING HOSPITALS

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BACKGROUND: Healthcare providers are tasked with the reconciliation of medications during care transitions. Errors may occur in this process, most commonly when documenting the pre-admission medication list (PAML) and writing discharge orders. We examined factors associated with such errors at two academic medical centers.

METHODS: We analyzed data from patients assigned to the intervention arm of the Pharmacist Intervention for Low Literacy in Cardiovascular Disease (PILL-CVD) Study, a randomized controlled trial. We assessed patient characteristics associated with medication reconciliation errors including health literacy, cognitive function, and patients' baseline understanding of their pre-admission medication regimen. We also determined the presence of an electronic medication list updated within 90 days prior to admission, number of pre-admission and discharge prescription medications, and number of medication changes between admission and discharge. We used negative binomial regression to analyze predictors of the number of errors, as well as clinically-relevant errors, in the physicians' PAML and discharge medication orders, considering the study pharmacist's medication history as the "gold standard." Results are reported as incidence rate ratios (IRR).

RESULTS: Among 379 patients with admission data, 174 (41%) had at least 1 PAML error. Among 401 patients with discharge data, 158 (39%) had at least 1 error in discharge medication orders. PAML errors were more common with a higher number of pre-admission medications, and less common when a recent medication list was present (Table). Clinically-relevant discharge medication errors were associated with married status, impaired cognitive function, higher number of PAML errors, and more medication changes made prior to discharge.

CONCLUSION: Medication reconciliation errors are common at the time of hospital admission and discharge. Clinically-relevant admission medication errors increased as the number of pre-admission medications increased. Furthermore, at discharge patients are at increased risk for clinically-relevant medication errors if they have impaired cognition, if PAML errors exist, or if many changes are made to their medication regimen during hospitalization. Further studies need to evaluate interventions focused on taking accurate pre-admission medication histories and verifying the accuracy of discharge orders in patients known to be at high risk for medication errors.
**BARRIERS PERCEIVED BY PHYSICIANS REGARDING THEIR OWN HEALTH CARE**

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**BACKGROUND:** Physicians have been shown to have multiple negative health seeking behaviors, which include self-prescribing and consulting friends and colleagues for their medical problems. While this type of behavior may not be harmful in acute illnesses, it is generally agreed that these behaviors can lead to poor outcomes in chronic illness and psychiatric conditions. Several studies have attempted to evaluate possible barriers to seeking care among physicians using surveys alone. This study seeks to evaluate how physicians perceive their own health care and barriers to accessing needed care through the use of semi structured interviews.

**METHODS:** This is a qualitative study utilizing semi structured interviews. Staff physicians and residents were recruited from the Departments of Medicine and Surgery at Walter Reed Army Medical Center and the Medical College of Wisconsin. An independent researcher performed the interviews, which focused on three major domains: perceptions about own health care, perceptions about providing care to self/family, perceptions regarding accessing mental health care. The interviews were recorded and transcribed by an outside transcription service. De-identified transcripts were coded separately by two researchers for themes, with frequent meetings for discussion and disagreement resolved through discussion. This process was used to elaborate an organizational scheme with major themes. Interviews continued until no new themes emerged.

**RESULTS:** Saturation was achieved after 24 interviews were completed. Four major themes emerged including: 1) barriers to accessing care, 2) caring for family and friends, 3) physician health behaviors, and 4) potential solutions to barriers. Perceived barriers to care include concerns about confidentiality, fear of consequences including employability, time constraints, and stigma related to particular diseases including mental health and sexual activity (function and diseases). Two beliefs emerged regarding health care for family and friends. Some physicians act as family providers or act as an intermediary, arranging care with colleagues or refilling standard medications. Other physicians made a decision not to treat family members for several reasons, including concerns about altered judgment, lack of objectivity, and guilt with potential bad outcomes. Physician health behaviors included self-diagnosing and self-prescription, informal care from colleagues, denial and minimization of symptoms, and unhealthy lifestyles. There was a strong sense of not wanting to burden colleagues in order to take care of one’s own health needs. There were many potential solutions proposed to the perceived barriers, such as building time in the schedule for regular health visits, changing the culture to improve attitudes toward stigmatized diseases and health in general, allowing physicians to receive care outside their place of work, and restricting access to electronic medical record to improve confidentiality.

**CONCLUSION:** Physicians, both staff and residents, identified a number of important themes regarding health care for themselves and their families. There are a number of important barriers to accessing care, providers are split on providing care for family members, and physicians’ health behaviors are often not healthy. A number of potential solutions were suggested that could improve medical care for health care providers.

**USE OF A VIDEO DECISION SUPPORT TOOL TO SUPPLEMENT GOALS-OF-CARE DISCUSSIONS WITH PATIENTS SEEN BY AN INPATIENT PALLIATIVE CARE SERVICE**

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**BACKGROUND:** A failure to participate in effective goals-of-care discussions may lead to the delivery of aggressive interventions in scenarios that are inconsistent with patients’ and families’ wishes. The current practice of eliciting preferences includes verbal descriptions of complex future disease states with which patients and families may have little familiarity or experience. Prior studies have demonstrated wide variability regarding patients’ preferences in the setting of advanced disease. The misunderstanding of factual information, particularly in patients with low health literacy, may account for a significant proportion of the variation in preferences which is observed. The use of video to reinforce verbal descriptions of treatment options may better inform patients and families engaged in end-of-life decision making. The purpose of this study is to assess the effect of a video decision support tool on preferences for end-of-life care in patients and surrogate decision makers consulted on by an inpatient palliative care service.

**METHODS:** This temporal intervention study consists of an observational and video phase, conducted over two consecutive five month periods, or until 25 subjects are enrolled in each group. Eligible subjects include adult patients and/or their healthcare proxies who are consulted on by an inpatient palliative care team and who are...
appropriate for a goals-of-care discussion. Subjects in the observational phase received the usual standard of care provided by an inpatient palliative care service. During the intervention phase, a short video illustrating specific treatments for three different levels of medical care, i.e. life-prolonging care, basic care and comfort-oriented care, is integrated into the standard palliative care consult. Following the palliative care consultation, all patient subjects and/or their healthcare proxies are surveyed regarding preferences for care near the end of life, the reasons for choosing as they did and the level of certainty regarding their decision. The primary study outcomes are the differences in proportions of patient subjects/healthcare proxies in each group who prefer comfort-oriented care and who die in accordance with their stated preferences. The secondary outcomes include the level of uncertainty regarding treatment preferences, satisfaction with pain control and symptom management and healthcare proxy satisfaction with end-of-life care following subjects’ death. Participants’ comfort level with the video is also measured. Outcomes are measured during the index hospitalization as well as over the phone at 7–14 days, 2–3 months and 5–6 months post-discharge.

RESULTS: To date, eight subjects have been enrolled in the observational phase of the study. When asked to identify preferences for end-of-life care, 2 preferred life-prolonging care, 1 preferred limited care, 4 preferred comfort care and 1 was unsure. The mean uncertainty score (range 0 to 50; higher score indicating greater uncertainty) was 20. There have been no adverse events reported and there has been no feedback that participation has been distressing in any way. Recruitment is actively ongoing.

CONCLUSION: The use of a video decision support tool to supplement goals-of-care discussions with patients and families consulted on by an inpatient palliative care team may provide an easily reproducible method for more accurately eliciting preferences and ultimately improve end-of-life care.

RESISTANT HYPERTENSION IN A VA POPULATION: NEED FOR FURTHER STUDY, BETTER TREATMENT AND PREVENTION OF CARDIOVASCULAR EVENT Jian Huang 1; Manmeet Singh 2; Wei Gu 1; Ronna Mallios 3; Sean McFarland 1; Jocelyn Fong 1. 1VACCHCS, Fresno, California; 2VACCHCS, Fresno, California; 3UCSF Fresno, Fresno, California. (Tracking ID # 10598)

BACKGROUND: Resistant hypertension (RH) is widely understudied, although it is a relatively common clinical problem with increased cardiovascular risk. The exact disease mechanisms are not well defined and the reported prevalence of RH varies with study populations. We sought to determine the prevalence of RH and its association with other co-morbid conditions in a VA population.

METHODS: Demographics and clinical data on diagnosis, labs, and medication profiles were collected from electronic records of 17,466 patients in this cross-sectional study. RH was diagnosed if BP was uncontrolled on 3 or more, or controlled on 4 or more agents, including a thiazide diuretic. We used t-test or Chi square test where appropriate for comparison of parameters between those with and without RH. We also used logistic regression model to calculate the adjusted OR and 95% CI.

RESULTS: Mean age was 67 years and BMI of 29.6 with 96% males. Overall prevalence of RH was 9% versus 13% among hypertensive patients. Patients with RH had significantly older age, higher BMI and Framingham score (FS) as well as higher prevalence of MI, PCI, CABG, CVA or TIA, PVD, CHF, ED, CKD, DM and MS.

CONCLUSION: Overall prevalence of RH in this study fell in the range reported in general population. Certain cardiovascular and metabolic diseases and conditions with target organ damage were significantly more prevalent in RH group. Our results suggest the need for multifaceted intervention in this high risk population. Further research is warranted to study the underlying disease mechanisms of RH in order to develop more effective treatment for the prevention of cardiovascular event.

PERSPECTIVES OF NURSES, HOSPITALIST PHYSICIANS AND PHYSICIAN ASSISTANTS TO LOCALIZING MEDICAL TEAMS TO A NURSING UNIT: A FOCUS GROUP STUDY

Siddhartha Singh 1; Kathlyn Fletcher 1. 1Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 10600)

BACKGROUND: Localizing medical teams to a single nursing unit is an attractive way to organize hospital care. In our hospital we localized patients assigned to two hospitalist-physician assistant (HPA) teams on one nursing unit between the period April 1, 2010 and July 10, 2010. We studied the perspectives of nurses, hospitalist physicians and physician assistants (PA) exposed to this intervention.

METHODS: We conducted a focus group study and invited all the nurses as well as hospitalist physicians and PAs who provided patient care on the localized nursing unit to participate. Invitations were sent out by e-mail, written informed consent and demographic information was obtained from the participants. Focus groups were conducted using a semi-structured open-ended focus group guide, were audio recorded and then transcribed. All identifiers were removed from the transcriptions. We analyzed the transcribed data qualitatively using grounded theory. The process included open-coding, axial coding and selective coding. Our open-coding procedure focused on identifying the impact of localization on patients and staff. Two investigators independently coded the focus group transcripts. We began by each reviewing one focus group transcript which resulted in our coding scheme. We then used this coding scheme to analyze the remaining transcripts. Our institutional review board approved this study.

RESULTS: We conducted 4 focus groups for 29 nurses and 1 focus group for 9 hospitalist physicians and PAs (see table). The analysis resulted in a coding scheme that mirrored the Institute of Medicine’s six aims for improvement of healthcare. Participants noted that patient safety increased due to greater provider accessibility, quicker responses of providers to patient decomposition and fewer telephone orders. They also felt that localized care was more effective and efficient due to functional multidisciplinary rounds and better teamwork; more patient-centered due to better and more frequent patient-provider interactions and more timely due to greater provider accessibility. On the other hand participants also noted that greater efficiency led to higher perceived workload which if not recognized and managed had the potential to have a negative impact on quality of care. Greater access of patients and nurses to providers may have the unintended consequence of more interruptions in workflow. Overall, participants felt that localization of medical teams was beneficial for patients as well as staff.

CONCLUSION: Our study is limited by being a single site study and shows that nurses, physicians and PAs felt that localization of medical teams to a single nursing unit led to improved quality of care and provider experience but the intervention had the potential for unintended negative consequences.
TALK THE WALK TO DO MORE: LOCALIZING HOSPITALIST PHYSICIAN ASSISTANT TEAMS TO A SINGLE UNIT IMPROVES WORKFLOW Siddhartha Singh 1; Vipulkumar Rana 2; Cheryl Jenkins 3; Kathleen Idstein 1; David Marks 1; 1Medical College of Wisconsin, Milwaukee, Wisconsin; 2Medical College of Wisconsin, Brookfield, Wisconsin; 3Froedtert Hospital, Milwaukee, Wisconsin. (Tracking ID # 10601)

BACKGROUND: Localization of medical teams to a hospital unit is an attractive way to organize hospitalist services but its operational impact on workflow has not been examined.

METHODS: Between April 1, 2010 and July 10, 2010, we localized patients assigned to two hospitalist—physician assistant (HPA) teams on one nursing unit. We concurrently compared the operational outcomes of these localized teams to two similar HPA teams with patients dispersed throughout the hospital to over 10 different units (the usual practice). A hospitalist faculty admitting medical officer (AMO) was asked to assign at least 5 admissions to each non-localized team every day. Non-localized teams did not take new patients beyond a maximum census of 16 patients each. The AMO assigned new patients to the localized teams to keep the nursing unit patient census (32) full. Beyond these guidelines the AMO was asked to consider the team's perceived workload and use judgment in deciding assignment. We collected billing information to determine total encounters for providers on these teams as a measure of clinical workload. We determined number of pages to each provider during work hours (from 7 am to 6 pm) through our telecommunication records. For the final 15 days of the intervention period we asked the Physician Assistant (PA) on each team to wear a pedometer and record steps taken during their work day as a measure of non-value added work.

RESULTS: Non localized teams performed an average of 11 billable patient encounters, received 28 pages between 7 am and 6 pm, and the non localized PAs took 5,554 steps during their weekday. In comparison, localized HPA teams averaged 0.99 more billable patient encounters a day (CI 0.41 — 1.58; p=0.001) and received 11.93 fewer pages every day (CI 10.95 — 12.91; p<0.001). PAs on localized teams walked 1182 fewer steps during the workday (CI 215 to 2580; p=0.097).

CONCLUSION: Our study shows that localizing HPA teams to one nursing unit allowed them to perform more clinical work while decreasing the number of interruptions due to pages. Fewer pages may also mean that localized HPA teams communicated more with nurses directly—a safer and richer mode of communication in comparison to phone communication or orders. Additionally the pedometer data suggests that non value added work represented by number of steps walked per day may have been lower on localized teams. In summary, localizing HPA teams to one nursing unit has a dramatically positive impact on their workflow.

OUTCOMES OF LOCALIZING HOSPITALIST-PHYSICIAN ASSISTANT TEAMS TO A NURSING UNIT Siddhartha Singh 1; Sergey Tarima 1; Mary Conti 2; Kathryn Fletcher 1; Vipulkumar Rana 3; David Marks 1; 1Medical College of Wisconsin, Milwaukee, Wisconsin; 2Froedtert Hospital, Milwaukee, Wisconsin; 3Medical College of Wisconsin, Brookfield, Wisconsin. (Tracking ID # 10609)

BACKGROUND: Localization of medical teams to a hospital unit has been shown to improve nurse-provider communication but its effect on patient outcomes is unknown.

METHODS: Between April 1, 2010 and July 10, 2010 we conducted a trial of localizing patients assigned to two hospitalist-physician assistant (HPA) teams to one nursing unit. We concurrently compared their outcomes to patients assigned to two similar HPA teams with patients dispersed throughout the hospital to over 10 different units (the usual practice). Patients with a principal diagnosis of sickle cell disease (SSD) were excluded from the analysis as they were preferentially assigned only to the non-localized teams. A faculty admitting medical officer (AMO) assigned patients to each team and did not use any clinical criteria (other than diagnosis of SSD) to make this assignment. The AMO was asked to assign at least 5 admissions to each non-localized team every day. Non-localized teams did not take new patients beyond a maximum census of 16 patients each. The AMO assigned new patients to the localized teams to keep the nursing unit patient census (32) full. Beyond these guidelines the AMO was asked to consider the team’s perceived workload and use judgment in deciding assignment.

RESULTS: Between April 1, 2010 and July 10, 2010, we localized 541 (non-sickle cell) admissions were assigned to the localized teams and 555 admissions were assigned to the non-localized teams. These admissions were similar except that patients on localized teams were older. As compared with patients cared for by non-localized teams, patients cared for by localized teams had a 11% longer adjusted length of stay (P=0.022) but similar charges and similar 30-day risk of readmission. We controlled for age, race, gender, payer status, weekend admission/discharge, co-morbidities, principal diagnosis and the effect of repeat admissions of the same patient. This study was reviewed by the institutional review board and granted an exemption as a quality assurance project.

CONCLUSION: Our study reveals a counterintuitive finding of higher length of stay when we localized HPA teams— an intervention designed to promote efficiency. This finding needs to be further explored within a wider context of other measures of quality of care such as patient satisfaction, failure to rescue rates and process measures. In addition, as new patients could be assigned to the localized teams only when the nursing unit had open beds due to discharges, there may have been a perverse incentive promoting higher length of stay to keep unit census high.

Table: Characteristics of focus group participants

|                        | Total Number | Age Median (range) | Gender Female | Years since completing training Median (range) |
|------------------------|--------------|--------------------|--------------|-----------------------------------------------|
| Nurses                 | 29           | 29 (22-53)         | 27           | 3 (1-32)                                      |
| Hospitalist Physicians | 6            | 31 (29-33)         | 1            | 1.3 (1-2)                                     |
| Hospitalist PAs        | 3            | 27 (25-27)         | 3            | 1.5 (1.5-1.5)                                |
POLST USE IN CALIFORNIA NURSING HOMES Neil S Wenger 1; Mimi Tarn 2; Allison Diamant 1; Karl Lorenz 3; Judy Ciliko 4; Kate O’Malley5. 1UCLA GIM&HRSR, Los Angeles, California ; 2UCLA Department of Family Medicine, Los Angeles, California ; 3Greater Los Angeles VA Medical Center, Los Angeles, California ; 4Coalition for Compassionate Care of California, Sacramento, California ; 5California HealthCare Foundation, Oakland, California . (Tracking ID # 10607)

BACKGROUND: Physicians Orders for Life Sustaining Treatment (POLST) forms improve communication of life-sustaining treatment preferences across care venues. California implemented this clinical tool in 2009 and a novel intervention of Community Coalitions was undertaken to advance POLST in localities. Community Coalitions engaged local hospitals, emergency services providers and nursing homes in educational and operational activities designed to support POLST adoption. About 18 months after introduction of POLST, we studied the implementation of POLST in California nursing homes (NHs) and the association with Community Coalition activity.

METHODS: NHs randomly selected in Coalition and non-Coalition counties were mailed surveys asking about POLST use and problems with implementation. Coalitions identified with which NHs they worked and the level of intensity of interaction with each NH.

RESULTS: Of 547 NHs surveyed, 143 (51%) of those in Coalition counties participated and 141 (52%) from non-Coalition counties. At 83% of responding NHs at least some staff had received POLST education and 59% of NHs reporting having a formal policy on implementation. A novel Community Coalition intervention facilitated POLST implementation.

EMPATHY, SUPPORT, OR BLAME REGARDING CIGARETTE SMOKING FROM PHYSICIANS CARING FOR TERMINAL LUNG CANCER PATIENTS: WHEN YOU STARTED, EVERYONE SMOKED AND IT WAS COOL Diane S Morse 1; Elizabeth A Edwardsen 2; Shmuel Reis 3; Sally J Rousseau 4; Mary Gale Gurnsey 5; Adam Taupin 6; Cleveland G Shields 7; Jennifer J Griggs 8; Susan H McDaniel 9. 1University of Rochester School of Medicine, Rochester, New York ; 2Departments of Emergency Medicine and Medicine, University of Rochester School of Medicine, Rochester, New York ; 3Division of Family Medicine, The R& B Rappaport Faculty of Medicine, The Technion- Israel Institute of Technology, Haifa, N/A ; 4Departments of Psychiatry and Family Medicine, University of Rochester School of Medicine, Rochester, New York ; 5Department of Psychiatry, University of Rochester School of Medicine, Rochester, New York ; 6University of Rochester, Rochester, New York ; 7Department of Medicine & Health Management and Policy Director, Breast Cancer Survivorship Program, University of Michigan, Ann Arbor, Michigan ; 8Dr Lauri Sands Distinguished Professor of Families & Health Director, Institute for the Family, Department of Psychiatry Associate Chair, Department of Family Medicine, University of Rochester School of Medicine, Rochester, New York . (Tracking ID # 10608)

BACKGROUND: Patient-centered care is respectful of and responsive to individual patient needs and beneficial for numerous patient outcomes. Patients with advanced cancer are especially in need of compassionate, caring physician responses. However, patient morbidity and mortality concerns can be particularly difficult for physicians to address. These health conditions can engender complex dialogues, making them fruitful for study of communication strategies. One issue of clinical importance in lung cancer care is how physicians address patients’ potential emotional reactions regarding any history of their cigarette smoking, since it is a frequent mediating factor in the disease. Other studies, with conditions including lung and breast cancer, as well as rape and HIV infection, have found an association between a lack of supportive communication, blaming, and shaming from medical providers and worsened outcomes. Successful motivational behavior change strategies employ support and empathy. Because supportive communication is associated with better outcomes, it is important to understand
dialogues between lung cancer patients and physicians in regard to cigarette smoking. The objective of this study is to examine physician communication associated with cigarette smoking in an existing database of first visits of undetected standardized patients (SPs) with stage IV lung cancer.

METHODS: Design: Consenting physicians had covert audio recordings of office visits with SPs. Population: Practicing physicians: 23 community oncologists and 23 community family physicians of which SPs successfully audio-recorded 19 oncologists and 20 family physicians. Physicians averaged 48.1 (SD=9.2) years old. Seventy-one percent were male and 29% were female. Prompted physicians were able to identify the SP correctly in 15% (n=5) of visits which were subsequently removed from the data set, leaving 34 undetected visits for this study. Analysis and text management: We conducted a thematic analysis of the transcripts, using an iterative process to create a coding system, with keywords and phrases in areas of interest. Two team researchers, randomly paired, coded each transcript. Coding development continued until saturation; with each revision all previously coded interviews were recoded by a minimum of 2 researchers. We resolved differences in coding in the larger research group by consensus. Team members then reviewed all coded elements in context, using sequence analysis to understand larger research group by consensus. Team members then reviewed all coded elements in context, using sequence analysis to understand cigarette smoking dialogue, focusing on physician speech. Identifying and defining cigarette smoking-related dialogue: Dialogue categories consisted of a) patient cigarette smoking related cues with physician responses and b) physician spontaneous questions regarding smoking behavior. We categorized these dialogues as supportive or not supportive by the physician towards the patient. Supportive statements regarding smoking were affirming, empathic, or non-blaming towards the patient’s decision to smoke or having cancer. Not supportive statements regarding smoking occurred either as a non-empathic response to an SP empathic cue or were blaming towards the patient for smoking or having cancer.

RESULTS: Actor adherence to role averaged 92%. Twenty-six of the 34 (76.5%) encounters contained a total of 49 dialogues regarding cigarette smoking, with a range of 0–4 smoking dialogues per encounter. Of these dialogues, 14.3% (n=7) were found to be supportive and 85.7% (n=42) were unsupportive. Supportive dialogues included empathy regarding the patients’ decision to smoke (“The sad thing is that people who smoke and develop a condition they blame themselves - they feel guilty.” “People from your generation were fooled.” “When you started, everyone smoked and it was cool.”) and acknowledged the difficulty of quitting (“It’s tough isn’t it?”). Unsupportive dialogues included pairing delivery of a poor prognosis with a statement about patient smoking (“Nowadays most people with lung cancer are previously smokers,”), responding to family history of death from lung cancer with a statement about smoking rather than empathy (Patient: “My mother died of lung cancer,” Doctor: “Was she a smoker?”), and not acknowledging the difficulty of quitting smoking (“You’ve been smoking a lot off and on.”).

CONCLUSION: Lung cancer patients frequently have a history of cigarette smoking which has contributed to their disease. It is to be expected that they feel some shame, guilt, sadness, or regret regarding their decision to smoke. Physicians can respond supportively by empathically acknowledging reasons patients may have started smoking and the difficulty of quitting. Less supportive responses include linking diagnostic or prognostic statements with the smoking history, which may be interpreted by the patient as blame for the disease. When a patient has a family history of lung cancer, concerns can be similarly addressed in a supportive fashion. Physicians can empower patients to address a personal and family legacy of smoking therapeutically through supportive behaviors. Cigarette smoking histories present an under-addressed opportunity for physicians to provide support and avoid blaming lung cancer patients. Such supportive relationships, in other health related domains have been associated with improved outcomes.

BARRIERS TO A COMMUNITY-BASED HEALTH INFORMATION EXCHANGE OF MENTAL-HEALTH DATA TO SUPPORT PRIMARY CARE Michael Weiner 1; Paul Dexter 2; Donald P. Hay 3; Donald Lindgren 4; Faye Smith 5; Tull Glazener 5; Adriane E. Siefert 5; Kristyn Looney 6; Klaus Hilgath 5; Malaz Boustanli 6; Hugh Hendrie 10; Christopher Callahan11; 1Indiana University Center for Health Services and Outcomes Research, and Center of Excellence on Implementing Evidence-Based Practice, Department of Veterans Affairs, Veterans Health Administration, Health Services Research and Development Service HFP 04–148, Indianapolis, Indiana ; 2Wishard Health Services and Regenstrief Institute, Inc., Indianapolis, Indiana ; 3Indiana University School of Medicine, Indianapolis, Indiana ; 4Midtown Community Mental Health Center, Indianapolis, Indiana ; 5Regenstrief Institute, Inc., Indianapolis, Indiana ; 6Indiana University Center for Aging Research, Indianapolis, Indiana . (Tracking ID # 10609)

BACKGROUND: Although excellent primary care requires comprehensiveness and coordination, many patients see primary care providers with limited access to specialty-care records. Mental-health (MH) records are often sequestered due to historical practices or policies. In health information exchange (HIE), institutions create agreements and technical means to share selected information. Exchanging certain MH information poses challenges, because federal and State law restricts sharing of details about substance abuse. With attention to policy, law, and technology, we integrated into an electronic health record (EHR) system the diagnoses of patients also seen in an affiliated community MH center (CMHC).

METHODS: The CMHC uses an electronic data system at all of its 13 sites. Stakeholders were gathered, including institutional leaders, their attorneys, and technical staff from the EHR vendors. The team reviewed legislation, institutional practices for managing and protecting data, and technical requirements for transmitting, storing, and displaying data. Agreements were reached to enable the HIE to occur. Due to disparities in designs of the EHR systems, CMHC records were examined to determine technical structure and relationship to native entry of data such as diagnoses. Data were imported into the primary, comprehensive EHR system, which includes all order entry, diagnostic test results, inpatient and outpatient narrative notes, and imaging and is accessed more than ten million times per year at the local institution. This EHR system is part of a city-wide HIE with five hospital systems, including 11 hospital facilities and more than 100 clinics and day surgery facilities. Following inspection of data, clinicians were informed about availability of CMHC data in the primary EHR system.

RESULTS: The CMHC provides care for about 1700 patients who are also seen in primary care. Regarding substance-abuse records specifically, the Code of Federal Regulations (Title 42, Part 2) prohibits disclosure without a patient’s consent. One exception allows for disclosure between or among personnel having a need for the information in connection with the diagnosis or treatment if the communications are within a program or between a program and an entity having direct administrative control over the program. More broadly regarding MH data other than psychotherapy notes, the Health Insurance Portability and Accountability Act does not treat such data
differently from medical or surgical data, which can be shared for treatment. Under the authors’ State law, exchanging MH data between providers within an institution is also permitted. The institution’s ongoing participation in the city-wide HIE program complicated plans to share new data. Limiting HIE of CMHC data to the primary institution and the CMHC required these data to be electronically tagged and required new access controls. Transferring data from the CMHC EHR required agreement upon data formats and telecommunications technologies. Making the CMHC data available in the main EHR system also required creating a new template through which data could be displayed. CMHC data including diagnoses were delivered to the primary system. The main user interface was modified to include a link to the CMHC information, enabling primary care providers to access CMHC data. Next steps include incorporating into the main EHR system the narrative progress notes from the CMHC.

CONCLUSION: This work illustrates legal, cultural, and technical issues surrounding sharing of community-based MH data to support primary care. Adding MH data to an existing HIE requires attention to law, local access controls, data formats, and education of administrators and clinicians.

HOW DO PATIENTS AND PHYSICIANS DIFFER IN THEIR CONCEPTUALIZATION OF THE REASON FOR HOSPITALIZATION? Zackary Berger 1; Anne Dembiter 2; Mary Catherine Beach 3. 1Johns Hopkins School of Medicine, Baltimore, Maryland; 2NYU School of Medicine, New York, New York. (Tracking ID # 10610)

BACKGROUND: An emerging body of literature focuses on concordance between patient and physician in terms of understanding of reasons for hospitalization. This basic agreement - or common ground - forms the very basis by which all other communication regarding an illness and its treatment is based. The few existing studies that exist on this topic vary widely in their estimates of diagnostic concordance. In light of the potential differences among studies in the measurement of diagnostic concordance, and to address patient understanding of hospitalization in general, we sought to qualitatively analyze the ways in which stated reasons for hospitalization differ between patient and physician from an epistemological perspective, in order to develop a framework for understanding inpatient-physician diagnostic discordance. An emerging body of literature focuses on concordance between patient and physician in terms of understanding of reasons for hospitalization. This basic agreement–or common ground–forms the very basis by which all other communication regarding an illness and its treatment is based. The few existing studies that exist on this topic vary widely in their estimates of diagnostic concordance. In light of the potential differences among studies in the measurement of diagnostic concordance, and to address patient understanding of hospitalization in general, we sought to qualitatively analyze the ways in which stated reasons for hospitalization differ between patient and physician from an epistemological perspective, in order to develop a framework for understanding inpatient-physician diagnostic discordance.

METHODS: In a major urban medical center in New York, we asked inpatients whether they knew why their doctors admitted them to the hospital, comparing that to their most recent physician’s note in the medical record. We then qualitatively analyzed statements made by patients and physicians regarding reasons for admission, classified ways in which these statements differed, calculated the prevalence of diagnostic concordance, and developed a model to demonstrate its potential impact on communication.

RESULTS: Of 46 patients, diagnostic concordance was present in 25 (54%), discordance in 16 (35%), and 5 patients (11%) could not give any reason for their hospitalization. Both patients and physicians most often expressed the reason for hospitalization in terms of diagnosis (“kidney stone”) rather than symptoms (“back pain”). Patients whose statements were concordant with their providers usually used slightly different terminology; some also included or omitted detail found in the physicians’ statements. Patients whose statements were discordant with their physicians were either vague (“I’m sick”), agreed on organ system (“chest pain” vs. “dysphagia”), or disagreed on the organ system involved (“can’t speak” vs. “atrial tachycardia”).

CONCLUSION: A significant proportion of medicine inpatients could not state their physicians’ reason for admission. Further research on this topic should investigate whether establishing inpatient diagnostic concordance improves outcomes.

RESIDENT USE OF SMARTPHONES WHILE PROVIDING PATIENT CARE Mitesh Patel 1; Jessica Dine 1; David Asch1. 1Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania. (Tracking ID # 10615)

BACKGROUND: The use of smartphones among the general population has grown dramatically over the past decade. The growth of medical applications for these devices has helped stimulate their adoption as a new tool for health care providers. Yet, their use by physicians in clinical settings is unknown.

METHODS: Our objective was to determine the percentage of internal medicine residents using smartphones in clinical settings, to assess how the devices were being used, and to evaluate perceptions of the impact of smartphone use on patient care. We surveyed internal medicine housestaff at three academic medical centers (Brigham and Women’s Hospital, the Hospital of the University of Pennsylvania, and the University of California, San Diego) between December 2009 and February 2010. Surveys were administered as hardcopies at intern and resident conferences, as well as through an online version that was made available through email.

RESULTS: Among 125 respondents, 79 (63.2%) used a smartphone as a tool while providing patient care (TABLE 1). The most commonly used device was the iPhone and Touch (64.6%), followed by the Blackberry (12.7%). Among smartphone users, about two-thirds used their device at least four times a day as an aid for providing patient care. The most common use of the smartphone was for medication reference (96.2%) or as a medical calculator (89.9%). More rare uses included using the camera feature to evaluate at rash over time, viewing pill identification photos for medication reconciliation, and searching the internet for journal articles and other medical information. Smartphones were perceived by housestaff to help save time (93.5%), reduce medication errors (77.9%) and improve quality of care (68.8%). A higher proportion of interns indicated that a smartphone helped them with specific tasks such as learning more medicine, choosing treatment options, improving patient safety and reducing medication errors. In contrast, a higher proportion of residents felt a smartphone helped them with broader issues, such as reducing healthcare costs and improving quality of care. Qualitative analysis revealed that use of smartphones while providing patient care created risks to patient privacy, the patient-physician relationship, and conflicts of interest in medical decision-making (TABLE 2). In contrast, benefits included enhanced ability to perform medication reconciliation and practice medicine at the point-of-care. More than half of respondents that did not use a smartphone reported that it was due to financial reasons. .
**CONCLUSION:** A significant proportion of residents are using smartphones as a tool for providing patient care. These smartphones may play an important role in improving physician efficiency, patient outcomes and health care quality.

**THE DIFFERENTIAL EFFECT OF HOSPITAL SERVICE-LINE PROFITABILITY ON READMISSIONS VERSUS DEATH**

Amol S. Navathe 1; Kevin G. Volpp 1; R. Tamara Konetzka 2; Matthew J. Press 3; Jingsan Zhu 1; Richard C. Lindrooth 4.

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**BACKGROUND:** Recent policy reform has emphasized the role of readmission rates as an indicator of quality of care, particularly with linking reduced Medicare payments to excess readmissions in The Patient Protection and Affordable Care Act. Under prospective payment, a reduction in reimbursement rates can potentially lower the quality of care during the hospital stay. We examine two measures that are commonly associated with the quality of hospital care: 30-day readmissions and 30-day mortality. Our objective was to determine whether the profitability of hospital service-lines to which a patient was admitted was associated with the likelihood of readmission or death within 30 days.

**METHODS:** We utilized a two-stage Cox proportional hazards competing risks framework, allowing for the simultaneity of readmission and mortality risks in the post-hospitalization period. This analysis was performed on a sample of 15,731,768 Medicare Fee-for-Service (FFS) discharges from 4,815 general acute-care hospitals eligible for prospective payment (PPS) during the fiscal years 1997, 2001, and 2005. Risk adjustment was performed using Elixhauser comorbidities and year fixed-effects controlled for secular trends. Baseline hazards were computed at the hospital service-line level to focus on longitudinal within-hospital variation. Profitability was measured using annual markup, computed by subtracting the cost of stays from the allowed charges and dividing this difference by the cost.

**RESULTS:** There was no evidence of an association between service line profitability and readmission risk (average effect: 0.16 percentage point decrease in readmission risk per 10 percent increase in markup, p-value
range less than 0.001 to 0.092). This effect was most pronounced for hospitals with high shares of Medicare patients, with an average magnitude of $-1.67$ percent points per 10 percent increase in markup (p-value less than 0.001). As the service-line markup approached break-even, sensitivity to changes in markup increased.

**CONCLUSION:** Service-line profitability impacted readmission and death within 30 days of discharge differentially, with no effect on the rate of readmission and a negative relationship with mortality. This finding highlights the complexity in utilizing readmission rates as quality of care indicators. Thirty day mortality has been implemented by CMS as an indicator of inpatient quality for certain conditions. However, there is still controversy regarding the use of 30-day readmission rates. On the one hand rapid readmissions may reflect poor quality of inpatient care. On the other hand, readmissions may also reflect the post-discharge quality of care, including transitions to the outpatient setting and outpatient care itself. The quality of care post-discharge may be unaffected by the variation in inpatient profitability and, as a result, readmission rates were unaffected. While post-discharge care likely also plays a role in 30-day mortality, our findings suggest that it did not offset the effect of reduced inpatient profitability.

**CAN WE MEASURE AGENDA SETTING AND BALANCING PRIORITIES IN ENCOUNTERS AND ARE THESE SKILLS INDEPENDENT?**  
Sondra Zabar 1; Kathleen Hanley 1; Jennifer Adams 1; Mack Lipkin 1; Colleen Gillespie2. 1NYU School of Medicine, New York, New York; 2NYU School of Medicine, NY, New York. (Tracking ID # 10619)

**BACKGROUND:** Agenda-setting and prioritizing are critical skills for effective and efficient clinical care. Studies have shown that physicians commonly interrupt patients early into the interview and do not fully uncover patients’ agendas. While some communication skills curricula emphasize surveying problems to elicit concerns, there is less focus on skills related to agenda setting. Little is known about how agenda setting influences the rest of the clinical encounter. To examine these processes we created an Objective Structured Clinical Exam Station where the learner needs to uncover and manage an urgent, unanticipated agenda.

**METHODS:** 21 PGY1, 2 4th medicine residents completed an OSCE station as part of an annual 10-station OSCE in which a 63-year-old healthy male presented worried about the flu and receiving the H1N1 vaccination. If he was asked if he had other concerns, he showed a ‘mole’ to the doctor. The ‘mole’ was a realistic (validated by dermatologists) melanoma tattoo. For each OSCE station including this one, trained Standardized Patients (SPs) rated residents’ communication, organization and time management, assessment, patient education and counseling, and management and treatment plan performance across cases using a 19-item behaviorally anchored checklist with 3 response options (not done, partly done, well done). Cronbach’s alpha ranged from .68 to .90 for items within these skill domains. Scores were calculated as % of items within each category rated as “well done.” In addition to assessing these general skills, the SP also indicated whether he had a chance to express both H1N1 and mole concerns at the start of the visit and whether the resident prioritized one or the other, balanced both issues, or prioritizing was unclear. Chi Square analyses explored whether this measure of agenda-setting/prioritizing was associated with residents’ performance in the other cases. Independent samples t-tests were used to assess whether residents’ ability to set the agenda/prioritize in this case was associated with mean differences in overall OSCE performance in core domains.

**RESULTS:** Overall 86% (18/21) residents recognized the urgency of evaluation of the mole. 17/21 (81%) of residents gave the SP an opportunity to express both concerns at the start of the visit. 2 residents prioritized either H1N1 or the mole (10%), 12 residents achieved a balance between the two (57%), and 7 residents priorities were unclear (33%). Residents who established balanced priority between the patient’s two concerns performed better than the other residents in 2 of the 3 assessment items: agenda-setting (p=.06) and history gathering for the skin lesion (p=.01) but not in exploring the patient’s anxiety (p=.44). These residents did not perform better in the 2 education and counseling items focused on H1N1 but they did in providing recommendations for the skin lesion (p=.07). They also performed better than residents who either didn’t set a clear priority or who clearly prioritized one over the other in management and establishing a treatment plan: 100% discussed next steps vs. 71% and 50% respectively (p=.03) and 100% made a specific plan for follow-up vs. 0% and 50% respectively (p<.001). OSCE results from the other 9 stations mirrored those found in this station: residents who had balanced the priority of the patient’s two concerns received higher assessment and management/treatment plan scores across the ten stations OSCE than those in the other two groups combined (assessment: mean of 55% well done vs. 36%, p=.046; management/treatment plan: mean of 53% well done vs. 42%, p=.027). Residents’ communication and patient education and counseling scores did not differ.

**CONCLUSION:** An OSCE station using a mole tattoo effectively demonstrated a relationship between agenda setting and balancing priorities. Balancing priorities and setting the agenda appears to be a skill largely independent of communication and patient education skills. However, this skill appears to be associated with effectively assessing patient health concerns and arriving at and effectively recommending an appropriate management/treatment plan. This advanced communication skill set incorporates clinical reasoning and negotiations and may prove to be a key communication skill.

**FINANCIAL CONDITION OF TEACHING HOSPITALS AND PATIENT OUTCOMES FOLLOWING 2003 ACGME RESIDENT DUTY HOUR REFORM**  
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**BACKGROUND:** The new Accreditation Council for Graduate Medical Education (ACGME) revised resident duty hour regulations will take effect July 1, 2011. One of the concerns is that these duty hour rules represent a significant unfunded mandate, with estimated costs of several hundred million dollars per year. The differential impact of duty hour reform on patient outcomes by underlying financial health of teaching hospitals is unknown. Hospitals that are more financially stressed may be less able to respond to such mandates and as a consequence, patient outcomes may be affected. In this study, we examine whether hospital financial health was associated with differential outcomes before and after implementation of the 2003 ACGME duty hour regulations.

**METHODS:** We used 2000-2005 Medicare data to evaluate changes in a comprehensive set of patient outcomes in less versus more financially healthy hospitals before and after duty hour reform. Financial health of hospitals was measured as the average ratio of cash flow to total revenue in the year prior to duty reform implementation using Medicare Cost Reports data. Interrupted time series analysis and logistic regression models, adjusting for patient comorbidities, common time trends, and hospital site, were utilized to assess changes over time. Outcome measures included mortality within 30 days of hospital admission, AHRQ Patient Safety Indicators (PSIs), failure-to-rescue (FTR) rates, and prolonged length of stay (PLOS). PSI measures included PSI-C reflecting continuity of care in the perioperative setting, PSI-T representing technical skills-based care, and PSI-O, an “Other” composite, with a mix of surgical and medical PSIs. We studied 3,614,174 unique Medicare patients admitted to 869 short-term acute-care non-federal teaching hospitals with principal diagnoses of acute myocardial infarction (AMI), congestive heart
failure (CHF), gastrointestinal bleeding, or stroke or a DRG classification of general, orthopedic or vascular surgery.

**RESULTS:** There was no systematic evidence that the degree of change in patient outcomes was associated with hospital financial health in post-reform year 1 ("Post 1") or year 2 ("Post 2") versus the pre-reform period. All 8 tests measuring the association between mortality and hospital financial health quartile were insignificant: Post 1 OR range 1.00–1.02 (95% CI range, 0.97–1.04) and Post 2 OR range 0.99–1.02 (0.97–1.05). For PSI-b, 6 of 8 tests were insignificant except for minor effects in Post 1 for PSI-0 and Post 2 for PSI-T: OR 0.96 (0.94–0.99) and OR 0.97 (0.94–0.99) respectively. FTR rate analysis demonstrated no significance for either post-reform year (OR 1.00 for both) and the test on FLOS outcomes resulted in significance only for the combined surgical sample in Post 2: OR 1.03 (1.02–1.04).

**CONCLUSION:** There was no systematic evidence that the degree of change in patient outcomes was associated with hospital financial health in post-reform year 1 ("Post 1") or year 2 ("Post 2") versus the pre-reform period. All 8 tests measuring the association between mortality and hospital financial health quartile were insignificant: Post 1 OR range 1.00–1.02 (95% CI range, 0.97–1.04) and Post 2 OR range 0.99–1.02 (0.97–1.05). For PSI-b, 6 of 8 tests were insignificant except for minor effects in Post 1 for PSI-0 and Post 2 for PSI-T: OR 0.96 (0.94–0.99) and OR 0.97 (0.94–0.99) respectively. FTR rate analysis demonstrated no significance for either post-reform year (OR 1.00 for both) and the test on FLOS outcomes resulted in significance only for the combined surgical sample in Post 2: OR 1.03 (1.02–1.04).

**CONCLUSION:** Hospital financial health was not associated with differential changes in patient outcomes before or after the 2003 ACGME duty hour reform. Our findings offer evidence that despite the significant costs, financially stressed hospitals kept up with the financially healthiest hospitals in quality of care provided. If we had found a deleterious association, then newly anticipated financial stresses from more stringent 2011 duty hour rules would have been cause for very serious concern. As it stands, our results provide some reassurance that teaching hospitals may successfully adapt to these new financial pressures without significant reductions in quality.

**ELECTRONIC RISK ALERTS TO IMPROVE PRIMARY CARE MANAGEMENT OF CHEST PAIN: A RANDOMIZED, CONTROLLED TRIAL**

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**BACKGROUND:** The primary care evaluation of chest pain represents a significant challenge. Electronic decision support could improve the quality and safety of chest pain evaluations by promoting risk-appropriate care.

**METHODS:** We enrolled 292 primary care clinicians caring for 7,083 adult patients with chest pain and no history of cardiovascular disease across 15 health centers. Clinicians were randomized to receive alerts within the electronic health record recommending risk-appropriate care based on automated calculation of the Framingham Risk Score (FRS) during office visits for chest pain. One alert recommended performance of an electrocardiogram and administration of aspirin for high-risk patients (FRS >10%) and a second alert recommended against performance of cardiac stress testing for low-risk patients (FRS <10%). The primary outcomes included performance of an electrocardiogram and administration of aspirin therapy for high-risk patients during the office visit; and avoidance of cardiac stress testing within 2 months of the office visit for low-risk patients. Hospital outcomes were collected within 1 month of the office visit. We surveyed all 292 clinicians enrolled in the study at the conclusion of the 15-month intervention period, achieving a 76% response rate.

**RESULTS:** The majority (81%) of patients with chest pain were classified as low risk. The clinical evaluation was generally more aggressive among high-risk patients compared to low-risk patients, including rates of performing electrocardiograms (50% versus 43%, p < 0.001) and cardiac stress tests (17% versus 10%, p < 0.001). High-risk patients were more likely than low-risk patients to be evaluated in the emergency department (11% versus 5%, p < 0.001) and to be hospitalized (7% versus 3%, p < 0.001). A diagnosis of coronary artery disease was established more commonly among high-risk compared to low-risk patients (1.1% versus 0.5%, p < 0.001). Acute myocardial infarction occurred among 28 (0.4%) patients, also more commonly among high-risk compared to low-risk patients (1.1% versus 0.2%, p < 0.001). Among 28 diagnoses of acute myocardial infarction, 10 (36%) represented missed diagnoses in the primary care setting not referred to the emergency department for acute management. Among high-risk patients, there was no difference between the intervention and control groups in rates of performing electrocardiograms (51% versus 48%, p=0.33) or administering aspirin (20% versus 18%, p=0.43). Among low-risk patients, there was no difference between intervention and control groups in rates of cardiac stress testing (10% versus 9%, p=0.40). A majority of intervention clinicians felt that the electronic alerts for high-risk patients were “very” (9%) or “somewhat” (49%) effective at improving their management of chest pain. A large majority of clinicians (81%) felt that the cut-off of 10% for the FRS to identify high-risk patients was “about right.”

**CONCLUSION:** Electronic alerts do not increase risk-appropriate care for these patients.

**PATIENT-PROVIDER RACE CONCORDANCE AND ADHERENCE TO ANTIHYPERTENSIVE MEDICATIONS: WHAT IS THE ROLE OF PATIENT TRUST?**

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**BACKGROUND:** Perceived quality of the patient-provider relationship has emerged as a potential contributing factor to racial disparities in healthcare. Race-discordant patient-provider relationships have been linked to lower perceived quality of care among Black patients receiving care from White providers compared to Black patients in race-concordant relationships. Alternatively, patients in race-concordant relationships have longer medical visits with higher ratings of positive affect, shared-decision making, and satisfaction. Despite mounting evidence that patient-provider race concordance affects processes of care (e.g., patient satisfaction, health service utilization), the impact on intermediate patient outcomes such as medication adherence is unclear. More importantly, no study has examined the mechanisms by which race concordance affects patient outcomes.

**METHODS:** We analyzed cross-sectional data from surveys of primary care providers and their hypertensive patients participating in the Minimizing Error, Maximizing Outcome (MEMO) Study, a multi-method longitudinal (2001–2005) study designed to explore the relationships between work conditions, physician outcomes and quality of care. Race concordance was characterized as dyads where both the patient and provider were of the same race; race discordance was characterized as dyads where the patient was Black and the provider was White. Medication adherence was assessed by asking patients to respond to a single question: In a typical week, how close do you come to following your doctor’s recommendations about medications? Responses were dichotomized as always take all of my medicine versus usually/ sometimes take all of my medicine. Patient trust was measured with 4-items assessing the patient’s overall trust in the provider as well as trust in their provider’s medical decision-making under certain financial/administrative constraints. Responses ranged from not at all to completely on a 5-point Likert-type scale. Multivariate logistic regression models tested the hypothesis that a higher proportion of patients in race-concordant dyads would exhibit better medication adherence than patients in the race-discordant dyads, after adjusting for patient (e.g., gender, age, number of hypertensive medications), provider (e.g., age, gender, specialty), and clinic-level (e.g., location) characteristics. Using Mackinnon’s model of mediation analysis, probit regression models were conducted to assess the effect of race concordance on medication adherence and if trust mediated this relationship.

**RESULTS:** Data from 220 physicians (10% Black, 41% female; mean age 44) and 816 of their hypertensive patients (24% Black, 64% female;
mean age 61) were included. Eighty-seven percent (87%) of patients were in race-concordant relationships; 76% in a White patient-provider dyad and 11% in a Black patient-provider dyad. A total of 55% of Black patients were in race-discordant relationships with White providers compared to only 1% of White patients seen by Black providers; we excluded the latter group due to the small sample size. White patients were older and had more comorbid conditions and lower diastolic blood pressure than Black patients in either race-concordant or discordant relationships (p=0.05 for each) and race-discordant relationships (60%; OR=0.51, 95% CI 0.30, 0.84, p=0.008). Adherence levels were not significantly different among Black patients in race-concordant vs. race-discordant relationships (p >0.05). Trust in the provider did not mediate the effect of race concordance on medication adherence; rather it had an independent effect. For each 1-point increase in the trust scale, all patients were 1.8 times more likely to report always being adherent to their medications, irrespective of their provider’s race (OR=1.82, 95% CI: 1.30-2.55, p<0.001).

**CONCLUSION:** White patients with White providers reported the highest levels of adherence. Among Black patients, there were no significant differences in adherence levels by racial composition of the patient-provider relationship. Trust in one’s provider was associated with better adherence for all patients, regardless of racial composition of the patient-provider relationship. While these findings do not conform to previous study's results, they convey an important message to the medical field. A patient-provider relationship characterized by high levels of trust is an influential determinant of patient behavior and even transcends the influence of race in certain populations. Future research is needed to understand under what circumstances race-concordance affects intermediate patient outcomes, particularly in Black patients, and the mechanisms driving this relationship.

**BIOMARKERS FROM MULTIPLE PATHWAYS ARE NOT ASSOCIATED WITH THE ONSET OF TYPE 2 DIABETES: THE FRAMINGHAM HEART STUDY.** Dhayana Dallmeier 1; Martin Larson 2; Na Wang 2; Joao Fontes 2; Emelia Benjamin 2; Caroline Fox2; Christina Lloyd-Travaglini 2; Karen Lasser3. 1Boston University Medical Center, Boston, Massachusetts; 2Framingham Heart Study, Framingham, Massachusetts; 3Boston University School of Public Health, Boston, Massachusetts . *(Tracking ID # 10659)*

**BACKGROUND:** Prior studies report conflicting findings regarding the association of biomarkers in predicting the onset of type 2 diabetes. We evaluated a panel of 12 biomarkers as possible predictors of the new-onset of diabetes in the Framingham Heart Study.

**METHODS:** We measured levels of circulating biomarkers representing inflammation (C-reactive protein, interleukin-6, monocyte chemotactic protein-1, tumor necrosis factor receptor 2, osteoprotegerin, fibrinogen), endothelial dysfunction (intercellular adhesion molecule, vascular damage (CD40-ligand, P-selectin, lipoprotein-associated phospholipase A2) and oxidative stress (urinary isoprostanes) in participants free of diabetes who attended the Offspring 7th (n=2499) or multi-ethnic Omni 2nd (n=189) examination of the Framingham Heart Study (1998-2001). Biomarker concentrations were log-transformed and standardized (mean = 0, standard deviation = 1); multivariable logistic regression was used to test each biomarker in association with incident diabetes (defined as: 1) fasting glucose level of 126 mg/dL and over or 2) use of insulin or oral hypoglycemic medications) at 6.6 years mean follow-up (2005-2008). We adjusted for age, sex, cohort, and additionally for established clinical covariates related to diabetes (body mass index, fasting glucose, systolic blood pressure, HDL cholesterol, triglycerides and smoking).

**RESULTS:** In a total of 2638 participants (56% women, mean age 59 years), at follow-up, 162 participants (6.1%) developed diabetes. C-reactive protein, fibrinogen, intercellular adhesion molecule, interleukin-6, urinary isoprostanes, monocyte-chemoattractant protein-1 and tumor necrosis factor receptor 2 were associated with incident diabetes after adjusting for age, sex and cohort (all p-values <0.02). However, none of the inflammatory biomarkers remained significant after multivariable adjustment (all p > 0.05). The c-statistic for prediction of diabetes was 0.89 in the multivariable model including only clinical covariates.

**CONCLUSION:** We demonstrated associations between biomarkers from multiple different pathways in association with incident diabetes, which were absent after additional adjustment of established clinical covariates. Inflammatory biomarker panels may not be an effective resource to adequately predict diabetes onset in community-based samples.

**RACIAL AND ETHNIC DISPARITIES IN RECEIPT OF THE HERPES ZOSTER VACCINE: RESULTS OF A NATIONAL POPULATION-BASED SURVEY** Deirdre Mooney 4; Janice Weinberg 2; Christine Lloyd-Travaglini 2; Karen Lasser 1. 1Boston University School of Medicine, Boston, Massachusetts ; 2Boston University School of Public Health, Boston, Massachusetts . *(Tracking ID # 10660)*

**BACKGROUND:** Herpes Zoster (HZ) vaccination decreases illness due to shingles, yet despite national guidelines, the vaccine is underutilized. Racial and ethnic disparities in receipt of other vaccines such as influenza and pneumococcal are well documented, yet few data are available regarding HZ vaccine receipt.

**METHODS:** We analyzed population-based data on 13,086 adults age 60 and older from the 2008 and 2009 National Health Interview Survey (NHIS), a nationally representative sample of the civilian non-institutionalized population. We used Chi square tests to compare receipt of HZ vaccine according to respondents’ demographic characteristics, access to care, and receipt of influenza and pneumococcal vaccine. To analyze race as a predictor of HZ vaccine receipt, we used multiple logistic regression controlling for sex, age, immigrant status, education, marital status, insurance type, income, region of the country, and having a usual site of care or care provider (all significant bivariable predictors of HZ vaccine receipt). We accounted for NHIS stratification, clustering and sampling in the multivariable analysis.

**RESULTS:** Only 8.1% of eligible adults reported receiving the HZ vaccine. There were racial differences in receipt, with blacks (3.7%) and Hispanics (3.5%) receiving the vaccine less often than whites (9.8%); p Whites were 2.2 times more likely to receive the HZ vaccine than were blacks and Hispanics, while they were 1.2 times more likely to receive the influenza vaccine and 1.5 times more likely to receive the pneumovax. HZ vaccination was more common among those who received the influenza or pneumococcal vaccine (10.7% and 12.8%) relative to those who had not received these vaccines (4.3% and 3.9 %, respectively; p Foreign-born individuals were also less likely to receive the vaccine (OR 0.62; 95% CI 0.43-0.88; p=0.008) as were those without a usual source of care (OR 0.53; 95% CI 0.29-0.96; p=0.04). Persons with Medicaid or no insurance were less likely to report vaccination than those with other insurance including Medicare and private insurance (OR 0.37; 95% CI 0.25-0.57; p Midwest versus the West (OR 0.68; 95 CI 0.52-0.90; p=0.008 and OR 0.70; 95% CI 0.57-0.88; p=0.002, respectively).

**CONCLUSION:** Racial and ethnic disparities exist in HZ vaccine receipt, with minorities having lower vaccination rates regardless of income, insurance type or having a usual source of care. Logistical barriers unique to the HZ vaccine (high cost, Medicare part D reimbursement, and need for freezer storage) may pose particular challenges to minority patients and the institutions that serve them. Multilevel interventions that increase patient and provider awareness of the vaccine and develop systems to promote vaccine uptake are needed to eliminate racial and ethnic disparities.
KNOWLEDGE, ATTITUDES AND PRACTICES REGARDING SMOKING AND CESSATION ADVICE: A SURVEY OF PHYSICIANS IN BUENOS AIRES

BACKGROUND: The efficacy of the Highly Active Antiretroviral Therapy (HAART) has transformed HIV/AIDS into a chronic disease. In Argentina, the infectologist assumes the role of being the patient’s primary care physician, which might result in scarce use of preventive measures and provision of tobacco cessation assistance.

METHODS: A cross sectional study was conducted in Buenos Aires, Argentina in 2010 to assess physicians’ knowledge, attitudes and current practices with regard to providing smoking cessation advice to their HIV-positive patients.

RESULTS: 169 infectologists were invited to participate and 128 completed the survey (75%). 61% were women and 66% worked at public hospitals. The median age was 39 years and 19% smoked. 90% indicated that they advise their patients to quit smoking, 17% that they set a quit date with the patient, 23% provide brief advice on tobacco cessation, 35% prescribe any pharmaceutical aid, 8% recommend the use of web sites for quitting, 5% suggest the use of phone quit lines and 17% use behavioral-cognitive treatment. 40% of participants considered that treating tobacco addiction was their responsibility but 92% considered that these patients should be referred to a specialist on cessation. The main barriers they reported to deliver tobacco cessation assistance were not having enough time (84%) and being trained inadequately on tobacco cessation (73%).

CONCLUSION: Most of infectologists reported treating tobacco addiction but they do not use evidence based strategies for cessation. Not having enough time and being inadequately trained were the main barriers they found for providing assistance for quitting. The provision of training in tobacco cessation to the infectologists might reduce tobacco consumption among people living with HIV and would have a significant positive effect on their health.

EVALUATION OF RILONACEPT FOR PREVENTION OF GOUT FLARES DURING INITIATION OF URATE-LOWERING THERAPY: RESULTS OF A PHASE 3, RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED TRIAL

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BACKGROUND: While attenuating serum uric acid levels <6.0 mg/dL is critical to the long-term management of gout, gout flares (GFs) are often precipitated as serum uric acid levels fall during the initial months of urate-lowering therapy (ULT). This phase 3 study evaluated the efficacy and safety of rilonacept, an interleukin-1 (IL-1) blocker, for the prevention of GFs during initiation of ULT with allopurinol.

METHODS: This multicenter trial included adults with gout (1977 ARA preliminary criteria), uric acid levels >7.5 mg/dL, and self-reported history of 2 or more GFs in the previous year. Eligible patients were initiated on allopurinol 300 mg daily (or lower dose in those with renal dysfunction) with subsequent titration to achieve uric acid <6 mg/dL and randomized to receive treatment (Tx) with weekly subcutaneous (SC) injections of placebo (Pbo; n=80), rilonacept 80 mg (R80; n=80), or rilonacept 160 mg (R160; n=81) (loading dose on Day 1). GFs were reported by the patient via interactive voice response diary. GFs were treated, as appropriate, with NSAIDs or oral glucocorticoids while continuing weekly SC injections and allopurinol Txs. The primary endpoint was the median number of GFs over the 16 week Tx period. Other endpoints included the percent of patients with 1 or more GFs, and the number of GFs during each 4 week Tx period through week 16. Safety and tolerability were also assessed.

RESULTS: Baseline characteristics were similar among treatment groups; 92.9% were male, the mean (SD) age was 52.3 (12.6) years, and the number of GFs reported in the prior year was 4.6 (3.3). By week 2 median serum uric acid levels decreased to 6.0 mg/dL in the R groups and 6.2 mg/dL in the Pbo group. Through week 16, the mean number of GFs per patient (primary endpoint) was significantly lower in both R groups relative to Pbo: 1.06 for Pbo; 0.29 for R80 (95% CI, 0.20 to 0.60; p=0.0003 vs Pbo), and 0.21 for R160 (95% CI, 0.14 to 0.41; p<0.0001 vs Pbo). From day 1 to week 16, the proportion of patients who experienced one or more GFs was 46.8% for Pbo (95% CI, 35.5 to 58.4) vs 18.8% R80 (95% CI, 10.9 to 29.0) vs 16.3% R160 (95% CI, 8.9 to 26.2; p<0.001 for both comparisons), resulting in an 60% and 65% reduction in the respective R groups. The number of GFs per Tx period is shown in Table 1.

The overall incidence of adverse events (AE) was similar between Pbo (60.8%) and rilonacept (63.4%). Injection site reactions (generally mild) were the most frequent AE with rilonacept compared with placebo (1.3 % Pbo, 8.8% R80, 19.8% R160). Other common AEs included respiratory infections, musculoskeletal system disorders, and headache, and rates were similar among the treatment groups. Three patients in each group experienced serious AEs; no rilonacept-related SAEs, deaths, or serious infectious AEs were reported.

CONCLUSION: This phase 3 trial confirmed that IL-1 blockade with rilonacept markedly reduced the occurrence of gout flares during initiation of urate-lowering therapy. Rilonacept demonstrated an acceptable safety and tolerability profile.

Table 1

| Tx period | Placebo | R80mg | R160mg |
|-----------|---------|-------|--------|
| Day1-wk4  | 27      | 7     | 5      |
| Wk4-wk8   | 29      | 9     | 6      |
| Wk8-wk12  | 17      | 6     | 2      |
| Wk12-wk16 | 11      | 1     | 4      |
METHODS: We used the 2007 Global Youth Tobacco Survey (GYTS) which assesses tobacco use among 13 to 15 years old youths who go to school. The GYTS’s variables used were: current smokers, smokers who want to quit now, never smokers susceptible to start smoking within the next 5 years, second hand smoke exposure outside home, adolescents who by single cigarettes, agreement with prohibition of smoking in public places. Information about the SES of the neighborhood of the school was obtained from national statistics. We used three variables: neighborhood with Convergent Poverty (households with insufficient economic capacity to purchase basic goods and services for subsistence), school public or private and; schools with social assistance (provision of free breakfast and lunch for students). The statistical analysis includes the description of the weighted prevalence of each individual variable for each socioeconomic level and school characteristic. A multilevel analysis was done using random intercept logistic regression model.

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CONCLUSION: Students from schools located at poor neighborhoods are more susceptible to start smoking, have a higher prevalence of smoking, are exposed more frequently to second hand smoking than those who attend schools from wealthier neighborhoods. These results provide evidence to the implementation of tobacco control policies in schools from low SES neighborhoods.

| Convergent Poverty | Social Assistance |
|--------------------|------------------|
| Public school      | OR               |
| (IC 95%)           | OR               |
| (IC 95%)           | OR               |
| (IC 95%)           | Current smoking  |

THE TIMING OF ANTIBIOTIC FILLS RELATIVE TO AMBULATORY VISITS

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**BACKGROUND:** Most analyses of antibiotic use in the United States have focused on visit-based antibiotic prescribing, with the assumption that antibiotics prescribed for acute infections will be used promptly. However, patients may delay their use of antibiotics longer than clinicians intend and patients may prescribe antibiotics without seeing patients face-to-face. We sought to describe the relationship between the timing of antibiotic prescriptions filled by patients and their most recent ambulatory visit.

**METHODS:** We performed a retrospective analysis of medical and prescription drug insurance claims of employees from a large multinational corporation for patients aged 18 to 64 years old from January 2001 to December 2007. We identified claims for patients filling antibiotic prescriptions plausibly intended to treat acute infections (i.e., antibiotic durations between 4 and 21 days and short-duration azithromycin). We then identified the most recent ambulatory visit preceding each antibiotic claim, identified the visit diagnosis, and calculated the time interval between the visit and the antibiotic claim. In order to isolate single episodes of care, we considered only the first of multiple fills when less than a month elapsed between sequential fills.

**RESULTS:** During the study period, 125,132 patients (mean age 44 years old [standard deviation, 13 years], 48% male) filled 324,987 antibiotic prescriptions that were plausibly intended to treat acute infections. The most commonly prescribed antibiotic classes were penicillins (36% [standard error for all percentages, <1%]), macrolides (29%), cephalosporins (15%), and tetracyclines (5%). Eight percent of antibiotic prescription fills occurred within 1 day of the preceding ambulatory visit, 14% within 4 days, 48% within 30 days, and 71% within 60 days. The median length of time between patients filling an antibiotic prescription and the most recent visit was 33 days. There was no outpatient visit within the preceding 90 days for 28% of antibiotic prescription fills. The most common diagnoses for the visits immediately prior to antibiotic prescription fills were acute respiratory infections (ARIs; 60%; median days to fill, 28), urinary tract infections (UTIs; 8%; median days to fill, 20), acne (7%; median days to fill, 28), and cancer screening (5%, median days to fill, 44). Overall, 25% of the most recent ambulatory visits had diagnoses that did not include ARIs, UTIs, acne, or other infections (median days to fill, 51).

**CONCLUSION:** The majority of antibiotic prescription fills occur more than a month after patients’ most recent ambulatory visit, indicating a large proportion of antibiotics are either not filled promptly or are prescribed by clinicians in the absence of closely antecedent ambulatory visits.

**RANDOMIZED CONTROLLED TRIAL OF MEDICAL HOME FEATURES TO REDUCE CARDIOVASCULAR RISK**

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**BACKGROUND:** The patient-centered medical home offers services and tools that may reduce coronary heart disease (CHD) risk and blood pressure in vulnerable populations. We conducted a randomized, controlled trial in African-American primary care patients with uncontrolled hypertension to evaluate the impact of an intervention using practice-based registry, staff support and community-based peer coaches on predicted CHD risk and systolic blood pressure after 6 months.
METHODS: A single-blind, randomized, controlled trial of behavioral support to reduce CHD risk was conducted in two level 3 NCQA certified, academic general medicine practices in the University of Pennsylvania Health System. A practice-based electronic medical record (EMR) registry was used to identify African-American patients aged 40-75 with uncontrolled hypertension, defined as a mean blood pressure above goal over a two-year period with at least one reading >10 mmHg above goal. Peer coaches were recruited and trained from among African-American patients with well controlled hypertension according to the same practices-EMR registry or from local community volunteers. Eligible subjects were recruited from July 2007 to November 2009. The intervention group received telephone-based lifestyle counseling by peer coaches to reduce CHD risk every other month for six months and educational visits to primary care staff on alternate months (two visits). All subjects received brochures about healthy foods and lifestyle. The primary outcome was 6 month change in predicted 4-year risk of a CHD event, based on a model developed by D’Agostino, for intervention versus control groups, and the secondary outcome was change in systolic blood pressure. Multiple imputation was used to estimate missing values for intent-to-treat analysis. Sensitivity analyses were conducted to evaluate comparability of completers versus non-completers.

RESULTS: Of 566 eligible patients, the 280 (49%) randomized subjects were characterized by: mean age 62 (SD 8.8); 65% women, 53% diabetes mellitus, and 18% had prior CHD or equivalent. Baseline 4-yr CHD risk did not differ significantly for the 136 intervention and 144 control subjects (5.8% and 6.4%, respectively). In both groups, mean baseline systolic blood pressure was 140.5 mmHg. Follow-up for 4-year CHD risk was competed in 76% of subjects and for systolic blood pressure in 88% of subjects. In an intent-to-treat analyses, the intervention group had greater reductions in both CHD risk (difference 0.8%, P=0.023) and systolic blood pressure (difference 7.1 mmHg, P=0.001). After adjustment, these significant differences persisted as well as for a reduction in diastolic blood pressure (P=0.023). Reduction in systolic blood pressure was similar for completers versus non-completers for the CHD risk analysis. One patient died in each study arm.

CONCLUSION: In this randomized, controlled trial, components of the medical home that included using a registry to identify at-risk hypertensive African-American patients and an intervention combining community- and office-based behavioral support produced clinically significant reductions in predicted 4-yr CHD risk and blood pressure. This trial supports the potential for the medical home to produce improved clinical outcomes in vulnerable populations.

MAMMOGRAPHY KNOWLEDGE, ATTITUDES, AND PHYSICIAN RECOMMENDATION AND EDUCATION: DOES PRIOR SCREENING MATTER? Edson Carias 1; Alfred Rademaker 1; Dachao Liu 1; Connie Lea Arnold 2; Terry Davis4. 1Northwestern University, Chicago, Illinois; 2LSU Health Sciences Center, Shreveport, Louisiana. (Tracking ID # 10676)

BACKGROUND: Although many interventions have successfully increased the rate of initial mammography use, the factors that prevent the consistent use of repeat screenings remain a growing focus in health-services research. Probable barriers to repeat screening may be worse in disadvantaged populations. The purpose of this study is to evaluate potential differences in breast cancer screening knowledge, attitudes, and physician recommendation and education between women who have had prior mammograms but are not up-to-date and those who have never been screened.

METHODS: Eligible participants (females, age 40 years and over) who had never had a mammogram or were not up to date on their mammogram screening (defined as not having had a mammogram for more than two years) were enrolled in six Federally Qualified Health Centers (FQHCs) in Louisiana. Structured surveys with questions about mammogram screening knowledge, attitudes, self-efficacy, and physician recommendation and education were administered to each participant. Literacy was assessed with the Rapid Estimate of Adult Literacy in Medicine (REALM). Chi-square tests were conducted for data analysis. Multivariate logistic regressions adjusted for age, literacy, and race.

RESULTS: Among the 937 female participants enrolled in our study, 65% were African-American, 35% were white, 30% had less than a high school diploma, and 44% read on less than a 9th grade level. Participants ranged in age from 40 to 89, with a median age of 52. Approximately 24% of participants had never received a mammogram (N=227). Participants who had never had a mammogram were less likely than previously-screened participants to have heard of any tests that find breast cancer (71% vs. 89%, p<0.0001). Participants who had never had a mammogram were less likely than previously-screened individuals to have heard of mammograms (28% vs. 68%, p<0.0001). Interestingly, approximately one in three FQHC participants who had previously been screened reported having never been given mammography education. Both groups reported having seen or heard an advertisement about breast cancer screening (85% vs. 80%, p=0.13). Although both groups had positive attitudes towards screening benefits, those who had never had a mammogram were more likely to agree that they were afraid of getting one because they might find out that something is wrong (26% vs. 13%, p<0.0001). Women who had never had a mammogram were less likely to know where to get a mammogram (77% vs. 83%, p<0.0001) or less likely to know how to get a mammogram (69% vs. 85%, p<0.0001). The two groups showed no difference in literacy levels (p=0.76). Results remained significant after adjusting for age, race, and literacy.

CONCLUSION: Participants who had not previously been screened had less knowledge about mammography and were less likely to have received a physician recommendation or education for a mammogram. Women who did not previously have a mammogram were less confident with the logistics of getting a mammogram, as well as dealing with the results of a mammogram. It is important for clinicians to provide counseling about the benefits of regular screening and explicit information about obtaining a mammogram.

PHYSICIANS DIALOGUES WITH TERMINAL LUNG CANCER PATIENTS: TRENDS WITH SHARED DECISION MAKING AND PATIENT FRIENDLY EDUCATION Elizabeth Edwardsen 1; Sally Rousseau 2; Diane Morse 3; Shumel Reis 4; Mary Gale Gurnsey 2; Adam Taupin 2; Cleveland Shields 5; Jennifer Griggs 6; Susan McCaDine7. 1University of Rochester, Rochester, New York; 2University of Rochester, Rochester, New York; 3University of Rochester School of Medicine, Rochester, New York; 4Rappaport Institute, Haifa, N/A; 5Purdue University, West Lafayette, Indiana; 6University of Michigan, Ann Arbor, Michigan. (Tracking ID # 10682)

BACKGROUND: Patient-centered care is respectful of and responsive to individual patient values, preferences and needs. This approach is a foundation of high-quality health care outcomes including safety, effectiveness, efficiency, and equity. Patient-centered care promotes patient autonomy. Shared decision making considers the patient’s perspective and involves defining problems, providing information and presenting options so patients can participate in care decisions. Patients...
with terminal cancer speak with their physicians about treatment options, symptom management, and morbidity and mortality concerns. These health issues can lead to complex dialogues, allowing potential opportunities for insights into the study of patient-physician communication. The objective of this study is to examine physician communication with respect to shared decision making and patient friendly education with terminal cancer patients.

METHODS: Design: Consenting physicians had covert audio recordings of office visits with Sps (standardized patients). Population: Practicing physicians: 23 community oncologists and 23 community family physicians of which SPs successfully audio-recorded 19 oncologists and 20 family physicians. Physicians averaged 48.1 (SD=9.2) years old. Seventy-one percent were male and 29% were female. SPs were all male. Prompted physicians were able to identify the SP correctly in 15% (n=5) of visits which were subsequently removed from the data set, leaving 34 undetected visits for this study. Analysis and text management: We conducted a thematic analysis of the transcripts, using an iterative process to create a coding system, with key words and phrases in areas of interest. Two team researchers, randomly paired, coded each transcript. Coding development continued until saturation; with each revision all previously coded interviews were recoded by a minimum of 2 researchers. We resolved differences in coding in the larger research group by consensus. Team members then reviewed all coded elements in context, using sequence analysis to understand shared decision-making, patient-friendly education and patient-centered approaches to medical care. Dialogue categories included: 1) decision-making, shared or not shared, 2) patient education, patient-friendly or medical jargon and 3) approach to medicine, patient-centered or physician-centered.

RESULTS: Thirty-two of 34 (94%) encounters contained dialogue with decision making. Of these utterances, 48% (n=104) were coded as shared decision-making and 52% (n=114) were not shared. Word counts for patient encounters were comparable for family physicians and oncologists. Percent word counts for the family physicians ranged from 24-78%, average 56% and median 58%. Respective counts for the oncologists were 31-83%, average 62% and median 66%. The absolute word counts were on average 10% higher for the family physicians. Despite this difference, shared decision making utterances were more prevalent (4:1) for the oncologist group compared with the family physicians. Family physicians, as a subgroup, were coded for non-shared decision making 2:1 to shared decision-making. Both physician groups utilized patient friendly education more commonly than medical jargon (6:1 for family physicians and 4:1 for oncologists). Both physician groups used similar approaches to medicine with patient-centered and physician-centered utterances. However, the oncologists leaned slightly more towards patient-centered encounters. Shared decision-making dialogues included: “I think you need to understand your standing and your options.” “You can even decide now what you want to do,” and “I will respect your decision.” Unshared dialogues included: “well I want to check some blood work today we probably need to do a couple of scans too and see how that’s done,” and “We need to get you in to see an oncology doctor.” Patient-centered approaches included: “Now in terms of symptoms in the lungs and pain what symptoms are you having right now?” Patient-friendly education included: “Well I’ll tell you what, let’s look at it and we’ll get you and if nothing looks really serious here today, I mean let’s hope nothing acute—then we’ll get you an appointment with the oncologist.”

CONCLUSION: Elements of shared decision-making and patient-friendly education were identified in the vast majority of patient-physician encounters. In this set of encounters the oncologists exhibited more shared decision-making (possibly due to greater comfort and exposure to terminal cancer patients). Patient-friendly education abounded in most encounters. Continued medical education and research are indicated to expand and explore this trend toward patient-centered care and shared decision-making with all patient populations. ACKNOWLEDGEMENT OF FUNDING: This project was supported by NC1 grant R21CA124913 for Dr. Shields and NIMH T32 MH18911 PI Eric Caine for Dr. Morse.

DUTY HOURS Kevin Volpp 1; Judy Shea 2; Dylan Small 2; Mathias Basner 2; Jingsen Zhu 2; Laurie Norton 2; Adrian Ecker 2; Cristina Novak 2; Lisa Bellini 2; David Dinges 2. 1Philadelphia VA; University of Pennsylvania School of Medicine and Wharton, Philadelphia, Pennsylvania; 2University of Pennsylvania, Philadelphia, Pennsylvania . (Tracking ID # 10686)

BACKGROUND: The Accreditation Council for Graduate Medical Education (ACGME) recently released new duty hour standards that will restrict interns to working 16-hour shifts. This is a controversial set of new regulations that stemmed from a recent Institute of Medicine Report that suggested curtailing the duration of shifts for interns either by shortening them or through widescale use of mandatory naps for extended duty overnight shifts. Previous research has indicated that naps on extended duty shifts for interns have low adherence rates and do not succeed in significantly increasing amount slept while on call, suggesting this is not a viable policy solution. We undertook this study to determine whether a system of mandatory naps for interns was feasible and could result in significant increases in the amount slept while on extended duty overnight shifts.

METHODS: 98 intern months at the Philadelphia VA Medical Center (PVAMC) and 75 intern months on the oncology unit of the Hospital of the University of Pennsylvania (HUP) were randomly assigned to either receive a standard intern schedule, which involved extended duty overnight shifts of up to 30 hours, or a “mandatory nap” month, in which interns were given protected time from 1230–530 am in which they were expected to sign out their cell phones to a covering resident. The schedule was a residency programmatic initiative; study participants were asked to wear wrist watch actiwatches and complete sleep diaries. The primary outcome was mean hours slept during extended duty overnight shifts as measured by Actiwatch Spectrum® wrist activity monitors. Secondary outcomes included percentage of call nights with no sleep and mean hours slept during other nights of the call cycle. The analyses were done using an unadjusted intent-to-treat analyses testing for differences between the intervention and control groups at each of the two sites, analyzing each site as a separate trial. To account for the correlation among a participant’s multiple observations, all of the analyses used Huber-White robust standard errors with individual participants as the clusters.

RESULTS: Interns on mandatory nap rotations at both PVAMC and HUP had significantly higher amounts of mean sleep during the protected periods (PVAMC: 2.6 vs. 1.6 hours, p-value<0.0001; HUP: 2.8 vs. 1.9 hours, p-value<0.0001). Nap month participants were also significantly less likely to have call nights with no sleep (PVAMC: 12.5% vs. 26.9%, p-value<0.0001; HUP: 11.1% vs. 17.1%, p-value 0.04). However, mean amount slept over the full call cycle was no different in the control and intervention groups (PVAMC 6.7 vs. 6.8 hours, p-value 0.50; HUP: 6.7 vs. 6.5 hours, p-value 0.19).

CONCLUSION: A mandatory nap intervention significantly increased mean amount slept during overnight call nights, which in the context of new ACGME regulations restricting duty hours could provide a useful alternative for programs seeking to comply with ACGME guidance on fatigue management for residents. However, overall mean sleep within each call cycle was unchanged, suggesting that while this approach could help with acute sleep deprivation, it would be unlikely to address problems with chronic sleep deprivation among residents.
BACKGROUND: Hypertension is a common chronic disease known to have many adverse health effects. Unfortunately, physicians have a tendency not to intensify their treatment of hypertension in response to uncontrolled blood pressure values; this tendency has been labeled “clinical inertia”. This trial was aimed at determining the impact of providing patients with tailored, web-based feedback to help them know when to ask questions aimed at intensifying their hypertension care.

METHODS: Diagnosed hypertensive patients (n=500) were enrolled in this RCT and randomized to one of two study groups: (1) Intervention condition—Web-based hypertension feedback, based on the individual patient’s self-report of health variables and previous BP measurements, to prompt them to ask questions during their next physician’s visit about hypertension care (e.g., “What can you do help me lower my blood pressure?”); (2) Control condition—Web-based preventive health feedback, based on the individual’s self-report of receiving preventive care (e.g., pap testing). The feedback gave participants questions to ask which they could discuss with their primary care provider (PCP) at their next visit. The primary outcome of the study is change in blood pressure and change in the percentage of patients in each group with controlled blood pressure.

RESULTS: Of 500 patients enrolled at baseline, 418 (83.6%) completed the 1-year follow up visit. Most (82.2%) participants utilized the intervention during at least 6 of 12 months, though this did not differ between groups. In addition, most (61.2%) participants reported asking questions directly from the web-site with no difference between study groups. As an example of the control condition (preventative maintenance), if participants had not received a recent tetanus shot they were prompted to ask their PCP if they might benefit from receiving one. Significantly more patients in the control group reported discussing this with their PCP (30.9% control, 13.9% intervention; p<0.001). This led to significantly more subjects in the control group (20.7% control, 8.7% intervention, p=0.005) reporting receiving a tetanus shot in the past year at follow-up. As a similar example of the intervention condition (hypertension care), if participants had not received a creatinine test or urine protein in the past year, they were prompted to ask their PCP if they might benefit from such tests. Significantly more participants from the intervention condition reported discussing creatinine testing (45.8% intervention, 30.2% control; p=0.009) and urine protein testing (40.3% intervention, 30.2% control; p=0.009).

CONCLUSION: The use of a patient activation intervention designed to overcome clinical inertia for hypertension care did not lead to more changes in hypertension medication use or blood pressure control. This was despite high levels of adherence, which led to positive changes in the use of preventive care services (e.g., tetanus immunization) as well as hypertension care services (e.g., creatinine testing, urine protein testing). By providing patients with individually tailored questions to ask during their PCP visits, this study demonstrated that participants were likely to discuss the questions with their PCP. These discussions led to changes in care, demonstrating that the feedback led to a positive change in the health management process.

THE RELATIONSHIP BETWEEN PREGNANCY INTENTION AND PRECONCEPTION HEALTH BEHAVIORS IN A NATIONAL SAMPLE OF REPRODUCTIVE-AGE WOMEN Cynthia H. Chuang 1; Marianne M. Hillemeier 2; Anne-Marie Dyer 3; Carol S. Weisman 4; 1Penn State College of Medicine, Hershey, Pennsylvania; 2Penn State University, State College, Pennsylvania. (Tracking ID # 10695)

BACKGROUND: While the causes of adverse pregnancy outcomes are only partially understood, it is known that predictors include unintended pregnancy and suboptimal preconception health behaviors. Moreover, the nonpregnant phases of a woman’s reproductive life have important implications for her own health as well as for future pregnancy outcomes. However, it is not well understood whether women recognize these risks, and how intention for future pregnancy impacts health behaviors. The objective of this study was to describe smoking, alcohol use, and folic acid supplementation in preconception women and determine if the likelihood of healthy preconception behaviors differs by whether and when women intend future pregnancy.

METHODS: Analysis was based on 36,949 nonpregnant women in the 2004 Behavioral Risk Factor Surveillance System (BRFSS) who were of reproductive age (18–44 years), sexually active, and capable of future pregnancy. The association between future pregnancy intention (intending pregnancy in less than 12 months from now, between 12 months to less than 2 years from now, in 2 or more years from now, not wanting to have a child in the future, or not sure/ambivalent) and preconception behaviors (any smoking, more than 7 alcohol drinks/week, and daily folic acid supplementation) was determined. Multivariable logistic regression models adjusted for diabetes, weight category, race/ethnicity, marital status, education, income, and any children under 18 living in the household (a proxy for prior pregnancy).

RESULTS: Women intending pregnancy in less than 12 months had lower rates of smoking (18.5%), lower rates of at-risk alcohol use (4.4%), and higher rates of folic acid supplementation (54.3%) than other women. However, in adjusted analysis, only the odds of folic acid supplementation remained higher in women intending pregnancy in the next 12 months (adjusted OR 1.49, 95% CI 1.15–1.92) compared with women not intending future pregnancy. Women intending pregnancy later or ambivalent about future pregnancy were no more likely to be engaging in healthy preconception behaviors than women not intending future pregnancy.

CONCLUSION: In this large, nationally representative population-based study, women intending pregnancy within 12 months were more likely to use folic acid, but pregnancy intention was not associated with preconception smoking or at-risk alcohol use in adjusted analysis. These findings support growing evidence that other than folic acid supplementation, women do little to change their health behaviors before pregnancy. Future research to understand determinants of preconception health behaviors is needed to inform future interventions aimed at reducing preventable adverse pregnancy outcomes.

EMERGENCY DEPARTMENT UTILIZATION BY PRIMARY CARE PATIENTS AT AN URBAN SAFETY-NET HOSPITAL Karen Lasser 1; Jeffrey Samet 2; Howard Cabral 2; Andrea Kronman 2; 1Boston University School of Medicine, Boston, Massachusetts; 2Boston University School of Public Health, Boston, Massachusetts. (Tracking ID # 10696)

BACKGROUND: We analyzed data on patients who had ≥1 primary care visit in the past year (July 1, 2009–July 1, 2010) to Boston Medical Center. Using ICD-9 codes for the principal ED visit diagnosis, we defined ED utilization according to a modified version of the NYU ED algorithm, categorizing ED visits as high, intermediate, and low severity. Such classification has a strong association with future hospitalization or death. We defined a frequent ED utilization group with ≥4 ED visits in the past year, and an occasional ED utilization group with 1–3 ED visits in the past year. Medical and psychiatric diagnoses were obtained from the EMR problem list and billing data. We used t-tests and chi-square tests to compare demographic characteristics of patients with and without any ED use. Controlling for age, gender, language, insurance, and the presence of medical and...
psychiatric diagnoses, we used multiple logistic regression to analyze predictors of frequent vs. occasional ED utilization.

RESULTS: Among 39,593 patients who had seen their primary care provider in the past year, 65.4% had no ED visits over that period. The 34.6% (13,710/39,593) with ≥1 ED visit made 30,048 ED visits, with a mean of 2.2 visits [IQR 1–2]. Frequent utilizers, accounting for 14.1% of all primary care patients with any ED use, made 41% of all ED visits by primary care patients. Most ED visits made by high utilizers were categorized as low severity (72.2%); 8.8% were high severity, and the remaining 19% were indeterminate severity. Patients with and without any ED use did not differ by language (79% spoke English) or gender (57% female). Patients with ED use were older (mean age 46.9) than persons without ED use (mean age 45.8; t < 0.0001). A higher proportion of blacks (43.2%) and Hispanics (42.9%) used the ED, relative to Asians (17.7%) and whites (20.1%; p < 0.0001). ED utilization by privately insured patients (21.3%) was less than that by patients with Medicaid and Free Care (44.9% and 46.0%, respectively; p < 0.0001). Among patients with any ED use, frequent ED utilizers were of similar age (mean 47) yet had a higher burden of medical and psychiatric comorbidity compared to occasional utilizers. In multivariable analyses, frequent (vs. occasional) ED utilizers were more likely to be under age 50 (odds ratio (OR) 1.2; 95% confidence interval (CI), 1.1-1.3), to have COPD (OR 1.8; 95% CI, 1.6-2.0), diabetes (OR 1.3; 95% CI, 1.1-1.4), CHF (OR 2.1; 95% CI, 1.8-2.5), bipolar disorder (OR 1.6; 95% CI, 1.3-2.0), anxiety (OR 1.3; 95% CI, 1.1-1.5), schizophrenia (OR 1.6; 95% CI, 1.2-2.1), depression (OR 1.7; 95% CI, 1.5-1.8) and PTSD (OR 1.6; 95% CI, 1.3-1.8).

CONCLUSION: ED utilization by primary care patients at an urban safety-net hospital was high, though most visits were low-severity. A medical home model which provides adequate access to psychiatric as well as primary care, and chronic disease management, has the potential to decrease non-emergent ED utilization.

BLOOD PRESSURE MEASUREMENT BIASES IN CLINICAL SETTINGS
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BACKGROUND: An article in JAMA (2008;299:2842–2844) reported that blood pressure (BP) measurement in clinical care settings seldom follows the protocol recommended by the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC). This may lead to over- or underestimates of the number of patients with controlled BP. We evaluated BP measurement modality as a source of bias in determining BP control.

METHODS: We evaluated BP measurement biases in the context of a community-based randomized trial in underserved, rural diabetic patients. Clinical BP was measured by community clinical staff instructed to “take the participant’s BP like you do in your own clinic.” Research BP was measured by personnel trained and certified according to an established research protocol in compliance with JNC recommendations. Each participant had both types of BP assessment during study enrollment on the same day over the course of 2 hours, with the clinical BP assessed first, most closely simulating clinical settings. Both BP assessments were conducted using an automated LifeSource Blood Pressure Monitor (Model UA 789).

RESULTS: The study sample included 227 diabetic participants (mean age 59 years, 86% African-American, and 75% female). As shown in the Table, mean clinical BP was higher than mean research BP by 5 mmHg for systolic BP (SBP, p < 0.001) and 2 mmHg for diastolic BP (DBP, p < 0.001), with greater differences for participants ≥65 years old. As shown in the Figure, using SBP > 130 or DBP > 80, the proportion of participants who were uncontrolled was 8% higher when using clinical versus research BP measurement (p < 0.001). Using higher cut-offs...
controlling for potential patient-level and facility-level confounders. race/ethnicity and receipt of care in a WHC with contraceptive use while used multivariable regression models to examine the associations between examined the bivariate relationships between each covariate and contraception. After adjusting for potential confounders, Hispanic and black women had significantly lower contraceptive use compared to white women with aura. A diagnosis of breast cancer, tobacco use and age >35, stroke, coronary artery disease, and diabetes were all associated with a significantly less likelihood of having any contraceptive method.

CONCLUSION: We found that overall contraceptive use in the VA is low, especially among minority women. We also found that receipt of primary care in a VA women’s health clinic is associated with significantly higher rates of documented contraception.

HIGH CONCORDANCE BETWEEN DERMATOLOGISTS AND GENERAL INTERNISTS IN IDENTIFYING DERMATOLOGIC CONDITIONS INTERNISTS SHOULD BE ABLE TO MANAGE

BACKGROUND: Studies reveal that a low percentage of Generalists accurately diagnose dermatologic cases, and that a significant amount of referrals from Generalists are ultimately deemed unnecessary. In our setting, a large urban ambulatory care center and Primary Care Internal Medicine Residency training site serving a medically indigent, racially, ethnically and linguistically diverse community, dermatologic conditions are common, and specialty services are limited. We therefore set out to identify dermatologic conditions that both Dermatologists and General Internists believe Internists should be able to diagnose and manage, with the overall goal of building a targeted teaching tool for Internists, to aid in improved patient care and prevention of unnecessary referrals.

METHODS: After a thorough review of the relevant literature and records of referrals at our practice site, we conducted five facilitated focus groups using a purposive sampling method to assess the self perceived needs of generalists and the perspective of dermatological consultants on that need: 3 groups of General Internists (n of 15, 2, 10) and 1 group of Dermatology Residents (10) and 1 group of Attendings (2). Near identical questions were posed and each group was asked to generate a list of dermatologic conditions that Internists should be able to diagnose and treat. The Dermatologists focus groups also had to diagnose and treat. The Dermatologists focus groups also had to generate conditions that were often misdiagnosed or “unnecessarily referred” from the Internist to the Specialist. All focus groups were audio recorded, transcribed and analyzed independently by each investigator using the Atlas TI software and then themes identified were compared, discussed and a consensus on findings was reached. This project was approved by our institutional IRB.

RESULTS: There was a high level of agreement on both dermatologic conditions General Internists should feel comfortable diagnosing and treating, and on the perceived weaknesses of the Generalist in diagnosis and treatment. The top ten most common and/or pertinent of these areas were then selected as the focus for our curriculum. These areas are: general skin care, the skin exam and common dermatologic nomenclature, drug eruptions, suspicious moles, dermatitis, alopecia, acne, lower extremity lesions (stasis dermatitis, cellulitis and vasculitis), common dermatologic outpatient procedures, and fungal infections. In addition, we have collected a rich data set on barriers to and preferences for learning this material which informed the development of a multi-component curriculum that includes on-line multi-media (text, pictures, algorithms and animations), and expert precepted live patient practice components.

CONCLUSION: By improving the acumen and confidence of General Internists in these needs-based areas of Dermatology, it would in turn enhance quality and efficiency of patient care in our under-served, urban community.

INTERNET BASED DEPRESSION PREVENTION FOR ADOLESCENTS: 2.5 YEAR FOLLOW-UP

BACKGROUND: The effectiveness of Internet-based interventions for adolescents with depression has been demonstrated over 2 years of treatment. To enhance treatment adherence, we conducted a 2.5 year follow-up of 222 adolescents who had completed online treatment of depression in a randomized clinical trial. The current study examined patient outcomes, treatment adherence, and effectiveness of treatment compared to treatment as usual (TAU).

METHODS: Adolescents were randomized to computer-based depression treatment or TAU. All were followed up at 2.5 years post-treatment. The primary outcome was treatment adherence measured by the number of treatment sessions completed (with 1 session = 50% adherence). Secondary outcomes included depression symptomatology as measured by the Inventory of Depressive Symptomatology (IDS) and the Child Depression Inventory (CDI).

RESULTS: Adolescents who completed the treatment had significantly lower depression symptoms at 2.5 years follow-up compared to those in TAU (treatment effect sizes: 0.64 for IDS and 0.76 for CDI). The percentage of adolescents who were adherent to treatment at 2.5 years follow-up was 39% in the treatment group compared to 18% in TAU (p<0.001). The effect size for treatment adherence was 0.70.

CONCLUSION: Internet-based depression treatment for adolescents is effective and can be sustained for up to 2.5 years post-treatment. Treatment adherence is a critical component of successful Internet-based treatment. Further research is needed to identify strategies to improve treatment adherence.
BACKGROUND: We conducted a long-term follow-up study of a primary care/Internet-based depression prevention intervention for adolescents (CATCH-IT), Competent Adulthood Transition with Cognitive-Behavioral Humanistic and Interpersonal Training).

METHODS: We elected to examine Internet site related outcomes for the entire cohort: 1) the number of times and the types of coping strategies used in the previous two weeks; 2) depressed mood, automatic negative thoughts, perceived social support and perceived school impairment at 2.5 year follow-up compared to baseline.

RESULTS: N=44, 53% of available sample, N=83 consented to participate. A majority of participants in follow-up study (54%, N=20) reported using 1 to 2 coping strategies favoring behavioral activation approaches in the last 2 weeks (M=1.8, SD=1.9). The most commonly used coping strategies were "Changing negative thoughts" (CBT, 29.7%, N=11) and "Changing my activities to be more active with people or fun things" (BA, 16.2%, N=6). Less utilized strategies included avoiding procrastination (2.7%, N=1) and relationship problem solving (5.4%, N=2). Significant declines at 2.5 years were found for Center for Epidemiologic Studies Depression (CES-D, mean correct score 47% vs. 55%, p<0.001). A minority of students knew that obesity caused the greatest increased risk for uterus cancer (6%), properly identified foods associated with increased cancer risk (27%), or understood the relationship between exercise and cancer risk (31%). Similarly, a minority of students knew that 10-20% of cancer deaths worldwide can be attributed to obesity, but approximately two-thirds (62%) overestimated the magnitude of risk. Only 2 items were answered correctly by at least two-thirds of students: knowing that obesity is associated with gastrointestinal cancers and knowing that whole grains and fiber can lower colorectal cancer risk.

CONCLUSION: Students enter medical school with significant gaps in their awareness of how cancer risk is affected by obesity, diet, and exercise. Given that weight and lifestyle are modifiable risk factors, medical school obesity curricula should include information on cancer risk.

ETHICS EDUCATION ACROSS THE CURRICULUM: HOW DO MEDICAL STUDENTS RELATE PRE-CLINICAL LEARNING TO CLINICAL EXPERIENCE? Lauris C. Kuldjāns 1; Laura Shinkunas 1; Valerie Forman-Hoffman 2; Marcy Rosenbaum 1; Jerold Woodhead 1; Lisa Antes 1; Jane Rowat1. 1University of Iowa Carver College of Medicine, Iowa City, Iowa. (Tracking ID # 10715)

BACKGROUND: Ethics education in medical school occurs predominantly during the pre-clinical years. Little is known about how the cognitive content of this education is remembered, perceived, and applied after students enter the clinical environment.

METHODS: We gathered data from third-year medical students during Internal Medicine and Pediatrics clerkships at the University of Iowa in 2007–08 through (1) a voluntary written survey and (2) content analysis of required written reflections about ethical and professional issues encountered during these clerkships. The survey queried: attitudes toward the clinical relevance of their second-year ethics course; knowledge about four ethical principles, other sources of ethical value, and goals of care in students' written reflections. NVivo qualitative software and SAS were employed to calculate frequency and chi-square statistics. Students' prior performance data from the second year (from a paper and a multiple choice exam during the ethics course) were also examined.

RESULTS: From a class of 141 third-year students, 109 (77.3%) were included for analysis based on completion of study components. The four ethical principles were recalled by most students (beneficence 95.4%, nonmaleficence 95.4%, autonomy 71.6%, justice 82.6%), but other sources of ethical value were recalled less frequently (right 11.9%, consequences 10.1%, comparative cases 16.5%, professional guidelines 18.4%, conscientious practice 21.1%). Out of 15 possible items within the systematic approach to clinical ethical reasoning taught in the second year, 34.9% of students cited 0–3 items, 50.5% cited 4–6, and 14.7% cited 7–9. Content analysis of reflections showed that no one of the four ethical principles was mentioned in more than 16% of reflections, and goals of care were mentioned in only 14.7%; by contrast, consequences were mentioned in 51.4%. Students who scored 90–100% on the multiple choice exam in the second-year ethics course were able to recall more sources of ethical value (P=0.02) and were more likely to refer to goals of care in their reflections (P=0.02). Most students believed the content of the second-year ethics course was relevant to medical practice (71.6%) and helped prepare them for the challenges they faced in the clinical environment (58.7%), that ethics and medicine are inseparable (93.6%), that they are able to recognize key ethical
obligations and challenges (96.3%), and apply a systematic approach to clinical ethical reasoning (65.1%). Students were more likely to believe that ethical and professional values in the clinical environment are practiced (71.6%) than discussed (44.0%).

CONCLUSION: Most third-year medical students in this study appear to recognize the clinical relevance of ethics and be satisfied with their pre-clinical ethics education. Though most can recall the names of four ethical principles, few are able to recall the names of other sources of ethical value or describe most of the components of a systematic approach to clinical ethical reasoning.

HOUSING INSTABILITY AND INCIDENT HYPERTENSION IN THE CARDIA COHORT

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BACKGROUND: Housing instability, a precursor to homelessness, may be an independent social and environmental risk factor for hypertension, but limited prospective data exist. We sought to determine if housing instability was an independent social and environmental risk factor for hypertension, but limited prospective data exist. We sought to determine if housing instability was associated with incident hypertension over 15 years of follow-up in the Coronary Artery Risk Development in Young Adults (CARDIA) study. Because causes of housing instability vary by race and sex, we hypothesized that housing instability would exert a differential effect on incident hypertension by race and sex.

METHODS: CARDIA is a study of 5,115 young adults, recruited from four sites in 1985–6 when they were 18–30 years of age. The cohort is balanced by race (black/white), sex, age and education, and has been followed with periodic exams over 20 years. At Year 5, when participants were 23–35 years of age, all available CARDIA participants were asked about housing; of these, 4342 did not have hypertension and were analyzed. We defined housing instability as living in overcrowded conditions (> 2 people per bedroom), moving 8 or more times in 2 years, or occupying a place without paying rent or money. We defined incident hypertension as systolic blood pressure >140 or diastolic blood pressure >90 or being on antihypertensive medications. We used pooled logistic regression to estimate the independent association between housing instability and incident hypertension at years 7, 10, 15 and 20 adjusting for age, sex, race, income, education, smoking, alcohol, cocaine, amphetamine use, marital or relationship status, marital or relationship problems, children, and body mass index (BMI). Because the effect of housing instability varied by race and sex, we report stratified results.

RESULTS: Of the 4342 participants without hypertension at Year 5, 370 (8.5%) were living in unstable housing with prevalence 5.0% (59/1179) among white women, 6.6% (69/1052) among white men, 11.7% (142/1212) among black women and 11.1% (100/899) among black men. Within the entire cohort housing instability was not associated with incident hypertension after adjusting for demographics, socioeconomic status, behavioral risk factors, social factors, and BMI (Adjusted Odds Ratio (AOR) 1.2, 95% CI 0.9–1.7). However, this association varied by race and sex (p-value for interaction < 0.001). Incident hypertension between years 5 and 20 occurred in 10.8% (121/1120) of stably housed white women vs. 28.8% (17/59) of unstably housed white women. Unstably housed white women had greater odds of incident hypertension (AOR 6.7, 95% CI 3.2–13.7) compared to stably-housed white women. There was no association with incident hypertension for unstably housed white men (AOR 0.8, 95% CI 0.4–1.8), black women (AOR 0.9, 95% CI 0.6–1.6), or black men (AOR 1.0, 95% CI 0.6–1.8) compared to stably housed adults in each race-sex subgroup.

CONCLUSION: In a biracial cohort of young adults, housing instability was associated with incident hypertension in white women, but not in white men, black women, or black men. Given the discordance in our findings by race and sex, housing instability may represent different phenomenon for black and white men and women. Some literature suggests that early-life psychosocial risk factors known to be associated with homelessness may be different for women and whites, compared to men and blacks. On this basis, we speculate that psychosocial stressors associated with housing instability may contribute to the development of incident hypertension in unstably housed white women.

IMPACT OF PRICE DISCOUNTS WITH AND WITHOUT MESSAGING ON SUGARY BEVERAGE CONSUMPTION: RESULTS FROM A MULTI-SITE INTERVENTION

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BACKGROUND: Some policymakers interested in curbing increases in obesity and diabetes have advocated taxing the purchase of sugary beverages. The objective of our study was to determine if an alternative financial incentive—a price discount for zero calorie beverages—would affect consumers’ beverage choice. In addition, we sought to assess whether messaging about the discount would augment its effectiveness.

METHODS: This was a nonrandomized, prospective trial of two interventions carried out at the cafeterias and stores of three different hospitals. The first intervention was a 10% discount on all zero calorie bottled beverages, including water, diet soda, and diet iced tea. The second intervention was a 10% discount on all zero calorie bottled beverages plus messaging to consumers about the discount. Messaging was in the form of marketing posters, which were displayed prominently and conveyed a connection between the discount and a healthier beverage choice. Each intervention lasted three weeks, and prices reverted to baseline between the interventions. Sales of sugary beverages and zero calorie beverages during the interventions were compared to pre- and post-intervention periods using overdispersed Poisson regression. Co-variate in the regression model included day of the week and total number of transactions (to adjust for customer volume), and the regression coefficients were converted to percent change in sales.

RESULTS: During the discount intervention, sales of sugary beverages at the three sites increased 6.5% (p=.276), decreased 10.8% (p=.004), and increased 5.6% (p=.0000); sales of zero calorie beverages increased 4.7% (p=.383), increased 15.2% (p=.001), and increased 3.0% (p=.098), respectively, relative to baseline. During the discount plus messaging intervention, sales of sugary beverages increased 5.0% (p=.277), decreased 10.3% (p=.008), and increased 1.4% (p=.313); sales of zero calorie beverages increased 11.7% (p=.007), increased 23.9% (p=.000), and increased 1.0% (p=.577), respectively, relative to baseline.

CONCLUSION: In response to the price discount intervention, sugary beverage purchases decreased, and zero calorie beverage purchases increased, at one of the three sites. At that site, messaging appeared to augment the effect of the discount. However, at the other sites, the interventions had no or modest effects at increasing zero calorie beverage purchases, and, in these cases, the effects were at least partially offset by increases in purchases of sugary beverages. The impact of financial incentives, such as price discounts, on consumer consumption of sugary beverages may vary in different settings. Policies based on these interventions require further evaluation before widespread implementation.
FACTORS ASSOCIATED WITH ADDRESSING BARRIERS TO ACCESSING CANCER CARE IN A PATIENT NAVIGATION PROGRAM

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Background: Patient navigation, which aims to reduce barriers to care, is increasingly being adopted as a model to reduce cancer health disparities in underserved communities across the country. Although studies are ongoing to assess the full benefit of this model on cancer care outcomes, there is little understanding of the process of navigation to achieve these outcomes. In this study, we examine documented barriers to care and corresponding navigation activities to address them.

Methods: Data from the intervention arm of a multi-site quasi-experimental patient navigation study included eligible women with abnormal Mammogram or Pap tests from 5 urban community health centers, during January 2007 to December 2008. Navigators were trained to identify, document and address 20 pre-defined barriers to care at each patient encounter. The goal of navigation was to engage in activities to ameliorate these barriers in order to facilitate timely diagnostic resolution of the abnormality. In each patient encounter, navigators documented unique barriers and corresponding actions taken to address that barrier. Based on literature review and consensus of the research committee, access barriers were grouped into 3 types: Logistic (e.g. Transportation), Cultural (e.g. Fear) and Financial (e.g. Employment). A barrier is considered addressed when there is a corresponding documented action (e.g. Arrangement for Transportation). Our analyses used the barrier as the unit of analysis and examined associations between patient characteristics and types of barrier with whether or not a barrier was addressed. Patients can contribute multiple barriers from multiple visits, and we used Generalized Estimation Equation (GEE) multiple logistic regression to examine these associations, accounting for correlation between multiple observations per subject.

Results: Among 1118 female intervention subjects, mean age was 42 years; 67% were non white; 71% had either public or no insurance. Overall, 602 (54%) subjects had 1 or more unique barriers identified across all encounters. This resulted in 1691 unique barriers to care of which 620 (37%) were Logistic, 167 (10%) were Cultural and 71 (4%) were Financial; almost half 833 (49%) of documented barriers did not fit into one of the predefined categories and were documented as Other. Overall 72% of the identified barriers were addressed. The Other barrier category had the lowest percentage of addressed barriers (59%), followed by Financial (79%), Logistic (84%) and Cultural barriers (92%). In bivariate analysis, using GEE model, Other barriers were less likely (OR: 0.29, CI: 0.21, 0.4) and Cultural barriers were more likely (OR: 2.4, CI: 1.2, 4.6) to be addressed compared to Logistic barriers. In bivariate analyses, African American women compared to White women had a lower odds of having an addressed barrier (OR: 0.64, CI: 0.42, 0.97) as did those from two community health centers (OR: 0.2, CI: 0.1, 0.4 and OR: 0.25, CI: 0.13, 0.48). In Multivariate GEE model, using type of barriers and adjusting for race, age, marital status, language, type of insurance and site of care to assess whether or not a barrier was addressed; type of barrier (Other barriers vs. Logistic barriers, OR: 0.32, CI: 0.23, 0.46, and Cultural barriers vs. Logistic barriers, OR: 2.67, CI: 1.34, 5.35) and belonging to one of the community health centers (OR: 0.33, CI: 0.15, 0.77) were the only significant predictors of the outcome.

Conclusion: In this community health center-based navigation program, navigators addressed most identified barriers when they were able to clearly categorize the barrier. After adjusting for site of care and barrier type, no individual patient characteristic was found to be associated with the ability of a navigator to address an identified barrier. This suggests that navigator training, which targeted 20 known barriers to care, provided navigators with the skills necessary to address those known barriers yet highlights unmet navigator training needs that are specific to the population served across each site of care.

PHARMACISTS’ PERSPECTIVES ON A PHARMACIST-LED CARE TRANSITIONS INTERVENTION: WHAT CAN WE LEARN FROM PILL-CVD? Sunil Kripalani 1; Katherine Taylor-Haynes 1; Alison Oberne 2; Courtney Cawthon 1; Jeffrey L Schnipper3; 1Vanderbilt University, Nashville, Tennessee; 2University of South Florida, Tampa, Florida; 3Brigham and Women’s Hospital, Boston, Massachusetts.

Background: Increasingly, institutions are implementing multifaceted programs which seek to improve hospital discharge transitions. However, little is known about which aspects of these complex interventions are most beneficial. The Pharmacist Intervention for Low Literacy in Cardiovascular Disease (PILL-CVD) study was a two-site randomized trial designed to reduce serious medication errors after hospitalization through a tailored educational intervention and telephone follow-up. The current qualitative study sought to determine the most important aspects of the intervention from the perspectives of the pharmacists who delivered it.

Methods: Semi-structured interviews were conducted with the 11 study pharmacists to examine their perspectives on pharmacist involvement in the different aspects of the PILL-CVD intervention, including medication reconciliation, two-in-hospital patient counseling sessions, and provision of simple medication adherence aids. Also, while telephone follow-up was conducted initially by non-clinical personnel, pharmacists followed up when problems were identified. Interview data were coded systematically using an a priori analytic framework, RE-AIM+, that expands upon Glasgow’s (1999) evaluation framework of Reach, Efficacy, Adoption, Implementation, and Maintenance.

Results: Pharmacists considered medication reconciliation the most important facet of the intervention. They frequently identified errors in
the Pre-Admission Medication List (PAML) as documented by treating physicians. A careful medication review by the pharmacist identified patients with poor understanding of their pre-admission medication regimens, pinpointed errors in patients’ medical records, and enabled creation of a complete, accurate medication list, but this process was considered time-consuming and likely imperfect. Adherence aids (e.g., pill box, illustrated daily medication schedule) were felt to be highly valuable for patients with low health literacy, though pharmaceuticals found them less useful for higher health literacy patients. Having non-clinical staff conduct the initial post-discharge follow-up calls effectively leveraged pharmacists’ time and hospital resources.

**CONCLUSION:** Medication reconciliation and use of simple adherence aids were felt to be the most beneficial aspects of this multi-faceted care transition intervention. This experience supports greater pharmacist involvement in medication reconciliation, either to verify the work of other health care providers or to construct the PAML from the outset. Additional refinements to the patient education tools may be needed to increase their utility for patients with adequate health literacy, though another solution would be to provide such tools only to patients with low health literacy. A protocol for post-discharge telephone follow-up by non-clinical personnel leveraged pharmacists’ time and could reduce the cost of similar interventions.

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**PATIENT AND PHYSICIAN DISCUSSIONS AFTER DECISION SUPPORT FOR COLORECTAL CANCER SCREENING IN THE ELDERLY**

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**BACKGROUND:** The potential benefit of colorectal cancer screening decreases with increasing age and co-morbidity. Individualized decision making between elderly patients and their providers has been recommended to encourage screening in those most likely to benefit from screening and to avoid harm in those most likely to experience net harm. This study has 2 purposes: 1) To assess the feasibility of providing targeted decision support intervention for both physicians and elderly patients prior to an office visit and audio-taping visits and 2) to examine individualized decision making during the visit through an analysis of audiotapes of the visits.

**METHODS:** We recruited a convenience sample of 6 physicians and their patients who were age 70 and older, not up to date with CRC screening, and were scheduled for an upcoming appointment. Prior to the visit we provided patients with a decision support booklet targeted to elderly patients. Physicians were given a bar graph showing life expectancy estimates divided by quartiles of health state and targeted to the patient’s age and gender. Visits were audio-taped, transcribed and coded for elements of individualized decision making.

**RESULTS:** Among 71 eligible patients, 20 (28%) agreed to participate with the majority declining because of the audiotaping. Twelve of the 20 encounters (60%) had discussions of CRC screening, defined as 3 verbal exchanges between physician and patient. The average discussion time was 6 minutes (range 1 to 22). Two of the 12 discussions were initiated by the patient. The patient’s health status was discussed in 7 encounters and in 3 of these encounters screening was discussed in the context of the patient’s other health issues. In 4 encounters, the USPSTF recommendations that screening is not routinely recommended for older adults were discussed. Decisions in favor of screening were made in 7 encounters (6 for FOBT; 1 colonoscopy); no decisions were made explicitly to discontinue screening permanently, but 3 patients preferred not to get screening at the current visit and for 2 the decision about screening was deferred. In 6 encounters, the physicians assessed patient understanding, 2 physicians discussed the potential benefits of screening, 2 physicians discussed the potential harms, and 2 physicians discussed uncertainty in the decision.

**CONCLUSION:** Our decision support tool triggered discussions in over half of participants who agreed to be audiotaped. Discussion was initiated primarily by physicians. Most discussions included considerations of limited life expectancy and an assessment of patient understanding, but fewer discussed benefits, harms, and uncertainty in the decision.

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**IMPLICATIONS OF DECLINING CABG RATES ON RACIAL DIFFERENCES IN CABG HOSPITAL VOLUME**

Peter W Groeneveld 1; Feifei Yang 1; Gina Puglione 1; Lin Yang 1. University of Pennsylvania, Philadelphia, Pennsylvania. (Tracking ID # 10737)

**BACKGROUND:** Coronary artery bypass grafting (CABG) has declined in frequency in the United States during the past decade. It is uncertain if this decline has been similar among white and black patients. Because hospitals may be unlikely to abandon their cardiac surgery programs despite declining surgical volumes, it is also unclear if declining CABG volumes have increased the proportion of whites and blacks receiving CABG at low-volume hospitals. Prior research indicates patients at hospitals with low CABG volumes (i.e., less than 150 cases/year) have worse surgical outcomes than patients at high-volume centers.

**METHODS:** Medicare claims from 2001 to 2008 for patients age 65 and older were analyzed to determine the number of white and black patients undergoing CABG in each year. Hospital identifiers on these claims were used to determine the annual number of U.S. hospitals providing CABG services. The total Medicare CABG volume at each hospital was calculated for both 2001 and 2008, and hospitals with fewer than 75 Medicare-reimbursed CABGs were designated as low-volume centers (Medicare CABGs constitute approximately 50% of all CABGs, thus hospitals with fewer than 75 Medicare CABGs were likely to be low-volume centers). The percentages of black and white patients undergoing CABG in low-volume hospitals in 2001 were compared to the corresponding percentages of black and white patients undergoing CABG at low-volume hospitals in 2008.

**RESULTS:** There was a 27% decrease in annual volume of CABGs among white Medicare patients from 2001 (152,000 cases/year) to 2008 (111,400 cases/year), but the decline among black Medicare patients was only 14% between 2001 (7,242 cases/year) and 2008 (6,248 cases/year) (p<0.001 for the difference in slopes). The number of U.S. hospitals offering CABG increased by 11% from n=1,039 in 2001 to n=1,154 in 2008 (p<0.001). The percentage of white CABG patients undergoing surgery at hospitals with low CABG volumes increased from 8% in 2001 to 16% in 2008 (p<0.001). The percentage of black CABG patients undergoing surgery at low-CABG-volume hospitals increased from 13% in 2001 to 21% in 2008 (p<0.001).

**CONCLUSION:** The decline in CABG volume during 2001–2008 was more pronounced among white patients than among black patients, suggesting that over time, whites were more likely than blacks to receive alternative treatment for severe coronary artery disease. Despite the national decline in CABG volume, we observed a paradoxical increase in the number of U.S. hospitals performing CABG surgery. Hence, there was a substantial increase in the fraction of all CABGs performed at low-volume centers, but the proportion of black CABG patients at low-volume centers was substantially greater than the proportion of white CABG patients at low-volume centers. If low-volume hospitals persistently have worse CABG...
outcomes than high-volume centers, these findings portend increasing racial disparity in CABG outcomes over time.

NEIGHBORHOOD CHARACTERISTICS ASSOCIATED WITH ACCESS TO PATIENT-CENTERED MEDICAL HOMES

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BACKGROUND: Patient-centered medical homes have gained prominence as models to promote high quality, cost-effective primary care. Evidence for significant racial/ethnic and geographic disparities in access to medical homes exist, however, the factors contributing to these disparities are not well established. Our study examined whether community characteristics, such as social cohesion, built environment, and perceived neighborhood safety are associated with access to patient-centered medical homes and are potential contributors to this disparity in access for children.

METHODS: We analyzed the 2007/2008 National Survey of Children's Health (NSCH), a nationally representative cross-sectional survey of parents/guardians of children, ages 0-17, that assessed neighborhood characteristics and access to a medical home (n=84,474). Our main outcome was access to a patient-centered medical home, measured by a composite score constructed from a total of 19 NSCH survey questions based upon the American Academy of Pediatrics' medical home definition. Our primary predictors were neighborhood cohesion, perceived community safety, the built environment measured by the number of neighborhood amenities (e.g. parks, sidewalks), and the number of neighborhood detractors (e.g. vandalism). For the predictors determined to be significantly associated with medical home access in unadjusted analyses, a multivariable logistic regression model including all predictors assessed access to a medical home, adjusting for age, gender, race, insurance type and status, poverty level, parental education level, primary language, family structure, household employment status, geographic region, and children with special health care needs. Analyses were conducted with SUDAAN software to account for the complex survey design.

RESULTS: Over 93% of all children had access to a personal provider and usual source of care. Access to medical homes was reported for 62% of all children and was more common among children who were Non-Hispanic white, privately insured, in higher income households, and without special health care needs. Adjusted analysis revealed three of our four predictors were independently associated with access to a medical home. Children living in communities perceived as unsafe were less likely to have access to a medical home as compared to children living in communities perceived as safe (adjusted OR 0.70; 95% CI: 0.69, 0.79). Children living in neighborhoods with one amenity were less likely to have access to a medical home compared to those with four amenities, were also less likely to have access to a medical home (OR 0.72; 95% CI: 0.62, 0.84). Similarly, children living in less cohesive neighborhoods were less likely to have access to a medical home than those living in very cohesive neighborhoods (not cohesive: OR 0.54; 95% CI 0.48, 0.61; somewhat cohesive: OR 0.72; 95% CI 0.65, 0.80; cohesive: OR 0.81; 95% CI 0.74, 0.89).

CONCLUSION: Our study suggests that several neighborhood characteristics are independently associated with access to a patient-centered medical home. Understanding the social and environmental factors that impede access to new models of health care delivery is essential to informing policies that reduce disparities in access to such models. Efforts to increase patient-centered medical homes in such at risk, disadvantaged communities should be a priority to improve primary care for children.

ASSOCIATION OF PRE-TREATMENT NUTRITIONAL STATUS WITH CHANGE IN CD4 COUNT AFTER INITIATION OF ANTIRETROViral THERAPY AT 6, 12, AND 24 MONTHS IN RWANDAN WOMEN

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BACKGROUND: HIV infection and malnutrition are prevalent in Africa. Rwandan women share a greater burden of HIV than men, and malnutrition (using World Health Organization definition of body mass index (BMI) < 18.5 kg/m2) is common (approximately 19%) in our preliminary studies of HIV-positive Rwandan women. Low serum albumin and BMI have been shown to independently predict increased mortality in several African studies. However, macro- and micro-nutrient supplementation have failed to consistently show reductions in HIV mortality. It is thus unclear whether these malnutrition measures simply mark more advanced HIV disease, and there are scant data on the effect of nutritional status on response to antiretroviral therapy (ART). As ART becomes more available in the low income countries, it is crucial to understand the association between poor nutrition and response to ART. We hypothesized that poorer nutritional status would be associated with poorer gains in CD4 count after ART initiation.

METHODS: This analysis was done on 537 Rwandan Women’s Intersassociation Study and Assessment (RWISA) participants who initiated ART after study entry and had at least six subsequent months of follow up. RWISA is a population-based observational cohort study of 710 ART-naive HIV + and 226 HIV-negative women who enrolled in 2005 and seen at six-month visits. At these visits, health and health behavior data were collected, including whether women initiated ART (exact dates of ART initiation and medication regimen were determined), physical exams performed, and biologic specimens collected and stored. Medical care was provided by non-governmental and national health organizations, separately from the RWISA study. Following World Health Organization (WHO) and Rwandan guidelines, women were eligible for ART if they had: WHO Stage IV disease, irrespective of the CD4 cell count; WHO Stage III disease with CD4 cell counts <350 cells/μL, or CD4 <200/μL regardless of clinical stage. The study outcomes were changes in CD4 count at follow up visits 6±3, 12±3, and 24±3 months after ART initiation. Indicators of nutritional status collected from the study visit prior to ART initiation that were used in these analyses included BMI, albumin, fat adjusted for (height)2, fat free mass (FFM) adjusted for (height)2, and sum of skinfold measurements at the thigh, triceps and subscapular muscles. Resistance and reactance obtained from bioelectric impedance measurements were used in standard formulae to calculate FFM and fat. Other covariates used included age, income in Rwandan Francs (FRW), education, pre-ART CD4 count (per 100 cells/μL) and history of AIDS defining illness (ADI) prior to ART initiation. Nutritional variables were examined in univariate linear regression models of CD4 change. Multivariate linear regression models of change for each nutritional variable were fit using backwards selection.

RESULTS: 537 women initiated ART at a mean age of 35 years. Mean (within 6 months) pre-ART CD4 count was 216 cells/μL. Prior to ART, the mean BMI was 21.6 kg/m2 (18.3% of the women classified as malnourished), mean albumin 3.4 g/dL, mean adjusted fat 4.70 kg/m2, mean adjusted FFM 17.1 kg/m2; and mean sum of skinfold measurements 0.495 cm. The mean change in CD4 count from pre-ART to 6±3, 12±3, and 24±3 months was 71, 89 and 153 cells/μL, respectively. In univariate analysis, higher albumin was associated with a smaller increase in CD4 count from pre-ART to 6 months post-ART. estimate
Sandra Feibelmann 1; Steven J. Atlas1; Karen L. Lewis 1; Christopher P. DeLeon 1; Michael P. Pignone 1; Carol E. Golin1. 1University of North Carolina - Chapel Hill, Chapel Hill, North Carolina. (Tracking ID # 10741)

BACKGROUND: Individualized decision making with providers about colorectal cancer (CRC) screening is recommended for adults age 75 and older because the potential net benefit of screening decreases with increasing age and co-morbidity. However, little is known about older patients’ preferences about CRC screening or the individualized decision making process. The purpose of this study was to provide decision support then examine physicians’ and patients’ perceptions of CRC screening and assess visit outcomes regarding CRC screening.

METHODS: We recruited a convenience sample of 6 physicians and their patients who were age 70 and older, not up to date with CRC screening, and were scheduled for an upcoming appointment. Prior to the visit, we provided patients with a decision support booklet targeted to elderly patients. Physicians were given a bar graph showing life expectancy estimates divided by quartiles of health state and targeted to the patient’s age and gender. Patients responded to questions about their screening preference (prefer screening, prefer not to get screening or unsure) prior to decision support and after decision support but prior to their visit. After the visit, patients responded to 5 point Likert scale about their perceptions of decisional balance between the risks and benefits of screening. After the visit, physicians also responded to 5 point Likert scale about their perceptions of decisional balance in this patient and whether it was likely that screening would prolong the patient’s life. We analyzed audiotapes of the visit to determine visit outcome, specifically whether CRC screening was discussed and if a decision about screening was made.

RESULTS: Prior to decision support, 8 of the 20 patients preferred to undergo screening, 3 preferred no screening and 9 were unsure. Post decision support, 10 patients changed their screening preferences resulting in 6 who preferred screening, 9 preferred no screening, and 5

DECIISION SUPPORT AND INDIVIDUALIZED DECISION MAKING FOR COLORECTAL CANCER SCREENING IN THE ELDERLY

ASSESSING PROVIDER KNOWLEDGE OF A HERNIATED LUMBAR DISC: ARE SPECIALISTS BETTER INFORMED THAN PRIMARY CARE PHYSICIANS? Sandra Feibelmann 1; Steven J. Atlas 1; Karen R. Sepucha 1. 1Massachusetts General Hospital, Boston, Massachusetts. (Tracking ID # 10740)

BACKGROUND: Health care providers engaging in shared decision making with their patients need to be well-informed about the relevant condition and available treatment options and outcomes. Primary care physicians (PCPs) see patients with a variety of conditions that are often initially managed by the PCP but may eventually require specialty referral. We sought to compare PCP and specialist knowledge about a herniated lumbar disc (HD).

METHODS: Providers were identified through the American Medical Association physician master file. The HD survey was mailed to 100 primary care or internal medicine providers and 100 specialists in neurological surgery, orthopedic spine surgery, physical medicine and rehabilitation, and pain medicine. Mailed surveys included 21 knowledge items covering the benefits and risks of surgery and non-surgical treatment options for HD. We determined what proportion correctly answered each item and compared results of PCPs and specialists.

RESULTS: Among 182 eligible participants, 97 providers completed the survey (53% response rate), 22 (23%) PCPs and 74 (77%) specialists. Their average age was 51 (SD 9.3), 83% were White, and they were practicing on average for 20 years (SD 9.8). PCPs had more years of practice than specialists (23 [SD 10.4] versus 18.5 [SD 9.4], p=.04).

CONCLUSION: In univariate analysis, higher FFM and albumin were associated with a smaller increase in CD4 count from pre-ART to 6 months, but not 12 or 24 months post-ART. However, these results did not persist in multivariate analysis at 6 months after adjustment for traditional predictors of response to ART. No marker of nutritional status predicted change in CD4 count from pre-ART to 6, 12, or 24 post-ART months in multivariate analysis. These results show that poor pre-ART nutritional status, measured by BMI, adjusted fat, adjusted FFM, albumin, and skinfolds does not preclude a good response to ART. The associations of higher FFM and albumin with a smaller post-ART CD4 increase seen in univariate analysis, likely reflect that these were markers of severe illness, and thus these were not significant in multivariate analysis. Low BMI, fat, FFM, albumin, and skinfolds can be associated with severe illness, and these markers should be fully investigated and interpreted with caution in further nutritional analyses.

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ABSTRACTS

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Specialists saw more patients with HD, median annual volume of 200 (quartiles 97.5, 400) for specialists compared to 20 (quartiles 7.75, 52.5) for PCPs. Overall, respondents correctly answered 71% of survey items with specialists more likely to correctly answer items than PCPs (73% vs. 63%, p=.008). More specialists knew that pain caused by a herniated disc usually gets better without surgery (93% specialists vs. 73% PCPs, p=.02). More specialists also understood that surgery provides faster relief from pain (81% specialists vs. 54.5% PCPs, p=.02) and that after five years both surgery and non-surgical treatments provide similar pain relief (76% specialists vs. 41% PCPs, p=.003). Specialists were more likely to know the rate of a serious complication (82% vs. 59%, p=.03). A majority of PCPs and specialists understood that exercise or staying active (91% vs. 90.5%, p=.62), physical therapy (91% vs. 95%, p=.42), over-the-counter pain medicine (91% vs. 99%, p=.13), and cortisone shots into the back (91% vs. 97%, p=.22) help some patients relieve their HD pain. Less than half of providers knew how many patients would have the same or more back or leg pain after surgery (41% PCPs vs. 26% specialists, p=.13).

CONCLUSION: In this sample, specialists who treat herniated disc patients were more informed about the benefits and risks of HD treatments compared to PCPs. It is challenging for PCPs to remain knowledgeable about all relevant information, especially when patient volume for a particular condition is low. Decision aids and other materials may be useful to support PCPs in educating patients about treatment options for a HD.
were unsure. After the visit, 12 patients thought the benefits outweighed the risks, 5 thought they were about the same, and 2 thought risks outweighed the benefits, while physicians responded that for 11 patients benefits were greater than risks, for 7 they were about the same, and 2 the risks were greater than the benefits. 11 physicians thought that screening would likely prolong the patient’s life. 3 reported it unlikely, and 6 assessments were neutral. Audiotapes revealed 8 visits with no discussion, 7 visits in favor of screening, 5 visits where screening was discussed but the decision was deferred, and no decisions were made to discontinue screening. The patients’ post decision support preference was not associated with the visit outcome (p=0.443) or the patients perception of decisional balance (p=0.135). However, the visit outcome was associated with the physicians’ perception of benefit (0.015), but not with physician decisional balance (p=0.62).

CONCLUSION: Patient decision support changed patient CRC preferences but these preferences do not appear to influence visit outcomes in this small sample. Perceived decisional balance was in favor of screening for both physicians and patients. Physicians’ perceptions of benefit may influence the individualized decision making for older patients, although additional research is needed to confirm these findings and determine screening outcomes.

IMPACT OF STUDENT-RUN CLINICS ON PRECLINICAL STUDENTS’ SOCIOCULTURAL AWARENESS AND INTERPROFESSIONAL ATTITUDES: A PROSPECTIVE COHORT ANALYSIS Leslie C. Sheu 1; Cindy J. Lai 2; Anabelle D. Coelho 2; Lisa Lin 2; Patricia Zheng 2; Patricia Hom 2; Vanessa Diaz 2; Patricia S. O’Sullivan 3; UCSF, San Francisco, California; University of California, San Francisco, San Francisco, California. (Tracking ID # 10742)

BACKGROUND: Descriptive studies have suggested that student-run clinics (SRCs) may positively impact preclinical students’ sociocultural and interprofessional attitudes which relate to how they may provide care in the future. However, rarely have studies included students from multiple professions, previously validated instruments, or a control group. At our health professions campus, first-year students from the Schools of Medicine, Nursing, and Pharmacy can elect to participate in one of three SRC electives, each focusing on a specific underserved population: Latino/Latina community, Asian/Pacific Islander immigrants, and the urban homeless population. In this study, we used validated measures to explore the impact of these SRCs on preclinical students’ sociocultural and interprofessional attitudes as compared to those who did not participate in SRCs.

METHODS: Using a pre-post control group design at the beginning and end of the academic year, we conducted a prospective cohort study involving first-year health professional students who did or did not participate in SRCs. We used two validated measures both using 5-point Likert scale for item ratings: 1) Sociocultural Attitudes in Medicine Inventory (SAMI), consisting of a 26-item questionnaire evaluating exposure to sociocultural attitudes and perceptions of influence of sociocultural background in physician/patient/health issues; and 2) Readiness for Interprofessional Learning Survey (RIPLS), a 19-item questionnaire measuring teamwork and collaboration, professional identity, and roles and responsibilities. The survey also included basic demographic information and open-ended questions for clinic participants to reflect on their experiences working with underserved populations and with other health professional students. All matching surveys were included in the statistical analysis. Descriptive statistics for all scales were generated in the two measures, and we conducted an analysis of covariance, using the pre-scores as the covariate, with two main effects, participation in SRCs and health professional school. The analysis was repeated for each dependent variable, which were the subscales for SAMI and RIPLS. The level of significance was set at 0.05. Qualitative analysis of open-ended responses was performed and consensus reached through discussion.

RESULTS: Of all students, 77% (274 of 358) completed the post-survey, with 68% (n=182) having matching pre-post surveys. First-year students held positive attitudes in both sociocultural and interprofessional domains at baseline and at the end of the year. There were no significant differences in context awareness based on SRC participation (p=0.53) or school (p=0.09), and no significant difference in sociocultural awareness (p=0.32 for SRC participation, p=0.06 for school). Students’ interprofessional attitudes were not different based on SRC involvement for any scale (p=0.385 for “Team” subscale, p=0.975 for “Identity” subscale, 0.285 for “Role” subscale). When analyzed by professional school, nursing students held more favorable interprofessional attitudes, regardless of SRC participation (p=0.006 for “Team” subscale, p=0.015 for “Identity” subscale, p=0.225 for “Role” subscale). No interaction effects were significant. In the qualitative analysis, 99% reported reinforced or increased commitment to working with the underserved, noting improved insight into health disparities and career choices. Forty percent reported that their experiences made a positive impact on their interprofessional attitudes.

CONCLUSION: In this study designed to rigorously evaluate the effect of SRC participation on two critical variables, we found no differences in sociocultural or interprofessional attitudes after adjusting for students’ baseline attitudes. However, given the highly positive scores on the SAMI and RIPLS at baseline, lack of further improvement in scores was not surprising; students still perceived benefits in their sociocultural and interprofessional attitudes, suggesting that learning about these issues may be more tacit. Such positive experiences in SRCs may have other effects not examined in this study.

PHARMACIST INTERVENTION FOR LOW LITERACY IN CARDIOVASCULAR DISEASE (PILL-CVD): A RANDOMIZED CONTROLLED TRIAL Sunil Kripalani 1; Christianne L Roumie 2; Anuj K Dalal 3; Courtney Cawthon 1; Alexandra Businger 3; Svetlana Eden 1; Ayumi Shintani 1; Ileko Mugalla 1; Terry A Jacobson 4; Kimberly J Rask 5; Viola Vaccarino 3; Tejal K Gandhi 3; David W Bates 3; Mark V Williams 3; Jeffrey L Schnipper 3; VA Tennessee Valley Geriatric Research Education Clinical Center, Nashville, Tennessee; VA Vanderbilt University, Nashville, Tennessee; Brigham and Women’s Hospital, Boston, Massachusetts; Emory University, Atlanta, Georgia; Northwestern University, Chicago, Illinois. (Tracking ID # 10745)

BACKGROUND: Serious medication errors (SMEs) are common after hospital discharge and include preventable or ameliorable adverse drug events (ADEs), as well as potential adverse drug events (pADEs) due to medication discrepancies or non-adherence. The Pharmacist Intervention for Low Literacy in Cardiovascular Disease (PILL-CVD) study was a randomized controlled trial to determine the effect of an educational and behavioral intervention on the incidence of SMEs after discharge.

METHODS: Patients hospitalized with acute coronary syndromes or acute decompensated heart failure were enrolled in the trial. The intervention consisted of pharmacist-assisted medication reconciliation, inpatient pharmacist counseling, low-literacy adherence aids, and tailored telephone follow-up beginning 1–4 days after discharge. The primary outcome was the incidence of SMEs during the first 30 days after hospital discharge. Secondary outcomes included the incidence of preventable or ameliorable ADEs, as well as pADEs. We computed the risk ratio (RR) and 95% confidence interval (CI) of events in the
intervention group vs. the control group using negative binomial regression.

RESULTS: Among 851 participants, 426 (50.1%) experienced >= 1 SME, 256 (30.1%) had >=1 ADE, and 253 (29.7%) had >=1 pADE. The intervention did not significantly alter the number of SMEs (RR=0.92, 95% CI 0.77 to 1.10) or ADEs (RR=1.09, 95% CI 0.86 to 1.39). Intervention patients tended to have fewer pADEs (RR=0.80, 95% CI 0.61 to 1.04), p=0.09. Post-hoc analyses stratified by site showed that at the site with information technology-assisted medication reconciliation previously in place, the intervention significantly reduced pADEs (RR=0.69, 95% CI 0.50 to 0.96).

CONCLUSION: A health-literacy sensitive, pharmacist-delivered intervention did not significantly reduce SMEs after hospital discharge. This type of intervention may reduce pADEs at hospitals without robust medication reconciliation programs.

TRENDS IN U.S. CORONARY REVASCULARIZATION PROCEDURES: 2001–2008
Peter W. Groeneveld1; Daniel Polsky1; Feifei Yang1; Lin Yang1; Gina Pugliano1; Andrew J. Epstein1. 1University of Pennsylvania, Philadelphia, Pennsylvania. (Tracking ID # 10746)

BACKGROUND: Coronary revascularization is among the most common and most costly hospital-based major interventional procedures performed in the United States. It is uncertain how new revascularization technologies, new published evidence from clinical trials, and updated clinical guidelines during the past decade have influenced the national volume of all coronary revascularizations as well as the proportion of revascularizations that are coronary artery bypass grafting (CABG) surgeries. The objective of this study was therefore to examine national time trends in the volume and type of coronary revascularization procedures during 2001–2008.

METHODS: We used the Agency for Healthcare Research and Quality’s Healthcare Cost and Utilization Project/National Inpatient Sample (NIS), a complete set of hospital discharge claims from a stratified random selection of approximately 20% of U.S. hospitals, to estimate the total number of CABG surgeries and percutaneous coronary interventions (PCI) performed annually from 2001 to 2008, as indicated by procedure codes recorded on these claims. We then used Medicare claims to estimate the annual volume of outpatient PCI procedures by calculating the annual ratio of outpatient to inpatient PCI procedures recorded on Medicare outpatient and inpatient facility claims, and applying this ratio to the inpatient PCI counts reported in the NIS. We tested time trends in proportions (e.g., CABG as a percentage of all revascularizations) with the Cochran-Armitage test, and we tested time trends in count data with negative binomial regression models.

RESULTS: The annual volume of coronary revascularizations in the U.S. decreased from 1.18 million procedures per year in 2001 to 1.11 million procedures per year in 2008, a 6% decrease (p=0.02). The annual national CABG volume decreased steadily by 34%, from 371,700 procedures per year (52% of all revascularizations) in 2001–02 to 246,800 procedures per year (22% of all revascularizations) in 2007–08 (p<0.001), but PCI volume increased during the same interval from 808,000 procedures per year in 2001–02 to 864,800 procedures per year in 2007–08, a 7% increase (p=0.04). The estimated number of non-federal hospitals providing CABG increased from n=1,060 in 2001 to n=1,200 in 2008 (p=0.002). The average CABG caseload per hospital declined by 39% (p<0.001), and the estimated number of hospitals providing fewer than 100 CABGs per year increased from n=140 in 2001 to n=320 in 2008 (p<0.001).

CONCLUSION: There was a 34% decline in CABG and a concurrent 7% increase in PCI for the treatment of coronary artery disease in the United States during the past decade. This shift in revascularization practice patterns may indicate increasing preference by physicians and/or patients for PCI rather than CABG for the interventional treatment of coronary artery disease. It is uncertain whether this marked reduction in CABG utilization reflects increasing adherence to evidence-based guidelines for the use of CABG, or alternatively indicates increasing underuse of CABG for the treatment of those coronary artery disease patients (i.e., triple-vessel disease or left main disease patients) for whom CABG has demonstrably better outcomes than PCI.

CROSSING QUALITY CHASM: PRIMARY CARE FROM THE PERSPECTIVE OF HOMELESS PATIENTS AND THEIR CAREGIVERS
Stefan Kertesz1; David Pollio2; Kay Johnson-Roe3; Jocelyn Seward3; Allison Borden 3; Theresa Kim 4; Erin Stringfellow 5; John Andrew Young 5; Cheryl Holt6; 1Birmingham VA Medical Center, Birmingham, Alabama; 2University of Alabama, Tuscaloosa, Maryland; 3Birmingham VAMC, Birmingham, Alabama; 4Boston Medical Center, Boston, Alabama; 5Boston Health Care for the Homeless, Boston, Alabama; 6University of Maryland, Baltimore, Alabama. (Tracking ID # 10749)

BACKGROUND: A patient-centered medical home should address the priorities of the patients it seeks to help. For patients who have been homeless, these priorities may not be captured by standard primary care quality measures. We interviewed homeless patients and expert providers to better understand aspects of quality relevant to homeless primary care, as part of a project to develop a future patient-reported survey.

METHODS: Thirty-six homeless patients from 2 cities were interviewed (28 male, 8 female; 22 veterans, 21 >1 year homeless). Interviews also included 22 nationally-selected expert providers (8 MDs, 7 nurses, 7 other). A semistructured interview queried 8 quality-related constructs drawn from Institute of Medicine (IoM) reports on primary care and quality. Interviews were audiotaped and transcribed. Two parallel analyses were used, a thematic analysis within existing IoM constructs, and an open-coded analysis for potential new constructs. Multiple coders were used, and acceptable inter-rater reliability achieved. Three new constructs emerged on preliminary review: Substance Abuse/Mental Illness, Homeless-Specific Needs, and Trust/Respect. A multidisciplinary team reviewed transcripts to identify 5 to 15 themes per construct.

RESULTS: Among 11 constructs, several themes distinctive to homeless care emerged. Examples: 
Under Patient Control, patients embraced some aspects of control (e.g. choice of provider) but also asserted limits on control ("I’m an addict...
Under Shared Knowledge, potential misuse of the electronic record was referenced, as was the need for candid, dialogic communication ("For you to sit with a doctor that don’t even wanna speak to you, or dialogue with you in no type of way, he just wanna look at you...That’s sad, that’s pitiful.
Under Homeless-Specific Needs, providers addressed competing priorities (shelter, food, etc), and the need to counteract stigma ("They’re so invisible anyway and feel such low self-esteem that...it’s not even the straw that broke the camel’s back. It’s just, it’s F—Y—..."
Under Trust/Respect, patients and providers spoke about interpersonal comfort between patient and provider, and the importance of confidentiality ("Trust means to me that I have no fear that what I say to him is going to get back to me through a third source, without me okaying it with him").

CONCLUSION: Patients and providers familiar with homelessness offer a nuanced understanding of IoM priorities such as patient control and shared knowledge while highlighting concerns regarding stigma, trust...
and respect. Design and measurement of the patient-centered medical home requires specialized consideration if it is to effectively serve vulnerable subpopulations like the homeless.

**PRIMARY CARE PROVIDERS’ ATTITUDES AND EXPERIENCES WITH ONLINE WEIGHT CONTROL PROGRAMS**

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**BACKGROUND:** Online weight control programs (OWPs) help overweight and obese individuals lose weight. Partnerships between OWPs and primary care providers (PCPs) could yield substantial public health benefits, in which each party provides services according to its own strengths. PCPs note that they lack competence in helping their patients lose weight and that their patients lack access to programs with low out of pocket costs. Despite their potential to address needs of PCPs and patients, OWPs have not been integrated into the primary care setting. This study sought to learn about PCPs attitudes and experiences with OWPs. Such knowledge is critical if OWPs are to be successfully integrated into primary care.

**METHODS:** We conducted 6 focus groups with 3 to 8 internal medicine and family medicine PCPs at 3 centers (n=32). Discussions were recorded and transcribed verbatim. Transcripts were reviewed iteratively for recurring themes. Open-ended questions addressed topics such as: referring patients to specialists, other professionals, community resources, and OWPs; characteristics of effective OWPs; and barriers to referring patients to OWPs.

**RESULTS:** When considering weight loss resources for their patients, the PCPs valued affordability, structure, familiarity, practicality, and educational content. PCPs’ personal and professional experience with OWPs was limited. Some PCPs referred patients to websites which provided basic information and aid in counting calories. PCPs perceived difficulty in identifying effective, evidence-based OWPs from among an extensive array of weight-related websites. They believed that effective OWPs would offer the following: structured behavioral program; accountability from other users and/or other staff; practical tips on how to initiate and maintain beneficial behaviors; and aid with decisions. They regarded information alone as inadequate to help patients lose weight. The PCPs felt that online discussions among users of OWPs should be monitored by experts for content and tone. Additionally, they welcomed the idea of receiving feedback from administrators of OWPs about their patients’ progress, especially if they could identify the amount and frequency of such feedback.

The PCPs anticipated using the feedback as a framework for talking with patients about their weight loss efforts and for praising patients when their patients lose weight was successful.

**CONCLUSION:** The features which PCPs desire can be found in existing OWPs or are technically feasible to implement. Researchers and OWP administrators need to collaborate to design and identify effective OWPs in prospective studies. Reducing or eliminating costs to patients will likely encourage PCPs to refer patients to OWPs. Lastly, OWPs should work closely with PCPs to design flexible systems for sending feedback to the PCPs about their patients.

**THE PREVALENCE OF CONFLICTS OF INTEREST AMONG GUIDE-LINE PANEL MEMBERS**

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**BACKGROUND:** Conflict of interest (COI) among authors of clinical practice guidelines may adversely impact the objectivity of the recommendations issued. Over the past decade, scant research has examined this topic in the field of Internal Medicine. We sought to determine the frequency of COI among authors of clinical practice guidelines between the years 2000-2010.

**METHODS:** We conducted a retrospective study of authors of hyperlipidemia and diabetes guidelines, published between the years 2000 and 2010 in the US and Canada. We chose hyperlipidemia and diabetes as representative disease categories because of the high prevalence of both diseases in the population. Guidelines were identified through The National Guideline Clearinghouse, MDConsult, UpToDate, and the websites of organizations with a potential interest in these diseases. COI were defined in two ways: 1) as the direct compensation of a guideline author by a pharmaceutical company in the form of grants (including research), speakers fees, honoraria, etc., or 2) primary authorship (1st author) of a clinical trial funded by the a manufacturer of a drug used to treat the disease of interest in the guideline, in the two years prior to and the year of guideline publication. Direct compensation was determined by examining declarations of COI that were published within the guideline. Authors that declared no COI were further investigated through examination of publications via MEDLINE and through an internet search. Guidelines were categorized as government-sponsored versus other, year developed (before and after 2007), disease (hyperlipidemia versus diabetes) and country of origin (U.S. and Canada). We used descriptive statistics to characterize the prevalence of COI among authors and panel Chairs and used two-sampled tests of proportion to examine differences by guideline characteristics.

**RESULTS:** We identified 14 guidelines meeting our search criteria. These guidelines included 288 authors, representing 246 separate individuals. All guideline panels had at least one author with a COI. Overall, 55% (158/288) of authors were found to have COI. Among authors not reporting COI, 13% (20/150) had undeclared COI. Among Chaired guidelines, 60% (6/10) of Chairs had COI. Government-sponsored guideline panels had significantly fewer authors with COI than non-government-sponsored panels (71% vs. 20% P less than 0.001), and COI was more prevalent among Canadian specialty organizations than U.S. specialty organizations (84% vs. 62%, P less than 0.01). We found an increased presence of COI in guidelines published after 2007 compared to those published prior (66% vs. 28%, p less than 0.001).

**CONCLUSION:** We found a high prevalence of COI, under-reporting of COI by guideline authors, and significant differences in the prevalence of COI between government and non-government-sponsored guidelines. Our finding that the majority of guideline authors and Chairs have COI, and that one out of eight authors did not report their COI raises concerns about the objectivity of these guidelines and the effectiveness of current disclosure practices. The guideline development process must be reformed to minimize conflicts of interest among authors to ensure the credibility and evidence-based nature of the clinical practice guidelines issued in the US and Canada.

**WILLINGNESS TO PAY (WTP) FOR WEIGHT LOSS COACHING: RESULTS FROM THE POWER TRIAL**

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BACKGROUND: With two thirds of American adults currently over-weight or obese, there is a pressing need for affordable evidence based weight-loss interventions. Efficacious medical or behavioral weight-loss programs are not routinely covered by insurance. Commercially-available programs do not have rigorous evidence supporting their efficacy and effectiveness, and insurance companies have been reluctant to cover such interventions. Improving the evidentiary base for weight loss interventions and understanding how patients value weight loss interventions by assessing their willingness to pay (WTP) is a critical step in translating findings from effectiveness trials into practice. Upon completion of a randomized controlled trial comparing an in-person behavioral intervention to a phone/email/web-based intervention for weight-loss, we studied participants’ WTP and the characteristics associated with WTP for continuing their weight loss interventions.

METHODS: POWER Hopkins is an on-going NHLBI-funded 24-month randomized clinical trial of weight loss with a self directed control arm, and two active intervention groups: 1) an in-person directed (IPD) group with individual and group in-person interventions plus web-based education and tracking support; 2) a call-center directed (CCD) group with similar interventions delivered by telephone, web, and email. At the end-of-study visit, we conducted in-person interviews of the IPD and CCD participants to assess their valuation of services received, double bound dichotomous-choice WTP, and likelihood to actually purchase these products. We used linear regression to examine the baseline characteristics (age, sex, income, race, education, and BMI) associated with WTP.

RESULTS: Of the 234 adults who completed the trial to date, 206 (88%) completed the end of study WTP survey. Mean age was 57 years, 61% were women and 56.3% were White, mean BMI at baseline (2 years earlier) was 36.4 kg/m2, 33% had graduate or professional degrees, and 61% had annual family income >$75,000. 69.4% of participants were interested in continuing the intervention, and 46.6% were ready to actually sign up for the services they received in the next two months (Table). Participants thought their intervention was worth $70.9 (CI 60.3-81.4), and they were willing to pay $49.6/month (CI 44.8-54.3). Multivariate analysis identified race as the only predictor of WTP: White participants reported mean WTP that was $18.2 (CI 8.0-28.3) less than African American participants.

CONCLUSION: After completing a two-year trial, the majority of participants in both groups were interested in continuing their multifaceted weight-loss interventions, and were willing to pay similar rates to other commercially available products. The surprising racial differences in WTP seen in this high SES group needs to be further examined when trial weight results are available. After a free or fully subsidized period, it might be reasonable to implement a direct to consumer or cost sharing mechanism to better translate effective evidence-based weight loss interventions into practice.

DO FINANCIAL INCENTIVES FOR GUIDELINE ADHERENCE IMPROVE CARE OF HYPERTENSION IN THE PRIMARY CARE SETTINGS? A MULTI-SITE RCT Laura A. Petersen 1; Kate Simpson 1; Le Chauncy Woodard 1; Kenneth Pitz 1; Tracy Urech 1; Meghan Z. Lutschg 1; Sylvia J. Hysong 1; Douglas Conrad 2; Jochen Profilt 1; R. Adams Dudley 3; 1VA HSR&D Center of Excellence Health Policy and Quality Program and Baylor College of Medicine, Houston, Texas; 2Departments of Health Services and Finance and Business Economics, University of Washington, Seattle, Seattle, Washington; 3Department of Medicine and Institute for Health Policy Studies, University of California, San Francisco, San Francisco, California. (Tracking ID # 10771)

BACKGROUND: Few data exist regarding the effectiveness of pay-for-performance programs as a tool to change provider behavior and improve quality of care, and some claim that financial incentives for quality are unnecessary and/or ineffective in motivating physicians to improve care. Using a cluster randomized controlled trial (RCT), we evaluated whether participants who receive financial incentives in addition to audit and feedback for their performance in delivering guideline-recommended hypertension (HTN) care improved the quality of HTN care in the primary care setting.

METHODS: Eighty-three primary care physicians and 45 non-physician health care staff members from 12 VA primary care clinics in 11 states enrolled in a 20-month cluster RCT designed to assess the effectiveness of financial incentives in improving adherence to guideline-recommended HTN care as outlined in the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7). Participants at each hospital were cluster-randomized to one of four study arms: (1) physician-level incentives; (2) practice group-level incentives; (3) combined physician- and group-level incentives; or (4) control. Participants received an educational session about HTN management. At the end of each of five 4-month study periods, all participants received audit and feedback on their performance. Intervention-arm participants received monetary rewards based on their use of guideline-recommended antihypertensive medications and the proportion of their patients who achieved JNC 7 blood pressure (BP) goals or received appropriate treatment in response to an elevated BP reading. Appropriate treatment included prescribing a new or increasing the dose of a current medication, prescribing a lifestyle modification for patients with Stage 1 HTN, or a follow-up visit with a controlled BP reading. We included data from the 77 physicians who participated for at least two performance periods in a repeated measures model with covariates for arm, performance period, an arm x performance period interaction, and an indicator of whether or not the provider had received the “ceiling” value for that measure. We also performed backwards elimination on a maximal model including the above covariates as well as those with a scientific or statistical

Table 1:

|                | N (%)  | Worth          | WTP            |
|----------------|--------|----------------|----------------|
| All Participants| 206    | 70.9 (60.3-81.4) | 49.6 (44.8-54.3) |
| Call Center Directed | 104 (50.5%) | 68.5 (53.0-84.0) | 47.8 (41.1-54.6) |
| In Person Directed | 102 (49.5%) | 73.3 (58.5-88.0) | 51.3 (44.5-58.2) |
| Ready to continue | 143 (69.4%) | 74.2 (61.9-86.6) | 53.9 (48.3-59.5) |
| Ready to sign up  | 96  (46.6%) | 78.7 (62.9-94.5) | 58.4 (51.5-65.4) |
| White            | 116 (56.3%) | 61.5 (47.5-75.4) | 43.0 (37.1-48.9) |
| Non-White*       | 90  (43.7%) | 82.9 (66.7-99.3) | 58.0 (50.4-65.6) |

Mean (95% Confidence Interval) in US dollars

*Predominantly African American
RESULTS: Average total payment over the 20 month study period for a physician in the individual arm was $2,570. The rate of improvement in proportion of patients achieving BP control or receiving appropriate clinical response to uncontrolled BP from one performance period to the next was 1.5 percentage points greater for physicians in intervention arms than for physicians in the control arm (p<0.01). This means that, on average, for two study physicians with panel sizes of 1,000 patients each, the physician in the intervention arm would have 45 more patients achieving BP control or appropriate response to uncontrolled BP after one year of exposure to the intervention, whereas the control arm physician would have only three more patients meeting this measure after the same period. After controlling for the gender and average age of a physician’s patients and whether a physician practiced at a teaching hospital, this relationship remained significant (p<0.01). When the four study arms were compared, participants in group incentive arms showed no statistically significant differences from control arms.

CONCLUSION: Patients of physicians who received modest financial incentives in addition to audit and feedback for delivering guideline-recommended HTN care had greater rates of improvement in BP control or receiving an appropriate clinical response to uncontrolled BP than patients of physicians who received audit and feedback only. However, incentives targeted at individuals appear to be more effective than incentives targeted at groups. These results suggest that, if properly designed, performance-based health care payment models could improve the quality of health care. Our ongoing work is assessing whether incentives have unintended effects on patients or the health care delivery system.

READMISSION RISK MODELING: A SYSTEMATIC REVIEW Devan Kansagara 1; Honora Englander 2; Amanda Salanitro 3; David Kagen 4; Cecelia Theobald 3; Sunil Kripalani3; 1Portland VA Medical Center, Oregon Health and Science University, Portland, Oregon; 2Oregon Health and Science University, Portland, Oregon; 3Vanderbilt University, Nashville, Tennessee; 4Portland VA Medical Center, Portland, Oregon. (Tracking ID # 10779)

BACKGROUND: Easily deployed risk models able to accurately identify those at high-risk for hospital readmission could help target transitional care interventions to the most appropriate patients. In addition, the utility of readmission rates as a quality metric depends on accurate prediction of the readmission rate expected in a given population. We performed a systematic review of risk prediction models for hospital readmission.

METHODS: We searched Ovid MEDLINE, CINAHL, and the Cochrane Library (Central Trial Registry, Systematic Reviews, and Abstracts of Reviews of Effectiveness) from database inception through June 2010 for English-language studies of readmission risk prediction models for adult medical patients. We had searched reference lists of reviews and relevant articles. Each full-text article was independently assessed by two reviewers for inclusion. We only included models tested in both a derivation and validation cohort.

RESULTS: From 6089 abstracts, we reviewed 141 full-text articles. Thirty-two articles examining twenty risk models met inclusion criteria. Most of these modeled the risk of all-cause readmissions ranging from 30 days to one year post-discharge. Only one study specifically distinguished potentially preventable readmissions. Most models relied on readily available administrative data, though 8 of 20 models did incorporate primary data from surveys or chart review. The ability of most models to accurately distinguish high from low readmission risk was poor to fair (11/13 models with available data reported a c-statistic of <0.70; range 0.60–0.83). Almost all models (19/20) included comorbidity variables and most (17/20) included utilization variables such as prior hospitalization. Most models examined basic sociodemographic factors such as age, sex, and race, but only seven examined other patient characteristics such as social support, behavioral risks, and depression. Prior hospitalization was consistently among the factors most predictive of readmission. However, given the differences in populations and risk factors examined, it is unclear which other risk factors are consistently associated with readmission risk.

CONCLUSION: Many statistical models predicting readmission risk have been evaluated, but their predictive ability is modest. This may reflect the very complexity of factors that contribute to readmission risk. Many models use administrative data and could be readily deployed at a health system level, but limited accuracy may temper their utility as quality metric tools. Moreover, potentially important clinical and sociodemographic variables are often overlooked. Future studies should assess the value of modeling patient characteristics that could be targeted by interventions such as health literacy, depression, and medication adherence.

SERVICES AVAILABLE TO LATINO PATIENTS WITH DIABETES AT HEALTH CENTERS ACROSS THE MIDWEST Arshiva A. Baig 1; Cara Locklin 1; Amanda Campbell 2; Cynthia T. Schaefer 3; Loretta Heuer 4; Marla C. Solomon 1; Quinn T. Michael 1; Martin Vargas 5; Deborah L. Burnet 1; Marshall H. Chin 1; 1University of Chicago, Chicago, Illinois; 2MidWest Clinicians’ Network, Inc., Lansing, Michigan; 3University of Evansville, Evansville, Indiana; 4North Dakota State University, Fargo, North Dakota; 5Community Action Partnership of Western Nebraska, Gering, Nebraska. (Tracking ID # 10782)

BACKGROUND: Type 2 diabetes disproportionately affects the growing Latino population and causes a high burden of disease. Many Latino patients with diabetes have limited socioeconomic resources, and thus health centers play a crucial role in caring for them. In this study, we assess the availability of services provided to Latino patients with diabetes at health centers across the Midwest and whether services vary by proportion of Latinos with diabetes seen at the centers.

METHODS: We conducted a survey of providers that treat patients with diabetes at Federally Qualified Health Centers affiliated with the MidWest Clinicians’ Network (MWCN). A survey was mailed to 1475 providers at 99 health center sites across 10 Midwestern states. Providers included certified diabetes educators, certified medical assistants, dietitians, health educators, licensed practical nurses, physicians, physician assistants, registered nurses, advanced practice nurses, and social workers. Providers were asked about the access to: 1) different types of providers; 2) language services; 3) culturally-tailored diabetes services; 4) expanded clinic hours; and 4) community outreach services at their sites. Health center sites were categorized as low density (LD) if <25% of their diabetes patient population was Latino or high density (HD) if >25% their diabetes patient population was Latino.

RESULTS: We received responses from 622 providers (47% adjusted response rate) at 87 sites (88%) from all 10 states with an average of 6 respondents per site. Of all respondents, 247 (39%) were physicians, 131 (17%) were advanced practice nurses, and 60 (10%) were physician assistants. 266 (43%) providers stated they worked in HD sites. Table 1 describes results by high density and low density site providers. Cluster analyses by site did not show any difference in the outcomes listed.

CONCLUSION: Health center sites serving a high density Latino patient population with diabetes offered many specialized services such as Spanish-
speaking providers, on-site interpreters, culturally tailored diabetes programs and community outreach for their patients. However, there are many opportunities for improvement related to subspecialty access, language services, and culturally tailored programs at both HD and LD sites.

THE ASSOCIATION OF VARYING LEVELS OF ENGLISH ABILITY WITH GLUCOSE CONTROL AMONG LATINOS WITH DIABETES
Arshiya A. Baig 1; Cara Locklin 1; Edward Foley 2; Bernard Ewigman 1; David O Melzer 1; Elbert S Huang 1. 1University of Chicago, Chicago, Illinois; 2Macneal Hospital, Berwyn, Illinois. (Tracking ID # 10785)

BACKGROUND: English speaking ability may impact receipt of diabetes care and glucose control among Latinos. Most diabetes studies have treated ability to speak English as a dichotomous variable despite the fact that there are many levels of English speaking ability. As a result, it is unclear how varying levels may be associated with glucose control among Latinos. Our main objective was to assess the association of English speaking ability with glucose control among Latinos with diabetes.

METHODS: We analyzed a subset of 167 Latino adults with diabetes from a cross sectional survey of 676 adults with type 2 diabetes recruited at clinics in the Chicago area from May 2004 to May 2006. The main outcome of interest was inadequate glucose control, defined as a glycated hemoglobin (HbA1c) >=7.0%. The main exposure of interest was English speaking ability, which was categorized as a series of indicator variables self-reported as speaking English very well (referent), well, not very well, or not at all. Adjusted analyses accounted

### Table 1. Services to patients by site density

| Service                              | Providers at high density sites n=266 | Providers at low density sites n=354 | p-value |
|--------------------------------------|--------------------------------------|--------------------------------------|---------|
| **Often/usually have access to providers** |                                       |                                       |         |
| Access to endocrinologist            | 25%                                  | 34%                                  | 0.02    |
| Access to certified diabetes educator| 61%                                  | 51%                                  | 0.01    |
| **Often/usually have access to language services** |                                       |                                       |         |
| Spanish speaking providers           | 48%                                  | 26%                                  | <0.01   |
| On-site interpreter services         | 84%                                  | 59%                                  | <0.01   |
| **Culturally-tailored diabetes services** |                                       |                                       |         |
| Culturally tailored diabetes patient education | 64%                                  | 25%                                  | <0.01   |
| Culturally tailored nutrition counseling | 63%                                  | 22%                                  | <0.01   |
| Physical activity classes in Spanish  | 35%                                  | 4%                                   | <0.01   |
| **Expanded clinic hours**            |                                       |                                       |         |
| Evening hours for medical appointments | 77%                                  | 60%                                  | <0.01   |
| Weekend hours for medical appointments | 43%                                  | 38%                                  | 0.20    |
| **Community outreach**               |                                       |                                       |         |
| Community outreach workers           | 78%                                  | 52%                                  | <0.01   |
| Community partnerships               | 49%                                  | 19%                                  | <0.01   |
for age, gender, educational attainment, annual income, health insurance status, duration of diabetes in years, being born in the U.S. and number of years in the U.S.

RESULTS: In the sample, 38% reported speaking English very well, 21% reported speaking well, 26% reported speaking not very well and 14% said they did not speak English at all. Latinos who reported speaking English very well were more likely than the other groups to be younger, have graduated high school, and to have been born in the U.S. (all p < 0.01). Mean A1c was 8.0±1.9% for Latinos who spoke English very well, 6.0±1.1% for those who spoke well, 7.4±1.5% for those who spoke not very well, and 8.6±1.9% for those who spoke no English. In adjusted analyses, Latinos who spoke English well were less likely to have an HbA1c <7.0% (OR=0.31, 95% CI 0.10-0.96) compared to those who spoke English very well. The odds of having inadequate glycemic control did not differ statistically for those who reported speaking English not very well (OR=0.69, 95% CI 0.19-2.44) or not at all (OR=1.55, 95% CI 0.34-7.07) compared to those who spoke English very well.

CONCLUSION: English speaking ability has a variable association with glycemic control in Latino patients with diabetes. High English fluency may reflect acculturation and adoption of poor lifestyle habits while inability to speak English may reflect increased barriers to care and lack of access to resources for diabetes. Further studies are needed to elucidate the mechanisms by which language affects glucose control.

WEBSITE FOR AT-RISK ALCOHOL USE: HOW TO MAKE IT VISIBLE AND FOR WHOM? Nicolas Bertholet 1; Myriam Rege Walther 2; Bernard Burnand 2; Jean-Bernard Daeppen 1. 1Alcohol Treatment Center, Lausanne University Hospital, Lausanne, N/A; 2Health Care Evaluation Unit, University Institute of Social and Preventive Medicine, Lausanne, N/A. (Tracking ID # 10794)

BACKGROUND: Websites providing information and tailored feedback for at-risk alcohol use are increasingly used to reach a large population that does not necessarily access primary care practices. Such websites need to target individuals with at-risk alcohol use and to be visited.

METHODS: We developed a website offering general information on alcohol use and its consequences, screening, and brief intervention with tailored feedback. The website is in French. To increase its visibility, we conducted a media campaign in the French part of Switzerland. We assessed the characteristics and satisfaction of the users. To qualify the impact of the media campaign, we recorded the geographical provenance of the users.

RESULTS: Between July 15 and November 14 2010, 14938 visitors accessed the website and 86% completed the screening and received tailored feedback. General information pages represented 23% of all the visited pages. Most users were male (67%), mean age (SD) was 36.5 (13.6); 34% of men and 38% of women reported weekly risky use (>14 drinks for men, >7 for women), 54% of men and 30% of women reported binge drinking (>6 drinks/occasion) at least once a month. Of the 56% people with risky use (either weekly risky use, binge drinking once a month or both), 67% envisioned change after receiving the feedback. Among those (n=576) who completed the satisfaction survey, 98% said the website provided useful information, and 79% that they could recommend it to a friend. Most visits (84%) came from Switzerland.

CONCLUSION: People may visit websites providing information and personalized feedback on alcohol use on their own, but a media campaign appear to increase largely the number of visitors. Our website seems to target the appropriate users since at-risk alcohol use was overrepresented among users compared to the general population, and satisfaction was high. Most at-risk drinkers envisioned change after their visit.
described. In this study, we report on the usage patterns of clinical messaging within a large health system that was among the first nationally to adopt this technology. In addition, we also examine whether use within primary care differs by practice setting.

**METHODS:** We analyzed patient portal use over a ten-year period within a single academic health system. Clinical messages were defined as patient-initiated clinical correspondence sent to a physician or nurse practitioner, excluding appointment and prescription refill requests. We restricted the analysis to actively enrolled patients, defined as registered patients who had accessed the web portal within the preceding two years. We assessed trends in the number of actively enrolled patients, and message frequency per 100 actively enrolled patients as well as per provider. Analyses examining differences in clinical messaging by demographic and clinical characteristics using multivariate Poisson regression are currently underway. In preliminary analyses looking at usage patterns by practice setting, we analyzed 2010 data from three primary care practices with heterogeneous patient populations: an urban hospital-based practice, a satellite practice located in an underserved area, and a community health center serving primarily underserved patients. We analyzed the average number of messages/100 actively enrolled patients/month using the Kruskal-Wallis test. Analyses were performed using SAS 9.2 (Cary, NC).

**RESULTS:** At the close of 2010, approximately 50,000 patients were active users of the patient portal across all participating practices within the health system. The number of clinical messages grew steadily along with total number of patients. (Figure 1) Over the ten-year period, providers saw a near doubling of messages, from 15.9 (SD 2.1) to 31.2 (SD 3.8) messages per month. (Figure 2) The average number of messages per 100 actively enrolled patients per month decreased initially over the first two years from 37.2 (SD 3.0) in 2001 to 20.6 (SD 2.2) in 2003, and then stabilized at an average of 22.0 (SD 2.6) from 2004-2010. Among the subset of primary care practices, patient use of clinical messaging differed by the practice setting. The median number of clinical messages per 100 actively enrolled patient per month in 2010 was 21.5 (IQR 3.5) for the hospital-based practice, 17.4 (IQR 3.6) for the satellite practice in an underserved area, and 5.9 (IQR 4.0) for the community health center (p<0.001).

**CONCLUSION:** Patient portal registration and clinical messaging has steadily increased over the past decade. After starting at a relatively high level and decreasing over the first three years, the average number of clinical messages per user per month has remained relatively constant over the last seven years. The initial high volume may reflect an early-adopter effect for patients who were among the first to sign up for the patient-portal. Over the ten-year study period, the average number of messages per provider has nearly doubled as more patients per provider have become users of the portal. Within primary care, use of clinical messaging varied widely by practice setting among actively enrolled patients.
A MOBILE HEALTH APPLICATIONS NEEDS ASSESSMENT AT A LARGE ACADEMIC INSTITUTION Ida Sim 1; Raymund Dantes 1.
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BACKGROUND: Mobile communication devices present opportunities to improve health and disease management by expanding interventions beyond the reach of traditional, practitioner visit-based care. Already, 17% of cell phone users have used their phone to access health or medical information, and 9% of cell phone users have an application that helps them track or manage their health. The vast majority of mobile health applications operate independently in closed “silos” that do not communicate with other applications or electronic health records. At the University of California, San Francisco, a large, research-intensive health sciences public university and medical center, there is growing interest to establish a centralized infrastructure to support and encourage creation of mobile health applications for research projects as well as for clinical care. In this study, we sought to summarize the current experience of UCSF mobile health developers; and second, to assess the specific needs of future mobile health developers at UCSF, so that future campus-wide efforts can better support faculty, staff, and trainees in the development of new applications.

METHODS: We conducted a cross-sectional, mixed quantitative and qualitative web-based survey from August 29 to September 24, 2010 of all faculty, staff, trainees, and students of the University of California, San Francisco. Survey questions were formulated and piloted with the input of key stakeholders, including current mobile health developers and campus administration. Participants were solicited using a single email invitation jointly sent by the university provost and the chief information officer to all UCSF faculty, students, and staff. This includes approximately 24,000 people. Only email recipients with interest or experience in developing mobile health applications were asked to complete the survey. Participants received no financial or other material compensation. Participants were not required to answer every question. The survey began by asking whether the participant had current or prior experience developing mobile applications. Participants without prior experience were asked a total of 12 questions. Participants with prior mobile application experience were asked 9 additional questions about their experiences, for a total of 23 survey questions.

RESULTS: We received responses from 770 people, for an overall response rate of approximately 3%. 165 respondents indicated that they were currently or had been previously involved with developing a mobile application for use with patients, research participants, trainees, or colleagues. 22 respondents had applications that had already been deployed, 21 had project prototypes, and 34 had projects under design. Common barriers encountered by developers included high initial costs, procuring funding, data security, and technical development. Enthusiasm for mobile health development services was very high among hundreds of survey respondents. 515 (95%) respondents “would consider” or “definitely use” campus-based mobile health development services if they were available. The intended functions of mobile health applications were diverse. The majority of respondents said their applications would be used for research (66%), patient care (62%), and health education (58%). Nearly half would use mobile applications for health monitoring (49%), and 42% would use applications for clinical teaching. Respondents were also more interested in building applications for low socioeconomic status (SES) populations compared to middle or high SES populations (37% vs. 31% and 25%). Nearly one-third of respondents wanted to develop applications for low English or low health literacy populations. Respondents indicated they would like additional support in all steps of mobile application development, but more requested support in “technical development” (65%), “building a user interface” (59%), “programming/coding” (54%), and “application testing/refinement” (53%).

CONCLUSION: We discovered there are already at least 165 mobile health development projects at UCSF, with dozens of projects already deployed or in prototype stages. We also discovered there are 515 UCSF community members who have mobile health ideas they would consider or definitely develop if support services were available. There was high enthusiasm for using mobile health applications for patient care, research, and health education. There was also significant enthusiasm for building applications for low SES, low English, and low health literacy populations. To our knowledge, there is no other publically available survey of mobile health technologies at a similar academic institution. This needs assessment survey of potential mobile health developers was designed to guide the development of mobile health development services at our institution. Based on our quantitative and qualitative results, we recommend that such services prioritize technical services, including programming and secure data management. These services should be flexible enough to assist in the creation of education, research, and patient care applications. The emergence of mobile health technologies is an unprecedented new technology that will have significant but still unpredictable effects on the future of patient care, medical research, and education. Academic institutions should consider which technical, consultative, and infrastructure services are needed to enable faculty, staff, and trainees to most effectively advance the use and science of mobile health.

IMPACT OF WORKLOAD ON PATIENT SAFETY AND QUALITY OF CARE: A SURVEY OF AN ONLINE COMMUNITY OF HOSPITALISTS Henry Michtalik 1; Peter J Pronovost 1; Brian Driscoll 2; Michael Farkawitz 2; Daniel Brotman 1; Johns Hopkins University, Baltimore, Maryland; 2Quantia Communications, Waltham, Massachusetts. (Tracking ID # 10808)

BACKGROUND: Studies of the impact of provider workload on patient safety and quality of care have primarily focused on nurses and resident physicians, but not attending physicians. We examined the relationship between workload and patient safety and quality via a survey of an online community of Hospitalists.

METHODS: We electronically surveyed 890 self-identified Hospitalists enrolled in QuantiaMD.com, an online physician community which provides continuing medical education and a national discussion forum. Participants received a secure e-mail link to the online survey and were awarded $10 at completion. The survey queried physician and practice characteristics, workload, frequency of an unsafe census, and what a “safe” workload would be in his/her setting. “Safe” was defined as “with minimal potential for error or harm.” Physicians also rated the impact of average census on process and outcome measures using a Likert scale ranging from 1 (Never/Definitely Not) to 5 (Very Often/Definitely).

RESULTS: Of the 890 physicians contacted, 506 (57%) responded. Five (1%) were excluded for not completing the survey. Physicians had an average age of 38.3 years (SD: ±8.4) and were in practice for a median of 6 years (IQR: 3, 10). The majority identified their primary practice area as adult (78%), pediatric (1%), or combined med/peds (2%) hospital medicine. Physicians practiced in an urban (46%),
suburban (43%), and rural (11%) setting and primarily as part of a community hospital (54%), academic teaching hospital (28%), or private group (12%). Forty percent of physicians reported that their typical inpatient census exceeded safe levels at least monthly and 36% of these reported a frequency greater than once per week. When the average actual workload was compared to the perceived safe workload, 40% of physicians exceeded their own reported safe level. Physicians reported that their patient load often (>4/5) led to incomplete patient/family discussions (25%), ordering potentially unnecessary tests or procedures (22%), delaying admitting or discharging patients until the next shift or day (22%), cross-covering (20%) or caring (17%) for too many patients, worsened patient satisfaction (19%), poorer handoffs (18%), increased 30-day readmission (14%), worsened overall quality of care (12%), failure to promptly act on critical findings (10%), and treatment errors (7%). With respect to adverse events, physicians reported that workload has likely >4/5 caused transfers to higher levels of care (10%), morbidity/complications (7%), mortality (5%), and incident reports (6%).

CONCLUSION: Hospitalists currently report unsafe workloads that expose patients to poorer quality of care and adverse events. Forty percent of Hospitalists reported an unsafe workload at least monthly. Over 20% of Hospitalists reported workload has often caused incomplete patient discussions, unnecessary tests and procedures, admission/discharge delays, and excessive cross-coverage. Over 20% of Hospitalists also reported that workload has likely caused patient transfers, morbidity, or mortality. Hospitalist workload may be adversely affecting patient safety and quality of care and should be further explored.

INAPPROPRIATE TESTING FOR URINARY TRACT INFECTION IN HOSPITALIZED PATIENTS: AN OPPORTUNITY FOR IMPROVEMENT
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BACKGROUND: Urinary tract infection (UTI) is the second most common bacterial infection leading to hospitalization, accounting for 40% of nosocomial infections. Despite the high prevalence of UTI, variability in diagnostic testing and treatment of UTI among hospitalized patients is common and can lead to inappropriate antibiotic use and subsequent antibiotic resistance. We therefore sought to determine the appropriateness of urine culture for UTI and its impact on antimicrobial prescribing.

METHODS: We randomly selected patients admitted to a large academic center between Feb 2008 and Feb 2009 who had urine cultures obtained during the hospital stay. Patients were excluded if they were admitted to intensive care, had a major urinary procedure (e.g., renal transplant, diversion, or stents), were actively being treated for a UTI at the time of admission, started on treatment >48 hours prior to urine collection while admitted, or were an obstetrics patient. Retrospective chart review was independently performed by two physicians to determine the presence of signs or symptoms of a UTI, presence of a urinary catheter, antibiotic administration and urine culture results. Determination of appropriateness for sending urine cultures was compiled from national and professional society guidelines (i.e., from the Centers of Disease Control and Prevention and the Infectious Disease Society of America).

RESULTS: Of the 210 patients included, 97 (46%) patients had an appropriate reason documented to obtain a urine culture. The majority of these (72%) had fever. Urinary symptoms were infrequent, occurring in 22%. In 113 (53.8%) patients no guideline-accepted criterion for obtaining a urine culture was found. Of these 113 patients, 41% had no documented indication for culture while 67 patients (59%) had documented reasons that were not consistent with guidelines, including orthopedic procedures (21%) and altered mental status without a urinary catheter (14%). Of all 210 patients 84% had negative urine cultures. Culture negativity was similar regardless of the presence or absence of indications supported by the guidelines (84% vs. 84%). Of the culture-negative patients, 45% were on antibiotics within 48 hours prior to urine collection. More than 10% of culture-negative patients were started on antibiotics for UTI within 72 hours after culture. The kappa statistic on indications for culture was 0.89, indicating excellent inter-rater agreement.

CONCLUSION: In over one half of hospitalized patients, urine cultures are obtained outside of accepted criteria, often being sent for reasons other than urinary symptoms. In these scenarios, complicating factors included insufficient supporting data (orthopedic procedures) or nonspecific symptoms (altered mental status), which might include UTI in the differential diagnosis. Urine cultures infrequently generated new antibiotic use, perhaps due to high rates of preexisting antimicrobial use. Guidelines relevant to the hospitalized patient are urgently needed.

VALIDATION STUDY OF HEMOGLOBIN A1C THRESHOLD FOR DIAGNOSING DIABETES: THE ASSOCIATION BETWEEN HEMOGLOBIN A1C LEVELS AND 3-YEAR INCIDENCE OF RETINOPATHY
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BACKGROUND: In 2010, the American Diabetes Association for the first time incorporated hemoglobin A1C (Hgb A1C) level of 6.5% as the diagnostic threshold for diabetes. Experts have historically used the outcomes of retinopathy as the benchmark for defining the diagnosis of diabetes. Due to scarce data on the relationship between Hgb A1C and the incidence of retinopathy, the expert panel relied primarily on several cross-sectional studies examining the association between Hgb A1C levels and the prevalence of retinopathy. In addition, these previous studies were methodologically limited by the lack of adjustment for participants who were pharmacologically treated for diabetes, and by residual confounding from other independent risk factors of retinopathy such as hypertension. To test the validity of the current Hgb A1C thresholds for the diagnosis of diabetes, we conducted the largest longitudinal study to date, and examined the association between Hgb A1C levels and 3-year incidence of retinopathy.

METHODS: We analyzed data from a cohort of 21,137 unselected Japanese adults aged 21 and older who underwent a preventive health check-up between January 1st and December 31st 2006, and returned for follow-up health check-up 3 years later at a medical center in Tokyo, Japan. Fundoscopic digital photos were systematically taken for both eyes for all participants at these check-ups and evaluated by clinical ophthalmologists. Retinopathy was defined as the presence of hard exudates, soft exudates, or retinal hemorrhages. We excluded those with retinopathy at baseline (n=237), with missing information on baseline Hgb A1C (n=24), baseline fundoscopic exams (n=523), or follow-up fundoscopic data (n=371). We conducted a series of logistic regression
models to examine the relationship between baseline Hgb A1C levels and the incidence of retinopathy at 3 years adjusting for baseline demographic factors, those with diabetes receiving treatment, and confounding risk factors for retinopathy.

**RESULTS:** Of the 19,982 participants in our analytic sample, approximately 49% were male. The mean age (SD) was 50.8 (11.5) years old, the mean body-mass index was 22.5 (3.3) kg/m2, the mean Hgb A1C was 5.6 (0.6) %, and the mean fasting blood glucose was 100.3 (14.6) mg/dL; 4.5% had diabetes at baseline using Hgb A1C threshold of 6.5%. At 3 years, the cumulative incidence of retinopathy was 0.86% (172/19,982). Compared to those with an Hgb A1C level of 5.0-5.4 % (the reference category), adults with Hgb A1C of 6.5-6.9% were associated with a significantly higher risk of developing retinopathy [odds ratio (OR): 3.83, 95% confidence interval (CI): 1.88-7.81, p<0.001] (see Table). This risk remained statistically different after the adjustment for blood pressure, hypertension treatment, low-density lipoprotein, high-density lipoprotein, and diabetes treatment [OR: 2.19, 95% CI: 1.03-4.66, p=0.041]. Those with Hgb A1C between 5.5 and 6.4% did not exhibit higher risk of retinopathy relative to the reference group.

**CONCLUSION:** Our results support current American Diabetes Association guidelines recommending using Hgb A1C level of 6.5% or higher as the threshold for the diagnosis of diabetes.

### Table. Odd ratios (OR) for developing new retinopathy across different baseline Hgb A1c

| Hgb A1C (%) | Sample size | Unadjusted model | Model 1 §¹ | Model 2 §² |
|-------------|-------------|-----------------|------------|------------|
|             | OR  | 95% CI  | p  | OR  | 95% CI  | p  | OR  | 95% CI  | p  |
| <5.0        | 1,698 | 0.77   | 0.37 to 1.62 | 0.49 | 0.95   | 0.45 to 2.01 | 0.89 | 0.95   | 0.45 to 2.00 | 0.89 |
| 5.0-5.4(ref) | 9,169 | 1.00   | 1.00 | 1.00 | 1.00   | 1.00 |
| 5.5-5.9     | 6,230 | 1.34   | 0.92 to 1.97 | 0.13 | 1.04   | 0.70 to 1.53 | 0.86 | 1.04   | 0.70 to 1.54 | 0.85 |
| 6.0-6.4     | 1,983 | 1.49   | 0.87 to 2.54 | 0.14 | 0.95   | 0.55 to 1.65 | 0.86 | 0.94   | 0.54 to 1.64 | 0.84 |
| 6.5-6.9     | 391   | 3.83*  | 1.88 to 7.81 | <0.001 | 2.39*  | 1.15 to 4.98 | 0.02 | 2.19*  | 1.03 to 4.66 | 0.041 |
| 7.0-7.4     | 197   | 2.52   | 0.78 to 8.11 | 0.12 | 1.40   | 0.43 to 4.61 | 0.58 | 1.15   | 0.33 to 3.98 | 0.83 |
| 7.5-7.9     | 118   | 10.26* | 4.58 to 23.01 | <0.001 | 6.04*  | 2.60 to 14.04 | <0.001 | 4.55*  | 1.71 to 12.11 | 0.002 |
| ≥8.0        | 195   | 18.60* | 10.92 to 31.66 | <0.001 | 13.37* | 7.57 to 23.62 | <0.001 | 10.52* | 5.18 to 21.37 | <0.001 |

§¹ Adjusted for age, sex, systolic and diastolic blood pressure, hypertension treatment, LDL and HDL.
§² Adjusted for the variables in Model 1 plus diabetes treatment.
* p-value < 0.05

### THE BURDEN OF CHRONIC DISEASE AMONG THE BHUTANESE REFUGEE POPULATION AT A US URBAN CLINIC

**Background:** Since the 1980 s, the government of Bhutan, a small impoverished country in Asia, enacted several policies that discriminate against minority ethnic groups living in Bhutan. Facing discrimination and prosecution, an estimated 80,000 people have fled to U.N. refugee camps in Nepal. To date, thousands of refugees have been resettled in countries across the globe including the US. From March 2008 to April 2009, an estimated 1,600 Bhutanese resettled in Atlanta. The Grady Refugee Clinic (GRC) cares for the Bhutanese refugee population in and around metro Atlanta.

In addition to the myriad of struggles facing these patients, many must also cope with the burden of chronic disease. While an increasing prevalence of chronic diseases has been noted among other refugee groups in the United States, it is unclear the magnitude of this burden in this Bhutanese refugee population.

The main objective of this study was to determine the prevalence of certain chronic diseases among the Bhutanese refugee population within this US urban clinic and compare these rates to selected populations.

**Methods:** A retrospective cross-sectional study was performed using 66 patient charts of Bhutanese refugees seen in the refugee clinic at GMH. Inclusion in the study required meeting the following eligibility criteria: 1) resettled Bhutanese refugee, 2) 18 years of age or older, and 3) seen in the clinic from September 2009 and August 2010. Data were abstracted on selected patient characteristics and certain chronic disease conditions, specifically overweight, obesity, diabetes, and hypertension using a standard data collection form. Diagnoses of these conditions were made using expert national clinical guidelines for each of the conditions (e.g., JNC 7 report for hypertension).

**Results:** In the clinic population, hypertension was present in 23% (n=15), diabetes in 14% (n=9), overweight in 42% (BMI cut-off of 25-29.9 kg/m2; n=28), and obesity in 9% (BMI cut-off of >30 kg/m2; n=6). The prevalence of diabetes is significantly higher among the refugee patients seen in our clinic than the Nepali population (13.5% vs 3.9%, respectively; pp=0.099). The prevalence of overweight and/or obesity is higher among the GRC patients than the Nepali population (51.5% vs. 8.9%; p=0.229) and the Bhutanese general population (52%; p=0.192).

There is no significant difference in prevalence of HTN between the GRC patients (22.7%) and the US (24.2%), Nepali (18.7%), and Bhutanese (22.1%) general populations.

**Conclusion:** This study demonstrates that the Bhutanese refugee population in our urban clinic faces a significant chronic disease burden. It is unclear why such a significant burden exists in this population. Possible explanations include exposures in refugee camps, poor access to care, decreased activity level, stress and depression, acculturation, and adopting unhealthy western behaviors. Exploring the determinants of chronic disease is needed as it...
implementing faculty oversight of intern written sign-out

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Background: Recently the accreditation council for graduate medical education mandated residency training programs to monitor and teach safe hand-off practices. resident trainees manage hand-offs with written, verbal or combined methods of sign-out communication. Although poor sign-out contributes to medical errors, there are limited resources available for faculty to assess the content of sign-out, and teach sign-out skills.

Methods: Based on observed deficiencies in sign-out at our institution we developed a curriculum incorporating the SIGNOUT mnemonic. The curriculum was paired with weekly faculty evaluation and feedback using a novel structured sign-out evaluation tool. We compared the inclusion of sign-out content, organization and readability in 177 written sign-outs during implementation of the paired curriculum and faculty feedback with 128 written sign-outs prior to implementation.

Results: The pairing of a one-page curriculum with weekly faculty evaluation of written sign-out improved the inclusion of advanced directives from 38% to 67% (p<0.001) and anticipatory guidance from a mean score of 1.8 [SD 1.2] to 2.3 [SD 1.5] on a 5 point Likert scale (p<0.001) by blinded review of sign-out by two independent senior residents. Readability and organization of written sign-out was unchanged.

Conclusion: A simple curriculum on sign-out content and organization paired with faculty evaluation and feedback can improve some parameters of sign-out. Prompting faculty with a structured evaluation tool of sign-out may be a useful way to improve and teach sign-out skills, as well as satisfy regulatory requirements to monitor and teach safe hand-off practices.

use of clinical vignettes to measure adherence to a point-based vte risk assessment tool: a comparison between internal medicine residents and hospitalist attendings.

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Background: Venous thromboembolism (VTE) remains a major cause of morbidity and mortality in hospitalized patients. Evolving guidelines for appropriate VTE prophylaxis have been endorsed by the American college of chest physicians (ACCP) for decades; however, appropriate prophylaxis remains underutilized. One possible explanation is that a commonly used point-based VTE risk assessment is too complex to use reliably, and might lead to inaccurate VTE risk stratification and inappropriate prophylaxis. To evaluate this possibility, we constructed clinical vignettes to measure and compare adherence to VTE guidelines between internal medicine residents and attendings.

Methods: Fifteen clinical vignettes of de-identified cases admitted to a general medical service through our emergency department were reviewed by internal medicine residents and attendings. Prior to completing the vignettes, all physicians received written and oral instructions. Each session lasted 60 minutes and was proctored by the author MJB. After reading each vignette, all physicians were asked to stratify each vignette as low, medium, or high VTE risk; identify contraindications to pharmacologic prophylaxis with low molecular weight heparin; and formulate a VTE prophylaxis plan. Responses were evaluated for appropriateness by MJB. The vignettes were scored as appropriate, over-prophylaxis, or under-prophylaxis based on the initial risk assessment and consideration of documented contraindications.

Results: Fifteen vignettes were reviewed by 36 residents and thirteen attendings. As an aggregate, the residents stratified 21%, 37%, and 43% of the vignettes as low, moderate, or high VTE risk, respectively. The attendings stratified 18%, 31%, and 51% as low, moderate, or high VTE risk, respectively. Resident guideline adherence was 65% compared to 78% by attendings. Over-prophylaxis occurred in 28% of resident responses, and in 14% of attendings’ responses. Under-prophylaxis occurred in 7% of resident responses, and in 8% of attendings’ responses.

Conclusion: Using clinical vignettes, our study demonstrates that, when using a point-based VTE risk assessment tool, attending physicians adhere to the guidelines by prescribing risk appropriate VTE prophylaxis more often than residents. Additionally, residents appear to underestimate VTE risk and over-prophylax more often than attending physicians. Under-prophylaxis was similar between the two groups. This suggests that appropriate VTE prophylaxis may be a teachable skill, and reinforces the ACCP statement that an educational approach should be part of any institution’s VTE prevention strategy. This is especially true when an institution is using a point-based VTE risk assessment tool and/or has medical residents performing this task.

To refer or not to refer obesity: are primary care physicians addressing the question?

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Background: The prevalence of obesity, along with patients who are overweight, now encompasses that of over half of the United States adult population. The potential impact obesity has on quality of life, including mortality, is now a prominent focus of current health policy. One goal of the Healthy People 2020 objectives is to increase the proportion of primary care physicians who regularly measure Body Mass Index (BMI). Additionally, obesity has been linked to diverse illnesses including type 2 diabetes mellitus, metabolic syndrome, hypertension, hyperlipidemia and cardiovascular disease (CVD) and carries a large economic burden on our nation’s health care expenditures. Previous studies demonstrate that patients are actually receiving less guidance from physicians in the primary care setting.

Methods: As part of routine clinical care at the University of Pittsburgh Medical Center’s Oakland Practice, patients complete routine screening questions on the Division’s computerized questionnaire, The Functional Assessment Screening Tablet (FAST). Utilizing cross-sectional data, a random sample of 350 patients were selected with self-reported high or low CVD risk factors including those with weight-related comorbidities. We examined the frequency distribution of measured body status according to self-perceived weight status, as well as physician documentation of weight status assessment abstracted from the medical record during a 12-month timeframe. The primary outcomes of interest are whether physicians offered patients with obesity a weight intervention (either a referral to a weight loss program, in-office weight counseling or pharmacotherapy). T tests, chi-square analyses and logistic regression were performed using a significance level of <0.05.
RESULTS: The overall sample was primarily female (62.8%) and the characteristics of the patients in each of the two cardiovascular strata included 72.2% female in the low-risk group with a mean BMI of 26.3 (SD 5.52) and 53.4% female with a mean BMI of 30.4 (SD 7.1) in the high-risk cardiovascular group (p<0.001). In the low and high-risk groups, 16.5% and 40.6% of the patients were obese while 32.9% and 37.4% were overweight based on BMI (p<0.001). The majority of patients in the low-risk strata appeared to accurately self-report a healthy perceived weight (53.6%) compared to an overestimation of self-reported healthy weight 35.9% in the high-risk strata (p=0.003). Using SAS software, multivariable logistic regression using backward selection demonstrated that BMI was significant with an adjusted odds ratio of 1.13 (95% CI 1.08-1.2) for physicians offering weight loss interventions.

CONCLUSION: Patients who are not afflicted with comorbid health conditions associated with obesity tend to have a more accurate self-perception of their individual body weight status. BMI predicted whether a physician offers a weight intervention. This information provides insight into how physicians may tailor their assessments, likely due to the time constraints of practicing in an outpatient setting.

PATIENT-CENTERED MEDICAL HOMES AND QUALITY OF PRIMARY CARE FOR CHILDREN: RESULTS FROM A NATIONAL SURVEY Jaya Aysola, Asaf Bitton, John Z. Ayanian. 1Harvard Medical School, Boston, Massachusetts; 2Dept. of Health Care Policy, Harvard Medical School, Boston, Massachusetts. (Tracking ID # 10834)

BACKGROUND: Patient-centered medical homes (PCMH) have gained prominence as models for more coordinated and cost-effective primary care. However, the impact of these models on quality of care merits further evaluation. We examined a large national survey to assess the association of medical homes with several indicators of quality of primary care for children.

METHODS: We analyzed the 2007/2008 National Survey of Children’s Health (NSCH), a nationally representative cross-sectional survey of parents/guardians of children, ages 0–17 (n=91,642). The primary predictor was access to a patient/family centered medical home (PCMH), measured by a composite score constructed from 19 NSCH survey questions related to the American Academy of Pediatrics’ definition of PCMH. We analyzed nine measures of quality of care, including number of preventive medical and dental care visits, receipt of appropriate immunizations and developmental screenings, and the absence of unmet health care needs. In the subset of children with specified chronic conditions, including asthma and mental health disorders, we examined the association of the medical homes with the number of missed school days and receipt of needed mental health services, respectively. In multivariable regression models we assessed the association of medical homes with each quality measure, adjusting for age, gender, race, insurance, poverty, parental education level, primary language, family structure, household employment, geographic region and special health care needs. Analyses were conducted with SUDAAN software to account for the complex survey design.

RESULTS: Access to medical homes was reported for 62% of all children and was more common among children who were Non-Hispanic white, privately insured, in higher income households, and without special health care needs. In adjusted analyses, children with a medical home were more likely than those without a medical home to have one or more preventive medical visits (adjusted OR (aOR) 1.25; 95% CI: 1.11, 1.41) and to receive developmental screenings (aOR 1.25; 95% CI: 1.04, 1.51), and much less likely to have any unmet medical needs (aOR 0.27; 95% CI: 0.23, 0.32). Parents/guardians of children with medical homes as compared to those without reported that they were more likely to have medical providers ask about their child’s development (aOR 1.54; 95% CI: 1.34, 1.78). In contrast, among children with behavioral or developmental disorders, those with medical homes were less likely to receive needed mental health services than those without (aOR 0.65; 95% CI: 0.49, 0.85). Among children with asthma (n=7518), the mean adjusted number of missed school days due to illness were days lower among those with a medical home than those without a medical home (5.0±0.3 vs. 6.7±0.5, p<0.001).

CONCLUSION: Patient-centered medical homes were associated with improved quality of care on some but not all pediatric measures. Our results underscore the benefits of the medical home model in primary care while highlighting areas for improvement. As plans for broad implementation of the patient-centered medical home proceed, evaluations of medical homes should assess the need for improved care coordination for mental health services.

BRIEF VERSUS EXTENDED COUNSELING FOR HIV CLINIC BASED BUPRENORPHINE TREATMENT OF OPIOID DEPENDENCE Jeanette Tetrault, Brent Moore, Declan Barry, Patrick O’Connor, Richard Schottenfeld, David Fiellin, Lynn Sullivan. Yale University School of Medicine, New Haven, Connecticut. (Tracking ID # 10835)

BACKGROUND: Untreated opioid dependence adversely affects HIV outcomes. Integrating buprenorphine into HIV treatment settings is feasible. However, the optimal level of counseling to augment pharmacotherapy for opioid dependent, HIV-infected patients has not been established.

METHODS: We conducted a 12-week randomized clinical trial of physician management (PM) versus PM plus enhanced medical management (EMM). All subjects received buprenorphine treatment. PM was a brief, manual guided counseling strategy and EMM was an expanded nurse administered drug counseling strategy that included antiretroviral (ARV) and buprenorphine adherence. The primary outcomes were percentage of opioid negative urine toxicologies, maximum duration of continuous abstinence from illicit opioids, buprenorphine treatment retention, CD4 count and percentage of subjects with non-detectable HIV viral load. Study group differences on treatment retention were evaluated using the Mantel Cox log rank test; differences on other outcome variables were examined using chi-square tests for categorical data and t-tests for continuous data. General estimating equations (GEE) were used for categorical repeated measure outcomes, and mixed-model ANOVA’s for continuous repeated measures.

RESULTS: 47 subjects were enrolled and randomized. There were no differences in baseline characteristics between the two groups with the exception of duration of HIV disease (15.4 years in the PM group vs. 8.7 years in the PM + EMM group, p=0.001). At 12 weeks, there were no differences between the two groups in percentage of opioid negative urines (61.6% PM vs. 69.0% PM + EMM, p=0.5) or maximum duration of continuous abstinence (4.9 weeks PM vs. 5.2 weeks PM + EMM, p=0.8). There was a trend toward increased retention in the PM group compared with the PM + EMM group (80% vs. 59%, p=0.1). CD4 counts increased from 312 at baseline to 336 cells/mm3 at 12 weeks in the PM group and from 295 to 308 cells/mm3 in the PM + EMM group (p=0.9). The percentage of subjects with non-detectable HIV viral load decreased from 69% at baseline to 35% at 12 weeks in the PM group and from 65% to 52% in the PM + EMM group (p=0.01).

CONCLUSION: Patients receiving buprenorphine along with PM and PM + EMM in a HIV clinical setting demonstrated a high degree of opioid abstinence, treatment retention, and a decrease in HIV viral load.
However, we were unable to detect a difference in efficacy between PM and PM + EMM, though there was a trend toward increased retention and greater decrease in viral load with PM only. Strategies to optimize counseling approaches and impact both opioid dependence and HIV outcomes for this specialized population are needed.

**PAYMENT SOURCE AS AN ADJUSTMENT FOR HOSPITAL READMISSION RATES**

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**BACKGROUND:** Preventable readmissions are among the measures increasingly used to evaluate the quality of hospital care. Current risk-adjustment methods may not be sufficient to account for the susceptibility of low-income individuals to more frequent hospitalizations, which can result in disproportionately higher than expected readmission rates for safety-net hospitals. We therefore examined the residual effect of payment source, a surrogate for socio-economic status and age, on predicted readmission rates after adjustment for case-mix and severity of illness.

**METHODS:** We used administrative data from January 2005 through April 2007 from 165 Florida hospitals with at least 2,000 eligible admissions, comprising 4,626,909 hospitalizations. Each admission was linked at the patient level so that readmissions to any hospital could be identified. We identified 30-day preventable readmissions to any hospital using Potentially Preventable Readmissions (PPR), a method that determines preventability of repeat hospitalizations based on whether there is a plausible causative relationship between the reason for the initial admission (IA) and the readmission (RA). We used All Patient Refined Diagnosis Related Groups (APR DRGs) to categorize reasons for hospitalization, and to adjust for severity of illness (SOI). Each eligible admission was assigned to a base APR DRG and to one of 4 SOI levels within the APR DRG. We calculated an expected readmission rate for each hospital using indirect standardization of statewide average rates within each APR DRG and severity level. We then examined overall expected and actual PPR rates within categories of patient age, the presence of a major mental health or substance abuse diagnosis, and categories of payer source. We used regression analysis to examine the influence of each of these factors on the accuracy of the PPR rate, and to generate modifications to the APR DRG risk adjustment.

**RESULTS:** Actual PPR rates for individual hospitals ranged from 2.27% to 20.79%, and ranged from 2.42% below to 8.18% above the expected rates derived from statewide averages. In the examination of payer source, the PPR model underestimated the statewide rate for Medicare patients (10.3% predicted versus 11.2% actual) and Medicaid patients (7.7% predicted versus 9.0 actual), while it overestimated the PPR rate for commercial insurance (6.7% predicted vs. 5.1% actual). We used coefficients derived from regression analysis to create adjustment factors for payment source and applied them to the standard APR DRG model, yielding predicted overall PPR rates much closer to the actual values for Medicare (11.16% v. 11.24% actual), Medicaid (8.88% v. 8.98% actual), and Commercial insurance (5.08% v. 5.10%).

**CONCLUSION:** There appear to be additional risks for preventable readmissions associated with payment source that are not measured in the PPR risk adjustment mechanism using APR DRGs. This study shows that adjustments for payment source, and likely for other socio-demographic variables (education, income), when available, can be readily incorporated into a risk-adjustment model. Not adjusting for payment source, and implicitly for the effects of poverty (Medicaid) and age (Medicare) could unfairly penalize hospitals that care for disproportionate shares of Medicare and Medicaid patients, while simultaneously favoring hospitals with larger numbers of privately insured patients.

**TRANSLATING MEDICAL STUDENT KNOWLEDGE OF QUALITY IMPROVEMENT: A QUALITY IMPROVEMENT PILOT CURRICULUM DEMONSTRATION**

**Jason Fish 1; Carl Stevens 1; LuAnn Wilkerson 1.**

**BACKGROUND:** With a persistent gap between evidence-based best practices and actual medical care in the US, healthcare systems are investing deeply in the integration of quality improvement (QI) methods but are lacking a physician workforce committed to and trained in project-based QI methodology. To address this, we developed and piloted a QI curriculum, embedding QI didactic and practical elements in the core third year internal medicine clerkship.

**METHODS:** The curriculum includes didactics on basic principles of QI methodology and health services research. In 2009–2010, 23 students were exposed, and assessment of all third year medical students’ ability to develop any structured QI strategy was determined using the Objective Structured Clinical Examination. The grading of the exam focused on broad QI categories.

**RESULTS:** The mean score on the exam was 43%. Those students exposed to the curriculum scored 20.9% higher than those students not exposed (p less than 0.001). We also found that those students participating in the QI pilot curriculum scored 21.1% higher than those students not participating in the curriculum (p less than 0.001), controlling for all students reporting exposure to some other QI didactics or QI projects (neither of which were significant in the multivariate model). Using t-tests, we identified that students in the pilot curriculum were more likely to recognize the importance of identifying key stakeholders, current institutional processes, and the need for continuous evaluation.

**CONCLUSION:** Our data indicates that our pilot demonstration of a QI curriculum using QI and health services methodology, coupled with practical business modeling tools, improved our students’ ability to recognize opportunities for QI and develop key strategies for improving quality. Yet, our data also indicates that students still have difficulty applying QI to clinical practice. More research is needed to identify how best to teach QI to medical students in a way that translates into appropriate application.

**HOW DO RESIDENTS LEARN TO PERFORM HIGH-QUALITY DISCHARGE CARE? A STUDY OF PROFESSIONALIZATION AND CORE COMPETENCY DEVELOPMENT**

**S. Ryan Greysen 1; Danise Schillero 2; Leora Horwitz 3; Leslie Curry 4; Martha Radford 2; Elizabeth Bradley 4.**

**BACKGROUND:** The Accrediting Council for Graduate Medical Education requires residents to develop competency in Systems Based Practice (SBP) and Practice-Based Learning Improvement (PBLI), however, we have limited understanding about how and when residents develop these competencies as they progress through training. Discharge care, an intrinsically systems-based practice, is
an ideal setting to explore opportunities and challenges for competency development in SBP and PBLI during post-graduate medical education.

**METHODS:** We employed a qualitative approach using in-depth, in-person interviews to describe the discharge process from the perspective of residents and to generate hypotheses about how residents learn to perform high-quality discharge care. We developed a purposeful sample of participants with attention to post-graduate year, gender, and experience in two internal medicine training programs, Yale and New York University (NYU), to ensure a wide breadth of experiences. We have completed 17 interviews with Yale residents and have begun enrollment of residents at NYU. Interviews were professionally transcribed and independently coded by two investigators using the constant comparative method and discrepancies were resolved by consensus. Additionally, three senior team members with diverse backgrounds and experiences provided layered input for coded transcripts. Thematic analysis was performed by the entire research team.

**RESULTS:** We analyzed transcripts from 17 residents: Ten (59%) were seniors (PGY-2 or PGY-3), seven (41%) were interns (PGY-1), and ten (59%) were female. Interns and seniors differed in their understanding of four aspects of discharge care: teamwork, uncertainty, safety, and continuity. Regarding teamwork, interns focused on collaborating with other physicians, while seniors recognized the interdisciplinary nature of discharge planning and engaged nurses, social workers, and case managers as part of the discharge team. While all participants described challenges with the inherent uncertainty of discharge timing, seniors differed from interns in their use of advanced planning strategies to anticipate challenges, often starting discharge planning at the time of admission. Concerning patient safety, interns tended to focus on avoiding medication errors whereas seniors took a more comprehensive view of a “safe discharge” to include patients’ home environment and social support system. Similarly, once patients were discharged, interns described difficulty with continuity and learning post-discharge outcomes whereas seniors typically developed methods to follow up with patients after discharge. When asked explicitly how they learned to perform high-quality discharge care, both interns and residents indicated there was no formal training or structure for learning about the discharge process, only peer-to-peer instruction and “learning by doing” on the wards.

**CONCLUSION:** Discharge care may be an overlooked opportunity in post-graduate medical education to teach concepts of SBP and PBLI competencies explicitly. Although our findings suggest residents are acquiring aspects of these competencies, learning about discharge care is unstructured and individual experiences may vary considerably. Educational interventions to standardize learning about discharge care and further emphasize teamwork, patient safety, and post-discharge outcomes of care may improve the development of SBP and PBLI during residency training. Such interventions may also help shape discharge practices at teaching hospitals to improve the overall quality of discharge care.

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**RETROSPECTIVE ANALYSIS OF HPV VACCINATION STATUS IN FEMALE PATIENTS: DOES THE VACCINATION PROCESS MATTER?**

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**BACKGROUND:** Clinical trials have shown that vaccines against HPV types 16 and 18, such as Gardasil, are almost 100% effective in preventing high-grade pre-cancer. According to a November 2010 report from the Centers for Disease Control and Prevention (CDC), only 17 percent of adult women aged 19 to 26 have received at least one shot of the HPV vaccine. It is unclear why the national rate is so low; we hypothesize that the current rate of vaccination for all eligible women attending two busy primary care practices at an academic healthcare center will be similar to the national rates and that by understanding the current vaccination process employed in the clinics may explain the low rates.

**METHODS:** We performed a retrospective analysis of all eligible female patients aged 18 to 26 from June 1, 2009 to May 31, 2010 at both primary care practices. We first used billing data to identify all eligible patients that came into the clinics during the inclusive time period. The inclusion criteria included female patients age 18 to 26 during the time period June 1, 2009 to May 31, 2010 and the exclusion criterion was female patients who never saw a medical doctor. For all patients identified, we performed a chart audit to determine whether these eligible patients received the HPV vaccine, had documentation that the vaccine was discussed, or had documentation that the patient declined that vaccine. Using quality improvement techniques, we also identified process flow diagrams to understand better the vaccination processes employed in both clinics.

**RESULTS:** From the original billing data, there were 1251 eligible females aged 18–26 who were seen at both primary care practices over the course of one year (6/1/09-5/31/10). Excluding 2 patients who did not see a medical doctor, the final cohort for our analyses consisted of 1249 patients. We found that each patient visited a physician an average of 1.8 times during this time period, and that 65% of the patients had an identified primary care physician at the center. After reviewing both billing data and chart audits, we found that 38.8% of eligible females had documentation of receiving the Gardasil vaccine at some point; 2.4% had declined the vaccine; and 8% were still undecided but had the discussion with their physician. Overall, 50.8% of the cohort was found to have an unknown status of the HPV vaccine. We looked at whether having a primary care physician affected these rates. Of those that had a PMD, 57.4% have a known vaccination status (either got the vaccine, declined, or discussed) while 42.5% of patients had an unknown status. Of those that did not have a PMD assigned, 33.7% have a known vaccination status and 66% did not. Using quality improvement techniques, we identified process flow diagrams indicating a lack of infrastructure for ordering and tracking the HPV vaccinations.

**CONCLUSION:** Since 2006, the HPV vaccine, specifically Gardasil, has been approved for the prevention of cervical, vulvar, and vaginal cancer associated with HPV types 16 and 18 and for the prevention of genital warts caused by HPV types 6 and 11 in female patients ages 9 through 26. Although our data indicate that these two primary care practices in an academic healthcare center are vaccinating more patients against HPV than the national average, the HPV vaccination status of 50% of the patients that come into the clinics remains unknown. In addition, for those patients engaging the healthcare system with no identified PMD, the rates are even lower which also could be seen as missed opportunities for preventive care. In examining the processes of administering the vaccine, the lack of infrastructure may be accounting for the significant variability found; given that the current process of vaccination rests solely on the physician to ask about vaccination status, order the vaccine and document accordingly. While the overall percentage of vaccination is higher than that of the national data, we feel that an infrastructure with reminders and proper tracking could improve upon the center’s current rate. Further research should be done to identify strategies for improving the vaccination rates in the context of the complex structures of the academic healthcare center.
A WEB-BASED EBM EDUCATIONAL PRESCRIPTION TO EVALUATE RESIDENT EBM COMPETENCY

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BACKGROUND: The expanding volume of medical research makes it critical for physicians to learn how to incorporate evidence into clinical care. The ACGME requires that residents are competent at practicing evidence-based medicine (EBM) as part of the practice based learning and improvement competency. Currently there are no validated tools to measure resident EBM competency. The objective of this study is to evaluate the feasibility and reliability of a novel EBM educational prescription (EP) in evaluating internal medicine residents’ EBM competency. The study also evaluated the effect of EP use on patient care decisions.

METHODS: The study was performed over a 6 month period at five internal medicine residency programs throughout the US. Residents completed EPs in various clinical settings including continuity clinic, inpatient ward rotations and outpatient block rotations. The web-based EP was developed to guide residents through the steps of EBM to answer patient care questions. Residents used the EP to describe a clinical question, document a search strategy, analyze the quality of evidence found, report the results of the evidence and describe how to apply the evidence to their individual patients. EP results were presented to attending physicians who graded the EP using a web-based form. EPs were graded on: 1) question formation; 2) searching; 3) evaluation of evidence; 4) application to patient; 5) ability to teach the team; 6) overall competence. Each area was scored on a scale of 1 (not yet competent) to 9 (superior) using an integrated grading rubric to provide anchors. The website includes attending training in EP grading. Time to complete and grade EPs, satisfaction with the EP and whether the EP changed patient care were recorded with each EP. Residents and attendings completed end of study questionnaires about their attitudes toward the EP and barriers to its use. Data collection will be completed in March 2011.

RESULTS: Preliminary results showed that 216 residents completed 499 EPs and 100 attendings graded 344 of those EPs. The average overall competency score was 6.51 (SD 1.46) out of 9. Residents took a median of 50 minutes (Interquartile Range (IQR) 30–65) to complete EPs and attendings took a median of 15 minutes (IQR 10–20) to grade each EP. Residents reported that 21% of the completed EPs changed the patient care plan, 6% would have changed the patient care plan if they had the information sooner and 52% confirmed the current care plan. To date, 86 residents and 25 attendings completed end of study questionnaires. Residents felt that performing EPs was probably or definitely a valuable experience (72.6%) and changed how they approached patient care (63.1%). The main barriers to resident use of EPs were time (52.4%) and comfort using evidence resources (17.9%). Attendings felt that the EP probably or definitely was a valuable tool in evaluating residents’ EBM skills (91.3%) and that it probably or definitely improved patient care (72.2%). Most attendings said that they would continue using EPs upon completion of the study (78.2%).

CONCLUSION: It is feasible to incorporate an online EP into clinical care in diverse clinical settings. EPs impact patient care plans. Overall, the EP process was well received by residents and faculty and felt to be a valuable tool. This study represents early evidence of the first valid tool to evaluate resident EBM competency during clinical care. Future analysis of the data will evaluate inter-rater reliability of the EP grading as well as factors affecting grading. A current study is underway to compare EP grades with grades on an EBM objective structured clinical exam (OSCE).

EFFECT OF MEDICARE PART D BENZODIAZEPINE EXCLUSION ON PSYCHOTROPIC USE AMONG BENZODIAZEPINE USERS

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BACKGROUND: The Medicare Modernization Act (MMA) created prescription drug coverage through Medicare Part D starting in 2006, but specifically excluded benzodiazepines from coverage due to studies showing adverse effects among elderly patients. However, when used appropriately, benzodiazepines are an effective, low-cost treatment for anxiety. We evaluated the effect of the benzodiazepine coverage exclusion on psychotropic prescribing patterns and costs among benzodiazepine users with prescription drug coverage before and after MMA implementation.

METHODS: We compared two cohorts of patients drawn from the same insurer who were prescribed benzodiazepines through the end of 2005. The intervention cohort was drawn from elderly individuals (N=19,339) enrolled in a large Medicare Advantage (MA) plan and the comparison cohort was drawn from near-elderly individuals (N=3,488) enrolled in a managed care plan. Both cohorts had prescription drug coverage before and after MMA implementation but benzodiazepine coverage was excluded for the intervention cohort after MMA implementation. Predicted psychotropic drug use rates and expenditures were generated from multivariable regression analyses that adjusted for time period (2006 and 2007 vs. 2005), age, gender, and comorbidities. Significance was determined as p<.05.

RESULTS: Benzodiazepine claim occurrences (including noncovered prescription fills) dropped from 100% in 2005 to 54.2% in 2006 and 74.8% in 2007 among the intervention cohort; among the comparison cohort, this dropped from 100% in 2005 to 81.9% in 2006 and 57.5% in 2007. Correspondingly, benzodiazepine costs dropped from $149 in 2005 to $873 in 2006 and $867 in 2007. From 2005 to 2007, predicted non-benzodiazepine psychotropic drug claim occurrences significantly increased among the intervention cohort (35.8% to 39.2%) but significantly declined among the comparison cohort (58.4% to 47.4%). Similarly, predicted non-benzodiazepine psychotropic drug expenditures significantly increased among the intervention cohort (35.8% to 39.2%) but significantly declined among the comparison cohort (613 to 820) but significantly declined among the comparison cohort (8647 to 8571) from 2005 to 2007. These changes were primarily due to significant differences in use of antidepressants (intervention cohort, 34.0% to 37.7%, S105 to S114; comparison cohort, 47.1% to 39.2%, S399 to S322) and anxiolytics (intervention cohort, 8.0% to 12.3%, S24 to S45; comparison cohort, 18.4% to 14.6%, S115 to 889).

CONCLUSION: Elderly benzodiazepine users continued to use benzodiazepines after its coverage exclusion, although at lower rates than before. Correspondingly, they increased use of non-benzodiazepine psychotropic drugs, particularly antidepressants and anxiolytics, although the magnitude of this increase does not appear to compensate for the reduction in benzodiazepine use. Use of benzodiazepines continued among the elderly despite negative financial incentives, possibly due to the low costs of such medication. While some substitution occurred with antidepressants and anxiolytics, the gap in psychotropic drug use may reflect either possible increases in psychotherapy or reduced use of treatment.
EFFECT OF MEDICARE PART D BENZODIAZEPINE EXCLUSION ON PSYCHOTROPIC USE AMONG PATIENTS WITH NEW ANXIETY DISORDERS Michael K. Ong1; Lily Zhang1; Haiyong Xu1; Francisca Azocar2; Susan L. Ettner1; 1UCLA, Los Angeles, California; 2OptumHealth Behavioral Solutions, San Francisco, California. (Tracking ID # 10861)

BACKGROUND: The Medicare Modernization Act (MMA) created prescription drug coverage through Medicare Part D starting in 2006, but specifically excluded benzodiazepines from coverage due to studies showing adverse effects among elderly patients. However, when used appropriately, benzodiazepines are an effective, low-cost treatment for anxiety. We evaluated the effect of the benzodiazepine coverage exclusion on prescribing patterns and costs, and outpatient behavioral care, among Medicare patients with new anxiety diagnoses.

METHODS: We compared two cohorts of patients drawn from the same insurer, an intervention cohort (N=8,397) of elderly individuals from a large, national Medicare Advantage (MA) plan, and from a comparison cohort (N=1,657) of near-elderly individuals enrolled in a managed care plan. Both cohorts had prescription drug coverage before and after MMA implementation, but benzodiazepine coverage was excluded for the intervention cohort after MMA implementation. Each cohort was comprised of individuals with new anxiety diagnoses in the first six months of 2005, 2006, and 2007. New diagnoses were defined as having no encounters with anxiety diagnoses in the prior six months. Predicted use and expenditure outcomes were generated from multivariable regression analyses that adjusted for time period (2006 and 2007 vs. 2005), age, gender, and comorbidities. Significance was determined as p<0.05.

RESULTS: Among the intervention cohort, those diagnosed in 2005 were predicted to have significantly higher rates of covered psychotropic drug claims than those diagnosed in 2006 or 2007 (p=0.09 vs. 45.9% and 50.0%); this difference was largely due to significantly reduced covered benzodiazepine claims, with 63% among those diagnosed in 2005 vs. 0.9% and 1.3% among those diagnosed in 2006 and 2007). Non-benzodiazepine (mostly antide presant and anxiolytic) predicted claim occurrences among the intervention cohort significantly increased from 40.3% in 2005, to 45.9% and 49.5% in 2006 and 2007. Predicted overall annual drug expenditures among the intervention cohort non-significantly increased from $825 in 2005 to $8129 in 2006, and significantly increased to $8154 in 2007. In contrast, among the comparison cohort, predicted claim occurrences did not significantly differ from 2005-2007 for all psychotropic drugs (75.4%, 74.4%, 77.7%), benzodiazepines (48.2%, 43.5%, 48.0%) and non-benzodiazepine psychotropic drugs (59.2%, 59.7%, 57.9%). Predicted overall psychotropic drug expenditures for the comparison cohort were relatively constant from 2005-2007 ($8438, $864, $8381) although there was a significant decline in predicted benzodiazepine expenditures in 2006 ($839) and 2007 ($838) compared to 2005 ($867). There were no significant differences in outpatient behavioral care across all years in either cohort.

CONCLUSION: Among elderly patients with new anxiety diagnoses, the benzodiazepine exclusion implemented in MMA resulted in increased use of non-benzodiazepine psychotropic drugs but overall less covered psychotropic drug use. Despite this reduction in overall psychotropic drug use and spending on benzodiazepines, overall psychotropic drug expenditures increased for the intervention group. The gap between psychotropic use before and after MMA may reflect reduced use of treatment, but not increased psychotherapy. Increasing psychotropic drug expenditures suggest that potential reductions in inappropriate benzodiazepine use were offset with slightly higher drug expenditures.

EFFICACY OF PATIENT REMINDERS LETTER TO IMPROVE ADHERENCE TO PREVENTATIVE AND DIAGNOSTIC RECOMMENDATIONS Zhou Zhang1; Jason Fish2. 1UCLA, Woodland Hills, California; 2UCLA, Los Angeles, California. (Tracking ID # 10864)

BACKGROUND: Recent literature identifies that completion of recommended services is marginal. Given these low rates, physicians have been trying many strategies to increase adherence; specifically, strategies have involved letters, phone calls, and text messages. While each has been shown to be effective for preventative services, it is unclear how each reminder strategy may affect completion of diagnostic study recommendations. Further, it is also unclear how best to implement these strategies in complex healthcare organizations. We hypothesize that while these strategies may benefit patients and increase adherence to both preventative and diagnostic study recommendations, there will simultaneously be a need to identify and improve organizational processes to facilitate patient participation in completing these recommended services.

METHODS: Using pilot data from a database of all ordered recommended care for both preventative and diagnostic study recommendations from one general internist’s outpatient practice at an academic health care center from 2008-2009, we collected completion rates of these recommendations. The database included record of completion of recommended care as well as documentation of two patient reminder letters being sent for each order. The physician followed a standard protocol for sending two reminder letters. Employing quality improvement techniques, we also generated process flow diagrams for preventative services and diagnostic study recommendations (which included laboratory, specialist referrals, and radiological studies) to identify how patients engage the medical system to complete the recommended services.

RESULTS: During the 12 month study period, a total of 1630 recommended services were recorded (251 preventative services, 416 specialist referrals, 683 labs, and 180 radiology and other diagnostic studies). Preventative services had a completion rate of 45% without any reminder letters, similar to published studies. With one reminder letter, this completion rate increased 13% and, with a second reminder letter, the completion rate increased an additional 8%. For the diagnostic study recommendations, baseline completion rates were found to be: 65% for referrals, 82% for labs, and 79% for radiological studies. The three diagnostic study recommendations increased 7-12% after a first reminder letter, with the second reminder letter increasing the completion rate by 1-3%. Using QI techniques, we generated process flow diagrams which identified complicated process for preventative services in comparison to diagnostic study recommendations.

CONCLUSION: Completion of recommended preventative services was significantly improved with two patient reminder letters. However, for some preventative services, such as colonoscopy for colon cancer screening, we did find that the completion rate remained low despite the two reminder letter intervention. We also found that for diagnostic study recommendations, one reminder letter offered an additional benefit; whereas, the second reminder letter offered minimal benefit. Our process flow diagrams also indicated that some of the processes for services, such as preventative services, have complicated processes, which may account for the differences of the effect the reminder-letter intervention had on some of the recommended services. Further research is needed to identify improved strategies for increasing
completion rates, with an understanding of these strategies in the context of organization processes.

**UPPER GASTROINTESTINAL SYMPTOMS DETERMINED USING A FREQUENCY SCALE FOR THE SYMPTOMS OF GASTROESOPHAGEAL REFUX DISEASE ARE AFFECTED BY VERTEBRAL DEFORMITIES IN ELDERLY JAPANESE INDIVIDUALS** Yoshinori Tokushima 1; Hitoshi Eguchi 1; Yuta Sakanishi 1; Yuichiro Eguchi 1; Satoshi Matsunaga 1; Tsuneaki Yoshioka 2; Shu Soejima 1; Yasutomo Oda 1; Sei Emura 1; Ryuichi Iwakiri 3; Kazuma Fujimoto 10; Takashi Sugio 1; Shunzo Koizumi 1. 1Saga Medical School, Saga, N/A; 2Saga Medical School, Saga, N/A; 3Saga Medical School Internal Medicine, Saga, N/A. (Tracking ID # 10865)

**BACKGROUND:** According to the World Health Statistics 2010 reported by the World Health Organization, Japanese people have the longest average lifespan in the world. The quality of life for elderly individuals is thus a priority issue in an aging society. Gastroesophageal reflux disease (GERD) is a lifestyle-related disease that shows a markedly increased prevalence in elderly individuals in Japan. Increased abdominal pressure, caused by kyphoscoliosis, is thought to be one factor responsible for this increased incidence. In a previous study, we found that the pathogenesis of GERD diagnosed by upper gastrointestinal endoscopy in elderly patients was affected by the increase in intra-abdominal pressure caused by vertebral deformities, including spondylosis deformans. However, the relationship between vertebral deformities and GERD, including GER symptoms, in elderly individuals remains unclear. The aim of this study was, therefore, to clarify the relationship between vertebral deformities and GER symptoms evaluated by questionnaire in the elderly general population in Japan.

**METHODS:** Elderly individuals who visited four adult day care services in Japan were enrolled in this study. GERD symptom scores were assessed using a frequency scale for the symptoms of GERD (FSSG) questionnaire. The degree of spine shortening was determined by the difference between arm span (cm) and body height (cm) (DAH), and medication history associated with GER symptoms was obtained.

**RESULTS:** A total of 112 elderly individuals were evaluated (89 female; mean age 80.1±6.1 years). The mean body mass index was 21.0±3.9 and the mean DAH was 6.4±6.4 cm. Sixteen individuals (14%) had significant GER symptoms (FSSG score >8). Sixty-eight (54.5%) individuals had mild GER symptoms (FSSG score 1–7), while 35 (31%) had no symptoms. Of the patients with GER symptoms evaluated by questionnaire in the elderly general population in Japan.

**CONCLUSION:** This study confirmed a positive relationship between GER symptoms and vertebral deformities. An FSSG questionnaire can provide a useful and inexpensive method for identifying GERD patients in the elderly general population.

**TOWARD UNIVERSAL HIV TESTING: IS THE CDC RECOMMENDATION OF ‘OPT-OUT’ SCREENING THE ANSWER?** Anish P. Mahajan 1; Jennifer N Sayles 2; Janni Kinsler 3; Saloniki James 2; Jacqueline Runangirwa 2; Rishi Manchanda 4; Lakshmi Makam 5; Martin Shapiro 1. 1David Geffen School of Medicine at UCLA, Los Angeles, California; 2Los Angeles County Office of AIDS Programs & Policies, Los Angeles, California; 3UCLA School of Public Health, Los Angeles, California; 4St. John’s Well Child & Family Center, Los Angeles, California; 5Hubert Humphrey Comprehensive Health Center, Los Angeles, California. (Tracking ID # 10866)

**BACKGROUND:** Most Americans have not been tested for HIV, and 20% of those infected are unaware. To expand testing, the CDC recommends routine ‘opt-out’ HIV screening, in which patients are told they will undergo testing unless they decline. Objective: To determine if opt-out screening is associated with greater testing offers and patient acceptance of screening than routine opt-in or risk-based testing.

**METHODS:** At 2 safety-net clinics, participatory research methods were used to create 3 screening interventions: physician-initiated (P-I opt-out, nurse-initiated (N-I) opt-out, and N-I opt-out. Using a quasi-experimental time samples design, each intervention was implemented for a 2-month interval over 6 months. 14,872 patients were eligible for screening. Differences in testing offers and patient acceptance of screening between the interventions and risk-based testing (standard of care) were assessed. Multivariate regression was used to identify correlates of screening refusal.

**RESULTS:** Relative to risk-based testing, the interventions increased the offer rate (11% vs. 25% p<0.05) and actual testing rate (7% vs. 14% p<0.05). Although offer rates were similar between opt-out and opt-in, the physician offer rate was greater than nurses (28% vs. 22% p<0.05). Overall percentage of patients accepting screening in opt-out and opt-in interventions were similar (59% vs. 56% p=0.09), but P-I opt-out was associated with greater acceptance than N-I opt-out (65% vs. 54% p<0.05). Recent test, older age, female sex, and African-American ethnicity were associated with refusing screening (p<0.05).

**CONCLUSION:** Routine HIV screening in ambulatory care is feasible, and resulted in at least a 2-fold increase in the percentage of clinic patients offered screening and proportion undergoing testing. The CDC recommendation for opt-out screening was not associated with greater patient acceptance of screening compared to opt-in screening. Such strategies do not assure universal offering of HIV testing.

**A MULTISITE STUDY COMPARING MEDICAL STUDENT AND FACULTY OPINIONS REGARDING ONLINE PROFESSIONALISM** Lynn Malec 1; Erik Black 2; Beatrice Boateng 3; Reed Van Deusen 4. 1Children’s Hospital of Pittsburgh, Pittsburgh, Pennsylvania; 2University of Florida College of Medicine, Gainesville, Florida; 3University of Arkansas for Medical Sciences, Little Rock, Arkansas; 4University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania. (Tracking ID # 10873)

**BACKGROUND:** Educating physicians-in-training about issues related to medical professionalism remains an important yet elusive challenge for medical educators. The Accreditation Council for Graduate Medical Education (ACGME) counts professionalism as a core competency in resident education however little guidance exists as to how to teach or evaluate trainees regarding professionalism. Professionalism education must encompass domains such as compassion, responsiveness to patient needs, respect for patient privacy, and sensitivity to diverse patient populations. Research has already established that unprofessional behavior in medical school is associated with later State board disciplinary action. Recent advances in Internet technologies and the consequent rise in popularity of online social media sites have added to the complexity associated with educating physicians-in-training about professionalism. Facebook, as a dominant online social media destination, has garnered specific attention from medical education researchers. Since the emergence of social media sites, medical trainees’ activities outside the workplace are increasingly publically available.
With this change, come new questions as to what constitutes professional behavior.

**METHODS:** A survey composed of vignettes, questions related to demographics, and opinion questions was electronically distributed to first year medical students and faculty in internal medicine and pediatrics at three academic medical institutions (University of Pittsburgh, University of Florida, and University of Arkansas). The vignettes contained de-identified photographs, quotes, and case scenarios. All vignettes were originally posted by medical trainees and were publicly available at the time they were obtained from the source websites. Participants were asked their opinions on how acceptable each vignette was to be posted online for four different levels of learner: premedical student, medical student, resident, and faculty member. There were three possible levels of acceptability for each level of learner: acceptable if posted on a public site, acceptable if posted on a protected site, and not acceptable. Comparisons between medical student and faculty responses were done using the Chi-squared statistic. This study was approved by the IRB at all three institutions.

**RESULTS:** The survey response rate was 30%. On average, medical students were 24 years old (SD=3.2) and faculty were 45 (SD=10.6). Vignette #1 was a picture of a woman standing in a parking lot holding a keg. If a premedical student posted this picture, 21.5% of faculty and 14.3% of medical students felt it would be unacceptable (p<.05). No statistically significant difference was found between medical students and faculty for this image if it were posted by medical students, residents, or faculty members. Vignette #2 was a picture of a man and woman on a beach and he is kissing her chest. If a premedical student posted this, 75.9% of faculty and 64.1% of medical students felt it would be unacceptable (p<.05). No statistically significant difference was found if this image were posted by a premedical student.

**CONCLUSION:** This study illustrates the lack of consensus on what constitutes professional behavior amongst medical students and attending physicians. Prior studies have suggested that generational differences do exist when it comes to perceptions of professionalism. Data derived from this study supports the idea that perceptions of professionalism differ between educators and trainees.

**MONITORING OF PRIMARY HEALTH CARE IN A FEE-FOR-SERVICE WITH UNIVERSAL COVERAGE COUNTRY: THE SWISS CHEESE**

**SITUATION:**
Nicolas Senn1; Jacques Cornuz1. 1Department of Ambulatory Care and Community Medicine, University of Lausanne, Lausanne, N/A. (Tracking ID # 10874)

**BACKGROUND:** Monitoring primary health care (PHC) is essential for public health, health authorities and care providers in order to achieve a high quality of efficient care (at best cost). Switzerland has a unique consumer-driven fee-for-service with universal coverage health system regulated by the health authorities. Very few studies have attempted to describe the Swiss PHC system and none have looked at the feasibility of using existing standardized indicators. We investigated the challenges of applying an international monitoring tool for PHC in Switzerland and compared with the US situation, since these two countries have been labeled as the Sister Republics (Hutson JH, The Library of Congress, 1991)

**METHODS:** We analyzed the strengths and weaknesses of the Swiss PHC system by practicing a standard monitoring tool developed for Europe called PHAMEU (Primary Health Care Activity Monitor for Europe, www.phameu.eu). We investigated the availability and quality of data and identified the indicators most relevant to describe the Swiss PHC health system with reference to the US situation. All collected data refer to the period 2005 to 2009.

**RESULTS:** From the 91 PHAMEU project indicators, 37 (41%) were built on directly available data, 14 (15%) required major adaptations of existing data and 40 (44%) were based on expert opinion as no data were available. Whereas 33 out of 39 (85%) indicators describing the structure of PHC (governance, economics and workforce) relied on existing data, only 7 out of 37 (19%) indicators describing the process of PHC (access, continuity physician-patient, coordination and comprehensiveness) were based on existing data. Slightly more than half (55%) of the available information came from the governmental sector, 33% came from PHC providers, 10% came from private health insurances and 2% came from other sources. The most relevant indicators describing the Swiss PHC system were the following: 1) 99.2% of the population is covered by the Swiss health insurance (US: 85%), 2) 26% (15 bS) of health expenditures was spent on PHC (US: no comparable data available), 3) 2.3% of health expenditures is spent on prevention (US: 3%), 4) 63% of private practices are single handed (US: 27%), 5) Number of GP visits per year and per capita was 2.8 (US: 1.5), 6) Mean duration of PHC consultation was 17 minutes (US: 21 minutes), 7) 3.2% of the time of consultations were spent for home visits, 8) 5.8% of the time of consultation was spent for telephone.

**CONCLUSION:** In Switzerland, which has a consumer-driven fee-for-service with universal coverage health care system, almost half of data were not available to build standard indicators for monitoring PHC. The information describing the operational activities of PHC is dramatically lacking especially in regards to the health status of patients, health care management and patient satisfaction. This might reflect the relative autonomy of PHC providers in their practice, which are predominantly single handed compared to the United States.
Sates where less than 30% of practices are single-handed. It seems however urgent to implement information systems to fill these Swiss cheese holes.

**SUBCLINICAL THYROID DYSFUNCTION AND THE RISK OF HEART FAILURE, OTHER CARDIOVASCULAR EVENTS AND MORTALITY IN THE ELDERLY**

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**BACKGROUND:** Mild thyroid dysfunction is common in older people. However the clinical importance is uncertain. We aimed to determine the extent to which subclinical hyper- and hypothyroidism influence the risk of common diseases in elderly people, including heart failure, atrial fibrillation, cerebrovascular and cardiovascular events or mortality.

**METHODS:** We studied 5748 men and women aged 70–82 years with known cardiovascular risk factors or previous cardiovascular disease, but free of heart failure and atrial fibrillation in the Prospective Study of Pravastatin in the Elderly at Risk (PROSPER) trial. In multivariate adjusted Cox proportional hazard models, we compared the risk of incident heart failure hospitalization, atrial fibrillation, cerebrovascular and cardiovascular events or mortality over a 3.2-year follow-up. Thyroid status was established at study baseline. Euthyroid participants (defined as thyroid stimulating hormone [TSH] level 0.45-4.5 mIU/l) were compared with those with subclinical hyperthyroidism (TSH < 0.45 mIU/l with normal free thyroxine) and those with subclinical hypothyroidism (TSH >4.5 mIU/l with normal free thyroxine).

**RESULTS:** The mean age of the study population was 75 (SD 3.3). The prevalence of cardiovascular disease was 44% at study baseline. Subclinical hyperthyroidism was present in 234 participants (4.1%) and subclinical hypothyroidism in 466 participants (8.1%) at baseline. There was no difference in prevalence of diabetes or known cardiovascular disease by thyroid status at baseline. During the 3.2-year follow-up, the incidence of heart failure hospitalization was higher in elderly adults with subclinical hyperthyroidism compared to the euthyroid group, with 25 vs 12 events per 1000 person-years (multivariate adjusted hazard ratio 2.61, 95% confidence interval, 1.59-4.26, p<0.01 (see Figure). The risk of heart failure dependant of thyroid function was similar in adults with endogenous subclinical hyperthyroidism, with or without pre-existing cardiovascular disease, or those under pravastatin or beta-blocker therapy, but increased with increasing heart rate (p for trend 0.043). We found no association between subclinical hypothyroidism and heart failure. There were no consistent association between subclinical hyperthyroidism and the risk of atrial fibrillation, cerebrovascular and cardiovascular events or mortality.

**CONCLUSION:** Subclinical hyperthyroidism is an independent risk factor for heart failure in elderly adults, particularly in those with an elevated heart rate. Randomized controlled trials of treatment of subclinical hyperthyroidism to prevent heart failure in older people are warranted.
COMPUTED TOMOGRAPHY ASSOCIATED CANCER AND CANCER DEATHS FROM EMERGENCY DEPARTMENT VISITS IN THE US
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BACKGROUND: Computed tomography scan (CT) use has increased substantially in the past decade. Although CTs offer distinct diagnostic advantages, their widespread use raises concern about iatrogenic cancer. Little is known about the number of cancers and cancer-related deaths caused by CT scans during the evaluation of adults-patients in U.S. emergency departments (EDs).

METHODS: We estimated the lifetime attributable risk of cancer and cancer related deaths caused by CT use during the evaluation of adult patients in US EDs annually and the frequency of, trends in and factors associated with CT use in this setting. We conducted a cross sectional analysis of CTs performed during ED visits by adults in a nationally representative sample using the National Hospital Ambulatory Medical Care Survey (NHAMCS), 1998–2008. We used the Biologic Effect of Ionizing Radiation VII model to estimate the lifetime attributable risk of cancer incidence and mortality based on age at exposure, gender, and effective dose estimates for all adult visits to US EDs during which a CT was performed in 2008. Because the NHAMCS does not provide details of CTs ordered (i.e. abdomen vs chest, single or double pass), we calculated the effective dose using the National Emergency Department Sample, which provides nationally representative estimates of the proportion of CTs performed on each body area (i.e. chest, abdomen) and the number of passes through the CT scanner for ED patients. We also established the proportion of visits for which CTs were performed from 1998 and 2008 and conducted multivariate logistic regression analysis to determine patient and hospital characteristics associated with CT usage in 2008. In order to determine whether potential increases in rates of CT use over time were associated with improved detection of severe or occult disease that require hospital admission, we compared the proportion of hospital and intensive care unit admissions per CT each year from 1998 to 2008 with a chi-square trend test. If increases in CT use were not associated with improved detection of severe disease requiring hospital or intensive care unit admission, we would expect this ratio to decline over time.

RESULTS: In 2008, 16,406,921 CTs were performed nationally during adult ED visits; we estimate that these will cause 3750 (95% CI 3570–3940) cancers and 1994 (95% CI 1904–2088) cancer deaths in future years. The proportion of adult ED visits during which a CT was performed increased from 4.8% (95% CI 4.4–5.1) to 17.1% (95% CI 16.0–18.2) between 1998 and 2008, a 335% increase. Older age, triage time of <15 minutes, and evaluation at an urban hospital were independently associated with higher odds of receiving a CT. The proportions of hospital and intensive care unit admissions per CT fell from 2.69 (95% CI 2.69–2.69) to 0.95 (95% CI 0.95–0.95) (p=0.0019) and from 0.28 (95% CI 0.28–0.28) to 0.12 (95% CI 0.12–0.12) (p=0.0093), respectively.

CONCLUSION: While the net number of lives saved by CT use in the EDs is not known, the large number of cancers and cancer deaths attributable to CT use, as well as the large increase in CT use without an associated increase in admission rates, highlight the importance of curbing unnecessary CTs in the ED setting.

NEEDLE AND SYRINGE EXCHANGE PROGRAMS IN CORRECTIONAL SETTINGS: FEASIBLE, SAFE AND NECESSARY! Hans Wolf 1; Thierry Favrod-Coune 2; Jean-Pierre Rieder 2; Francoise Pinault 2; Laurent Getaz 2; Barbara Broers 2. 1University Hospitals of Geneva, GENEVA, N/A; 2University Hospitals of Geneva and University of Geneva, Geneva, N/A. (Tracking ID # 10899)

BACKGROUND: Addiction-related problems are highly prevalent in almost every prison in the world. Despite the fact that illicit drugs are forbidden, they frequently enter most correctional facilities. Therefore, harm reduction measures such as needle and syringe exchange programs (NSP) need to be implemented. In the community and in prison, NSPs have been shown to: 1. prevent the transmission of infectious diseases, 2. not compromise the security (syringes not used as a weapon) and 3. not increase the consumption nor the injection of drugs. Despite strong evidence of efficacy, NSPs exist in less than 1% of the prisons worldwide. The Geneva University Hospitals are dispensing health care to inmates of the prison of Geneva, the largest remand prison in Switzerland. This prison faces severe overcrowding as it housed in 2010 a mean of 543 inmates, primarily male, in the 270 officially provided places (occupancy rate: >200%). The NSP is in place since 1996. The aim of the study is to evaluate the acceptance and feasibility of the NSP in prison.

METHODS: In the prison of Geneva, a syringe exchange protocol was elaborated by addiction specialists and accepted by the prison authorities in 1996. The protocol gave an official framework to provide injection kits and appropriate counseling to drug-using inmates. Staff is trained in addiction and harm reduction measures. Evaluation included distribution and return of the syringes over time.

RESULTS: Each year 169–446 syringes were distributed to 24–53 intravenous drug using inmates (fig 1). The return rate ranged from 58 to 83%. No acts of aggression or other incidents involving the contents of injection kits (e.g. threats, aggression, injury by a syringe left in a dustbin ...) were reported. The program was well accepted by the prison staff and the health care team. Healthcare workers noted that 10-20% of the iv-drug users participating in the program related an initial hesitation when distributing the syringes, which let suspect that the fear of denouncement existed and that the totality of the target prisoners were not reached. The prison direction actively supported the program and operated no cell search for drugs after delivery of an injection kit. In addition to the harm reduction itself, the program helped to strengthen the dialogue in an atmosphere of greater understanding and encouraged constructive co-operation between all partners (healthcare team, prison officers, and political partners).

CONCLUSION: Scientific evidence as well as our experience showed that syringe and needle exchange in the prison is feasible, safe and well accepted by staff and iv-drug users, although it could be improved by providing better confidentiality during the distribution of the injection kits. The program needed an active supervision to make sure that nurses, prison staff and detainees feel comfortable with it. Access to harm reduction measures should be universal, in concordance with human rights principles and therefore be implemented in all prisons.
DELIVERY, UPTAKE, AND SATISFACTION WITH DECISION SUPPORT INTERVENTIONS IN A PRIMARY CARE CLINIC  
Carmen L Lewis 1; Leslie Stewart 1; Shaun McDonald 1; Kim Young-Wright 1; Robert Malone 1; Christopher P DeLeon 1; Michael P Pignone 1.
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BACKGROUND: Patient centered care is an important component of quality medical care. Employing decision support interventions is a means of promoting patient centered care by encouraging patients to be more actively engaged in their medical care. However, implementation of decision support interventions in primary care poses a number of challenges including the timing of delivery to maximize uptake and effectiveness and the logistics of integrating the program into existing clinic operations. Our purpose was to implement decision support interventions for a wide variety of health conditions in primary care practices and to test the effectiveness of this program in terms of patient uptake and satisfaction.

METHODS: We employed health information technology (HIT) to identify patients who are potentially eligible for decision support using ICD-9 diagnosis codes and billing information. For patients who were due for CRC screening, staff mailed decision support several weeks prior to the patient’s upcoming appointment. For in-clinic delivery, we employed continuous quality improvement methodology to modify nurse work processes to assess patient eligibility for and interest in targeted decision support interventions by administering a computer-based survey during their intake evaluation. Decision support was then provided by care assistants according to patient preference (DVD and booklet provided in clinic vs. mailed after the visit). During follow up appointments nurses were also triggered to collect information about patient uptake and satisfaction with decision support interventions.

RESULTS: From 8/10 to 11/10 we delivered decision support to 433 eligible patients for screening (236 for colorectal cancer (CRC) and 5 for PSA screening), symptomatic conditions (46 for hip and 42 for knee osteoarthritis, 46 for chronic pain, 2 for depression, 9 for menopause, 9 for benign prostatic hyperplasia), and chronic conditions (28 for diabetes, and 10 for weight loss surgery). Over this period, clinic staff follow-up on 532 patients who had been provided decision support within 6 months of their clinic visit. Of these patients, 363 (68%) indicated that they had received a decision aid. Among this 363 patients, 302 (83%) liked receiving the decision aid, 295 (81%) found the information useful, 209 (58%) watched some or the entire DVD, and 239 (67%) read some or the entire booklet. Patients were more likely to report that they liked receiving the decision support (88% vs. 79% p=0.03), more likely to watch the DVD (66% vs. 51% p<0.01) or read the booklet (72% vs. 59% p=0.02) for symptomatic conditions (n=134) compared to screening (CRC) (n=197). Similarly, those who received decision support in clinic (n=168) were more likely to report they liked getting it (90% vs. 77% p<0.01) more likely to watch it (67% vs. 50% p<0.01) and more likely to read the booklet (74% vs. 58% p<0.01) than those who were mailed decisions support (CRC screening) before their upcoming visit.
CONCLUSION: We were able to deliver a wide variety of decision support interventions and the majority of patients reported receiving them. Uptake and satisfaction appeared to vary by topic type and delivery method.

SHORT LENGTH OF STAY IS ASSOCIATED WITH INCREASED MORTALITY William Southern 1; Julia Arnsten 2. 1Albert Einstein College of Medicine/Montefiore Medical Center, Sleepy Hollow, New York; 2Albert Einstein College of Medicine/Montefiore Medical Center, Bronx, New York. (Tracking ID # 10906)

BACKGROUND: Since the introduction of the prospective payment system (PPS) in 1983, hospitals in the U.S. have been financially incentivized to shorten inpatient length-of-stay (LOS), and LOS has shortened dramatically. However, it is unclear if reducing LOS adversely affects patient outcomes, such as hospital readmission and mortality. Given financial pressures to shorten LOS, it is possible that some patients may be discharged too early, and that premature discharge is associated with poor patient outcomes. Previous attempts to examine associations between LOS and patient outcomes have generally been confounded by patient-level factors. In particular, because LOS is closely associated with disease severity, patients with shorter lengths-of-stay tend to be less severely ill than patients with longer lengths-of-stay. We used a unique study design to examine associations between LOS and outcomes of care. Our analysis was based on physician LOS tendencies, which were determined for each physician and then used to group hospital admissions and assess associations with mortality and readmission.

METHODS: We examined all admissions to the medical teaching service of an urban medical center from 7/1/02 through 6/30/08. First we calculated the mean LOS for each physician during the study period; this defined each physician’s LOS tendency. Next, each physician was designated a “long-LOS” or a “short-LOS” physician defined by the median LOS for all physicians. Then we created two admission groups, which we defined according to the physician to whom the admission had been assigned. We then compared admissions assigned to long-LOS physicians vs. short-LOS physicians with respect to baseline admission characteristics (demographic characteristics, insurance, Charlson co-morbidity score, admission laboratory values, Laboratory-based Acute Physiology Score (LAPS), and discharge diagnoses), physician characteristics (# of admissions, hospitalist vs. non-hospitalist, years since licensure, years since graduation, and US vs. international medical school) and 30-day mortality and readmission rates. Next, we constructed logistic regression models to assess the independent association between physician LOS tendency, and patient outcomes after adjustment for patient-level and physician-level covariates. To address the threat of residual confounding, we used a propensity score model to match admissions assigned to long-LOS physicians with those assigned to short-LOS physicians with respect to demographic characteristics, insurance, Charlson co-morbidity score, admission laboratory values, Laboratory-based Acute Physiology Score (LAPS), and discharge diagnoses. Each admission assigned to a short-LOS physician was matched to one admission assigned to a long-LOS physician using a greedy, nearest neighbor matching protocol. Finally, we constructed univariate and multivariate conditional logistic regression models to assess the independent association between physician LOS tendency and patient outcomes in the matched patient groups.

RESULTS: 26,445 admissions and 79 physicians were examined. 7380 admissions were assigned to long-LOS physicians, and 19,065 admissions were assigned to the short-LOS physicians. Admission groups were similar with respect to age, sex, insurance type, admission creatinine, Charlson score, and discharge diagnoses. Admissions assigned to short-LOS physicians were more likely to be Black, and had a higher mean LAPS score. Short-LOS physicians saw more total admissions, and were more likely to be hospitalists, have fewer years of licensure, and fewer years since graduation. After propensity score matching, the patient groups were similar with respect to all demographic and clinical characteristics. In unmatched analysis, care by a short-LOS physician was not significantly associated with 30-day mortality (OR 1.07, 95% CI: 0.94-1.22). After adjustment for demographic and clinical patient characteristics care by a short-LOS physician was associated with increased risk for 30-day mortality, but the difference was not significant (OR 1.13, 95% CI: 0.97-1.32). After propensity score matching, care by a short-LOS physician was associated with significantly increased risk for 30-day mortality (OR 1.18, 95% CI: 1.02-1.37) which remained after adjustment for physician characteristics (OR 1.19, 95% CI: 1.01-1.40).

TABLE: Care by a short-LOS physician was associated with significantly increased risk for 30-day mortality (OR 1.18, 95% CI: 1.02-1.37) which remained after adjustment for physician characteristics (OR 1.19, 95% CI: 1.01-1.40).

CONCLUSION: We used a unique study design to examine associations between physician LOS tendency and mortality. Compared to admissions assigned to physicians with longer LOS tendencies, admissions assigned to physicians with shorter LOS tendency had higher 30-day mortality and readmission rates.

| Model                        | 30-Day Mortality OR (95% CI) | 30-Day Readmission OR (95% CI) |
|------------------------------|-----------------------------|-------------------------------|
| Unadjusted                   | 1.07 (0.94 - 1.22)          | 1.03 (0.96 - 1.11)            |
| Multivariate Adjusted a      | 1.13 (0.97 - 1.32)          | 1.03 (0.95 - 1.12)            |
| Propensity Score Matched b   | 1.18 (1.02 - 1.37)          | 1.03 (0.94 - 1.12)            |
| PS Matched and Adjusted c    | 1.19 (1.01 - 1.40)          | 1.04 (0.94 - 1.14)            |

a Adjusted for Pscore, age, race/ethnicity, LAPS, diagnosis
b Conditional Logistic regression with matched pairs as groups
c Adjusted for hospitalist vs. non-hospitalist and years of licensure
mortality. It is unclear why assignment to short-LOS physicians was not associated with increased risk for readmission. However, we were unable to capture readmissions to hospitals outside our system, and it is possible that patients discharged after short LOS were more likely to seek readmission elsewhere, biasing our results. Future studies should apply this study design to a larger sample size to better assess the association between physician length of stay tendency and patient outcomes.

FEASIBILITY OF UTILIZING AN ALL-VOLUNTEER WORKFORCE OF SUCCESSFUL WEIGHT LOSERS TO ADDRESS THE US OBESITY EPIDEMIC Jennifer L. Kraschnewski 1; Christopher N. Sciamanna 1.

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BACKGROUND: Though most adults are able to lose weight if they try, few are able to maintain that loss without ongoing support. Long-term, sustained interventions have been shown to improve weight loss and delay weight gain. However, given that overweight and obesity affect 2 out of 3 Americans, any potential intervention needs to be highly cost-effective. Laypersons (i.e. peers) have demonstrated effectiveness in leading groups for individuals interested in weight loss, although studies have not assessed using successful unpaid volunteers. In addition, nearly one in 6 US adults has successfully lost at least 10% of their weight and kept it off for at least one year. In this study, we examine the possibility of utilizing an all-volunteer workforce to help address the obesity epidemic.

METHODS: We used data from a survey of a nationwide panel of adults (Knowledge Networks, Inc.) with a response rate of 83%. The analytic sample consisted of 673 men and women who completed the online survey in February 2010. Of the 673, 133 (19.7%) participants were not overweight (BMI > 25.0) at their maximum weight, so were excluded from these analyses. Participants were asked about their weight history using items from the National Health and Nutrition Examination Survey (NHANES) Weight History Questionnaire and the Behavioral Risk Factor Surveillance System (BRFSS). Survey items were created to identify participant interest in three specific types of weight control programs: a free program led by successful peers, a program that was not free and led by a successful peer, and a more traditional program led by trained paid professionals. Interest was assessed using a 5-point Likert-type scale and question order was varied randomly. We additionally created a survey item to assess participant interest in leading a weight control group, which was asked of “successful peers”, defined as individuals who had ever lost at least 10 pounds. Participants were also asked about any prior volunteering. Multiple logistic regression models assessed: (1) the association of participant characteristics with preference for an unpaid successful volunteer group leader over a paid expert, and (2) the association of participant characteristics with likelihood of willingness to volunteer to lead a weight control group. All models controlled for demographics (age, gender, race/ethnicity, education level, household income), weight history, weight loss intention, and medical history (overall health status, hypertension, diabetes).

RESULTS: The sample had the following characteristics: 45.5% were female, 16.2% were at least 65 years old, 31.3% were college graduates, and 50.8% had a household income of greater than $50,000. The majority of participants (61.3%) reported currently trying to lose weight and most (85.9%) had lost at least 10 pounds once in the past. Though most (51.6%) participants had no preference between the peer-led free program and expert-led paid program, nearly half (44.5%) preferred the peer-led free program. Only 3.9% of participants preferred the expert-led paid program. After controlling for demographics, weight history, medical history and weight loss intention, the only variables associated with a preference for a peer-led free program, versus an expert-led paid program, was a recent personal experience with a weight control program (adjusted OR 2.2, 95% CI 1.1-4.5) and experience as a volunteer (adjusted OR 2.2, 95% CI 1.3-3.8). Of the individuals with prior weight loss success (n=540), 14.7% were willing to volunteer to meet with a group of people to help them control their weight (i.e. answered “strongly agree” or “agree”). In multivariable analyses, willingness to be a group leader in a peer-led free program was associated with BMI category, recent personal experience with a weight control program and experience as a volunteer. Those who had a BMI in the 18.5-24.9 (normal weight) and 25.0-29.9 (overweight) ranges were 0.1 times (95% CI 0.0-1.0) and 0.2 times (95% CI 0.0-1.0) as likely, respectively, to be interested in being a group leader than those with a BMI > 40.0 (morbidly obese). Individuals who recently participated in a weight loss program were 0.3 times as likely to be willing to lead a group (95% CI 0.1-0.9). Those who reported ever volunteering for an organization were 14.6 times (95% CI 4.4-48.2) more likely to be interested in being a group leader than those who did not report volunteering.

CONCLUSION: Overall, participants appear to be much more interested in a free weight control program led by peers, compared to traditional programs (expert-led) or programs led by peers for which they are required to pay. In addition, one in 7 individuals with prior success at weight loss would be willing to volunteer to lead weight control groups, suggesting a feasible workforce for this type of intervention. Interest in volunteering to lead such a program amongst those who have been successful at weight loss was associated with prior experience with volunteerism. This may mean that using existing hospital volunteering programs as recruitment vehicles may be useful for identifying potential volunteers. Further research is necessary to determine the effectiveness of a volunteer-led weight control program.

HEPATITIS B: PREVALENCE, RISK FACTORS AND KNOWLEDGE OF TRANSMISSION MODES AMONG INMATES IN A SWISS PRISON Laurent Getaz 1; Hans Wolff 1.

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BACKGROUND: Hepatitis B (HBV)-infection continues to be a substantial problem worldwide despite the existence of a safe and effective vaccine. HBV is transmitted within prison settings, but also after release, because of resumption of drug use and sexual activity. Preventive programs in prison can reach many high-risk individuals. This study aimed to estimate the prevalence of HBV infection and its associated factors as well as the knowledge of transmission modes among inmates of Geneva’s Champ-Dollon prison, which is Switzerland’s largest remand prison.

METHODS: A total of 116 individuals were interviewed using a standardized questionnaire on sociodemographic characteristics and HBV knowledge. All accepted blood samples. HBV surface antigen (HBsAg), antibodies against surface antigen (HBsAb) and antibodies against core antigen (HbcAb) were detected by enzyme immunoassay.

RESULTS: This prison population was characterized by a high proportion of young male migrants: 36% originating from Eastern Europe, 32% from sub-Saharan Africa and 22% from North Africa; 64% were illegal immigrants without health insurance. Prevalence for HbcAb indicating past or current infection was 44% (95% CI: 34.9-53.0) and 4.3% (95% CI: 1.4-9.8) had HBsAg indicating current infection. Eleven percent (95%CI: 5.5-17.0) of inmates had only HbsAb, suggesting former vaccination.

Region of origin is significantly associated with HBV infection (p<0.00001): 75.7% (28/37) of inmates from sub-Saharan Africa were HbcAb positive (95% CI 61.8-89.5), 40.5% (17/42) from Eastern Europe (95% CI 25.6-55.3) and 12% (3/25) from North Africa (95% CI 2.5-31.2). Age 27 years or older was also significantly associated with HBV infection (p=0.035). On stratified analysis, origin and age remained significantly associated with HBV infection.

Eleven percent (4/37) of inmates from sub-Saharan Africa and 1.3% (1/79) of those from other origins were HBsAb positive (p=0.038).
Only 1 of 5 inmates (20%) suffering current infection (HBsAg positive) was aware of his infection. A minority of inmates were aware that HBV can be transmitted through unprotected sex (24%), sharing needles (26%), sharing razor (21%) and tattooing (19%). Inmates not originating from Western Europe had the worst knowledge of transmission modes (p=0.003).

CONCLUSION: Prevalence of current HBV infection was 14 times higher than in the Swiss general population and also higher than in U.S. prisons. The high prevalence (4.3%) combined with the ignorance of infection and the lack of knowledge of transmission modes underlines the need for action to limit the risk of HBV in this population. The main risk factor found in our study was the geographical origin of the inmates. Differences in the prevalence of HBV by world regions reported by the CDC corroborate these results.

Two-thirds of the inmates were illegal immigrants in Switzerland, who had no health insurance and thus no access to community immunization program. A serological screening of populations characterized by high HBV prevalence would enable the implementation of an intensive educational program targeting contagious and susceptible inmates. When relevant, appropriate treatment could be provided. Persons tested positive for past or current infection could be excluded from vaccination thus leading to substantial reduction of costs. Prison settings provide unique opportunities to vaccinate this high risk population. Vaccinating incarcerated persons protects not only those individuals, but also the community at large.

DISPARITIES IN SURGERY FOR EARLY STAGE LUNG CANCER: AN ANALYSIS OF MORTALITY ONE YEAR AFTER DIAGNOSIS

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RACIAL/ETHNIC DISPARITIES IN HYPERTENSION FOLLOW-UP CARE OF HEALTH CENTER PATIENTS

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1Health Resources and Services Administration, Rockville, Maryland; 2Johns Hopkins School of Public Health, Baltimore, Maryland

RACIAL ETHNIC DISPARITIES IN LUNG CANCER SURGERY MORTALITY AMONG EARLY STAGE LUNG CANCER PATIENTS

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addition, no disparities exist in receipt of hypertension self-management training by nurses (African Americans OR=2.46 (1.82, 3.33); Hispanics OR=1.71 (1.26, 2.33)). African Americans are more likely than other racial/ethnic groups to be hospitalized or visit the ER in the past 2 years due to hypertension (OR=1.50 (1.07, 2.11)). Hispanics are less likely to express confidence in their capacity to self-manage hypertension relative to other racial/ethnic groups (OR=0.56 (0.42, 0.74)).

CONCLUSION: Among Health Center patients with hypertension, there are no apparent racial/ethnic disparities in patients' receipt of counseling or self-management training provided by a health center professional. However, disparities exist for hospitalization/ER use and self-efficacy for hypertension control. These results persisted after controlling for a number of important patient clinical and demographic characteristics. Health centers, like other settings, need to address potentially avoidable acute care usage due to hypertension by implementing better care coordination and improving patient self-management. A more aggressive educational and outreach program may lead to greater self-efficacy for hypertension self-management.

RESULTS OF THE IMPROVING PERFORMANCE IN PRACTICE PROGRAM: IMPROVING PRIMARY CARE THROUGH PRACTICE COACHING AND IMPROVEMENT NETWORKS Erin Elizabeth Van Scoyoc 1; Kevin Stanford 2; Peter Margolis 3; Darren DeWalt 3. 1UNC Chapel Hill, Chapel Hill, North Carolina; 2Cincinnati Children’s Hospital Medical Center, Cincinnati, Ohio; 3University of North Carolina at Chapel Hill, Chapel Hill, North Carolina. (Tracking ID # 108929)

BACKGROUND: Optimal strategies for widespread primary care transformation are unknown. One challenge to scale up is how to design programs to address variation in the organizational or contextual factors that may be associated with successful quality improvement (QI) efforts. The Improving Performance in Practice (IPIP) initiative is a program of the primary care specialty societies and boards that aims to improve the pace and success of primary care transformation efforts and establish ongoing improvement networks. The IPIP program assists states in developing regional ambulatory care quality initiatives that support practices in undertaking routine performance measurement and data sharing, education in QI methods and clinical content, and the creation of networks of practices to share the ideas and work of improving care. State programs also provide on-site practice coaching to facilitate the improvement process. IPIP enrolled its first practices in 2006, and is currently active in seven states, with more than 350 participating practices. The objective of this study is to investigate whether practices that have participated in the IPIP program have improved the quality of care for patients with diabetes, and to determine if practice characteristics influenced the pace of improvement.

METHODS: Practices participating in the IPIP program submit monthly performance reports on standardized measures. We studied practices reporting the following diabetes measures: percent of diabetic patients in the practice with: A1c >9%, systolic blood pressure (SBP) <130 mmHg, LDL <100 mg/dL, an eye exam, smoking cessation counseling, a foot exam, and testing or treatment for nephropathy. We included all practices that had participated in the IPIP program for at least six months prior to November 2009, and excluded practices that did not focus on diabetes, and practices that used a convenience consecutive sampling method for data reporting. We used linear regression to determine the mean rate of change over time for each measure, and estimated the projected improvement over 12 months based on the mean rate of change per month for each measure. We then compared the rate of improvement by practice characteristics including: practice size (number of provider FTEs), presence of an electronic health record (EHR), prior experience with quality improvement, initial performance, and number of months participating in the IPIP program.

RESULTS: 165 practices participating in the IPIP program were included. 33% of practices were in Pennsylvania, 32% in Colorado, 23% in North Carolina, and 12% in Michigan. 64% of practices had less than or equal to 3 FTEs. 49% had an EHR in place, and 22% reported prior experience with quality improvement. 46% had participated in IPIP for more than 12 months. Practices participating in the IPIP program improved significantly in all of the measures except for the blood pressure and cholesterol goals (SBP<130 mmHg and LDL<100 mg/dL). Figure 1) Practices with worse initial performance improved faster than those with better initial performance (p<0.01 for all of the diabetes measures). Presence of an electronic health record, prior experience with QI, and practice size did not impact the rate of improvement (p>0.05 for all of the diabetes measures).

CONCLUSION: Practices participating in the IPIP program improved the quality of care for their patients with diabetes. Improvement was faster in practices with worse initial performance. Creating networks of practices can be an effective model to disseminate quality improvement to community primary care practices. Consistent, frequent measure reporting across a large number of practices, combined with information on practice context and facilitation, can help to understand factors that expedite translation of evidence into practice. Such an improvement infrastructure can also lead to more rapid adaptation of the practice support strategies.
HOUSING AND CASE MANAGEMENT DECREASE HOSPITALIZATIONS AMONG FREQUENT USERS OF HOSPITAL SERVICES: A PILOT STUDY  
Laura Zimmermann 1; David Buchanan 2; Lou Rohr3; 1; 2Erie Family Health Center, Chicago, Illinois; 3Rush University Medical Center, Chicago, Illinois.  (Tracking ID # 10936)

BACKGROUND: Homeless individuals utilize the health care system often and at great expense. Although some of these individuals have complex medical needs requiring intensive support, others have complex social needs which require supportive housing and case management. In some cases, the increased use of health services is a symptom of these other basic needs being unmet. We examined the impact of supportive housing and case management on health care utilization among homeless individuals who are hospitalized frequently.

METHODS: A social worker (S.S.) at John Stroger Hospital of Cook County identified subjects who were 18 years or older, hospitalized at least three times in the last 12 months at a Cook County Bureau of Health Services hospital, and met the Housing and Urban Development definition of being chronically homeless. The intervention consisted of case management including referral to interim housing and facilitated access to permanent housing. Baseline demographic data were collected through subject self-report, and investigators used Cook County Bureau administrative databases to collect information about hospitalizations, days in the hospital, emergency room (ER) visits, and clinic visits for each individual 12 months before and after enrollment. Time spent in permanent housing during the next 12 months was also recorded. Wilcoxon Signed Rank test was used to compare these measures 12 months before and after enrollment. For all enrolled 1) those who achieved permanent housing 2) those enrolled who did not achieve permanent housing.

RESULTS: Investigators enrolled 34 individuals, and 21 achieved permanent housing. Nineteen achieved permanent housing for greater than 6 of the 12 months after enrollment. The average age of enrollees was 47.6 years, and 71% (n=24) were men. Among all individuals enrolled, average number of hospitalizations decreased from 3.9 to 1.3 after enrollment (p=<0.001), and mean days in the hospital decreased from 18.0 to 6.8 (p=<0.001). Mean number of ER visits decreased from 4.3 to 2.6 but was not statistically-significant. Those who achieved permanent housing had significantly lower mean hospitalizations (3.8 to 1.2, p=<0.001) and hospital days (18.3 to 8.6, p=0.002). However, even those individuals who did not achieve permanent housing had lower rates of hospitalization (4.0 to 1.4, p=0.004) and lower mean hospital days (17.6 to 3.8, p=0.003) after enrollment in the program. In those who achieved permanent housing for greater than 6 months, case management and supportive housing is also associated with significantly lower mean number of ED visits (3.5 to 1.4, p=0.022).

CONCLUSION: Among homeless individuals who are frequent users of hospitals, supportive housing and case management is associated with significantly lower rates of hospitalization and days in the hospital in the twelve months after enrollment compared to the twelve months before enrollment.

ELECTRONIC HEALTH RECORD IDENTIFICATION OF PRE-DIABETES AND AN ASSESSMENT OF UNMET COUNSELING NEEDS  
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BACKGROUND: Over 57 million people in the United States have pre-diabetes, and 70% will progress to diabetes mellitus (DM) type 2. In 2002, two large clinical trials demonstrated that lifestyle modification consisting of diet, exercise, and sustained weight loss can reduce the incidence of DM in pre-diabetic, at-risk patients by approximately 60%. The Diabetes Prevention Program (DPP) went on to demonstrate a 34% reduction in DM incidence at ten years. However, recent National Health and Nutrition Survey (NHANES) data suggest that these practices have not been widely encouraged by physicians and that pre-diabetes often goes unrecognized.

Frequently, serum glucose measurements become part of the health record because serum glucose is included in popular laboratory bundles (i.e. basic metabolic panel, basic chemistry panel, etc.) that providers order to diagnose or evaluate conditions other than abnormal glucose metabolism. However, patients and providers are often not aware of these data and may not use these data to initiate preventive counseling for pre-diabetic patients. Electronic health record (EHR) -generated clinician reminders can keep appropriate preventive care from slipping through the cracks during a busy primary care visit, and have been shown to increase rates of preventive care.

We explored whether electronic health record (EHR) query based on glucose measurements can identify pre-diabetic patients eligible for lifestyle intervention, and we estimated rates of pre-diabetic lifestyle modification counseling.

METHODS: Subjects included men and women >18 years of age who attended at least three office visits in a large, urban, academic primary care practice in Chicago. Electronic search identified patients with plasma glucose levels of 100 to 199 mg/dl between June 1st, 2007, and June 1st, 2009, excluding those with diabetes or diabetic medications/supplies documented as coded, searchable data in problem, diagnosis, or medication lists. This glucose range was chosen based on the most widely accepted definition of pre-diabetes: the presence of impaired fasting glucose (IFG) and/or the presence of impaired glucose tolerance (IGT). IGT is defined as fasting serum glucose levels of 100 to 125 mg/dl, and IGT is defined as serum glucose levels of 140 to 199 mg/dl two hours after an oral glucose load of 75 grams. From these 5,366 patients, 100 randomly-selected subjects underwent classification into provisional categories based on all available EHR documentation on fasting state and concurrent fasting lipid panels: likely pre-diabetes, likely diabetes, abnormal glucose metabolism in the setting of acute illness, or possible normal glucose metabolism. In those likely to have pre-diabetes, investigators reviewed phone and office encounters 6 months before and after each glucose measurement to identify documented lifestyle modification counseling. We compared characteristics of subjects who did and did not receive lifestyle modification counseling using the two-tailed student’s t-test for normally-distributed continuous variables, Wilcoxon Rank Sum test for non-normally-distributed continuous variables, and the Fisher exact test for categorical variables.

RESULTS: The initial electronic query identified 5,366 non-diabetic patients who had attended the clinic over two years with glucose measurements in the range of 100–199 mg/dl. Eighty-three percent had a glucose level of 100 to 125 mg/dl. Of the 100 randomly-selected patients (from the 5,366) for whom manual chart review was undertaken, 58% (95% CI 48 to 68%) of subjects met criteria for likely pre-diabetes. Fourteen percent were categorized as likely having diabetes, abnormal glucose metabolism in the setting of acute illness, or possible normal glucose metabolism. In those likely to have pre-diabetes, investigators reviewed phone and office encounters 6 months before and after each glucose measurement to identify documented lifestyle modification counseling. We compared characteristics of subjects who did and did not receive lifestyle modification counseling using the two-tailed student’s t-test for normally-distributed continuous variables, Wilcoxon Rank Sum test for non-normally-distributed continuous variables, and the Fisher exact test for categorical variables.

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POOGER CLOCK DRAW TEST SCORES ARE ASSOCIATED WITH GREATER FUNCTIONAL IMPAIRMENT IN PERIPHERAL ARTERIAL DISEASE: THE WALKING AND LEG CIRCULATION STUDY II Laura Zimmermann 1; Mary McDermott 2. 1Institute for Healthcare Studies, Feinberg School of Medicine, Northwestern University, Chicago, Illinois; 2Division of General Internal Medicine, Feinberg School of Medicine, Northwestern University, Chicago, Illinois. (Tracking ID # 109398)

BACKGROUND: Men and women with lower extremity peripheral arterial disease (PAD) have greater functional impairment than those without PAD. Men and women with PAD have slower walking speed, poorer walking endurance, and lower physical activity levels compared to those without PAD. Impaired walking performance in PAD is not fully explained by the degree of lower extremity arterial obstruction. Thus, mechanisms for functional impairment in PAD are not fully understood.

Cognitive impairment is a major risk factor for decreased functional performance in the aging population and is more prevalent in those with PAD compared to those without cardiovascular disease. Individuals with PAD perform worse on multiple cognitive function tests compared to age- and education-matched controls without PAD. However, to our knowledge, no published studies have established an association between subtle cognitive disturbance and functional performance in individuals with PAD. This cross-sectional study determined whether cognitive impairment, assessed by the clock draw test (CDT) is associated with poorer functional performance among older, dementia-free individuals with PAD, independent of severity of arterial obstruction and potential confounders.

METHODS: Participants were men and women age 60 and older with Mini Mental Status Examination scores ≥24 with PAD (n=339) and without PAD (n=234). Subjects were recruited from two urban vascular testing laboratories and a primary care clinic. Functional performance measurements included the 6-minute walk test, 4-meter walking velocity at usual and fastest pace, the Short Physical Performance Battery (SPPB), and accelerometer-measured physical activity at home. CDTs were scored using the Shulman method, which assigns points based on components of the clock and ranges from a score of 0 to 5, 5 being the best score. Results adjust for age, sex, race, education, ABI, comorbidities, and other confounders. Clinical characteristics and associations between CDT scores and clinical characteristics were compared between PAD and non-PAD subjects using general linear models for continuous variables and chi-square tests for categorical variables. Analysis of covariance was used to analyze the relationship between CDT and functional performance measures after adjustment for demographics, comorbidities.

RESULTS: Clock draw test (CDT) scores were categorized as follows: Category 1: CDT score 0–2, Category 2: CDT score 3, Category 3: CDT score 4–5. In unadjusted analyses of PAD participants, lower CDT scores were associated with slower usual- and fast-paced walking velocity, lower SPPB score, and lower levels of physical activity in those with PAD (p-trend=0.005, 0.003, 0.011, 0.005, respectively). After adjustment for age, sex, race, education level, ABI, cardiovascular disease, cancer, and pulmonary disease, lower CDT scores were associated with slower usual-paced walking velocity (Category 1: 0.78 meters/second; Category 2: 0.83 meters/second; Category 3: 0.86 meters/second; p-trend=0.024) and lower physical activity (Category 1: 420 activity units; Category 2: 677 activity units; Category 3: 701 activity units; p-trend=0.043) among PAD subjects.

In unadjusted analyses of participants without PAD, lower CDT scores were associated with slower normal and fast-paced walking velocity (p-trend<0.001, <0.001) and a poorer SPPB score (p-trend=0.001). After adjustment for age, sex, race, education level, ABI, cardiovascular disease, cancer, and pulmonary disease among participants without PAD, lower CDT scores continued to be associated with slower usual-paced walking velocity (Category 1: 0.79 meters/second; Category 2: 0.95 meters/second; Category 3: 0.98 meters/second; p-trend=0.025), slower fast-paced walking velocity (Category 1: 1.17 meters/second; Category 2: 1.28 meters/second; Category 3: 1.33 meters/second; p-trend=0.044), and poorer SPPB scores (Category 1: 8.06 meters/second; Category 2: 10.29 meters/second; Category 3: 10.49 meters/second; p-trend=0.036).

CONCLUSION: Cognitive impairment is associated with poorer functional performance, independent of ABI, in older, non-demented individuals with PAD. Further prospective study is needed to determine the mechanisms of the association between CDT scores and functional performance in PAD participants and whether those mechanisms are unique to PAD participants compared to the general population. Longitudinal data are necessary to determine whether baseline CDT score or decline in CDT score predict decline in functional performance, institutionalization, or mortality in individuals with PAD.

UNDERESTIMATION OF CALORIES PURCHASED AT FAST-FOOD RESTAURANTS-WHO AND HOW MUCH? Jason P Block 1; Suzanne Condon 2; Ken Kleinman 1; Sheryl Rifas-Shiman 1; Matthew W Gillman 1. 1Harvard Medical School/Harvard Pilgrim Health Care, Boston, Massachusetts; 2Massachusetts Department of Public Health, Boston, Massachusetts. (Tracking ID # 109399)

BACKGROUND: Obesity results from overconsumption of energy in relation to energy expenditure. Adults may over-consume because they are unaware of the calorie content of foods they buy. When presented with restaurant menus in experimental settings, adults underestimate the calorie content of meals they would choose, but no real-world evaluations exist of how well adults estimate the calories of the food they purchase. The purpose of this study was to quantify the difference between actual and reported calorie content of food purchased for dinner at fast-food restaurants in New England and to assess the correlates of underestimation.

METHODS: We interviewed adults 18+ years of age at fast-food restaurants during the baseline phase of a study to evaluate a coming federal regulation that will require chain restaurants across the US to post calories on their menus. We randomly selected 3 McDonald’s, 3 Burger Kings, 2 Subways, 1 Wendy’s, and 1 KFC in each of Boston and Springfield, MA, Providence, RI, and Hartford, CT, for a total of 40

identified, comprising 24% of opportunities (95% CI 17 to 33%) in the 58 pre-diabetic individuals. We noted only one instance of documentation of a specific Diabetes Prevention Program recommendation, which appeared in a phone note and included the recommendation of weight loss of 7% of body mass. The difference in mean baseline BMI was clinically and statically significant when comparing those counseled to those not counseled (54.1 versus 29.9, p=0.037). Otherwise, there were no statistically or clinically-significant differences between the two groups in terms of demographics (age, sex), co-morbidities (hypertension, dyslipidemia, coronary heart disease, congestive heart failure, cerebrovascular accident, transient ischemic attack), or clinical characteristics (glucose, creatinine, blood pressure, lipid levels).

CONCLUSION: EHR query using a glucose measurement criterion can identify pre-diabetic individuals and those who require further evaluation of glucose metabolism, including subjects with undiagnosed diabetes. Our findings support the need to address glucose measurements of 100 to 199 mg/dl on a systemic or organizational level, potentially with physician reminders. Future research should investigate EHR-based, population-level interventions to facilitate pre-diabetes recognition and intervention, leading to improved quality of care.
restaurants. We visited each restaurant three times from April to August 2010 between 5:15 to 7:30 pm, for 120 total restaurant visits. We attempted to approach all adults sequentially as they exited the restaurant. In exchange for a $2 incentive, we conducted a brief interviewer-administered survey to collect demographics, height and weight, food choices, and whether the participant saw and used nutritional information available in the restaurant. As part of the survey, we also asked each participant to estimate the calorie content of his or her dinner. To calculate the actual calorie content of food purchased, we used the participant’s receipt and nutritional information from restaurant websites. Using multivariable logistic regression accounting for clustering of respondents by chain, we examined correlates of large-scale underestimation (reported versus actual calories ≥500).

RESULTS: We interviewed 915 participants (7.6 respondents per restaurant), representing 36% of adults we approached. 59% of respondents were male, 38% were White, 33% were Black, and 20% Hispanic; 42% were 18-29 years old, 31% were 30-49 years, and 27% were ≥50 years old. 556 subjects (65%) were overweight or obese. The mean actual calorie content of meals was 836 calories (SD 425), and the mean underestimation was 135 calories (SD 753; IQ range 530 to 2700). The most important factors in food choice were taste (79% said taste mattered “a lot”), convenience (54%), price (32%), and calorie content (26%). 210 (23%) of participants reported seeing nutritional information in the restaurant, but only 38 (54%), price (32%), and calorie content (26%) were more likely to underestimate. 18-29-year-olds v. 30-49-year-olds (OR 2.54 [95% CI 1.59-4.06]), and Hispanics (OR 3.60 [95% CI 2.08-6.24]) were more likely to underestimate calorie content, and underestimation of calorie content holds promise that menu labeling from restaurant websites. Using multivariable logistic regression accounting for clustering of respondents by chain, we examined correlates of large-scale underestimation (reported versus actual calories ≥500).

RESULTS: We interviewed 915 participants (7.6 respondents per restaurant), representing 36% of adults we approached. 59% of respondents were male, 38% were White, 33% were Black, and 20% Hispanic; 42% were 18-29 years old, 31% were 30-49 years, and 27% were ≥50 years old. 556 subjects (65%) were overweight or obese. The mean actual calorie content of meals was 836 calories (SD 425), and the mean underestimation was 135 calories (SD 753; IQ range 530 to 2700). The most important factors in food choice were taste (79% said taste mattered “a lot”), convenience (54%), price (32%), and calorie content (26%). 210 (23%) of participants reported seeing nutritional information in the restaurant, but only 38 (54%), price (32%), and calorie content (26%) were more likely to underestimate. 18-29-year-olds v. 30-49-year-olds (OR 2.54 [95% CI 1.59-4.06]), and Hispanics (OR 3.60 [95% CI 2.08-6.24]) were more likely to underestimate. 18-29-year-olds v. ≥50-year-olds (OR 0.57 [95% CI 0.34-0.94]) were less likely to underestimate, and BMI and sex were unrelated. Correlates of purchasing ≥1000-calorie meals were underestimated of calorie content by ≥500 calories and age 18 to 29 years old v. ≥50 years old. The importance of calorie content (mattered “a lot” v. “not at all”) predicted a lower odds of ordering ≥1000-calorie meal.

CONCLUSION: One-third of adults visiting fast-food restaurants in New England purchased ≥1000 calories for dinner, and 27% underestimated the meal’s calorie content by ≥500 calories. Purchasing ≥1000 calories strongly predicted underestimating calorie content of meals by ≥500 calories. Minorities were more likely to underestimate calorie content, and 18- to 30-year-olds were less likely. Collection of similar data after the federal menu labeling regulation goes into effect will help determine the impact of the regulation on these patterns of knowledge and consumption. The strong association of large-calorie meal purchases and underestimation of calorie content holds promise that menu labeling could make calories more salient.

MAPPING NEGLECTED TERRAIN: HOW FRONT-LINE NURSING HOME STAFF ASSESS AND COMMUNICATE ABOUT CHANGE IN CONDITION Karen Glasser Scandrett 1; Mary Ann Anichini 2; Celia Berdes 3; Kenneth Boocvk 4; Debra Saliba 5; Linda Emanuel 6; Stephanie Taylor 6; Northwestern University, Chicago, Illinois; 2Presbyterian Homes, Lake Forest, Illinois; 3Buie Center on Aging, Chicago, Illinois; 4The Mount Sinai Medical Center, New York City, New York; 5RAND Corporation, Santa Monica, California.

BACKGROUND: Nursing home residents are dependent on nursing aides (NAs) for basic daily care, socialization and other quality of life activities, and the early detection of clinical changes. Contact with registered nurses is limited, and physician visits may be infrequent. Although NAs may detect important changes in a resident up to five days before they become clinically significant, and despite the availability of tools to help staff report and document changes, residents regularly experience unplanned discharges for potentially preventable clinical problems. Methods from safety sciences may help to implement better communication and management practices among nursing home staff, but these methods are not utilized by many nursing homes, and gaps in staff education and training exist. As part of a larger curriculum development project to train nursing home staff members in patient safety, we conducted focus groups to understand how staff detect clinical changes and communicate about it with other providers. We used a patient safety framework to identify the organizational structures and processes needed for effective clinical care and team communication.

METHODS: Four focus groups were conducted by a trained facilitator at a single, non-profit suburban facility: two groups were comprised of NAs and two of licensed staff members, with day and evening shifts divided. An interview guide addressed four training-responsive conceptual areas derived from prior literature review and expert panel consensus: 1) How staff learn about their residents’ typical health patterns; 2) How staff watch for clinical changes (who watches and what is noted); 3) What clinical changes are perceived to be significant and must be reported; and 4) How staff communicate about changes in their resident. Within each training concept, questions were also asked to ascertain barriers to or facilitators of performing each task. Transcribed interviews were analyzed for themes in an iterative process by multidisciplinary team members.

RESULTS: A total of 12 staff participated in the four groups. They reported using multiple sources of information to develop their understanding of residents’ baseline function, and to detect subtle clinical changes. They regarded all clinical changes as potentially significant, and described multiple methods for communication about them with various team members. Communication between CNA and nurse was reported to be not consistent or reliable. Physician response resulting from communication between nurse and physician depended on physician familiarity with the resident and was not perceived as effective in achieving desired results.

CONCLUSION: Front-line nursing home workers self-report skill in detecting subtle clinical change in their residents, but are less confident in assessing the significance of those changes. Staff members developed some creative approaches to communicate within their discipline, but interdisciplinary communication is not a systematized routine and the desired clinical outcome is not always achieved. Skills and tools for structured clinical assessment, effective interdisciplinary communication, and exposure to systematic approaches to implement improvements are important topics for further training. Patient safety science offers an important framework to shape efforts for quality improvement in nursing facilities.
community involvement. While education and screening are major goals, the motivation and expectations of the attendees may inform a more rational health fair design, and also provide insight into patient-physician communication.

METHODS: All English and Spanish speaking participants at the Yale Primary Care fall 2010 health fair in Waterbury, CT were asked to participate anonymously in a survey to collect demographic data and basic information about their medical history. These data were matched with health screening results that included measurements of blood pressure, BMI, and glucose. The survey was approved by the Yale University IRB.

RESULTS: 228 attendees participated in the survey; 176 (75%) were female; the average age was 54 years [range 21 to 84]; 164 (72%) spoke English; 30% had less than a high school education, while 6% had a college education or greater; 73% had a primary care provider; and 80% had insurance, including state Medicaid. Based on BMI results, 26% were overweight, 30% were obese and 23% were morbidly obese. On fingerstick measurement, 30% had impaired fasting glucose, 22% had a glucose ≥ 126-199 mg/dL, and 5% had glucose ≥ 200 mg/dL. 31% of blood pressure readings met a diagnosis for essential hypertension (≥ 140/90 mmHg). Overall, 41% had visited the emergency room (ER) for care at least once in the past year [range of ER visits was 1 to 18] and 28% (or 68% of those who visited the ER) had been admitted to the hospital in the prior year. Despite these numbers, 80% of participants rated their health as good or better, 18% as fair and 2% as poor.

CONCLUSION: The community served by this health fair was a largely English-speaking, middle-aged, overweight female population with a low level of formal education. The Spanish speaking population (30%) is slightly higher than the Latino population of Waterbury (24.1%). Despite 4 out of 5 attendees having insurance, and 73% having a primary care provider, 2 out of 5 had visited the ER for care in the past year, and many of them were admitted to the hospital. These data underscore the significant and complex medical problems faced by underserved populations and reflect the national trend of increased ER visits for care, even among those with access to primary care. Additionally, as many people had routine primary care providers, this survey demonstrates that most attendees came for additional health information and education and not for a diagnostic or therapeutic intervention, suggesting that doctor-patient communication for this population could be augmented which may lead to decreased ER visits as well. Further research into these areas is needed.

THE DISCLOSURE GAP: PATIENT AND PROVIDER PERSPECTIVE ON THE QUALITY OF ACTUAL DISCLOSURES Thomas H Gallagher 1; Douglas Brock 1; Mary Etchler 2; Alan Lembiz 2; David M Studdert 3; Jeff Varnell 3; Dennis J Boyle 4. 1University of Michigan, Ann Arbor, Michigan; 2Denver, Colorado; 3Division of General Internal Medicine, Department of Internal Medicine, University of Michigan, Ann Arbor, Michigan; 4COPIC, Denver, Colorado (Tracking ID # 10043)

BACKGROUND: Disclosing unanticipated outcomes to patients is an expectation of accreditation standards and national quality organizations. Preliminary studies suggest that a sizable gap exists between these expectations and current practice. Yet few studies have measured the quality of actual disclosures.

METHODS: We developed and validated a brief survey to assess patients’ and physicians’ ratings of the quality of actual disclosures. The surveys were administered to patients and physicians who were participating in the 3Rs program of COPIC Insurance, a program to promote disclosure of certain unanticipated outcomes and to reimburse patients for out-of-pocket expenses and lost time. Patients and physicians rated the overall quality of the disclosure. Patients were also asked whether specific disclosure elements recommended by consensus guidelines were present in the discussion, and how likely they were to return to this physician if they needed similar care in the future. The surveys were distributed to 908 patients and 936 physicians between 2007–2009 after management of the event in the 3Rs program had been concluded.

RESULTS: Surveys were returned by 817 physicians (87%) and 514 patients (57%). Physicians and patients did not agree on the severity of the event in question. 33% of patients considered the event to be “extremely serious (I might have died),” compared with 8% of physicians (P<.0001). When asked to rate the quality of the disclosure on a scale from “0” (“extremely dissatisfied”) to “10” (“extremely satisfied”), physicians were much more satisfied with the quality of the disclosure (mean 8.1) than were the patients (mean 6.2, P<.001). 41% of patients rated the quality of the disclosure as a “5” or less. Regarding patient assessment of specific disclosure elements, physicians scored highest on explaining the event in terms the patient could understand (68% agreed), providing a sincere apology to the patient (65% agreed), and being truthful when explaining the event (64%). In contrast, only 37% of patients agreed that the physician assured them that steps would be taken to prevent similar events from happening again. Ten items from the patient survey were combined into a Patient Satisfaction Scale (Chronbach alpha=.96). Lower Patient Satisfaction scores were associated with higher patient perception of the severity of the event (Spearman correlation=.15, P=.002) and with a lower likelihood of returning to that physician for future care (Spearman correlation=-.78, P<.001).

CONCLUSION: Measuring patient and physician ratings of actual disclosures is feasible, and reveals substantial shortcomings. Routinely measuring disclosure quality could help organizations target efforts to improve these challenging conversations.

PUBLIC REPORTING FOR PERCUTANEOUS CORONARY INTERVENTIONS IN NEW YORK STATE Lena M. Chen 1; Endel John Orav 2; Arnold M. Epstein 3; 1Ann Arbor VA Medical Center, and Division of General Medicine, Department of Internal Medicine, University of Michigan, Ann Arbor, Michigan; 2Division of General Internal Medicine, Brigham and Women’s Hospital and Harvard Medical School, Boston, Massachusetts; 3Dept. of Health Policy and Management, Harvard School of Public Health: Division of General Medicine, Harvard Medical School and Brigham & Women’s Hospital, Boston, Massachusetts (Tracking ID # 10950)

BACKGROUND: Prior studies of public reporting on risk-adjusted mortality for coronary artery bypass grafting (CABG) have found that public reports have strong predictive validity and likely encourage poor quality surgeons to leave practice. However, except for CABG surgery, there are few data on the predictive accuracy of public reports or their impact on providers’ practice. We used data from New York State on percutaneous coronary interventions (PCIs) to address three questions: 1) what is the predictive accuracy of public reports for PCIs, 2) what is their impact on market share, and 3) is report performance associated with decisions to leave practice?

METHODS: We examined quality performance by hospitals (and cardiologists), as measured by publicly reported risk-adjusted mortality rates (RAMRs) for non-emergent PCIs performed in New York State between 1998 and 2007. For hospitals (and cardiologists) in each performance quartile, we estimated: 1) the average risk-adjusted mortality rate after report publication, 2) the change in market share from pre-release to post-release year, and 3) the proportion of physicians leaving practice in the post-release year.
RESULTS: Between 1998 and 2007, the New York State public reports included data on 351 cardiologists who performed non-emergent PCIs at 49 hospitals. We found that report cards had poor predictive accuracy for hospitals. For example, in 2002–2004, average hospital RAMRs increased monotonically from best to worst performance quartiles (RAMRS of 0.21, 0.27, 0.36, and 0.50, p-value <0.001). In the year after the report was published, hospitals in the worst performance quartile in 2002–2004 still had the highest RAMR of any quartile but the association was not significant and none of the trends were monotonic (RAMRs from best to worst quartile: 0.56, 0.57, 0.59, 0.77, p-value= 0.30). We found that public reports for cardiologists were inconsistent in their ability to predict future performance. For example, between 2005 and 2007, patients who picked a cardiologist from the worst performance quartile (based on the 2001–2003 report), had a higher chance of dying than those who picked a cardiologist from one of the other three quartiles (RAMRs of 0.61, 0.56, 0.52, 0.53; p=0.005). However, performance was similar across the top three quartiles, and none of the other years we examined had statistically significant results. Performance ranking was not associated with a change in market share for hospitals or for physicians (all p>0.05). There was no association between report performance, and decisions to stop practicing in New York after report publication (4% in top and bottom quartiles; p>0.05).

CONCLUSION: We found that the New York State reporting system for PCIs has poor predictive accuracy for hospitals, and inconsistent predictive accuracy for cardiologists. We found no evidence that consumers or payers are using the public reports to drive market share, or that cardiologists who perform poorly are more likely to leave practice after report release. The utility of public reporting may differ substantially for different procedures.

PUBLIC OPINIONS ABOUT PAYING PEOPLE TO TAKE THEIR MEDICINES James D. Park 1; Jessica Metlay 2; Jeremy M Asch 3; David A Asch 1. 1University of Pennsylvania, Philadelphia, Pennsylvania; 2Vassar College, Poughkeepsie, New York; 3Brandeis University, Waltham, Massachusetts. (Tracking ID # 10951)

BACKGROUND: There is considerable interest in using financial incentives to improve people’s health. In fact, financial incentives are of increasing national interest, as legislative elements are embedded in the Affordable Care Act. However, paying people to improve their health touches upon strongly held views about personal responsibility. As various stakeholders consider financial incentives for improving health, public opinions regarding social and ethical issues related to their use have yet to be defined. This study aims to evaluate public opinions about the use of financial incentives to improve health.

METHODS: The New York Times article, “For Forgetful, Cash Helps the Medicine Go Down” by Pam Belluck, highlighted a study using financial incentives to improve Warfarin adherence. The article, published on June 13, 2010, resulted in 217 reader comments posted by June 14th. A second article, “Should People Be Paid to Stay Healthy,” was published on June 14, 2010 and contained five commentaries from experts in bioethics and health policy. This article elicited 177 reader comments from June 15 to June 28, 2010. The content of readers’ comments was systematically analyzed. Three reviewers read comments from both articles to identify common themes. Comments were randomly divided into a training set and an evaluation set. Two reviewers worked together to assign themes to each of the comments in the training set. Comments could be assigned multiple themes or none at all. Through that process, the original set of themes was modified to a more consistent set to which all reviewers agreed. Two reviewers worked independently to code the comments in the evaluation set. To test for inter-rater reliability, kappa scores were calculated for each theme. Differences in coding were adjudicated between the two reviewers (using the third reviewer for disagreements) and the coding of all comments was combined into a single set for analysis.

RESULTS: Participant information was unavailable. General data about the online readership was obtained: 48.9% are women; 62.8% are between the ages of 25–54; 48.6% earn an income of $75,000 or more; 84.3% have some college education. Average number of themes assigned to a comment was 1.5 and ranged between 0–6. Kappa scores ranged between 0.45-0.75 with a mean of 0.64, indicating generally good agreement.

Themes, percent of comments representing the theme, & select exemplars

Alternative Incentives
Good health should be the ultimate incentive (13%) Penalties should be used as an incentive (20%)

Ethical & Social Issues
Financial incentives reward people for irresponsibility (21%) “We’re going to reward people for being lazy and stupid.”
Financial incentives indirectly penalize people with good health habits (10%) “Responsible members of our society must constantly pay the price for the stupidity of others.”
Financial incentives will ruin people and society (6%) “With each act that “we” as a society take to mitigate personal responsibility, we create ever more inept and dysfunctional fellow citizens.”
People will game the system to win the financial incentive (3%) Financial incentives are paternalistic (4%)

Negative Public Perceptions
People make moralistic judgments or negative assumptions about individuals who use financial incentives,(11%) People think the government is involved in financial incentives,(11%) People distrust the health profession and the services they provide. (12%)
The idea of paying people to take medications is absurd, outrageous, etc. (25%)

Positive Public Perception
People support the use of financial incentives (13%) “Less expensive to pay them to take the meds than to watch them fall apart.”

CONCLUSION: The comments revealed largely negative perceptions of financial incentives that may limit the public acceptability and uptake of this approach. In addition, the comments conveyed an appeal for greater personal responsibility for individual health. Despite the negative perceptions, there was measurable but minority support for the use of financial incentives, particularly from individuals who recognized good health practices may avert higher healthcare costs for chronic conditions later in life.

PRE-CLINICAL MEDICAL STUDENTS’ KNOWLEDGE AND ATTITUDES IN CARING FOR LESBIAN, GAY, BISEXUAL AND TRANSGENDER PATIENTS Nicole Rosendale 1; Benjamin Cox 2; Allison Avery 1; Colleen C. Gillespie 3; Adina Kalet 5; Richard Greene 1. 1NYU School of Medicine, New York, New York; 2New York University School of Medicine, Brooklyn, New York; 3New York University School of Medicine, Brooklyn, New York; 4NYU School of Medicine, Brooklyn, New York; 5NYU School of Medicine, NY, New York. (Tracking ID # 10952)

BACKGROUND: While Americans have grown much more accepting of lesbian, gay, bisexual and transgender people, little research has investigated pre-clinical medical students’ knowledge and attitudes in
caring for lesbian, gay, bisexual and transgender (LGBT) patients. This study provides results of a survey of such knowledge and attitudes in 1st and 2nd year medical students. The survey will ultimately serve as a pre-test for evaluating the impact of an LGBT health curriculum. A similar study conducted in the same medical school in 2006 also allows for identification of secular trends.

**METHODS:** In December 2010, first and second year medical students at NYU School of Medicine were sent an email requesting their participation in a 39-question survey designed to assess their knowledge, attitudes and confidence in caring for LGBT patients. Knowledge was assessed via 20 multiple choice and true/false questions focusing on five major content areas: epidemiology of health issues in LGBT populations, anatomical and physiological aspects of transgender individuals, equity/access to health care, medical practice with LGBT patients (e.g., how to ask about sexual behavior; prevalence with which gay men disclose sexual orientation to their physicians), and sociocultural issues. Attitudes were assessed on a 5-point agreement scale and are grouped into four (conceptual and empirically supported via factor analysis categories: attitudes toward LGBT patients, attitudes about comfort/confidence in treating LGBT patients, attitudes about the need to know about sexual orientation and behavior to effectively treat, and views of whether most primary care physicians can effectively treat LGBT patients. Students were also asked about their connections with and experience in treating LGBT individuals. Repeated measures ANOVAs with Bonferroni-corrected multiple comparisons were used to compare content areas within the overall knowledge scores and attitude items.

**RESULTS:** A total of 155 of 330 students responded (47% response rate). Students, on average, got 59% of items correct on the 20-question knowledge assessment (SD=13%). Students who identified as LGBT or had clinical experience with LGBT patients had significantly higher knowledge scores. Knowledge was lowest in the medical practice (mean 34% correct, SD 38%) and epidemiology (37% correct, SD 16%) and highest in the transgender (84% correct, SD 19%) and sociocultural (74% correct, SD 32%) areas. Students generally held positive attitudes toward LGBT patients (mean endorsement of positive statements about LGBT patients=4.3, SD .6) but were slightly less comfortable/confident toward LGBT patients (mean endorsement of positive statements about LGBT patients=4.3, SD .6) but were slightly less comfortable/confident in treating LGBT patients (mean=3.6, SD .9) and reported slightly less positive attitudes toward needing to know (mean=3.7, SD .6). Most students did not strongly endorse that “most primary care physicians can effectively treat LGBT patients” (mean=2.3, SD .8). Knowledge and attitudes were fairly similar to those found for 3 rd and 4th year medical students in 2006.

**CONCLUSION:** Knowledge of LGBT health concerns, as measured in our survey, suggests the need for more education for preclinical students, particularly since identification with the LGBT community and clinical exposure to LGBT patients is associated with higher scores and more positive attitudes. Students in our sample need to learn more about clinical practice with and the epidemiology of health issues with LGBT patients and some students report discomfort and lack of confidence in conducting physical exams on and discussing sexual behavior with LGBT patients.

**CONFINED TO IGNORANCE: THE ABSENCE OF PRISONERS FROM NATIONAL HEALTH DATA** Brie Williams 1; Cyrus Ahalt 1; Ingrid A Binswanger 2; Michael Steinman 1.

1University of California, San Francisco and SFVAMC, San Francisco, California; 2University of Colorado, Denver, Aurora, Colorado. (Tracking ID # 10954)

**BACKGROUND:** As of 2008, 1 in 31 Americans was incarcerated, on parole or probation, and 1 in 15 was expected to spend time in prison during his or her lifetime. Although studies show that persons currently or previously incarcerated are in worse health and generate higher health care costs than the general public, such studies are small, infrequently conducted, and incorporate limited measures of health (e.g., self-report of selected medical conditions within larger criminal justice questionnaires). Our goal was to analyze leading publically available national health datasets for questions that could be used to assess the health of persons with a current or prior history of incarceration.

**METHODS:** We analyzed all 48 datasets from the Society of General Internal Medicine (SGIM) Dataset Compendium, a resource providing links to major national datasets for generalist researchers. Five were not publically available, 7 did not include patient-level health data, and 4 were not relevant to US prisoners and were excluded, resulting in 32 datasets. For each dataset, we examined all publically available documentation (questionnaires, codebooks, and results summaries) for the terms: Jail, Prison, Incarceration, Crime, Criminal, Convict, Victim, Police, Correctional, Corrections. We then determined each dataset’s stated focus (health care costs, health disparities, older adults, youth, health risk factors) and sample construction (longitudinal, cross-sectional). In a secondary analysis, we contacted all 12 longitudinal study investigators to determine whether subjects who became incarcerated during the study were dropped and/or reenrolled after release; 3 studies did not respond to 2 emails and 1 phone call and were therefore not considered for subsequent analyses.

**RESULTS:** Of the 32 datasets, 20 were cross-sectional and 12 were longitudinal. Datasets focused on health disparities (9), health care costs (7), older adults (6), youth (5), and/or health risk factors (11). None was designed to investigate the health of persons with a current or past history of incarceration. Subjects incarcerated at the study’s outset were excluded in 25 datasets (78%); the remaining 7 may have included prisoners but did not code them as such (e.g. studies of all hospitalized patients in the US). Eight studies (25%; 4 cross-sectional, 4 longitudinal) included a question with one of our keywords. Of these, 4 (1 cross-sectional (USRDS) and 3 longitudinal (MIDUS, ADDHEALTH, CARDIA) included a question that could be used to define a group with a history of incarceration. The others did not differentiate incarceration from other criminal justice problems (e.g. Question: “Do you have legal problems, such as imprisonment, prosecution, lawsuits, or litigation?”). The 4 datasets with a question about incarceration history were focused on health risk factors (3 - CARDIA, ADDHEALTH and USRDS), health disparities (3 - CARDIA, ADDHEALTH and MIDUS), and youth (1 - ADDHEALTH). Notably, only 3 of 9 studies focused on health disparities and none of the studies focused on health care costs assessed incarceration. Our secondary analysis of longitudinal studies showed that only 2 of 9 both followed subjects through incarceration and generated a new code to indicate that they had been incarcerated (ADDHEALTH and CARDIA). The remaining studies either dropped those who became incarcerated (44%) or followed them but did not indicate they had been incarcerated (33%).

**CONCLUSION:** Large health-related datasets can provide accurate, unbiased, and relevant data to researchers, public health experts, clinicians and policy-makers. Of the 32 national health datasets reviewed, 1 cross-sectional and 3 longitudinal datasets could be used to investigate the health of persons who have been incarcerated. The association between incarceration and poorer health has been documented for the large and growing criminal justice population which is overrepresented by racial and ethnic minorities. A lack of relevant data, however, precludes more rigorous assessment of incarceration’s impact on health disparities, risks for specific health outcomes, and health care
costs. In 2007, the Institute of Medicine issued new ethical guidelines for prisoner health research recognizing that “access to research may be critical to improve the health of prisoners.” Our findings suggest that a good place to start would be through the broader inclusion of incarceration-related questions in national health datasets.

INVITING PATIENTS TO READ THE DOCTOR’S NOTES: HOPES, FEARS, AND DISSONANCE

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BACKGROUND: As the public demands better care and greater transparency, providers increasingly offer patients online access to laboratory results and other parts of their electronic medical records through secure Internet portals. However, few clinicians routinely share encounter notes with their patients. OpenNotes, a yearlong research and demonstration project involving primary care physicians (PCPs) and their patients in Boston (BOS), Pennsylvania (PA), and Seattle (SEA), is inviting patients to review their doctors’ notes online. We hypothesized that patients would be generally positive in their attitudes toward open notes, although there might be differences based on demographic and health factors, and that PCPs would be generally less positive. Prior to providing access to notes, we surveyed eligible patients and doctors about their attitudes and expectations.

METHODS: We conducted online surveys of patients and PCPs from the 3 participating primary care settings: an urban academic health center and associated community practices (BOS), a primarily rural integrated health system (PA), and a county hospital serving mainly indigent patients (SEA). Eligible patients and PCPs in BOS and PA had active portal accounts; patients and PCPs in SEA used a portal made accessible for the OpenNotes project. Drawing on insights from focus groups and individual interviews, we developed surveys designed to solicit patients’ perceptions about potential benefits and risks related to reading their PCPs’ visit notes and included a set of parallel items in surveys of their PCPs. Survey invitations were sent to PCPs by email and to their patients through secure patient Internet portals. We calculated proportions of patients and PCPs agreeing or disagreeing with a series of benefit and risk statements. In addition, we evaluated patients’ perceptions of benefits and risks according to demographic and health characteristics.

RESULTS: 38,325 patients and 174 PCPs completed surveys. Patient response rates were 40% in BOS, 43% in PA, and 100% in SEA where all patients joining OpenNotes (n=273) completed surveys at enrollment. PCP response rates were 83% in BOS, 52% in PA, and 79% in SEA. Among patients, mean age was 52 years (SD 14, range 18–73), with 63% female, 63% white, and 64% employed. 27% reported education up to high school (HS); 25% had some college; 17% graduated college; and 26% had post-college education. 168% reported fair/poor health. 93% of patients wanted to look at their notes, and 94% thought open notes a good idea, compared to 55% of PCPs. Patients and doctors also differed on risks and benefits (see Table 1).

Demographic and health characteristics accounted for few differences among patient perceptions of benefits and risks. However, 94% of those with HS education or less felt they would take better care of themselves, compared to 84% of those with the most education. Similarly, 84% of those with HS education or less felt that open notes would help them remember to take medications, compared to 64% of those with advanced education. Those rating their health fair/poor felt they were more likely than those with better health to take medications as prescribed (83% vs. 73%). We found no substantial differences in perceptions of risks according to patients’ characteristics.

CONCLUSION: Overall, patients were remarkably positive about the prospect of reviewing their visit notes online and anticipated many benefits and few risks in doing so. The majority of PCPs were also positive about potential benefits, but they were strikingly more worried about risks. The implications of such open interchange are complex, and we look forward to the end of our year-long intervention when both patients and PCPs will report on their experiences with OpenNotes.

Table 1. Patients’ and PCPs’ Perceptions of Risks and Benefits

| Benefits. Patients would … | Respondents agreeing or somewhat agreeing |
|---------------------------|------------------------------------------|
|                          | Patients | PCPs |
| better understand health and conditions | 95.1% | 71.8% |
| take better care of themselves | 94.7% | 83.9% |
| be more likely to take medications as prescribed | 88.1% | 52.3% |
| feel more in control of care | 74.9% | 59.8% |
| be better prepared for visits | 92.3% | 79.3% |
|                          | Average weighted for # of responses (95% CI) | 89.5% (89.2%-89.8%) | 69.3% (62.4%-76.1%) |
| Risks. Patients would … | Respondents agreeing or somewhat agreeing |
|-------------------|-------------------------------------|
| compensate more | 16.6% | 63.8% |
| find notes more confusing than helpful | 12.0% | 59.2% |
|                          | Average weighted for # of responses (95% CI) | 14.3% (14.0%-14.7%) | 61.5% (54.3%-68.7%) |
GENDER DISPARITIES IN LIPID-LOWERING THERAPY AMONG VETERANS WITH DIABETES

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BACKGROUND: Women with diabetes are more likely than men to have a low-density lipoprotein cholesterol (LDL) below recommended levels. This is an important quality issue because 1) hyperlipidemia is a risk factor for cardiovascular disease, 2) hyperlipidemia may have a higher impact on cardiovascular outcomes in women compared to men with diabetes, and 3) treatment of hyperlipidemia with statins in diabetes is associated with a more than a 20% reduction in cardiovascular disease risk. The reasons for worse lipid control among women with diabetes are unclear, but may be due in part to differences in treatment patterns. We undertook this study to assess differences in lipid-lowering therapy between female and male veterans with diabetes and elevated LDL.

METHODS: We conducted a cross-sectional study of veterans serviced by the Veterans Health Administration (VA) in 2006 who had both diabetes and hyperlipidemia and compared all females (N=22,479) to age- and facility-matched males (N=89,431). We compared proportions of patients with any VA prescription for lipid-lowering therapy in the year and, among those with elevated LDL (>100 mg/dl) and no prior treatment, we compared initiation of lipid-lowering therapy. Likelihood of treatment was estimated using multiple logistic regression with adjustment for race, VA eligibility, health care utilization, cardiovascular diseases, mental health conditions, and a comprehensive list of other co-morbidities. We also performed the analysis stratified by age.

RESULTS: Women had higher LDL levels than men (110±38 vs. 101±36 mg/dL) and fewer of them were receiving lipid-lowering therapy (80% vs. 84%). Women were less likely to receive therapy (adjusted odds ratio [95% confidence interval]: 0.79 [0.76-0.82]) or to be initiated on such therapy (27% vs. 39%), and initiation of therapy (27% vs. 39%, 0.56 [0.47-0.67]). Adjustment for potential confounders did not change the risk estimates.

CONCLUSION: Women veterans with diabetes and hyperlipidemia receive less aggressive lipid-lowering therapy than men, especially in younger age groups. This disparity is of concern, because early intervention to control hyperlipidemia can reduce the later burden of cardiovascular disease among diabetic women.

"TASTE IS EVERYTHING": A QUALITATIVE STUDY OF BEVERAGE CONSUMPTION IN COLLEGES

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BACKGROUND: Young adults consume more sugary beverages than any other age group, leading to increased risk for weight gain. Limited data are available to explain the reasons for this high sugary beverage consumption or to provide insights into how behavioral interventions might reduce consumption. We conducted a qualitative study to examine these factors among college students.

METHODS: We conducted a total of 12 focus groups of freshman and sophomore students in 6 colleges located in Massachusetts and Louisiana, including 2 historically black colleges. Prior to each focus group, participants completed a brief survey about demographics and factors that determine beverage choice. We asked a core set of questions at each group addressing students' behaviors around the consumption of beverages, and their opinions about proposed interventions in colleges to reduce sugary beverage intake. Discussions were audio-recorded and professionally transcribed. We conducted a content analysis of the focus group transcripts using the principles of the immersion-crystallization method. This qualitative approach consists of the analysis team individually reviewing the transcripts and engaging in a series of group analysis discussions to identify dominant themes and preliminary interpretation of the data. Next, we used a group consensus procedure to create a code book and code definitions, and we subjected the transcripts to line-by-line coding. Analysis of resulting code reports facilitated further comparison of data from each of the 12 transcripts and final interpretation of the findings.

RESULTS: 90 students participated in the 12 focus groups (mean 7.5 participants per group). Mean age was 19 years old; 63% were female; 55% were freshman; 50% were White; 47% were Black. In pre-focus group surveys, nearly all (93%) participants reported that taste was an important factor in determining beverage choice followed by price (58%) and calorie content (30%). In the focus group discussions, taste remained the most important reason for choosing a beverage. Students were often quite fixated on favorite sugary beverages: "I want to drink my favorite drinks until the day that you're going to die" and "If they're healthy or not I'm going to drink it if I'm thirsty." They considered changing from a favorite drink difficult: "It takes . . . one of those [near] death experiences but something like really drastic to change." Price was important, and students sought value: "You get a lot for that dollar and "Only I label I look at is the price label." Health and calorie content had limited contribution to beverage choices: "When it's not like an immediate negative effect . . . no matter how unhealthy . . . you tell people something is, I don't really think anyone is going to like take it to heart." Some students reported calorie content of food as an important determinant of their diet but rarely considered drinks as substantial contributors to overall calorie intake: "Some people think about it when they're doing their food, but drinks . . . aren't overlooked." The strongest themes emerging about the negative impact of sugary beverage consumption were the perceived dangers of the mysterious chemical content of 'dark' sodas. Although Black and White students were mostly similar in their perspectives and behaviors, in the pre-focus group survey 60% of White v. 0% of Black students reported giving some consideration to the calorie content of beverages when choosing what to drink.

CONCLUSION: Among a diverse group of college students in two states, taste and price were the most important factors in choosing beverages with little thought given to health impact. The disconnect between consideration of calorie content of food v. beverages raises the possibility that educational interventions that present the caloric content of beverages in “food currency” may be beneficial.

IMPROVING FOLLOW-UP OF ABNORMAL TEST RESULTS: EVALUATING THE IMPACT OF A MANDATORY NOTIFICATION

Archana Laxmisan 1; Dean Forrest Sittig 2; Donna Espadas 3; Kenneth Pietz 4; Hardeep Singh 1.

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BACKGROUND: Concerns about timely follow-up of abnormal imaging and lab test results remain despite electronic notifications to providers. In the Veteran’s Health Administration (VA), there is a wide variability in
what notifications are delivered to the clinician due to individual preference and system-level mandates. On March 11, 2009, a change in the VA electronic health record (EHR) was implemented to require all pathology results (normal or abnormal) to be transmitted to ordering providers via EHR-based automated notifications that cannot be switched off by providers (mandatory alerts). We examined the impact of this intervention on follow-up of abnormal pathology results in the outpatient setting.

METHODS: We conducted retrospective chart reviews to evaluate pre- and post-intervention follow-up outcomes at two large VA facilities. We electronically extracted all pathology reports in a six-month time-frame before and after the date of intervention. From 16,738 pre-intervention and 17,305 post-intervention reports at two sites, we randomly selected 688 and 706 abnormal outpatient reports, respectively. Trained reviewers collected outcome data using a standardized pre-tested data collection instrument, on all possible acceptable follow-up actions for up to six months post alert transmission. Follow-up actions were defined as documentation of either 1) ordering or performance of an appropriate follow-up test or referral, 2) prescribing or changing treatment based on result, 3) patient notification of test result, 4) subsequent hospitalization where the result was addressed, or 5) other documentation of appropriate provider-recognition such as noting patient preference to decline or to seek follow-up elsewhere. Reviewers also categorized follow-up actions as direct or indirect, depending on whether they could clearly link the action directly to the report. For example, a direct action would be a letter communicating results to a patient, while an already scheduled consultation before the result was available would be an indirect action. Outcome measures included proportion of abnormal reports with lack of any follow-up within 6 months and median time to direct follow-up action pre-and post-intervention.

RESULTS: Post intervention, the proportion of reports without follow-up decreased significantly (9.8% vs.3.5% p<0.01). However, median time to direct follow-up action was unchanged pre and post intervention (8 days IQR 5–15 days vs. 8 days IQR 5–14 days; P=0.6)

CONCLUSION: Notification of abnormal pathology results is likely more effective at improving follow-up when made mandatory than when providers are allowed to customize receiving these results on their own. However, mandatory notification did not lead to fail-safe follow-up at six-months or prompt earlier follow-up actions by ordering providers. We examined the impact of this intervention on follow-up of abnormal pathology results in the outpatient setting. The small-area level but has been demonstrated in analyses only at the large-area (county) level. We describe the development and demonstrate the application of a ZIP code-level Index of Relative Rurality (IRR) classification system that can be used to delineate the degree of rurality at the small-area level. We compare how the choice of classification system affects how geographic areas and the populations who reside in these areas are defined as rural.

METHODS: Data from the 2000 US Census and from the United States Department of Agriculture’s Economic Research Service (ERS) were linked to Veteran clinical and demographic (including residential address) data extracted from the Veteran’s Administration Pittsburgh Health System administrative and clinical records, which consisted of 7,608 Veterans with diabetes living in Ohio, Southwest Pennsylvania and West Virginia having recorded a primary care visit in 2008. The ERS data provided the ZIP code RUCA rurality measure associated with each Veteran address. A ZIP code-level IRR classification system was developed using 4 Census-derived measures: residential area-level population, population density, degree of urbanization, and distance to Metropolitan Statistical Area (MSA) from Veteran address. An IRR score of 0 is assigned to the least rural (most urban) geographic area, and a score of 1 is assigned to the most rural.

RESULTS: When using the 4-tier (“Urban,” “Large Rural,” “Small Rural,” “Isolated Rural”) RUCA classification system, fewer than 5% (137/7570) of Veterans with diabetes lived in rural areas. When using the IRR classification system, when rural was defined as ≥0.4. 21% (1597/7570) of Veterans with diabetes lived in rural areas. Nineteen percent (1434/7608) of Veterans with diabetes had addresses that could not be geocoded to a specific latitude and longitude because patient addresses were either post office boxes or rural routes. These addresses were more likely to be located in rural areas compared to urban areas when using ZIP code information as a proxy for address. Using the 4-tier RUCA classification system, 12% (137/371) of addresses that could not be geocoded were categorized in rural areas compared to 8% (1297/7199) in “Urban” areas; when using the IRR classification system, 48% (710/1597) of those living in more rural areas (IRR 0.4) could not be geocoded compared to 14% (762/6011) in more urban areas (IRR < 0.4).

CONCLUSION: The ZIP code-level RUCA classification system compared to the IRR appears to more narrowly define what geographic areas/populations are rural. Results using the ZIP code-level IRR classification system are comparable to those obtained from using RUCA codes, but using the IRR classification system has the advantages of being more flexible methodologically and easier to interpret than using RUCA codes.

USING THE INDEX OF RELATIVE RURALITY (IRR) TO ESTIMATE DEGREE OF RURALITY AT THE SMALL-AREA LEVEL IN HEALTH SERVICES RESEARCH Sanae Inagami 1; Shasha Gao 2; Martine Shendge 2; Janice Probst 2; Hassan Karimi 3; Roslyn Stone 3; Mary Ann Sevick 6; Michael Fine 2. 1; 2VA Pittsburgh Healthcare System, Pittsburgh, Pennsylvania; 3University of South Carolina, Charleston, South Carolina; 4University of Pittsburgh, Pittsburgh, Pennsylvania; 5University of Pittsburgh, Pittsburgh, Pennsylvania. (Tracking ID # 10966)

BACKGROUND: Accurate analysis of health problems facing rural residents, as well as the implementation of programs to address them, depends on how well rurality is measured. Currently, rural classification systems at the small-area level include those based on the Rural Urban Commuting Area (RUCA) system and a relatively new measure, the Index of Relative Rurality (IRR). The IRR has the potential to be used at the small-area level but has been demonstrated in analyses only at the large-area (county) level. We describe the development and demonstrate the application of a ZIP code-level Index of Relative Rurality (IRR) classification system that can be used to delineate the degree of rurality at the small-area level. We compare how the choice of classification system affects how geographic areas and the populations who reside in these areas are defined as rural.

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SENIORS UNNECESSARILY COMPLICATE THEIR HOME MEDICATION REGIMENS POST-DISCHARGE Lee Lindquist 1; Lucy Lindquist 2; Lisa Zickuhr 1; Elisha Friesema 1; Michael Wolf 1. 1Northwestern University, Chicago, Illinois; 2Walgreens, Chicago, Illinois. (Tracking ID # 10965)

BACKGROUND: Following hospitalization, seniors have multiple medication changes and new instructions. Seniors also frequently receive medication instructions from many sources. The universal medication schedule (UMS) was recently proposed for standardizing prescribing practices to four daily time intervals which would simplify regimens and potentially improve adherence. We aimed to determine whether seniors consolidate their medications following a hospital discharge, or if there was evidence of unnecessary regimen complexity.

METHODS: Face to face interviews were performed by study nurses with 200 seniors ≥70 yrs in their homes in the community one month following hospital discharge. At one month, subjects would have developed a routine schedule for taking their medications. During the home visit, the study nurse asked the subject to demonstrate how they
took their medications in a normal day. The nurse visualized where the medications were stored and whether or not a pill box was used. Information on times of day, locations of med, and reasons for each were recorded. Following the interview, research assistants entered their medication lists and calculated the number of times in a day the subject took their medications. Two health care professionals (a pharmacist and a physician) blinded to the actual use of the patient were given the medication regimens of each patient. They were asked to determine the fewest number of times a day that a patient could take the regimen. A third healthcare professional served as a tie-break.

RESULTS: Of 200 seniors [mean age 83.0 yrs, 57% female], 152 (76%) had medication changes at hospital discharge. Medication regimens could be simplified for 85 (42.5%) patients. Of those seniors who were not consolidating their medications, 53 (26.5%) could have had the number of times a day medications were taken reduced by 1; 26 (13.0%) could have reduced by 2; and 6 (3.0%) could have reduced by 3. Medication regimen interrater reliability between the pharmacist and physician (kappa) was 0.845. The three most common causes of overcomplexity of medication regimens were (1) misunderstanding medication instructions (i.e. taking cholesterol lowering medications very late at night), (2) concern over absorption of drugs (i.e. before or after meals), and (3) perceived drug-drug interactions. Pillboxes were used by 99 (49.5%) of subjects but usage did not significantly correlate with simplified regimens.

CONCLUSION: Over forty percent of seniors aged 70 and older overly complicate their medication regimen following a hospitalization. This lack of consolidation potentially impedes medication adherence. Health care professionals should ask patients to explicitly detail the number of times medication consumption occurs in the home. Home nurse visits may also be useful to better ascertain true medication usage. In exploring the reasons behind the complexity, patients and health care professionals need improved education and communication about medication usage.

READABILITY OF PATIENT EDUCATION MATERIALS LINKED TO ELECTRONIC HEALTH RECORDS

Lauren Stossel 1; Nora Segar 2; Cameron 1; Joanne Messerges-Bernstein 1; Elisha Friesema 1; David Baker 1; 1Northwestern University, Chicago, Illinois.

BACKGROUND: Ample patient education materials (PEMs) are available on the internet. However, many are written at high school or college reading levels. This renders them inaccessible to the average Medicare beneficiary, who reads at a 5th grade level, and the average US resident, who reads at an 8th grade level. Currently, electronic health record (EHR) providers partner with companies that produce PEMs. This allows clinicians to access PEMs without navigating away from the patient’s electronic medical record during visits. Because institutions are indirectly endorsing these PEMs through the EHRs they purchase, it is crucial to assess their readability. Our goal was to assess the readability of PEMs provided by popular EHR vendors. We hypothesized that a majority of these PEMs are written above target readability, defined as at or below an 8th grade reading level.

METHODS: Per a 2009 report by Modern Healthcare, 26% of US hospitals use Meditech as their EHR supplier. Meditech uses PEMs from Micromedex, Medline, and Lexicomp. These PEM databases are also freely accessible in most academic hospitals. Based on proportions assuming 20,000 PEMs, 50% of PEMs above target readability, a 10% margin of error, and alpha 0.05, we randomly sampled 100 disease-matched PEMs from each of these three databases (n=300 PEMs). Grade reading level needed to read the PEMs was calculated using three validated indices endorsed by the Center for Medicare and Medicaid Services as being appropriate for assessing readability of PEMs: SMOG, Gunning Fog, and Flesch-Kincaid. These indices vary in stringency, and are based on the number of syllables per word as well as sentence length. We calculated the percentage of documents that were above target readability, and used an ANOVA to compare the average readability scores of each database.

RESULTS: Thus far, we have analyzed 50 disease-matched PEMs from each of three PEM databases. The percentage of each database’s PEMs that are above target readability are shown in Table 1, as well as median grade levels and grade level ranges for each database’s PEMs. Based on the Gunning Fog index, the ANOVA showed a significant difference in the average grade reading levels of the PEMs from these sources. Micromedex had the lowest average reading level (9th grade) compared to 10th grade for Medline and Lexicomp (p<.001).

CONCLUSION: The vast majority of PEMs available through the most widely used EHR are written at reading levels considerably higher than that of the average US adult. Given health literacy’s enormous impact on our healthcare system, it is crucial that EHR vendors provide educational materials that are written at appropriate reading levels designed for comprehension by patients at all levels of health literacy.

Table 1:

| Database       | Micromedex (n=50) | Medline (n=50) | Lexicomp (n=50) |
|----------------|-------------------|---------------|-----------------|
| Readability Index | Flesch-Kincaid | Flesch-Kincaid | Flesch-Kincaid  |
|                 | Running Fog      | SMOG          | Running Fog     |
|                 | 8th               | 9th           | 10th            |
| % of PEMs Above Target Readability | 56       | 86            | 94              |
| Median Grade Levels (Range) | 8th (5-10) | 9th (7-11) | 10th (7-12) |
perform a criminal background check at the state level, but only 55% perform a federal check. Other screening measures include phoning references (100%), drug screening (93%), checking driving records (30%), requiring proof of auto insurance (4%), credit check (5%), and psychological evaluation (2%). Some agencies stated that they perform an “elder abuse record check,” “social security number trace,” “national caregiver background check,” “circuit court access program medical assistant exclusion list,” and “state caregiver check.” On further investigation, we found no evidence of these databases and were unable to verify their existence. All agencies reported that caregivers could assist with reminding clients of medications, accompanying seniors to physician appointments, and following physician orders. Although these activities require strong health literacy, no agencies reported assessing potential caregivers’ health literacy. Agencies primarily determined skill sets through self-report via questions of the caregiver (100%) during the hiring interview. Training of caregivers was extremely variable and included providing a manual, post-hiring training in the home of the senior by a care manager or nurse, shadowing other caregivers, or family effort after hiring. The range of time spent on training was 8 hours to 4 days. On average, agencies charged seniors an hourly rate of $19.31 ($12-$28). Caregivers received 88-10 an hour on average from prior reports. Of the agencies, 64% did not provide health insurance for their employee caregivers.

CONCLUSION: Using an agency to hire caregivers may give seniors and their families a false sense of security regarding the background and skill set of the caregivers. Recent studies have shown that caregivers make errors on medication regimens. More stringent screening, education, and training of caregivers by agencies are needed to ensure adequate care of their senior clients.

EFFECTS OF MEDICARE PRESCRIPTION DRUG COVERAGE ON NON-DRUG MEDICAL SPENDING J. Michael McWilliams 1; Alan M Zaslavsky 1; Haiden A Huskamp1. 1Harvard Medical School, Boston, Massachusetts. (Tracking ID # 109777)

BACKGROUND: The Medicare prescription drug benefit (Part D) has increased use of prescription drugs, decreased out-of-pocket spending for prescription drugs, and decreased cost-related non-adherence among elderly adults. The national effects of Part D on hospitalization rates and non-drug medical spending, however, have not been clearly defined.

METHODS: We used longitudinal survey and linked Medicare claims data from the nationally representative Health and Retirement Study to measure quarterly non-drug medical spending and utilization from 2004–2007 among 3,224 elderly beneficiaries reporting less generous prescription drug coverage (drugs partially or not at all covered) and 2,495 reporting more generous coverage (drugs mostly or completely covered) in 2004. To estimate effects of the implementation of Part D, we fitted generalized linear models comparing non-drug utilization and spending before and after 2006 by prior drug coverage. We estimated these effects for the entire cohort, for adults with drug-sensitive chronic conditions, and for adults with low incomes. For comparison, we conducted similar analyses for a control period from 2002–2005, prior to Part D implementation. Applying a similar analysis to biennial survey data, we compared changes from 2004–2008 in prescription drug coverage, out-of-pocket spending, and cost-related non-adherence for beneficiaries with less or more generous drug coverage in 2004. We then compared these differential changes to differential changes occurring in a control cohort from 2002–2004. Comparisons were adjusted for baseline sociodemographic and health characteristics, the complex survey design, repeated measures, survey non-response, and missing claims due to Medicare Advantage enrollment.

RESULTS: After the first quarter of 2006, spending on acute and post-acute care tended to be lower for beneficiaries with less generous prior drug coverage (-$313/quarter; P=0.08) than was expected from preceding trends and changes in spending for beneficiaries with more generous prior drug coverage. Spending on acute and post-acute care after 2006 was significantly lower than expected for beneficiaries with drug-sensitive chronic conditions (-$413/quarter; P=0.03) and low incomes (-$781/quarter; P=0.01) who had less generous drug coverage in 2004. Hospitalization rates also tended to be lower than expected after 2006 for those with less generous prior drug coverage (-0.014/quarter; P=0.08). Spending on other non-drug services did not differentially change after 2006 for beneficiaries with less generous prior drug coverage (-$84/quarter; P=0.97). In a control cohort from 2002–2005, spending on acute and post-acute care did not differentially change after the first quarter of 2004 for beneficiaries with less generous drug coverage in 2002 ($19/quarter; P=0.90). Beneficiaries who had less generous drug coverage in 2004 reported better drug coverage (+20.5 percentage points with more generous coverage; P<0.001), lower out-of-pocket spending on drugs (-$152/month; P=0.002), and less cost-related non-adherence (-2.4 percentage points; P=0.04) than was expected in 2008 in the absence of Part D.

CONCLUSION: The implementation of Medicare Part D was associated with lower spending on acute and post-acute care for beneficiaries with less generous drug coverage before 2006. These benefits were concentrated among those with drug-sensitive chronic conditions, for whom increased use of prescription drugs might prevent costly complications, and among those with low incomes, who were less likely to be able to afford prescribed medications before 2006 and more likely to qualify for subsidized Part D coverage without a coverage gap. Hence, the costs of provisions in the Patient Protection and Affordable Care Act to reduce cost-sharing in the doughnut hole of standard Part D coverage may be partially offset by reduced Medicare spending on Part A services for these groups. Moreover, these findings would support policies incentivizing Part D plans to design drug coverage and formularies to minimize Part A spending.

RELIABILITY OF AN INTERACTIVE COMPUTER PROGRAM FOR ADVANCE CARE PLANNING Jane R. Schubart 1; Michael Jay Green 1; Megan Whitehead 1; Elana Faraone 1; Benjamin H. Levin1. 1Penn State College of Medicine, Hershey, Pennsylvania. (Tracking ID # 109778)

BACKGROUND: The 1990 Patient Self Determination Act requires healthcare institutions to inform patients about advance directives (ADs) and offer individuals the opportunity to express their wishes regarding end-of-life care. Despite widespread efforts to promote ADs, completion rates remain low. “Making Your Wishes Known: Planning Your Medical Future” is an interactive computer program that guides individuals through the process of advance care planning. The program explains common health conditions that can impair patients’ communication of preferences, as well as interventions that commonly involve life or death decisions. Users are helped to reflect on and articulate their personal values/goals relating to medical care, disability, death/dying, and quality of life (QoL). The program includes a decision aid that translates health care preferences into a detailed AD document. An important step in establishing the validity of this decision aid is to demonstrate reliability in generating an AD that reflects an individual’s values/preferences and, in the absence of major life changes, remains stable over time. This study examines the test/re-test reliability of the AD document generated by the computer program.
METHODS: Participants were recruited from a list of patients who expressed interest in advance care planning. Inclusion criteria were age >30, English speakers, >8th grade reading level, cognitively able to use the program, and not depressed. Participants completed the decision aid at 2 study sessions, 4–6 weeks apart, each lasting 1–3 hours. At the second session, participants completed a questionnaire about interim life events that might influence responses to end-of-life healthcare decisions. Generalizability Theory (G7) was used to assess multiple reliability indices and to determine the relative importance of various sources of error using 2 scales — the medical “Wishes” scale and the “QoL” scale. “Wishes” scores involved 8 binary items (e.g., kidney dialysis, mechanical ventilation, feeding tube) under 5 clinical scenarios (stroke that would/would not improve, coma that was/was not reversible, and dementia). QoL scores were determined by the values statements selection.

RESULTS: 24 participants completed the study (19 women and 5 men; ages 43–89). Under classical theory testing, both the “Wishes” and “QoL” scales had high internal consistency in both time periods (Cronbach Coefficient Alpha=0.83–0.95, 0.86–0.89) meaning that the items comprising them “fit together”. Test-retest reliability was moderate to high for “QoL” (Pearson Correlation Coefficient=0.83). Using the GT models, reliability was low for “Wishes” across the scenarios (G-index=0.21), implying that rankings for specific treatments tend to vary, but improved (G-index=0.49) if the scenario was held constant, suggesting that under some scenarios the reliability of the scale may actually be high. The G-index for “QoL” was high (G-index=0.81), indicating that formulations of general goals/values remain stable across time. The study construct did not take into account the influence of the decision aid itself on individuals’ “Wishes” rankings.

CONCLUSION: Using our computer-based decision aid, specific wishes vary over time, but general values regarding quality of life remain consistent. Future studies will examine whether individuals’ wishes for specific medical treatments show greater stability after accounting for the educational impact of the decision aid.

HEALTH BELIEFS OF STROKE SURVIVORS IN AN URBAN COMMUNITY

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BACKGROUND: Secondary prevention of stroke depends on the control of hypertension and hyperlipidemia and use of anti-thrombotic medications. Fewer than half of all stroke survivors have these risk factors controlled, and recurrent strokes and inadequate risk factor control are more common in minority populations. A research team formed from a community-academic partnership aimed to identify health beliefs that may contribute to poor risk factor control among stroke survivors in the predominantly minority population in Harlem and the Bronx, New York for potential areas of intervention.

METHODS: Adults over 40 years of age with a history of stroke or transient ischemic attack (TIA) within the past 5 years were recruited from community and clinical sites to enroll in the Prevent Return of All Inner-city Strokes through Education (PRAISE) trial. Upon enrollment, participants completed a survey that assessed patient factors related to recurrent stroke, including demographics, health status, social support, and relationship with doctors. Blood pressure, direct LDL cholesterol and body mass index (BMI) were also measured. The composite outcome of the study was control of all three primary risk factors for stroke: blood pressure <140/90 mmHg, LDL cholesterol <100 mg/dl, and reported regular use of an anti-thrombotic.

RESULTS: Of 330 stroke and TIA survivors, 46% were African American, 33% were Hispanic, and 13% were Caucasian; 64% were female. Most participants (69%) reported residual stroke symptoms and most (70%) worried about future strokes, but only 19% identified blood pressure and only 13% identified cholesterol as major risk factors for stroke. Only one-third (31.5%) had the composite outcome of all three primary factors controlled. Half of the study participants reported their blood pressure was well controlled; of these people, nearly one-third (28%) did not have their blood pressure at goal. Of the 39% who reported their cholesterol was well controlled, 38% did not have their LDL at goal. While nearly all (93%) participants were under the care of a primary care doctor, one-third did not strongly believe that medications help prevent future strokes, 35% did not fully understand their medications, nearly half forget to take medications, and half believed doctors prescribe too many medications. Also, 47% believed racial discrimination occurs in doctors’ offices and only 23% believed that Blacks and Latinos could receive the same care as Caucasians.

CONCLUSION: In this urban, predominantly minority population of stroke survivors, despite the presence of symptoms, concern for future strokes, access to a primary care physician, and a desire to prevent recurrent strokes, there remains a gap in the knowledge of stroke risk factors and the role that medications fulfill in their control. This is reflected by the inadequate use of anti-thrombotic medication, poor control of blood pressure and LDL cholesterol. In addition, this study revealed perceived racial disparities in doctors’ offices and access to care. These findings highlight the need for interventions that can facilitate health education among those at risk for future strokes and the need to foster more effective relationships with healthcare providers in the urban community.

RELIANCE ON VA OUTPATIENT SERVICES BY MEDICARE-ELIGIBLE VETERANS

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BACKGROUND: Patients who obtain outpatient care in more than one health care system disrupt continuity of care and may have a lower quality of care and worse health outcomes, particularly among individuals with complex chronic conditions. The Department of Veterans Affairs (VA), the largest integrated health care system in the United States, served 5.5 million veterans in 2008. However, a significant proportion of veterans who use the VA also have coverage through Medicare. To transform primary care delivery, VA is implementing a patient centered medical home model system wide using the team-based approach to provide patient-centered care to further improve access, coordination, and continuity of care. This study examines longitudinal changes in reliance on VA healthcare system for primary and specialty care over four years among a cohort of VA Medicare-eligible veterans.

METHODS: This is a retrospective cohort study. The study sample included 15,520 Medicare-eligible veterans who used VA primary care in 2000. We merged VA administrative and Medicare claims data to examine outpatient use during Fiscal Years (FY) 2001–2004. Patients

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were censored at the year of death. VA outpatient care reliance was defined as the proportion of total (VA/Medicare) visits received in VA for primary care or specialty care. We estimated VA outpatient care reliance using beta-binomial regressions because of a U-shape distribution indicating that significant number of veterans concentrated at high and low VA reliance.

RESULTS: Of 869,000 primary and specialty care visits in the study period, 39% occurred within VA. VA primary care reliance was substantially higher than VA specialty care reliance (66% vs. 50% in FY2001; p<0.001) and both primary and specialty care reliance decreased throughout the study period (59% vs. 32% in FY 2004; p<0.001). Significant shifts occurred at both extremes of VA reliance. From FY2001 to FY2004, the proportion of patients in the top decile of VA primary care reliance decreased from 38% to 30%, while the proportion in the bottom decile doubled from 10% to 20% (Figure). Similarly, the proportion of patients in the top decile of VA specialty care reliance decreased from 24% to 13%, while the proportion in the bottom decile doubled from 23% to 47%.

CONCLUSION: VA primary and specialty care reliance by a cohort of Medicare-eligible VA primary care patients decreased substantially over 4 years. By the fourth year, only half of primary care visits and one-third of specialty care visits occurred in VA for this population of primary care users. Decreasing VA outpatient care reliance may have had substantial impacts on chronic disease management and continuity of care. Increasing use of non-VA services complicates VAs implementation of patient centered medical home models and performance measurement.

**Figure: Adjusted VA Reliance on Primary Care 2001-2004**

![Graph showing adjusted VA reliance on primary care from 2001 to 2004.]

**RISK OF RESIDENT CLINIC HANDOFFS: SHOWING UP IS HALF THE BATTLE**

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BACKGROUND: Continuity of care in the primary care setting is associated with greater patient satisfaction and fewer hospital admissions. Nationally, many patients experience a change in their PCP when departing Internal Medicine (IM) residents handoff their patients to junior residents. No studies to date have examined the specific patient risks relating to these handoffs. Our study aims to characterize patients at higher risk of adverse events after a clinic handoff.

METHODS: In June 2010, graduating IM residents listed clinic patients they perceived to be at "high risk" during the clinic handoff on a signout worksheet which included reasons for high risk status, target follow-up date, and tasks to be done. During a designated handoff meeting, departing residents discussed their patients with the junior resident taking over their clinic. Clinic coordinators used worksheets to facilitate scheduling of patients. For all patients, signouts and charts were reviewed to determine if and when patients were scheduled and if they saw their new PCP. We also examined associations between follow-up, patient factors (no show rates), and outcomes (ED visits or hospitalizations) in the three months after the transition. PGY2 residents assuming care were resurveyed regarding their beliefs of the clinic handoff process.

RESULTS: Thirty graduating residents identified 258 clinic patients as high risk. Mean age was 61 (range 27-95), 63% were female, and on average the patients were transitioning to their 3rd PCP in 5 years. Patients were deemed high-risk due to complexity (59%), new diagnoses (28%), psychiatric diagnoses (18%), and non-adherence (12%). Nearly all patients (97%, 250/258) were scheduled for their follow-up appointment. However, one third (29%, 75/258) of patients "no showed" or cancelled their first visit with their new PCP. Ultimately, less than half (44%, 113/258) of patients saw the correct PCP. The average time between visits with the old and new PCP was 110 days (range 11 to 350). Six months after the handoff, one fifth (19%, 50/258) of patients had not yet been seen. A significantly higher overall ‘No Show’ rate (NSR) (reported in Epic) was more likely to be noted among patients missing their first visit with their new PCP. Ultimately, less than half (44%, 113/258) of patients saw the correct PCP. The average time between visits with the old and new PCP was 110 days (range 11 to 350).

Most (95%) PGY-2 residents completed surveys. While half (47%) of residents worried about missing important patient data during the transition, a similar proportion (48%) reported they do not take ownership of a patient until the first clinic visit.
CONCLUSION: Resident clinic handoffs are a vulnerable time for high risk patients. While most patients were scheduled for appointments, over half were not seen by the correct resident who was to take over their care. Patients who miss appointments are especially at risk of adverse consequences during this care transition. Because residents do not feel responsible for patients until after their first clinic visit, improving patient attendance to the first visit with their new PCP is imperative. Future interventions to improve resident clinic handoffs should incorporate these findings.

ASSOCIATION OF INCARCERATION WITH TRAUMA, SUBSTANCE USE RELATED HEALTH CONSEQUENCES, AND HEALTH CARE UTILIZATION Nicole Redmond 1; LeRoi S. Hicks 2; Debbie M. Cheng 3; Donald Allenworth-Davies 4; Michael R. Winter 5; Jeffrey H. Samet 6; Richard Saitz 7. 1Brigham and Women’s Hospital, Dorchester, Massachusetts; 2Brigham and Women’s Hospital, Boston, Massachusetts; 3Brigham and Women’s Hospital, Boston, Massachusetts; 4Boston Medical Center, Boston, Massachusetts; 5Boston University School of Public Health, Boston, Massachusetts. (Tracking ID # 108993)

BACKGROUND: Recently released inmates are at significantly higher risk of death due to drug overdose, suicide, homicide, and cardiovascular disease relative to the general population. Whether these mortality differences are due to the higher prevalence of drug dependence among inmates, or due to an independent effect of incarceration, is not clear. Among substance dependent adults, we explored the effects of incarceration on outcomes that may be intermediate markers for mortality: a) traumatic injuries, b) substance use-related health consequences, and c) hospital and/or emergency department (ED) utilization.

METHODS: We analyzed survey data (baseline, 3, 6, and 12 month follow-up) collected for the Addiction Health Evaluation and Disease management (AHEAD) Study, a randomized clinical trial to test the effectiveness of chronic disease management for substance dependence in primary care. The following 3 outcomes (past 3 months, assessed at 3, 6, and 12 months) were evaluated: (1) any traumatic injury; (2) substance use related health consequences (defined as any of the following while using drugs and/or alcohol: accident, suicide attempt, physical/sexual assault, or an overdose requiring ED/medical attention); and (3) a composite variable for hospital and/or ED utilization excluding addiction treatment or detoxification (defined as reporting “yes” to any medical or psychiatric hospitalization or any ED visit). The main independent variable was self-reported recent incarceration, defined as spending at least one night in jail or prison <3 months prior to the research interview. In longitudinal analyses, incarceration was modeled as a time-dependent and time-lagged (assessed at the interview prior to outcome) variable. Covariates included sociodemographic and clinical characteristics, drug dependence type (alcohol, drug, or both, determined by diagnostic interview), randomization group and past 3-month value of the outcome at baseline (i.e., at study entry). We used generalized estimating equations logistic regression models to evaluate the association between recent incarceration and each of the three dichotomous outcomes, adjusting for all covariates.

RESULTS: Of 553 subjects, 404 (73%) were male with a mean (±SD) age of 38.3 (±10.1) years; 260 subjects (47%) were non-Hispanic White, 175 (32%) were non-Hispanic Black, 73 (13%) were Hispanic, and 45 (8%) were of other race/ethnicity. Other cohort features were the following: 95 (17%) were alcohol dependent only, 144 (26%) were drug dependent only, and 314 (57%) were both drug and alcohol dependent; 93 (17%) reported recent incarceration at study enrollment. Recent incarceration was not significantly associated with traumatic injury (adjusted odds ratio [AOR]=1.10, 95% CI: 0.73-1.65) or health care utilization (AOR=0.92, 95% CI: 0.68-1.24). However, recent incarceration was associated with higher odds for substance use-related health consequences (AOR=1.43, 95% CI: 1.03-1.98).

CONCLUSION: Although larger samples and/or longer follow-up may be necessary, we did not detect significant effects of incarceration on injury or health care utilization, despite adjustment for sociodemographic, clinical and substance dependence characteristics. However, among people with alcohol and/or drug dependence, incarceration appears to be associated with higher odds of substance use related health consequences. Substance use related health consequences may explain, at least in part, the increased risk of death faced by former inmates.

TOTAL RECALL IS A MYTH: ASSESSING PATIENT RECALL OF HEALTH INFORMATION PRESENTED USING ALTERNATIVE “FACTS & MYTHS” MESSAGE FORMATS Kenzie A. Cameron 1; Tiffany Brown 1; Michael E. Roloff 1; Elisha M. Friesema 1; Sara Hauber 1; Jason A. Thompson 1; David W. Baker 1; Northwestern University Feinberg School of Medicine, Chicago, Illinois; 2Northwestern University, Evanston, Illinois. (Tracking ID # 108995)

BACKGROUND: Preventive health messages using a “Facts & Myths” format attempt to reinforce accurate information and refute false information. Some research caution against the use of such a format, reporting that myths may be misremembered as facts. However, communication research proposes that a message containing original arguments (facts), counterarguments (myths), and a refutation of counterarguments will be more persuasive than a facts only message. Given the ubiquity of the Facts & Myths format, we sought to identify how alternative Facts & Myths formats affect patients’ retention of accurate information.

METHODS: We conducted a randomized clinical trial of four alternative messages related to influenza/influenza vaccination. The control message was a “Flu Vaccine Facts & Myths” flyer disseminated by the Centers for Disease Control and Prevention (CDC control), which presents facts, myths, and some general evidence in support of the facts. Three alternative message formats were created: (1) Facts Only, (2) Facts & Myths, and (3) Facts, Myths, and Refutations, a message including additional evidence to refute the myths presented. Patients were recruited from a General Internal Medicine practice between September 2009 - February 2010 (N=126), completed a telephone pre-test, and were randomized to receive one of the 4 messages. The message was mailed to patients one week prior to a scheduled physician visit. This abstract reports on a subset of patients (N=87) who reported receiving and reviewing a message, and who completed an in-person interview immediately prior to their visit. Participants were read 8 statements and asked to recall if the statements had been (1) presented as a fact, (2) presented as a myth, (3) presented, but I don’t recall if it was a fact or a myth, or (4) not presented in the mailed message. Responses were analyzed to assess recall accuracy (range 0–8) for each of the 4 message formats and the difference among message formats.

RESULTS: Participants accurately recalled the presentation of a mean of 4.44 statements (SD=2.02). An ANOVA demonstrated significant differences in recall accuracy between message formats (F=8.65, p<.001): CDC control - M=4.77 (SD=1.82); Fact Only - M=3.00 (SD=1.74); Facts & Myths - M=4.52 (SD=1.97); and Facts, Myths and Refutations - M=5.76 (SD=1.65). Scheffe’s post-hoc analysis revealed significant differences in recall accuracy between the Fact Only and Facts, Myths and Refutations (p<.01); and Fact Only and CDC Control (p<.05) formats; the difference in recall accuracy approached signifi-
Efficacy and Tolerability of Once-Daily Gabapentin Extended-Release (G-ER) for the Treatment of Postherpetic Neuralgia in Patients at Least 65 Years Old

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BACKGROUND: The risk, severity and duration of postherpetic neuralgia (PHN) all increase with subject age. Furthermore, treatment decisions must consider the greater likelihood of concomitant medications in older patients. Immediate-release gabapentin is approved for treatment of PHN and has a low propensity for drug-drug interactions; but requires multiple daily dosing and is associated with a high frequency of dizziness and somnolence. The efficacy and tolerability of once-daily gabapentin extended-release (G-ER; 1800 mg) for treatment of PHN has recently been examined in a double-blind, placebo-controlled, Phase 3 study. In this analysis of data from that study, we examined the efficacy and tolerability of G-ER in patients who were at least 65 years old and subsequently compared these patients with the overall study population.

METHODS: Patients with PHN of duration >6 months and an average daily pain (ADP) score >4 were enrolled. After 1 week of baseline assessments, patients were randomized to G-ER (titrated to 1800 mg over 2 weeks) or placebo with their evening meal for a total treatment period of 10 weeks, followed by 1 week of dose tapering. The primary efficacy endpoint was baseline observation carried forward change in ADP. Rates of adverse events also were recorded. The primary efficacy endpoint and rates of adverse events also were assessed separately in patients who were >65 years old.

RESULTS: The overall intent-to-treat population included 450 patients (G-ER, n=220; placebo, n=230). 280 patients were at least 65 years old (G-ER, n=139, placebo, n=141). The safety population included two additional patients (one <65 years old, placebo; one >65 years old, G-ER). In the overall study population, the mean +/− SD baseline ADP scores in the G-ER group and placebo groups were comparable (6.6+/−1.4 vs 6.5+/−1.4, respectively). Comparable baseline scores also were observed in patients >65 years old (G-ER, 6.8+/−1.5; placebo, 6.5+/−1.3). In the overall study population, ADP scores were reduced significantly at endpoint in the G-ER group when compared with placebo (least squares [LS] mean difference ±SE, −0.49+/−0.20; p=0.0125). Similarly, in patients who were >65 years old, the reduction in ADP scores was significantly greater in the G-ER group compared with placebo (LS mean difference +/−SE, −0.65+/−0.25; p=0.0088). Compared with G-ER-treated patients in the overall population, a smaller proportion of G-ER-treated patients in the older subgroup reported at least 1 adverse event (52.5% vs 47.1%, respectively), but the proportions were comparable for the placebo groups of the overall population and of the older subgroup (39.4% vs 39.7%, respectively). Dizziness and somnolence in G-ER treated patients were observed less frequently in the older subgroup compared with the overall population (dizziness: 10.7% vs 11.3%, respectively; somnolence: 4.3% vs 5.4%, respectively) although those frequencies were higher than observed in the respective placebo groups (dizziness: 2.8% and 1.7%, respectively; somnolence: 1.4% and 3.0%, respectively). No other adverse events were observed in >5% of any group of the overall population or older subgroup and consistently more frequently in the G-ER group compared with placebo.

CONCLUSION: G-ER provided significant reduction in pain intensity compared with placebo in both the overall study population and in the older subgroup of patients. G-ER was well tolerated overall and in the older subgroup of patients. The frequencies of dizziness and somnolence in G-ER treated patients, both overall and in the older subgroup, suggest a lower rate than observed in previous clinical trials of immediate-release gabapentin.

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Impact of Hospital Teaching Intensity on the Quality of Care in Hospitals

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BACKGROUND: Studies examining the quality of care that a patient receives in teaching versus non-teaching hospitals have demonstrated mixed results and many were conducted prior to the implementation of the Accreditation Council for Graduate Medical Education (ACGME) residency work hour restrictions. Thus, a more current examination of the association between hospital teaching intensity and quality of care is overdue.

METHODS: We linked 2008 Hospital Quality Alliance (HQA) and 2007 American Hospital Association (AHA) data for each medical and surgical hospital in the U.S. Main outcome measures included 30 day readmission rate and mortality rate for 3 conditions: acute myocardial infarction (AMI), congestive heart failure (CHF), and pneumonia. The predictor of interest was teaching intensity, defined as number of residents-to-bed ratio and classified into either: (1) non-teaching (zero residents/bed), (2) low teaching intensity (0–0.25 residents/bed), (3) medium teaching intensity (0.25–0.6 residents/bed) and (4) high teaching intensity (>0.6 residents/bed). We utilized linear regression to examine the relationship between teaching intensity and each clinical outcome adjusted for hospitals’ geographic location, ownership, urban versus rural setting, nursing intensity (nurses/1000 patient days), presence of an ICU, insurance mix, hospital size and presence of hospitalists.

RESULTS: Of the 2423 hospitals reporting quality outcome data, 1528 (63%) were non-teaching, 609 (29%) were low teaching intensity, 116 (5%) were medium teaching intensity, and 80 (3%) were high teaching intensity. After adjustment for hospital characteristics, increasing teaching intensity was significantly linearly associated with readmission rates for all three conditions and conversely associated with mortality rates for AMI and CHF (see Table).

CONCLUSION: In this nationally-representative sample of medical and surgical hospitals we found that increased teaching intensity is associated with higher readmission rates but lower mortality for the most common of inpatient medical diagnoses. Our findings suggest that teaching intensity may be associated with higher quality of inpatient care, but poorer quality transitions of care.
DOES MEDICARE PART D PROVIDE ADEQUATE DRUG COVERAGE FOR COMMON HEALTH CONDITIONS

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BACKGROUND: Medicare Part D plans provide important drug coverage for 28 million Medicare beneficiaries but vary widely in which drugs they cover and the copayments charged. Such variation among Part D formularies means that some drugs are “widely covered” by nearly all plans at affordable copayments, while other drugs are covered by only some plans or are covered only with high copayments. To understand the clinical impact of such Part D formulary variation, we examined which common health conditions may currently lack widely covered drugs at affordable copayments. Beneficiaries whose health conditions are treated by these drugs are at greater risk for high out-of-pocket drug costs, cost-related medication non adherence, and losing coverage for their current medications if they seek to switch plans.

METHODS: We analyzed 3,693 Part D plan formularies nationwide using the June 2009 Centers for Medicare and Medicaid Services (CMS) Prescription Drug Plan Formulary and Pharmacy Network Files. Seven common health conditions were examined; hypertension, hyperlipidemia, diabetes, heartburn, asthma or chronic obstructive pulmonary disease (COPD), depression, and Alzheimer’s. For each condition, we determined whether the corresponding treatment classes had “widely covered” and “affordable” drugs. The definition of “widely covered” was varied from ≥80% to ≥90% of plans. The definition of “affordable” was varied from ≤$15 to ≤$35 copayment per month. Sensitivity analyses found these findings to be robust to the definition of widely covered and affordable, and results are presented for drugs which are covered by ≥90% of plans at copayments ≤$35.

RESULTS: A total of 77 (43%) out of 180 drugs were widely covered and affordable (average coverage: 98% of plans, average copayment 85.10) and 103 drugs were non-widely covered or had high copayments (average coverage: 48% of plans, average copayment 835). Out of seven conditions, there were widely covered and affordable drugs in almost all treatment classes for hypertension, depression, heartburn, and dyslipidemia. In contrast, there were no widely covered and affordable drugs for two treatment classes for diabetes (thiazolidinediones and insulin), nor for most treatment classes for asthma/COPD (short or long-acting beta-agonist, steroid inhaler, combination beta-agonist/steroid, other), nor for Alzheimer’s. All 77 widely covered drugs were generic, and no brand-name drugs were widely covered by ≥90% of plans at ≤$35 copayments. Generic drugs were on average covered by 91% of plans (range 13% to 100%) and the average copayment was 87. Most but not all of the 99 generic drugs included were widely covered and affordable (77 of 99 drugs=78%). Brand-name drugs were on average covered by 45% of plans and none were widely covered at copayments of $35 or less. The average brand-name copayment was $40 (range $17 to $71, standard deviation $12).

CONCLUSION: Medicare beneficiaries who need medications for chronic diseases such as asthma, diabetes, and Alzheimer’s remain at risk for high out-of-pocket drug costs given the lack of widely covered and affordable drugs in Part D formularies for treating these conditions. Even as the Part D coverage gap is phased out, policymakers need to evaluate how to address variation in formularies and high copayments for drugs for treating these common health conditions.

NO MOMENT WASTED: THE PRIMARY CARE VISIT FOR DIABETIC ADULTS

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BACKGROUND: Although quality of care guidelines are straightforward, diabetes visits within the primary care setting are often more complex than adhering to these guidelines. We sought to take an in-depth look at what happens when the health care needs of people with diabetes are addressed by exemplar clinicians caring for the underserved.
METHODS: We conducted a qualitative study of diabetes visits from a safety net primary care clinic with high quality of care scores for diabetes patients. We recruited adults with type 2 diabetes from the 4 primary care physicians at the clinic until no new themes emerged in analyses. We audiotaped, observed, and transcribed the doctor-patient visits. Using a grounded theory approach, two investigators independently coded and analyzed transcripts for all health issues that arose during the visit, and marked whether the physician or patient first initiated the discussion on a particular health issue.

RESULTS: Fifteen patients participated. In a mainly African American (93%) middle-aged (mean age 61 years) female (64%) population, mean blood sugar, blood pressure, and cholesterol were under fairly good control (HbA1c 7.5%, BP 134/81 mmHg, and LDL 100 mg/dl). However, nearly one-half of patients were above recommended goals in at least one category. The mean visit length was 27 minutes (range 18–38 minutes) for a scheduled 20 minute visit, and did not include time for finishing the note. The average number of total health issues discussed at the visit was 25 (range 16 to 31), with an average of 15 brought up first by the physician and an average of 10 brought up first by the patient. The health issues were grouped into the following domains from most to least frequently discussed: chronic diseases, prevention, health behavior, social environment, medications, acute symptoms, interpersonal, and coordination of care. Physicians most frequently initiated discussions in chronic diseases, prevention, and health behavior. Patients most frequently initiated discussions of social environment and acute/new symptoms followed by prevention and health behavior - which were also frequently raised by physicians.

CONCLUSION: Primary care visits by diabetes patients are complex. Emerging new models of primary care delivery and quality measurement should support and allow adequate time to address the complementary priorities of patients and physicians as they work together on the complex tasks of improving patient’s health.

COGNITION AND CHOICE OF TRADITIONAL MEDICARE OR MEDICARE ADVANTAGE J. Michael McWilliams 1; Christopher C Afendulis 1; Thomas G McGuire 2; Bruce E Landon1. 1Harvard Medical School, Boston, Massachusetts. (Tracking ID # 11006)

BACKGROUND: Since the Medicare Modernization Act of 2003, increased payments to Medicare Advantage (MA) plans have been associated with a dramatic proliferation in the number of plans available to Medicare beneficiaries and more generous benefits for MA enrollees. Too many or overly complex insurance options may result in suboptimal choices by Medicare beneficiaries. In particular, those with cognitive deficits may have difficulty identifying the most valuable option in their enrollment decisions.

METHODS: For 6,672 participants from the nationally representative Health and Retirement Study, we analyzed survey data, linked Medicare enrollment data, and county-level administrative data on MA plans from 2004–2007, to determine: 1) if the availability of more plans has increased or decreased enrollment in MA; and 2) if beneficiaries with lower cognitive functioning have been less responsive to expanded benefits in MA. Logistic regression was used to estimate effects of within-county increases in the number of plans available and generosity of plans’ benefits on beneficiaries’ enrollment in MA or traditional Medicare. Generosity of benefits was measured as the expected monthly out-of-pocket costs in MA for a standardized population of beneficiaries, averaged across all plans available in a given county and year. Results were compared by cognitive functioning, which was assessed in surveys by a validated instrument modeled after the Mini-Mental State Examination. All analyses were adjusted for sociodemographic and health characteristics of participants, county fixed effects, the incomplete linkage to enrollment files, and the complex design of the survey.

RESULTS: The mean number of MA plans increased twofold or more each year from 2004 to 2007 in U.S. counties with at least 1 plan. Increases in available MA plans up to 15 were associated with significant increases in MA enrollment (P<0.004), but increases between 15–30 plans were not (P=0.84). Increases above 30 plans were associated with significantly decreased enrollment in MA (P<0.001). By 2007, over 95% of study participants faced lower expected out-of-pocket costs in MA than in traditional Medicare with Medigap coverage, based on county-level averages. Decreased expected out-of-pocket costs in MA (more generous benefits) were associated with increased MA enrollment among participants with high cognitive functioning (P=0.02) but not among participants with low cognitive functioning (P=0.56).

CONCLUSION: Medicare beneficiaries were less likely to enroll in MA when faced with numerous choices. Those with lower cognitive functioning were less responsive to the generosity of MA benefits in their enrollment decisions. Simplifying choice in MA could improve beneficiaries’ decisions, strengthen value-based competition among plans, and extend the benefits of choice to seniors with impaired cognition. In particular, the role of insurance exchanges established by the Patient Protection and Affordable Care Act could be expanded to serve Medicare beneficiaries and MA plans.

USING A REGIONAL HEALTH INFORMATION EXCHANGE TO IMPROVE IDENTIFICATION OF POST-DISCHARGE FOLLOW-UP PROVIDERS Mustafa Fidahussein 1; John Hook 1; Joe Kesterson 1; Martin Were1. 1Regenstrief Institute, Inc., Indianapolis, Indiana. (Tracking ID # 11012)

BACKGROUND: Determining who patients should follow-up with post-discharge is a key step in transitioning care from an inpatient to outpatient setting. Typically, this follow-up provider information is contained within the discharge summary, and inpatient providers rely greatly on it to determine who to communicate the patient’s hospital course, discharge summary, and any test results returning after discharge. Unfortunately, no studies exist that evaluate how complete and accurate the follow-up information documented in discharge summaries is, and whether strategies exist to improve identification of the providers who discharged patients actually follow-up with after hospitalization. We set out to determine (a) the follow-up patterns of patients discharged from two large hospitals in central Indiana, and (b) the potential role of a regional health information exchange (RHIE) in improving identification of the providers with whom these patients follow-up with post-discharge.

METHODS: We performed this study at two large urban Midwestern hospitals (Hospital A and Hospital B) which are served by comprehensive electronic health record systems (EHRs) and which participate in the Indiana Network for Patient Care (INPC) RHIE. The study involved 679 randomly-selected patients (306 from Hospital A and 373 from Hospital B) who were admitted to the General Internal Medicine Hospitalist Services (GIMHS) teams during Jan-Feb 2009 at these institutions. Discharge summaries for the study patients were each reviewed independently by two physicians who abstracted the names of the intended follow-up providers that were mentioned in the summaries. If there were disagreements between the reviewers on whether a particular follow-up provider was mentioned, the reviewers discussed the case to achieve consensus. Electronically stored encounter data from the INPC were also queried to extract all outpatient physician encounter data for the study patients that occurred 12–14 months prior to the relevant admission and 3–5 months after discharge (Jan 1, 2008 - Jun 1, 2009). Using this data, we determined the frequency with which patients actually followed up with the intended outpatient providers.
and also with other providers who were not mentioned in the discharge summary. We also determined how often historical visit information contained in the RHIE could be used to inform likely outpatient follow-up providers for patients, especially when no information about the follow-up providers was available in the discharge summary.

RESULTS: Of the 679 study patients, 458 (67.6%, [180, 59.9% Hospital A & 278, 75.3% Hospital B] had at least one follow-up provider mentioned in the discharge summary, with the other 221 (32.4%, [126, 41.4% Hospital A & 95, 25.3% Hospital B] having no follow-up provider mentioned. Of the 458 patients with a provider mentioned in the discharge summary, 309 (43.4%, [84, 47% Hospital A & 101, 36.3% Hospital B] followed-up in clinic with at least one of the mentioned providers, 132 (29.6%, [61, 34% Hospital A & 71, 26.8% Hospital B] followed-up with none of the providers mentioned in the summary, and 141 (31.1%, [55, 19.9% Hospital A & 106, 38.3% Hospital B] did not follow-up with any provider. Historical encounter information from the RHIE revealed that of the 317 patients who had a follow-up provider mentioned in the discharge summary and who followed-up post-discharge with any provider, 182 (57.6%, [83, 57% Hospital A & 99, 58% Hospital B] followed with at least one of the same providers they had been seeing prior to admission. Of the 123 patients who did not have any follow-up providers mentioned in the discharge summary but still followed-up post-discharge with any provider, 58 (47.4%, [43, 52% Hospital A & 15, 16% Hospital B] followed-up with at least one of the same providers they had been seeing prior to admission. Overall, of the 440 patients who had a clinic visit post-discharge, 240 (55%, [126, 59% Hospital A & 114, 55% Hospital B] saw at least one of the same providers they had visited with prior to their admission. Of the 458 patients that had at least one follow-up provider mentioned in the discharge summary, 182 (40%, [74, 41% Hospital A & 108, 39% Hospital B] were seeing at least one of these providers prior to admission. Of these 182 patients, 94 (52.3%, [43, 58% Hospital A & 51, 47% Hospital B] followed-up with the at least one of the same providers post-discharge.

CONCLUSION: A care system which relies largely on follow-up provider information contained within discharge summaries is highly inadequate at identifying the actual providers patients follow up with after they are discharged from the hospital. We found that 33% of discharged patients had no follow-up providers identified. Even when follow-up providers were mentioned in the discharge summary, almost a third of the patients still saw other providers. Regional Health Information Exchanges, which contain encounter information that occur after hospital discharge, offer a valuable resource in improving identification of the true follow-up providers for patients discharged from the hospital. Additionally, historical visit information within these systems can help predict who the likely post-discharge follow-up provider will be for patients being discharged from the hospital. We observed that more than half of the patients actually followed up with a provider they had seen prior to the admission. Making this historical provider information available during discharge planning could potentially increase the likelihood that the right follow-up providers will be identified at the time of a patient’s hospital discharge.

PERCEPTION OF CLINICIAN ROLES AND RESPONSIBILITIES DURING CARE TRANSITIONS OF OLDER ADULTS

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BACKGROUND: Older adults with complex care needs frequently require care in multiple settings, and they are at high risk of receiving suboptimal care during care transitions. Clinician roles and responsibilities during care transitions remain poorly defined. We sought to characterize the perceived roles and responsibilities of inpatient- and outpatient-based clinicians during care transitions, and explore barriers to clinicians fulfilling their perceived roles.

METHODS: This was a qualitative study involving one-hour semi-structured in-depth interviews conducted with forty participants directly involved in care transitions of older adults (18 physicians, 3 nurse practitioners (CRNPs), 3 physician assistants (PAs), 10 case managers, 4 social workers, and 2 home care coordinators). These participants were from a variety of settings, including an acute care hospital, a skilled nursing facility (SNF), two community-based outpatient practices, and one home healthcare agency. Interviews explored the roles and responsibilities of clinicians (physicians, CRNPs, PAs) during care transitions of older adults, as perceived by themselves and by others. Audiotapes of the interviews were transcribed, coded, and analyzed, generating several themes and subthemes.

RESULTS: Participants averaged 45.3 years of age and 17.2 years in practice. Seventy-two percent were women, and 15% were ethnic minorities. Slightly less than half (45%) were from outpatient clinics and home care, 27.5% from an acute hospital, and 27.5% from a SNF. Content analysis revealed several major themes:

1) Essential components of clinician roles during care transitions. These included: Review of clinical information upon receiving patient; Communication with patient and family; Communication with multi-disciplinary staff; Medication reconciliation; Assessment of discharge needs and available support at home; Discharge summary; Post-discharge follow up and care; and Communication with clinicians in other settings.

2) Tension between “routine” and “ideal” roles.

3) Agreement between self and others’ perceptions of ideal roles.

4) Patient and clinician factors prompting clinicians to go “the extra mile” and move from routine to ideal roles.

Clinicians were more likely to go above and beyond their routine when the patient was medically or socially more complex, in high risk situations such as a major change in status, and when the clinician was personally more invested (e.g., when she knew the receiving clinician personally or developed a strong interest in the patient’s case).

5) Barriers to fulfilling ideal roles.

These included: healthcare system barriers such as reimbursement and staff turnover, care transition process barriers such as lack of access to other providers, and lack of knowledge and education regarding care transitions.

CONCLUSION: This study characterizes the roles and responsibilities of clinicians during care transitions of older adults. We report discrepancies between perceived roles of clinicians in an ideal care transition and actual practice, and we describe perceived barriers to fulfilling the ideal role. We also describe patient and clinician factors that may prompt clinicians to do more than the routine and act closer to the ideal role. Future investigations could explore ways to overcome some of the barriers, and whether to target certain high-risk transitions.
PHARMACY SUPPORT IN VA PRIMARY CARE CLINICS AND MEDICATION ADHERENCE AMONG PATIENTS WITH DIABETES Beverly Mielke 1; Mark Perkins 2; Edwin Wong 2; Chuan-Fen Liu 3; David Au 4; Christopher Bryson5; 1UW Medicine, VA Puget Sound Healthcare System, Seattle, Washington; 2VA Puget Sound Health Care System, Seattle, Washington; 3Department of Veterans Affairs, Seattle, Washington. (Tracking ID # 110222)

BACKGROUND: While there has been extensive research into patient specific predictors of adherence and patient specific interventions to improve adherence, little work has focused on organizational level factors that may either facilitate or hinder adherence. Pharmacists working in primary care clinics are an integral part of many patient-centered medical homes. We examined whether the presence of pharmacists in VA primary care clinics was associated with medication adherence among patients with diabetes.

METHODS: We obtained refill data for all patients with diabetes on an oral medication seen in VA primary care clinics during fiscal years 2006 and 2007. We calculated a medication possession ratio using an algorithm developed specifically for the VA data sources, classifying patients as adherent if they had more than 80% of their oral therapy regimen during the first quarter of 2007. For all clinics with more than 100 such patients, we calculated an adjusted proportion of patients adherent in that clinic. Adjustment included patient level factors such as age, comorbidities, and diabetes severity from diagnostic codes. We then used organizational data from the VA Primary Care Survey, which reported the number of full-time equivalents (FTE) of pharmacists working within primary care. We used generalized estimating equations both to produce the adjusted proportions and to examine the association between pharmacy FTE per thousand patients with diabetes and proportion of adherent patients.

RESULTS: There were 212 clinics overall, comprised of 139 VA medical centers (VAMC) and 73 community-based outpatient clinics (CBOCs) in the sample, with a total of 304,472 patients represented. Overall, 71% of clinics had some pharmacist support, with 69% of VAMCs and 74% of CBOCs in the sample reporting support. There were 0.95 (range 0–7.6) pharmacist FTE per 10,000 clinic patients and 1.5 (0 to 14.4) pharmacist FTE per 100,000 patient-months per year on average. The overall proportion of adherent patients was 70.8%, with wide clinic-level variation from 57.9% to 79.8% adherent patients. The adjusted proportion of patients adherent in clinics staffed with pharmacists (70.7%, 95% CI 69.9% to 71.4%) and clinics without pharmacists (71.3%, 95% CI 70.1% to 72.4%) was not different. Among all clinics, there was a small negative association between pharmacy FTE and adherence (−0.27% per FTE, 95% CI −0.51 to −0.02%). In all other analyses after adjusting for the number of patients per clinic, or restricting to clinics with pharmacists, there were no significant associations between FTE and adherence.

CONCLUSION: This observational analysis of pharmacy FTE in primary care clinics did not explain the wide variation observed in clinic-level medication adherence. In addition to considering the usual threats to validity in cross-sectional observational data, other external organizational support, such as telephone wait times and administrative support to facilitate the mechanics of refills, may be more important in promoting adherence than high-level internal support such as pharmacists.

A RANDOMIZED CONTROLLED TRIAL OF PEER MENTORING AND FINANCIAL INCENTIVE TO IMPROVE GLUCOSE CONTROL IN AFRICAN AMERICAN VETERANS Judith A. Long 1; Erica Jahule 2; Diane Richardson 1; Kevin Volpp2; 1Philadelphia VA Center for Health Equity Research and Promotion, Philadelphia, Pennsylvania; 2University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania. (Tracking ID # 110223)

BACKGROUND: Minorities have disproportionately high rates of Diabetes Mellitus (DM), poor DM control, and the consequences of poor control – micro-vascular complications. Interventions that improve DM control in minority population have the potential to reduce important health disparities. In this study we conducted a randomized controlled trial to test the effectiveness of peer mentoring and financial incentives in improving glucose control relative to usual care in a population of African American veterans.

METHODS: All participants were African America veterans, with persistently poor DM control (last 2 HbA1c readings >8%), between the ages of 50 and 70 years. Participants were randomized to one of three arms (usual care, peer mentoring, or financial incentives), with follow-up 6 months after enrollment. Participants had a study HbA1c drawn at enrollment and at follow-up. In addition they were called monthly to assess for hypoglycemic symptoms. Those in the peer mentoring arm were matched to a trained mentor who previously had poor DM control (HbA1c >8%) but now was in good control (HbA1c <8%). Mentors were called monthly to reinforce the training and given $20 a month for speaking with their mentee at least four times/month. Participants randomized to the financial incentive arm were told they could earn $100 at six months if their HbA1c dropped by one point and $200 if the HbA1c dropped by two points or to 6.5%. We used an intention to treat analysis and assumed no change from baseline in HbA1c for those lost to follow-up who did not have a current (+/−1 month) HbA1c in the electronic medical record.

RESULTS: A total of 118 veterans were enrolled and randomized to the 3 arms (39 to usual care, 39 to peer mentoring, and 40 to financial). The mean baseline HbA1c by arm was: usual care 9.9 (SD 1.6), peer mentoring 9.8 (SD 1.8), and financial incentive 9.5 (SD 1.5). The mean baseline HbA1c for peer mentors (based on chart review that made them eligible for the study) was 6.7% (SD 0.6). Follow-up HbA1c was missing for 2 people in the usual care arm, 3 in the peer mentoring arm, and 4 in the financial arm. HbA1c dropped by 0.1% in the control arm, 0.9% in the peer mentoring arm, and 0.3% in the financial incentive arm. After adjusting for baseline HbA1c, the mean change relative to control was −1.02 points (95% CI −1.75 to −0.29) in the peer mentoring arm and −0.53 points (95% CI −1.22 to 0.15) in the financial incentive arm. The intervention was well tolerated. Participants reported <3 minor hypoglycemic symptoms per month 91% of the time (511/563 calls). In addition, there were only two hospitalizations for hypoglycemia (1 in the control arm and 1 in the financial incentive arm).

CONCLUSION: Peer mentors had a strong and statistically significant effect in improving glucose control in a population of veterans with persistently poor DM control whereas financial incentives had only a marginal influence on glucose control. Peer mentors may be a relatively low-cost and culturally sensitive means to improving glucose control and reducing racial disparities in diabetic outcomes.

RACIAL/ETHNIC DISPARITIES IN CANCER SCREENING RATES AMONG PATIENTS OF HEALTH CENTERS Quyen Ngo-Metzger 1; Ravi Sharma 1; Leiyu Shi 2; Seiji Hayashi 1; Charles Daly 1; Robert Politzer 3; Quyen Ngo-Metzger 1. 1Health Resources and Services Administration, Rockville, Maryland; 2Johns Hopkins School of Public Health, Baltimore, Maryland; 3Consultant, Columbia, Maryland. (Tracking ID # 110225)

BACKGROUND: Certain racial/ethnic minority populations in the US have higher cancer prevalence and mortality, underscoring the need for
A PERSONAL HEALTH RECORD MODULE IMPROVES DOCUMENTATION OF FAMILY HISTORY
Jeffrey L. Schnipper 1; Lynn A. Volk 2; Jonathan S. Wald 3; Tejal K. Gandhi 2; Deborah H. Williams 1; Blackford Middleton 2; Brigham and Women’s Hospital, Boston, Massachusetts; 2Partners HealthCare System, Wellesley, Massachusetts; 3JSW, Inc., Sharon, Massachusetts. (Tracking ID # 11026)

BACKGROUND: Collecting and documenting detailed patient family history information is important to identify those at high risk for disease who may benefit from increased surveillance and/or risk factor modification. Currently, effective methods are lacking for systematically collecting and documenting this information for use in clinical decision support and patient care. This study evaluated the use of a family history module within an electronic personal health record (EHR) on the frequency and comprehensiveness of documented family history information.

METHODS: We randomized 11 primary care practices within an integrated delivery system in the Northeast that used the Patient Gateway PHR. In the intervention practices, consented patients received access to an electronic Family History module three weeks before a scheduled office visit requesting detailed information on their personal and family history of six target conditions (breast and colon cancer, coronary artery disease, diabetes, glaucoma, and osteoporosis). Patients submitted “eJournals” that could be viewed by physicians during the visit where the information could be verified and easily added to the electronic health record (EHR). Study patients included those who submitted eJournals and had an associated visit. Control patients submitted eJournals about topics unrelated to family history. Study outcomes included mean number of conditions documented in the EHR per patient and mean quality score reflecting the comprehensiveness of the documented history. Scores for each condition were calculated by giving one point each for number of relatives, the degree of relationship, and the age of onset. Differences in documentation before and 30 days after the visit in the two arms of the study were analyzed using Wilcoxon rank sum test.

RESULTS: 652 of 975 patients (66.9%) invited to complete a family history module submitted an eJournal. The mean number of conditions per patient documented in the EHR increased significantly more after the visit in the intervention arm compared to the control arm. The increase in quality score was greater in the intervention group, although the difference was not quite statistically significant. A weighted score which integrated quantity and quality of documented family history information also increased more in the intervention arm than in the control arm (Table).

CONCLUSION: An electronic PHR module requesting updated family history information from patients prior to an office visit was associated with a significant increase in the number of conditions documented in the EHR. There was also a trend towards more comprehensive information regarding number of relatives, degree of relationship, and age of onset for each condition, information crucial to determine patient risk and guide management.

### Documentation of Family History in Electronic Health Record for Target Conditions

|                  | Control Arm (724 patients) | Intervention Arm (652 patients) | P value |
|------------------|----------------------------|---------------------------------|---------|
| Conditions, total (mean per patient) | 54 (0.67)                  | 61 (0.08)                      | 93 (1.04) | 113 (0.17) | P=0.005 |
| Score if condition reported, mean per patient | 0.65 | 0.75 | 1.04 | 1.29 | P=0.06 |
| Weighted Score, mean per patient | 0.05 | 0.06 | 0.15 | 0.22 | P=0.001 |

1 Score = average quality of documentation score for all reported conditions if any condition reported for that patient
2 Weighted score = same as Score if any condition reported, zero if no condition reported for that patient
HEALTH INFORMATION EXCHANGE AND QUALITY OF CARE Lisa Kern 1; Yolanda Barron 1; Rina Dhopleshwarkar 1; Rainu Kaushal1. 1Weill Cornell Medical College, New York, New York. (Tracking ID # 11027)

BACKGROUND: Health information exchange, or the electronic sharing of clinical data across health care providers, has become a national priority. However, evidence on the effectiveness of health information exchange has been limited. We previously found, in a cross-sectional study, that health information exchange was associated with higher ambulatory quality of care. However, it was not possible in that study to rule out confounding by physicians’ baseline quality of care. This study was designed to address that limitation. Our objective was to determine any association between health information exchange and quality of care, adjusting for baseline quality of care.

METHODS: We conducted a longitudinal cohort study over two years (Clinical_trials.gov Registration #NCT00225563). We included primary care physicians in the Taconic Independent Practice Association in the Hudson Valley region of New York State. We included all of those primary care physicians who had at least 150 patients with MVP Healthcare and had quality data at baseline and follow-up. All physicians had access to an electronic portal, through which physicians could view test results, radiology reports, discharge summaries and other reports for their patients over time, regardless of the ordering physician. We used usage of the portal as the independent variable. For the dependent variable, we used health care quality at follow-up, as measured by 13 metrics from the Health Plan Employer Data and Information Set (HEDIS) and 2 patient satisfaction metrics. We used generalized estimation equations to measure associations between usage and quality at follow-up, adjusting for 11 physician characteristics (including adoption of electronic health records, case mix, resource utilization and health care quality at baseline).

RESULTS: We included 138 primary care physicians. The mean practice size was 4 physicians per practice. Nearly half (43%) of the physicians were users of the portal. Non-users performed at or above average for 51% of the quality metrics at both baseline and follow-up (p=1.00). Users performed at or above average for 57% of the quality metrics at baseline and 64% at follow-up (p=0.06), a relative improvement of 12%. Adjusting for physician characteristics and baseline quality, use of the portal was independently associated with higher quality of care at follow up (Odds Ratio 1.42; 95% Confidence Interval 1.04, 1.95; p=0.03).

CONCLUSION: Health information exchange, which is presently being encouraged by federal incentives, was associated with modest improvements in ambulatory quality.

MEDICAL JOURNALS IN THE 21ST CENTURY: HOW CAN THEY REFLECT THE MANY FACES OF GENERALISM? Jocalyn Clark 1; Jocalyn Clark2. 1Public Library of Science (PLoS), Toronto, Ontario; 2PLoS, Toronto, Ontario. (Tracking ID # 11028)

BACKGROUND: As a prime mode of dissemination for researchers and practitioners in general and internal medicine, medical journals aim to publish the best science and debate across all areas of medical education, research, policy, and practice. Individually and collectively, general medical journals strive to serve their diverse readerships by promoting quality research and reporting, medical professionalism, and the integrity of the scientific literature.

But what is the evolving role of general medical journals in the 21st century? Beyond being venues for the publication of science, journals like Journal of General Internal Medicine (JGIM), BMJ, PLoS Medicine and the other leading general medical journals are now interested—and often required—to engage in broader activities that help improve the world in which we all practice and teach. These responsibilities include arbitrating plagiarism, authorship, competing interests, and other “editorial crimes and misdemeanours” (JGIM Jan 2011: p1); intervening when necessary in allegations of research misconduct; promoting best publication practice and ethics; organizing as groups of editors to set standards on trial registration and interactions with the pharmaceutical industry; and advocating for social responsibility and the health of vulnerable populations.

METHODS: In this session, Dr Jocalyn Clark—senior editor at PLoS Medicine, former assistant and associate editor at BMJ, assistant professor of medicine at the University of Toronto, member of SGIM, and member of the editorial policy committee of the World Association of Medical Editors (WAME)—will report 3 recent cases that reflect the new roles and responsibilities of medical journals. She will discuss the leadership agenda needed to address the challenges and external pressures that both journals and the profession face, and how GIM practitioners can shape and influence that agenda.

Evidence shows that none of these cases was simple or straightforward—but each case provides an opportunity to reflect and debate the role of journals within the broader world of general and internal medicine.

RESULTS: Ghostwriting. Publishing ethics say that ghostwriting is unethical and unacceptable; but it is pervasive in the medical literature. The astonishing extent of ghostwriting in the HRT literature was revealed recently when PLoS Medicine & The New York Times partnered to intervene in litigation that resulted in the public release of 1000s of documents showing how HRT was over-promoted by Wyeth and the risks to women’s health downplayed. How can journals fight against ghostwriting and what can GIM profession do to help? Editors’ Competing Interests. Recent published research has revealed the extent of income from advertisements, reprints, and industry-supported supplements received by leading general medical journals, raising questions about the competing interests of editors. Given that most journals have concerned themselves mostly with the competing interests of authors and reviewers, what are the ways that journals can examine and manage their own potential for conflict? Journals’ Social Responsibility. If medical journals are to reflect the stated social responsibility commitments of professional associations like SGIM, they must orient their journal scope and priorities to address the needs of vulnerable populations. PLoS Medicine recently undertook an extensive re-visioning of its scope to reflect the global burden of disease and to prioritize papers addressing global health issues. How do general medical journals promote social responsibility, and how can GIM practitioners influence this aspect of journals?

CONCLUSION: The many faces of generalism demand that general medical journals in the 21st century assume new and evolving leadership roles to reflect the diversity of GIM and the external pressures that professionals and journals face. Continued debate and collaboration are required.
PERCEPTIONS OF RATES OF UNINTENDED PREGNANCY AMONG PRIMARY CARE PROVIDERS Eleanor Binlal Schwarz1; Eleanor Binlal Schwarz1; Sara M. Parisi1; Mindy Sobota 2; Melissa Nothnagle 3; Cynthia Chuang4. 1University of Pittsburgh, Pittsburgh, Pennsylvania; 2Oregon Health Sciences University, Portland, Oregon; 3Brown University/Memorial Hospital of Rhode Island, Pawtucket, Rhode Island; 4Penn State College of Medicine/Milton S. Hershey Medical Center, Hershey, Pennsylvania. (Tracking ID # 11029)

BACKGROUND: Primary care providers (PCPs) treat many women of reproductive age and are well positioned to address risk of unintended pregnancy. As contraceptive effectiveness is a major factor in women's contraceptive decision making, it is important for PCPs to convey accurate information on the risk of unintended pregnancy with and without available methods of contraception.

METHODS: We distributed an online survey to 550 PCPs trained in General Internal Medicine or Family Medicine and practicing in Western Pennsylvania, Central Pennsylvania, Rhode Island, or Oregon, in 2009. The survey focused on PCPs' experiences using electronic medical records and clinical decision support. In addition, the survey contained 6 open-ended questions to assess their knowledge of the prevalence of unintended pregnancy in the United States, risk of pregnancy among non-users of contraception, and the failure rates of available contraceptive methods with typical use. Responses were considered to be “correct” if they were within two percentage points above or below the typical use failure rates provided by the 19th edition of Contraceptive Technology: for condoms (15%), oral contraceptive pills (8%), contraceptive injections (3%), and IUD’s (< 1%). Similarly, estimates of the prevalence of unintended pregnancy in the US were considered correct if they ranged from 48-52%, and estimates of the risk of pregnancy with use of no contraception were considered correct if they were between 83-87%.

RESULTS: One hundred and seventy-two PCPs completed the online survey, a response rate of 31%. The majority (54%) of respondents underestimated the prevalence of unintended pregnancy in the US and 81% underestimated the risk of pregnancy among women using no contraception. On average, those that underestimated the prevalence of unintended pregnancy underestimated it by 23+/−8 percentage points. Those that underestimated the risk of pregnancy among women using no contraception underestimated it by a mean of 35+/−20 percentage points. The majority of PCPs also underestimated the typical use failure rate of most contraceptive methods, with the exception of the IUD. Specifically, 86% of PCPs underestimated the typical use failure rate of oral contraceptive pills, 62% underestimated the typical use failure rate of condoms, and 16% underestimated the typical use failure rate of contraceptive injections. Although the majority of PCPs correctly reported the failure rate of IUDs as <1%, they were more likely to overestimate the failure rate of IUDs than any other contraceptive. Male PCPs were significantly more likely to underestimate the prevalence of unintended pregnancy than were female PCPs (70% vs. 42%, p=0.001). But male and female PCPs were equally likely to underestimate the risk of pregnancy among women using no form of contraception (80% males vs. 83% females, p=0.53).

CONCLUSION: Many PCPs have inaccurate perceptions of rates of unintended pregnancy with typical use of available contraceptives, and many underestimate the risk of pregnancy when no contraception is used. Whether more accurate perceptions of rates of unintended pregnancy would improve PCPs' provision of preconception and contraceptive counseling is unknown, but deserves further study.

REDUCING DISPARITIES IN ACCESSING PRIMARY CARE: THE ROLE OF HEALTH CENTERS Quyen Ngo-Metzger1; Leiyu Shi2; Seiji Hayashi1; Charles Daly1; Ravi Sharma1; Robert Politzer3. 1Health Resources and Services Administration, Rockville, Maryland; 2Johns Hopkins School of Public Health, Baltimore, Maryland; 3Consultant, Columbia, Maryland. (Tracking ID # 11030)

BACKGROUND: Disparities in access to primary care in different types of health care settings are found to be due to race/ethnicity, health insurance, income, and health needs. The purpose of this study is to examine the experience of primary care by patients seen at health centers (HCs) compared to mainstream healthcare settings such as physician offices (POs), HMOs, and hospital outpatients (HOs). The focus is on racial/ethnic (predisposing), health insurance, income (enabling) and health (need) disparities, and the role of the healthcare system in overcoming these.

METHODS: Comparative effectiveness study based on cross-sectional analyses of two nationally representative surveys. For patients seen at HCs, the 2009 Health Center Patient Survey was used. The survey, sponsored by the Health Resources and Services Administration, has a probability sample of 4,562 patients representing over 13 million HC medical patients seen during 2008. For patients seen at other healthcare settings, the 2008 National Health Interview Survey was used. To reflect the design of the Health Center Patient Survey, only respondents with at least one physician visit in mainstream healthcare settings (n=21,545) were included. Similar measures of primary care accessibility (e.g., usual source of care “USC”, unable or delayed in getting medical care, unable to get dental care, unable to get mental care, unable to get prescription drugs) were used in both analyses. In addition to race, income, insurance, and health status, other covariates in the multivariate analyses were age, gender, education, marital status, employment, disability, and residential region.

RESULTS: Patients seen at HCs experienced comparable or better accessibility to primary care compared to other settings, e.g., 96% of HC patients identified a USC compared to 85% for patients nationally. Whereas there were no racial/ethnic and health-status related disparities and limited insurance-related disparities in HC settings, significant disparities (racial/ethnic, insurance, and income) existed in other settings. For example, in terms of racial/ethnic disparities, nationally 17% African Americans and 29% Hispanics did not have a USC, compared to 12% whites (p<.01). 12% African Americans and 11% Hispanics were unable to get needed medical care compared to 8% whites (p<.01). Nationally 49% uninsured did not have a USC, compared to 9% privately-insured (p<.01). 27% uninsured were unable to get needed medical care compared to 4% privately-insured (p<.01). In terms of income disparities, nationally 24% low-income patients did not have a USC, compared to 10% higher-income patients (p<.01). 15% low-income patients were unable to get needed medical care compared to 4% higher-income patients (p<.01). These national-level disparities (two-fold for racial/ethnic groups and three-plus-fold for insurance and income groups) persisted after controlling for other patient sociodemographic characteristics.

CONCLUSION: Patients seen at HCs report comparable or better accessibility to primary care compared to other settings, e.g., 96% of HC patients identified a USC compared to 85% for patients nationally. Unlike other healthcare settings where significant disparities existed in primary care quality among patients with different racial/ethnic, insurance, and income groups, few disparities were noted among HC patients. As safety-net providers for uninsured and vulnerable populations, HCs provide high-level accessibility to primary care and overcome health disparities.
ASSOCIATION OF EDUCATIONAL DEBT WITH QUALITY OF LIFE, BURNOUT, AND MEDICAL KNOWLEDGE: A NATIONAL STUDY OF INTERNAL MEDICINE RESIDENTS

Manuela Calvo 1; Manuela Calvo 1; William Southern 2. 1Albert academic medical center from January 1, 2006 to June 30, 2010 who with CKD (GFR <60), admitted to the medical service of an urban

METHODS: We conducted a study of United States residents using the 2008 Internal Medicine In-Training Examination (IM-ITE) survey. Educational debt was assessed, along with quality of life (QOL) and symptoms of burnout. Medical knowledge was measured by scores on the IM-ITE. Associations between debt, well-being factors, and medical knowledge were analyzed in multivariable models.

RESULTS: Data were obtained for 16,394 residents, representing 74.1% of all eligible U.S. internal medicine residents in the 2008-2009 academic year. QOL exhibited little association with debt. However, the presence of at least one symptom of burnout was more common among residents with greater amounts of educational debt (odds ratio, 1.72 [CI 1.49 to 1.99]; p<0.001 for debt >$200,000 relative to no debt). IM-ITE scores were lower at higher debt levels, with a difference of 5.0 points between residents with no debt and residents with debt exceeding $200,000. This difference exceeded the 4.1-point and 2.7-point differences seen as residents progressed through their first and second years of training, respectively.

CONCLUSION: Debt burdens were associated with increased symptoms of burnout and lower medical knowledge scores. These associations with well-being and a key training competency have not previously been reported, and emphasize the potential for debt to impact both physician well-being and patient care skills. Further study of the effects of debt on physicians is warranted.

TREATMENT WITH DALTEPARIN IS ASSOCIATED WITH LOWER RISK OF BLEEDING COMPARED TO TREATMENT WITH UNFRAGMENTED HEPARIN, IN PATIENTS WITH CHRONIC KIDNEY DISEASE

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BACKGROUND: Subcutaneously administered low-molecular-weight heparins (LMWH) have emerged as the drugs of choice for hospitalized patients requiring anticoagulation because of their favorable safety profile and ease of use. However, because LMWHs are excreted by the kidneys, and accumulate in patients with chronic kidney disease (CKD), intravenous infusion of unfractionated heparin (UFH) is often used in patients with CKD. We sought to examine the safety of using Dalteparin, a LMWH that has shown minimal tendency to accumulate, in patients with CKD. We hypothesized that any risk associated with accumulation of Dalteparin would be offset by the risks of intravenous infusion of UFH, which requires more frequent monitoring and adjustment of dosing. We therefore compared the risks of bleeding in patients with CKD who are treated with Dalteparin vs. UFH.

METHODS: In this retrospective cohort study we examined all patients with CKD (GFR <60), admitted to the medical service of an urban academic medical center from January 1, 2006 to June 30, 2010 who were treated with treatment doses of Dalteparin or UFH. Treatment doses were defined as ≥10000 units of daily for a minimum of three days for Dalteparin and intravenous infusion for a minimum of three days with at least one activated partial thromboplastin time ≥50 seconds for UFH. Smaller doses were thought likely to be used for prophylaxis, and were excluded. Demographic characteristics, laboratory values, ICD-9 code diagnoses, and inpatient medications were extracted for each admission from the electronic medical record. The primary outcome was bleeding, defined as an ICD-9 code for any bleeding event within 60 days of the initiation of anticoagulant therapy. Patients treated with dalteparin vs. UFH were compared with respect to demographic characteristics, length of stay, admitting diagnosis, co-morbidities, history of bleeding, treatment with warfarin, laboratory values (creatinine, liver function tests, hemoglobin, platelet count, INR, aPTT) and bleeding rates using t-tests and chi-squared tests, as appropriate. We constructed logistic regression models to examine the independent association between choice of anticoagulant (Dalteparin vs. UFH) and bleeding rates, after adjustment for demographic and clinical characteristics of patients.

RESULTS: Of 3546 patients with CKD treated with anticoagulants, 2045 (58%) received Dalteparin and 1501 (42%) received UFH. Patients treated with dalteparin were older, and had fewer comorbidities. A total of 355 bleeding events were identified. The incidence of bleeding was 7.6% in the dalteparin group vs. 11.7% in the UFH group (p=0.001). After adjustment for demographic and clinical characteristics, treatment with dalteparin was associated with significantly smaller risk of bleeding (OR 0.69, 95% CI: 0.55-0.88) when compared with treatment with UFH.

CONCLUSION: The use of dalteparin in patients with renal insufficiency was associated with a lower rate of bleeding events compared to the use of UFH in a group of patients with similar characteristics. Dalteparin appears to be safe to use in patients with CKD.

RESEARCH WITHOUT RESULTS: INADEQUATE PUBLIC REPORTING OF CLINICAL TRIAL RESULTS

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BACKGROUND: With a goal to increase transparency of the medical literature, required registration of randomized trials began in 1997. The online database clinicaltrials.gov launched in 2000 to meet these requirements. The Food and Drug Administration Amendment Act (FDAAA 801) of 2007 requires “basic results” reporting starting in September 2008. This law mandates that the study sponsor or principal investigator submit results no later than 1 year after primary completion date, but may be extended for 1 year upon request “under good cause.” We aimed to evaluate the rate of compliance with results reporting by applicable trials registered in clinicaltrials.gov and the peer-reviewed publication rate for completed studies with results.

METHODS: From all 99,315 records in clinicaltrials.gov, we excluded “not applicable” studies per FDAAA 801 (without a United States site, phase 0 and 1, non-interventional studies), then grouped records by primary completion date into the year before required reporting, October 2006 to September 2007 (06–07), and one and two years after required reporting of results, October 2007 to September 2008 (07–08) and October 2008 to September 2009 (08–09). Abstracted data from the records included presence of results in clinicaltrials.gov, funding source, trial phase, enrollment size, and publication listed in clinicaltrials.gov or found in pubmed.gov by searching for clinical trials registration number. The primary and secondary outcomes were the rate of results reported in clinicaltrials.gov and publication rate among studies reporting results. Bivariate comparisons between the outcomes with funding and phase were tested with the chi-squared statistic. Mean number of subjects enrolled was compared using the t-test. Logistic
regression models were determined using stepwise selection from all study characteristics. Number enrolled was mean-centered and transformed to represent a unit change of 100 subjects.

**RESULTS:** We identified 1097 records in 06-07, 2231 in 07-08, and 2923 in 08-09. Study characteristics did not differ over the study period including funding source, study phase, and number subjects enrolled. Results reporting increased from 6.8% (n=75) prior to mandatory reporting to 19.7% (n=427, p<.001) in 07-08 and 10.8% (n=316, p=.001) in 08-09. In regression analysis, odds ratios for reporting results was 3.34 (95%CI: 2.56-4.33) for 07-08 and 1.75 (95% CI: 1.34-2.30) for 08-09, versus 06-07. Industry funding had positive association with reporting (OR 1.60, 95%CI: 1.14-2.25) while NIH funding (OR .60, 95%CI: .42-.87) and other U.S government funding (OR .19, 95%CI .06-.63) were negatively associated. Focusing on the 818 records that had results in clinicaltrials.gov, 60% (n=45) in the year prior to mandatory reporting had a peer reviewed published paper that could be found in clinicaltrials.gov or pubmed.gov. This rate decreased to 32.8% (n=140, p<.001) in 07-08 year and further to 19.9% (n=63, p<.001) in the 08-09 year. In regression analysis, the odds of records with peer-reviewed published results decreased after required reporting (07-08 OR: .31, 95%CI .19-.53; 08-09 OR: .16, 95%CI .09-.28). Studies that were NIH funded (OR 3.55, 95%CI: 2.08-6.06), Phase II (OR 2.56, 95%CI: 1.82-3.60), and larger enrollment (OR 1.02, 95%CI 1.01-1.04) were more likely to publish their results. A total of 1,112,461 subjects were enrolled in studies over the study period in which no results were reported.

**CONCLUSION:** Clinical trial registry has increased the transparency of published trials, but this represents a small minority of trials. Reporting of basic results for all applicable registered trials has increased but not reached its goal of universal reporting, with industry funded studies leading the way. Unfortunately, patients are still being “left on the cutting room floor.” Enticements with either a stick or carrot and barriers to reporting need to be identified to improve data reporting and hence transparency.

**EFFICACY OF ELECTRONIC TOOLS TO ASSIST WITH IDENTIFICATION OF AND COUNSELING FOR OVERWEIGHT PATIENTS** Joyce Tang 1; Robert F. Kushner 1; David W. Baker 1. 1Northwestern University, Chicago, Illinois. (Tracking ID # 11040)

**BACKGROUND:** Although overweight (Body Mass Index [BMI] 25–29.9 kg/m2) is associated with serious health consequences, physicians often do not recognize patients who are overweight and infrequently counsel them about weight loss. Our objective was to evaluate a set of electronic health record (EHR)-embedded tools to assist with identification and counseling of overweight patients.

**METHODS:** Physicians at an academic GIM clinic were randomized to activation of an EHR-embedded tool set (n=15) or to serve as usual care controls (n=15). The tool set included: automated calculation of BMI; physician point-of-care alert for overweight (BMI 27–29.9 kg/m2); a counseling template to help physicians counsel patients on action plans; and an order set to facilitate entry of overweight as a diagnosis and order relevant patient handouts. We queried the EHR weekly to obtain names of patients for whom the tool set was used. These patients were surveyed by phone 3 weeks after their appointment and queried about progress toward their goal and perspectives about counseling received. Medical records were reviewed for a random sample of patients with BMI 27–29.9 kg/m2 who had a visit with an intervention group physician (n=100) or with a control group physician (n=100) during the study period in order to assess physician recognition of overweight as a problem (i.e. listed as an encounter diagnosis or problem in the assessment and plan) and documentation of weight-specific counseling (i.e. recommendation for weight loss or maintenance). Outcomes for intervention and control groups were compared using chi square tests. Intervention physicians also completed an anonymous survey rating the tools and ranking barriers to tool use.

**RESULTS:** Intervention group physicians were more likely than control physicians to document a diagnosis of overweight (28% vs. 8%, respectively; p<0.001) and to document weight-specific counseling (32% vs. 18%, respectively; p=0.02). Two-thirds of intervention physicians documented counseling in at least 20% of their overweight patients, but only 36% of control physicians did. When documenting weight-specific counseling, intervention group physicians used the tool about half the time. Overall, the tool was used in response to only 10.7% of alerts, but 5 physicians used the tool in response to 20–40% of prompts. When the tool was used, physicians nearly always entered overweight as an encounter diagnosis (97%) and documented an action plan (98%). Sixty-one patients for whom the tool was used were interviewed by phone 3 weeks after their visit (63% response rate). Virtually all patients reported taking steps toward their goal (98%), and most said counseling increased their motivation (93%) and led to changes in their diet or exercise habits (88%). Most intervention physicians responding to a survey (73% response rate) agreed that the tool alerted them to patients they did not recognize were overweight (91%) and improved the effectiveness of their counseling (82%). Physicians estimated the tool required 7.5 minutes to use, and rated time as the most important barrier to tool use.

**CONCLUSION:** EHR-based alerts and management tools increased documentation of overweight, the frequency of counseling, and short-term behavior change among the vast majority of patients for whom the tools were used. Although a subgroup of physicians used the tools frequently, overall tool usage was low due to time constraints. Future efforts to increase physician counseling need to identify ways of overcoming the time constraints of a routine office visit.

**FACTORS AFFECTING LEARNERS’ DAILY PRIORITIES DURING WARD ATTENDING ROUNDS AND ATTENDING PHYSICIANS’ ADAPTABILITY** Brita Roy 1; Nidhi Huff 2; Analia Castiglioni 1; Lisa Willett 1; Carlos Estrada 2; Robert Cenert 1. 1University of Alabama at Birmingham, Birmingham, Alabama; 2University of Alabama at Birmingham, Birmingham, Alabama. (Tracking ID # 11041)

**BACKGROUND:** Understanding learners’ expectations and priorities for ward rounds is essential to enhance learning. In prior work, we identified domains necessary for successful ward rounds from the learners’ perspective. However, learners may prioritize domains differently due to daily changes in competing demands. This study aims to assess factors that affect the relative importance of each domain to learners on a daily basis and the frequency that attending physicians focus on those domains.

**METHODS:** In a prospective observational study, trainees from 39 different internal medicine inpatient ward teams at 3 hospitals from September-November 2010 independently completed daily evaluation cards. Each day, trainees (a) documented their team’s total patient census (<5, 6–10, and >11 patients), (b) day of call cycle (pre-call, call, post-call, and other), (c) ranked the 2 domains their attending demonstrated best, and (d) selected the domain that was most important. Domains of successful ward rounds have been previously described, and included: Teaching Process (i.e. sharing decision-making process, physical exam skills), Learning Environment (i.e. being approachable, respectful), Role Modeling (i.e. teaching by example, bedside manner), and Team Management (i.e. efficiency, providing autonomy). Patients were admitted only on call days, every fourth night, maximum of 10 admissions in a 24-hour period; at least 1 trainee completed a 30-hour shift on the post-call day. We used Chi square tests to evaluate associations between census/call cycle and domain selected (Chi for trend).
RESULTS: Trainees completed 831 cards, evaluating 41 attendings. Team Management was the most important domain for learners on post-call days (40%) compared to non-post-call days (NPCD) (22%) (p<0.001), and attendings were ranked highly in Team Management on post-call days (ranked as a top attribute on 51% of post-call days, vs. 38% of NPCD; p=0.002). As patient census increased, Team Management was increasingly important to trainees (p-trend<0.001), but was not ranked as a top domain for attending performance (p-trend=0.56).

Teaching Process was most important on NPCD (29%) compared to post-call days (19%) (p=0.007), and attendings performed well in this domain on NPCD (59%) vs. post-call days (51%) (p=0.07). Teaching Process had no association with importance (p-trend=0.38) or performance (p-trend=0.56) as patient census increased.

The importance of Role Modelling and Learning Environment was unchanged between post-call and NPCD days (p=0.05, p=0.53, respectively). As patient census increased, Role Modelling became less important (p-trend=0.07), but attending physicians performed better in this domain (p-trend=0.04). Attending performance in Learning Environment decreased as patient census increased (p-trend=0.001), and it was a lower priority for learners (p-trend=0.02).

CONCLUSION: On post-call and days with higher patient loads, efficiency and autonomy is the priority for trainees, but on other days attendings should focus on sharing decision making process. Success on ward rounds requires emphasis of different skills on different days: the best ward attendings recognize trainee fatigue and work load, and apply a diverse and adaptable skill set for changing needs.

CHRONIC CANCER MEDICATION ADHERENCE IN BREAST CANCER SURVIVORS: A QUALITATIVE STUDY

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BACKGROUND: Adherence to chronic medication is challenging but critical. As more primary cancer treatments are delivered orally and are under the patient’s control, understanding factors motivating cancer treatment adherence grows in importance. For women with breast cancer estrogen receptor-positive (ER+) tumors, primary adjuvant therapy requires five years of a daily anti-hormonal agent. While nonadherence to hormone therapy is a preventive measure to decrease risk for recurrence (rather than therapy to inform an intervention to improve adherence. We asked about quality of life issues, support needs, and medication side effects and barriers and facilitating factors to treatment adherence, explored their beliefs about medication risks and benefits, whom hormonal therapy was prescribed. We assessed their medication adherence included a misunderstanding of why one needed to take the medication, poor trust of or communication with physicians (e.g., not feeling comfortable discussing side effects), worry about risks associated with medication and concerns about becoming “dependent” on medication.

CONCLUSION: Factors affecting breast cancer patients’ adherence to cancer medication are similar to other chronic diseases such as physician trust, physician-patient communication and beliefs about risks and benefits of medications. However, breast cancer patients also express issues of resistance, ability to endure medication side effects and risk of cancer recurrence as important aspects to medication adherence. As cancer survivors live longer and more primary care physicians manage these patients and their chronic issues, it is important to recognize and support the factors that facilitate better medication adherence in these patients.

FACILITY CHARACTERISTICS DO NOT EXPLAIN HIGHER DIAGNOSTIC MAMMOGRAPHY FALSE POSITIVE RATES AT FACILITIES SERVING VULNERABLE WOMEN

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BACKGROUND: Facilities serving vulnerable women have higher diagnostic mammography false positive rates than facilities that serve primarily non-vulnerable women. False positives can lead to anxiety, unnecessary biopsies, and contribute to additional healthcare costs. Whether facility characteristics such as the availability of on-site breast ultrasound or biopsy, affiliation with an academic service, or profit status explain these differences in quality is unknown.

METHODS: We examined 78733 diagnostic mammograms obtained to evaluate a breast problem performed at Breast Cancer Surveillance Consortium facilities from 1999–2005. We used hierarchical logistic regression to determine if adjusting for facility characteristics accounts for differences in false positive rates between facilities serving vulnerable and non-vulnerable women. Facilities were assigned vulnerability indices according to the proportion of mammograms performed on women with lower educational attainment, racial/ethnic minority status, limited household income, or rural residence.

RESULTS: Higher false positive rates for diagnostic mammography interpretations to evaluate a breast problem at facilities serving vulnerable women were not explained by facility characteristics. While both availability of ultrasound and biopsy services onsite were associated with greater odds of a false positive in 7 of 8 models (p<0.05; ORs ranging from 1.24 to 1.88), adjustment for the availability of these services did not attenuate the association between vulnerability and false-positive rates. Prior to adjustment, odds ratios comparing the odds of a false positive between facilities on the basis of the binary vulnerability indices were: lower educational attainment (OR 1.33; 95% CI 1.03, 1.74); racial/ethnic minority status (OR 1.33; 95% CI 0.98, 1.80); limited household income (OR 1.56; 95% CI 1.26, 1.92); rural residence (OR 1.38; 95% CI 1.10, 1.73). After adjustment, these estimates were practically unchanged.

CONCLUSION: Availability of on-site diagnostic services may contribute to higher utilization of medical care overall, but it does not explain the higher importance (‘I consider myself a trooper’). Patients almost universally felt that daily hormonal therapy helped prevent recurrence of breast cancer, although there was some difference in perceptions of how much risk reduction the medications afforded. Some felt that though the risk reduction may be “very, very small”, they continue to adhere “for that 2%” reduction in risk. Trust in their personal physicians and in the knowledge of the medical system was a key factor to continued adherence (“I trust my oncologist implicitly”). Women also felt that taking hormonal therapy was a personal choice (“you choose to treat yourself and it’s up to you to find out all the best options”). Some barriers to medication adherence included a misunderstanding of why one needed to take the medication, poor trust of or communication with physicians (e.g., not feeling comfortable discussing side effects), worry about risks associated with medication and concerns about becoming “dependent” on medication.
false-positive rates of diagnostic mammography at facilities serving vulnerable women. Future studies of diagnostic mammography interpretations should evaluate whether higher false positives rates at facilities serving vulnerable women are driven by radiologists’ concerns of a high cancer prevalence and low likelihood of follow-up in their patient populations.

**ANTICOAGULATION OUTCOMES IN ATRIAL FIBRILLATION: IMPACT OF MENTAL ILLNESS**

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**BACKGROUND:** Warfarin anticoagulation can reduce stroke risk in atrial fibrillation (AF), but can harm patients with difficulty adhering to its rigorous monitoring requirements and complex dosing regimen. While clinicians often perceive patients with mental health conditions (MHC) as being at risk for non-adherence, little empirical evidence guides anticoagulation clinical decision-making in this population. We examined whether presence of comorbid MHC is associated with adverse anticoagulation outcomes: stroke, major hemorrhage, or death.

**METHODS:** Using the Veterans Health Administration (VA) National Patient Care Database linked to Medicare data, we identified 77,431 non-institutionalized patients with AF at the start of the observation period (FY2004) receiving warfarin from VA. We considered patients to have MHC Yes if they had an MHC ICD9 code (derived from AHRQ Clinical Classifications Software algorithm) both at baseline and in the observation period. Patients were MHC No if they had no MHC ICD9 code in FY02-FY04. The 12,701 with ambiguous MHC status (ICD9 code at baseline or in the observation period, but not both) were excluded from main analyses, leaving N=64,730 in the main analytic cohort. The primary outcome was the composite of stroke, major hemorrhage and death. Admissions for strokes and major hemorrhage were identified from ICD9 codes in inpatient VA and Medicare records, using established algorithms. Death was identified from VA Vital Status file (derived from VA and non-VA sources). Logistic regressions estimated adjusted odds ratios of MHC on the primary outcome and on its components, first controlling for age (AOR1), then also controlling for sex, race/ethnicity and CHADS2 stroke risk index (AOR2).

**RESULTS:** Comparing the 10,731 MHC Yes versus the 53,999 MHC No, mean (SD) age was 72 (9.8) versus 75 (7.7) and mean (SD) CHADS2 was 3.0 (1.5) versus 2.9 (1.5). 20.4% versus 16.0% had the primary (composite) outcome, 5.1% versus 4.3% died in FY04, 2.4% versus 1.3% had a stroke, and 14.4% versus 11.4% had a major hemorrhage. Patients with MHC Yes were more likely than those with MHC No to have the composite outcome in unadjusted and adjusted analyses (Table). This was true for each specific MHC as well; those with psychotic disorders and alcohol use disorders did particularly poorly. Examining components of the composite outcome, for stroke, AOR2 was 1.41; for hemorrhage, AOR2 was 1.27; and for death, AOR2 was 1.18 (p<0.05 for each AOR2).

**CONCLUSION:** Warfarin-treated AF patients with MHC had significantly higher risk of stroke, hemorrhage, and death, even after adjustment for covariates. This effect was most pronounced for patients with psychotic or alcohol use disorders, pointing to the possibility that these represent high-risk subgroups. Identification of mediators of this relationship could inform efforts to improve AF-related outcomes in this vulnerable population, such as intensifying oversight of warfarin treatment or evaluating safety and efficacy of alternative stroke prevention therapies.

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**SYNDROMIC SURVEILLANCE OF INFLUENZA-LIKE ILLNESS USING AUTOMATED VA DATA - PRELIMINARY RESULTS FROM THE IDAHO INFECTIOUS DISEASE REPORTING NETWORK**

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**BACKGROUND:** Syndromic surveillance of disease uses existing health care information to help better identify and predict clinically relevant outbreaks of disease such as influenza. Currently, influenza-like illness (ILI) disease monitoring in Idaho is based on laboratory data combined with periodic person-to-person reports collected by Idaho state workers. This is time consuming and relies on voluntary reporting. Our objective was to study whether syndromic surveillance of ILI using data from the Veterans Administration electronic medical record (CPRS) correlates to officially reported influenza activity levels in the State of Idaho.

**METHODS:** The Boise Veterans Affairs Medical Center (VAMC) provides care to over 20,000 veterans living in Idaho with clinics in Boise and surrounding sites. Using data from the Veterans Integrated Service Network (VISTN 20) data warehouse for influenza from 2009, we identified ILI cases from these clinics using ICD-9 codes collected as weekly counts. Additional counts of fever (>100.5°F) hypoxia (O2 < 92%), lab tests for influenza IA/B antigen, culture; novel flu), and prescriptions for antivirals (oseltamivir) were summed individually, and in an unweighted fashion as total weekly counts; Spearman correlation and multivariate logistic regression were used with predictors from the same week & preceding week. This was correlated with weekly flu activity as reported by the CDC; this reports geographic spread of influenza, as reported by state epidemiologists. The VA Puget Sound IRB approved this study.

**RESULTS:** Using comparisons with epidemiologist-reported flu activity level, all clinical data elements had statistically significant associations using Spearman correlation; sum of total counts of predictors r=0.57 (p<0.0001); lab tests r=0.51 (p<0.0001); ICD-9 codes r=0.47 (p=0.0003); prescription r=0.38 (p=0.005); fever r=0.31 (p=0.02); hypoxia r=0.28 (p=0.04). Total counts accounted for one-third (r2=0.3) of variance. Similar results were found for preceding week counts. In logistic regression, both ICD-9 and lab counts were significant predictors (Wald χ2=6.80, p=0.009, Wald χ2=7.15, p=0.007 respectively).

**CONCLUSION:** Limitations include that we were only able to sample a small percent of the overall state population using VA data; accordingly, young people, women and children are underrepresented in this sample. Despite this, this study suggests that data obtained from electronic health records may be useful in predicting ILI on a regional basis. The combination of ICD-9 codes, vital signs, lab, and pharmacy data provided the best correlation with influenza. ICD-9 and lab counts
both contribute independently to prediction and should be considered to build a stronger model of prediction in our data. This research was made possible by NIH Grant #3P20 RR0116454-0952 from the INBRE Program of the National Center for Research Resources. Research support was also provided by the Boise Veterans Affairs Medical Center and University of Washington.

**CONCLUSION:** Antipsychotic prescribing is common in older VA nursing home patients, including those without a documented evidence-based indication for use. The odds of use are increased in Veterans residing in Alzheimers/Dementia Special Care Units and in those with aggressive behavior and taking concomitant anxiolytic/hypnotics. Quality improvement efforts are needed in VA, as well as non-VA, nursing homes to reduce potentially inappropriate antipsychotic prescribing and increase the use of non-pharmacological behavior modification approaches. The effect on nursing homes of FDA antipsychotic warnings issued subsequent to the study period should be examined, both within and outside of the VA system.

**RETAIL CLINICS’ EFFECTS ON PRIMARY CARE RELATIONSHIPS**

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**BACKGROUND:** Retail Clinics (RCs) are convenience-focused clinics located in retail stores. Staffed by nurse practitioners, they provide walk-in care for a limited set of acute and preventive concerns and saw 5 million visits in 2009. Physicians and policymakers are concerned that retail clinics may negatively impact primary care relationships. In theory, each RC visit to could represent one fewer visit to a primary care provider (PCP) and, therefore, one fewer opportunity to build a primary care relationship or receive preventive or chronic care. In this study we empirically evaluate these concerns.

**METHODS:** We performed a retrospective cohort analysis of a database of de-identified insurance claims from a sample of 14.8 million patients in 20 insurance markets from the years 2007–9. We sampled all patients who had an “index visit” to an RC for one of 11 simple acute conditions and randomly selected control patients who had an index visit to a PCP for one the same conditions.

We included 94,235 patients who were younger than 65 years, living within 20 miles of an RC, and continuously insured for 1 year before and after an index visit: 29,575 with RC index visits and 64,660 with PCP index visits. For each patient, we compared care delivered in the 365 days before and after the index visit. Using a difference-in-differences approach, we evaluated the impact of the RC visit on two proxies for a primary care relationship: (1) receipt of a preventive health examination or (2) having two or more visits to the same PCP. We used multivariate logistic regression to estimate the marginal effect of visiting a retail clinic on subsequent receipt of primary care.

**RESULTS:** Compared to visiting a PCP for a similar concern, visiting an RC was associated with 1.4% (p<0.001) increased likelihood of having a subsequent preventive health examination. Adjusted rates of preventive examinations were 27.2% before and 28.9% after an RC index visit, compared to 45.9% before and 46.2% after a PCP index visit. Compared to visiting a PCP, visiting an RC was associated with 2.5% (p<0.001) decreased likelihood of having two or more visits with the same PCP. The adjusted percentages of patients having two or more PCP visits were 41.8% before and 42.8% after an RC index visit, compared to 51.8% before and 55.3% after a PCP index visit.
CONCLUSION: Compared to visiting a PCP for an urgent health condition, visiting an RC may modestly increase the likelihood of receiving subsequent preventive examinations and moderately decrease the subsequent likelihood of having multiple visits to the same PCP. It is possible that some preventive issues that can be addressed in an acute visit to a PCP cannot be addressed at a comparable visit to an RC. Concerning PCP continuity, after visiting RCs patients may substitute RC visits for PCP visits or may simply seek less primary care. These first empirical analyses of the impact of RC care on PCP relationships find effects of mixed direction and modest magnitude. Physicians’ concerns that RCs will undermine primary care relationships may not be substantiated.

OUTPATIENT AND INPATIENT PAID MALPRACTICE CLAIMS AND THE FOCUS OF PATIENT SAFETY EFFORTS Tara F. Bishop 1; Andrew M. Ryan 1; Lawrence P. Casalino 1; Well Cornell Medical College, New York, New York. (Tracking ID # 11071)

BACKGROUND: Since the landmark Institute of Medicine Report, To Err is Human, there has been significant progress in patient safety, but most initiatives have centered around inpatient care. This study sought to compare the volume of paid malpractice claims for errors in the outpatient versus inpatient settings. The number and dollar amount of paid malpractice claims may be taken as an indicator of errors in each setting.

METHODS: Using data from the National Practitioner Databank (NPDB), we performed a cross-sectional comparison and trend analysis of malpractice payments for errors in the outpatient and inpatient settings. The NPDB is a repository of all malpractice claims paid on behalf of licensed health care providers. For the cross-sectional analysis, we limited our sample to claims paid in 2008. For the trend analysis, we examined payments made from 2004 to 2008. We only included payments made on behalf of a physician (MD or DO) including resident physicians. We excluded entries in which only disciplinary action by a credentialing or licensing body occurred. We calculated the absolute number and proportion of malpractice claims paid for physicians in the inpatient, outpatient, and both (for the same case) settings and used linear regression analysis to determine whether these proportions changed over time. We used the Chi-squared test to multiple logistic regression to compare differences in payments amounts by setting. We also performed chi-squared test to compare differences in the types of errors and outcomes of events by setting.

RESULTS: In 2008, there were 10,535 malpractice claims paid on behalf of physicians. Of these payments, 5,020 or 47.7% were for errors in the inpatient setting, 4,487 or 42.5% were for errors in the outpatient setting, and 1,028 or 9.6% were for errors in both settings. The proportion of payments for errors in the outpatient setting increased a small but significant amount from 41.2% in 2004 to 42.6% in 2008 (p<0.001). Mean payment amount for errors in the outpatient setting was significantly lower than in the inpatient setting (S891,834 vs S836,227, p<0.001) as was median payment amount (S815,000 vs. S819,000, p<0.001). This difference remained significant even after accounting for differences in the type of error and patient and physician characteristics. In the outpatient setting, the most common types of errors were diagnostic (46.5%), treatment (22.5%), and medication (7.6%) errors. In the inpatient setting, the most common types of errors were surgical (35.4%), diagnostic (19.9%), and treatment (17.4%) errors. Obstetric (13.9% vs. 1.5%) and anesthesia (3.7% vs. 1.4%) errors were more common in the inpatient setting. In bivariate analysis, the proportion of the types of error was significantly different between the inpatient and outpatient settings (p<0.001). Major injury was the most common outcome in both the inpatient (37.2%) and outpatient (32.3%) settings.

A small but significantly higher percentage of inpatient malpractice payments were for an outcome of death (34.5% vs. 32.3%, p<0.001).

CONCLUSION: A high proportion of paid malpractice claims are for errors in the outpatient setting. These findings suggest that we need similar focus on error reduction in the outpatient setting as has been done in the inpatient setting.

EFFECTS OF A WALKING INTERVENTION ON SYSTEMIC INFLAMMATION IN PERSONS WITH DIABETES MELLITUS AND PERIPHERAL ARTERIAL DISEASE Tracie Collins 1; Scott Lunos 1; James Hodges 1, 1University of Minnesota, Minneapolis, Minnesota. (Tracking ID # 11073)

BACKGROUND: We sought to determine whether a walking intervention would reduce inflammation in patients with diabetes mellitus and peripheral arterial disease (PAD).

METHODS: We obtained blood samples from a consecutive subset of patients with diabetes mellitus and PAD (as defined by an ankle-brachial index—an objective measure of lower limb blood flow −0.9) who were part of a larger, two-arm, six-month trial. The two study arms were attention control and a home-based walking intervention. All participants were contacted bi-weekly for six months and, during each call, the study coordinator discussed participants’ efforts to manage their diabetes mellitus and, as indicated, hypertension, hyperlipidemia, and smoking. For participants randomized to the intervention group, each phone call also included a stage of change based intervention to motivate the use of home-based walking at least three days each week for 50 minutes each session. Also, each intervention participant completed a 50-minute walking session with an exercise instructor one additional day each week. The study was funded by the American Diabetes Association. Participants completed baseline and six-month assessments of co-morbidities, exercise behaviors, and walking ability. Linear regression was used to assess the relationship between group assignment, walking ability, or exercise behaviors with each biomarker.

RESULTS: We obtained blood samples on 55 participants (control=25 and intervention=30). At baseline, median values for the biomarkers were as follows: soluble intercellular adhesion molecule (ICAM) 245.94, intercellulin-6 (IL-6) 3.18, soluble vascular cell adhesion molecule (VCAM) 828.63, monocyte chemoattractant protein (MCP-1) 414.09, B2 microglobulin 2.80, total cholesterol 168.00, triglycerides 174.00, high-density lipoprotein (HDL) 40.00, low-density lipoprotein (LDL) 81.00, and C-reactive protein (CRP) 2.82. There were no significant differences between the control and intervention groups in baseline characteristics with the exception in use of clofazol (26% of the control group used this medication versus 8% of the intervention group, P=0.008). At 6 months and based on change in the intervention group minus change in the control group, we observed the following: ICAM by 5.15 (SE 11.58, P>0.20), VCAM by 29.62 (SE 48.99, P>0.20), total cholesterol by 9.00 (SE 29.77, P=0.16), triglycerides by 10.90 (SE 34.53, P>0.20), HDL by 3.61 (SE 2.09, P>0.09), LDL by 1.67 (SE 5.83, P>0.20), CRP by 0.19 (SE 1.41, P>0.20). In analyzing treadmill walking distance as a predictor of inflammation, we observed that ICAM changed by −1.81 (SE 5.63, P<0.20), VCAM by −11.17 (SE 23.85, P>0.20), LDL by −0.95 (SE 2.77, P>0.20), and HDL by −0.57 (SE 1.04, P>0.20), for every 1 SD change in area under the curve for treadmill walking distance. We observed similar changes in biomarkers when looking at additional measures of walking ability including responses to the Walking Impairment Questionnaire and Exercise Behaviors Survey.

CONCLUSION: Our results suggest that some biomarkers of inflammation (ICAM, VCAM, total cholesterol, triglycerides, and LDL) may be improved by exercise in persons with diabetes mellitus and PAD.
Surprisingly, HDL which is traditionally managed with an increase in physical activity, did not improve as walking distance improved.

HEALTHCARE DISPARITIES EXPERIENCED BY ADULTS ON THE AUTISTIC SPECTRUM Christina Nicolaidis 1; Dora Raymaker 2; Katherine McDonald 3; Sebastian Dern 4; Elesia Ashkenazy 2; William Cody Boisclair 5; Amanda Baggs 6. 1Oregon Health & Science University, Portland, Oregon; 2Autistic Self-Advocacy Network, Portland, Oregon; 3Portland State University, Portland, Oregon; 4AASPIRE member at large, Berlin, N/A; 5AASPIRE member at large, Atlanta, Georgia; 6AASPIRE member at large, Burlington, Vermont. (Tracking ID # 11075)

BACKGROUND: There has been a great increase in the recognition of Autism Spectrum Disorders (ASD). Current estimates are that up to 1% of the adult population may be on the autistic spectrum. Though studies have shown that people with developmental disabilities experience significant disparities in care, most studies have recruited participants through disability services or institutional settings and may not have included the wide heterogeneity of ASD. Autistic adults who use the Internet represent an understudied population of healthcare users who may experience important barriers to care. Our objective was to identify disparities in healthcare for autistic adults who use the Internet, as compared to Internet users without disabilities.

METHODS: The Academic Autistic Spectrum Partnership in Research and Education (AASPIRE), a partnership between researchers, autistic self-advocates, family members, healthcare workers, and disability service providers, used a Community Based Participatory Research (CBPR) approach where community members served as equal partners in each stage of the project. We conducted an online survey via the Gateway Project, an online registration system for research projects committed to inclusion, respect, accessibility and community relevance. Gateway Project participants, age 18 or older, completed an assessment of autistic traits (the Autism Quotient) and provided information on autism-related diagnoses. Gateway Project participants who reside in the US and self-identify as being on the autistic spectrum were invited to participate in a survey on unmet healthcare needs, healthcare utilization, healthcare satisfaction, barriers to healthcare, general and psychological well-being, and healthcare self-efficacy using standardized instruments. Our team of academic and community partners adapted all instruments to be accessible to autistic adults. We matched autistic participants by age and sex with non-autistic adults without disabilities and invited them to take the same survey. We analyzed data using Stata software. We used t-tests and chi-squared tests for bivariate analyses and used logistic and linear regression for multivariate analyses. Primary analyses include all adults who consider themselves to be autistic. Secondary analyses limit autistic participants to those who score 32 or greater on the Autism Quotient and to those who have formal medical diagnoses on the autistic spectrum.

RESULTS: 360 participants (199 autistic, 161 non-autistic without disabilities) completed the survey. Both groups had high educational attainment (>90% with at least some college), but the autistic group had lower income (53% vs. 29% with <$25,000 annually). In multivariate analyses, after adjustment for age, sex, race/ethnicity, personal and parental educational level, income, and type of health insurance, autistic adults had higher odds of having unmet health needs (physical health, OR 2.3, p=0.01; preventive health OR 2.0, p=0.045; mental health, OR 5.1, p<0.001), higher odds of using the emergency room within the past year (OR 3.2, p=0.001), lower odds of complying with preventive care such as pap smears (OR 0.32, p=0.006), lower satisfaction with health care (p<0.001), lower healthcare self-efficacy (p<0.001), and a greater number of barriers to healthcare in each category (p<0.001). Secondary analyses limiting the autistic group to either those who had formal medical diagnoses or those who scored high on the AQ did not significantly alter the results.

CONCLUSION: Autistic adults who use the Internet report receiving significantly worse healthcare than Internet users without disabilities. Healthcare providers should be made aware of potential barriers to care for autistic adults - including adults such as those in our sample, with overall high educational attainment and the communication and intellectual skills necessary to use the Internet. Future research is needed to find ways to improve healthcare for adults across the entire autistic spectrum.

TWENTY PERCENT OF TENNESSEE MEDICAID RECIPIENTS WHO PARTICIPATED IN WEIGHT WATCHERS LOST 5% OR MORE OF THEIR INITIAL WEIGHT Nia S. Mitchell 1; Misoo Ellison 1; James Hill 1; Adam Gilden Tsai1, 1University of Colorado, Denver, Colorado. (Tracking ID # 11078)

BACKGROUND: Obesity and its associated medical problems are crucial issues for internists in the United States, as well as the health care system as a whole. Low socioeconomic groups have higher rates of obesity than the general population. Although there is some evidence that commercial weight loss programs are effective, they are still too expensive for the most vulnerable populations. In an effort to help control obesity, Tennessee Medicaid (TennCare) partnered with Weight Watchers to offer its recipients access to the weight loss program for a nominal fee. The aim of this study was to determine the weight change among adult Medicaid beneficiaries that participated in Weight Watchers.

METHODS: Weight Watchers is a well known commercial weight loss program that helps its participants lose weight through group support and information about healthy eating, portion control, exercise, and behavior modification. Participants attend weekly group meetings led by Weight Watchers employees who have successfully lost weight with the program. Program participants paid a $1 copayment for each visit and TennCare covered the other $8.10. The current study is a retrospective analysis of weight change among 1,192 overweight and obese TennCare recipients who participated in Weight Watchers in 2006 and 2007. Weight change in kg was calculated as the difference from the first date of participation to the last. Weight change was also calculated as percentage change from initial weight. Weight change was subsequently categorized as weight loss or gain of 0 to 5%, >5 to 10%, and >10%. Analyses were stratified by gender and by initial BMI category for women (overweight vs. obese) because the starting weights for males vs. females and for overweight vs. obese females were significantly different. The average weight loss was also calculated based on the number of meetings attended.

RESULTS: During the study period, 1,965 Medicaid recipients participated in the program and 1,192 individuals were eligible for analysis with at least one follow-up weight measurement. The average starting weight for females was 111.4 kg (SD=27.7) and the average starting weight for males was 144.3 kg (SD=43.0); and the average baseline BMIs for females and males were 41.1 (SD=9.4) and 45.4 (SD=13.1), respectively. The average weight loss for all participants was 3.0 kg, equal to 2.7% of initial weight. Twenty percent of participants lost 5% or more of their initial body weight while participating in the program. There was no statistical difference in weight loss between overweight or obese females or between males and females. The average number of meetings attended was 9.9 (SD=10.2), with a range of 2 to 92 meetings and a median of 7. Over 13% of the participants (N=160) only attended 2 meetings. On average, these participants lost 0.5% (SD=6.4) of their initial weight. Over 23% of the participants (N=276) attended 13 or more meetings, and they lost an equal to 2.7% of initial weight. Twenty percent of participants lost 5% or more of their initial body weight while participating in the program. Weight change was subsequently calculated as percentage change from initial weight. Weight change was also calculated as percentage change from initial weight. Weight change was subsequently categorized as weight loss or gain of 0 to 5%, >5 to 10%, and >10%. Analyses were stratified by gender and by initial BMI category for women (overweight vs. obese) because the starting weights for males vs. females and for overweight vs. obese females were significantly different. The average weight loss was also calculated based on the number of meetings attended.

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CONCLUSION: Twenty percent of the TennCare recipients who participated in Weight Watchers lost a clinically significant amount of weight, even though the average weight loss among all participants was modest. Participants who attended more meetings were more likely to lose a clinically significant amount of weight. Obesity and its associated comorbidities place a significant burden on Medicaid budgets and on the primary care providers who treat Medicaid patients. Thus, partnerships that allow low-income patients to access weight loss programs may provide a valuable weight management tool and should be explored further.

NOMINAL GROUP TECHNIQUE TO IDENTIFY ATTRIBUTES OF TOP ATTENDING PHYSICIANS Nidhi Gupta Huff 1; Brita Roy 2; Carlos Estrada 3; Robert Centor 4; Analia Castiglioni 2; Lisa Willett 2; Stuart Cohen 2. 1University of Alabama at Birmingham, Fultondale, Alabama; 2University of Alabama at Birmingham, Birmingham, Alabama; 3Birmingham VAMC, The University of Alabama at Birmingham, Birmingham, Alabama; 4University of Alabama at Birmingham, Birmingham VAMC, Birmingham, Alabama. (Tracking ID # 11079)

BACKGROUND: Ward attending rounds remain a cornerstone of residency education; however, data is limited on characteristics that define exceptional attendings. We created a study to identify attributes of top ranked attending physicians.

METHODS: Internal medicine residents and students on general medicine services at an academic medical center participated in nominal group technique (NGT) sessions to generate a list of attributes describing their ward attending. Participants voted on attributes based on perceived importance. For attributes with three votes or more, six nominal group technique (NGT) sessions to generate a list of attributes with the number of votes in each domain. Correlation between attending rank and number of votes within domains were calculated using Pearson Correlation Coefficient (r).

RESULTS: A total of 264 residents and students participated in 17 NGT sessions for 23 attending physicians. This generated 66 attributes, which fit within the five domains of teaching excellence: role modeling, teaching process, learning environment, team management, and setting expectations. Attendings were placed into top, middle, and bottom tertiles using a pre-existing, standard evaluation (E-value©). E-value© rank was compared with the number of votes in each domain. Correlation between attending rank and number of votes within domains were calculated using Pearson Correlation Coefficient (r).

CONCLUSION: Teaching excellence in top rated attendings is characterized by engaging learners by explaining the decision making process and setting aside time to teach.

ACCURACY OF DO NOT RESUSCITATE (DNR) IN ADMINISTRATIVE DATA L. Elizabeth Goldman 1; Philip W. Chu 1; Dennis Osmond 1; Andrew Bindman 1. 1University of California San Francisco, San Francisco, California. (Tracking ID # 11080)

BACKGROUND: Having a Do Not Resuscitate (DNR) order, defined as a physician order of DNR within 24 hours of admission, is strongly associated with in-hospital death. The Center for Medicare and Medicaid Services is beginning to require the collection of whether patients have DNR orders on admission that could be used as a risk adjustment variable in hospital quality assessments. The validity of this approach is partially dependent on whether DNR is accurately reported by hospitals. The objective of this study is to test the accuracy of a DNR data element in California administrative data, the only state that currently requires the collection of this information.

METHODS: We used an audit by registered nurses (RN) of 1673 medical records from 48 California hospitals to compare DNR coding in the 2005 Patient Discharge Data (PDD) to RN re-abstraction and determined whether patient characteristics were associated with coding accuracy. Subjects were selected using a probability sample of patients with acute myocardial infarction, community-acquired pneumonia, or congestive heart failure. Overcoding a DNR order was considered to have occurred when the PDD recorded a DNR order, and the RN reabstraction said there was none. Undercoding a DNR order was considered to have occurred when the PDD did not record a DNR order, and the RN abstraction did.

RESULTS: The PDD “overcoded” a DNR order in 191 (11.4%) records and “undercoded” a DNR order in 71 (4.2%) records. Among those overcoded, the record did confirm a DNR order in 99 (46.6%) but it was incorrectly documented in the PDD because the order was written more than 24 hours after admission. The odds of DNR being inaccurately coded increased significantly with patient years of age, [(overcoding OR 1.03; p=0.002); (undercoding OR 1.04; p<0.0001)] and undercoding was higher among those patients who died (OR 2.01; p=0.007).

CONCLUSION: Among hospitalized patients with one of three common medical conditions, DNR coding in administrative data is inaccurate in more than one in seven cases. While there are important reasons to include DNR status in risk adjusted mortality rates to judge hospital quality, the finding that the recording of DNR status is particularly problematic among patients who died suggests that this variable as currently reported by hospitals in California is invalid. Further work needs to be done in developing data reporting standards for DNR if it is to become a useful component in performance measurement.

BENEFITS OF WALKING THERAPY IN PATIENTS WITH DIABETES MELLITUS AND PERIPHERAL ARTERIAL DISEASE WHO ARE LIMITED BY LEG PAIN OR FATIGUE Tracie Collins 1; Winta Ghidei 2; Jasjit Ahluwalia 3. 1University of Minnesota, Minneapolis, Minnesota; 2University of Minnesota, Center for Health Equity, Minneapolis, Minnesota; 3University of Minnesota, Executive Director, Center for Health Equity, Minneapolis, Minnesota. (Tracking ID # 11083)

BACKGROUND: Patients with diabetes mellitus and peripheral arterial disease (PAD - defined by an ankle-brachial index - an objective measure of lower limb blood flow - <0.9) are limited by walking from both leg pain and fatigue or fatigue only. Commonly health care providers focus on leg pain, but not fatigue when managing patients with PAD. Walking therapy is an important treatment option for patients with PAD to reduce leg pain and improve quality of life. We conducted a secondary analysis of a clinical trial in which we randomized patients with diabetes mellitus and PAD to an attention control and a home-based walking intervention. This secondary analysis compared treadmill walking...
distance, both maximal and onset to pain, at baseline and at 6 months in both the intervention and control groups for those stopping the treadmill secondary to leg pain and fatigue, or fatigue only.

**METHODS**: All participants (n=145) were contacted bi-weekly for six months and, during each call, the study coordinator discussed participants' efforts to manage their diabetes mellitus and, as indicated, hypertension, hyperlipidemia, and smoking. Participants completed baseline and six-month assessments of treadmill walking distance, both maximal walking distance and onset to pain distance. Linear regression was used to assess the relationship between group assignment and each outcome.

**RESULTS**: Of the 145 patients randomized (mean age 66.5 years, SD 10.1 years), eight terminated treadmill testing for reasons other than leg pain and fatigue or fatigue only, 106 terminated treadmill testing secondary to leg pain and fatigue (control=54; intervention=52), and 31 terminated testing secondary to fatigue only (control=12; intervention=19). Comparing change from baseline to 6-months among participants who terminated treadmill testing because of leg pain and fatigue, control participants improved their _maximal walking distance_ by 48.0 (20.9) meters as compared to 24.3 (21.6) meters for intervention participants (p=NS) and _onset to pain distance_ increased by 50.2 (21.7) meters for control participants compared to 31.7 (28.4) meters for intervention participants (p=NS). For persons who terminated treadmill testing for fatigue only, change from baseline to 6-months in maximal walking distance was 28.4 (52.7) meters for control participants compared to 46.7 (31.7) meters for intervention participants (p=NS) and onset to pain distance was 38.0 (52.6) meters for control participants as compared to 139.1 (34.6) meters for intervention participants (p=0.10).

**CONCLUSION**: A home-based walking intervention may have more benefit for improving onset to pain distance as compared to maximal walking distance in persons with diabetes mellitus and PAD who are limited by fatigue (i.e., deconditioning). Further research is needed to address the benefits of home-based walking for persons with diabetes mellitus and PAD who are limited not only by leg pain but also fatigue.

**EQUITY IN THE RECEIPT OF TAMIFLU DURING THE PANDEMIC FLU?** William Shrank 1; Sebastian Schneeweiss 2; Michael A. Fischer 2; Brennan 6; Niteesh Choudhry 2. 1Brigham and Women’s Hospital, Boston, Massachusetts ; 2Brigham and Women’s Hospital, Boston, Massachusetts ; 3Harvard Medical School, Boston, Massachusetts ; 4CVS Caremark, Chicago, Illinois; 5CVS Caremark, Woonsocket, Rhode Island. (Tracking ID # 11084)

**BACKGROUND**: Tamiﬂu is a potential life-saving therapy for the management of inﬂuenza. During the recent pandemic ﬂu, lay press reports raised concerns about differential access to Tamiﬂu based on patient income. However, little is known about the relationship between patient characteristics and receipt of Tamiﬂu therapy. In a sample of patients insured by a large, national pharmacy beneﬁts manager, we evaluated patient characteristics associated with Tamiﬂu receipt during the pandemic ﬂu.

**METHODS**: We identiﬁed patients continuously enrolled in a pharmacy beneﬁt insurance plan from CVS Caremark between October, 2008 and May, 2010. Pharmacy claims were used to examine whether patients received a prescription for prophylactic or therapeutic doses of Tamiﬂu during the study period. Independent, patient-level variables included gender, age, geographic region, number of unique medications (a proxy for comorbidty) and median income in zip code of residence. We ﬁt a logistic regression model to assess patient characteristics associated with Tamiﬂu receipt. In addition, we used county-level information about rates of inﬂuenza diagnosis during the study period for 19 states to assess the relationship between patient characteristics and Tamiﬂu receipt, controlling for disease burden.

**RESULTS**: The study cohort consisted of almost 26 million patients throughout the US who, on average, were 41 years old; 52.5% were female, and they used an average of 1.9 unique medications in the first 4 months of the study period. Overall, 1.26 million patients (4.8%) ﬁlled a prescription for Tamiﬂu during the study period. In multivariate analyses, beneficiaries aged 50–64 and 65 or older had 51.2% and 77.1% lower odds, respectively, of receiving Tamiﬂu than those in the lowest quintile. In the 19 states with inﬂuenza diagnosis data, we found no statistically signiﬁcant relationship between rates of diagnosis and the likelihood of Tamiﬂu receipt. Geographic variations became insigniﬁcant after controlling for inﬂuenza disease burden, and the relationship between income and Tamiﬂu receipt strengthened. Patients in the highest income quintile had 32% greater odds of receiving Tamiﬂu than those in the lowest quintile. 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**CONCLUSION**: We found that income in the zip code of residence is more strongly related to Tamiﬂu receipt than rate of inﬂuenza diagnoses during the pandemic ﬂu. These ﬁndings corroborate concerns about equity of treatment in the setting of pandemic ﬂu, and they call for more equitable solutions to distributing potentially life-saving treatments.

**A POOLED SAFETY ANALYSIS OF ROFLUMILAST FOR THE TREATMENT OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE: TIME TO ONSET, DURATION AND SEVERITY OF ADVERSE EVENTS** B Wagner 1; PMA Calverley 2; LM Fabbri 3; KF Rabe 4; H Mosberg 5; Forest Research Institute, Jersey City, New Jersey ; 2University Hospital Aintree, Liverpool, N/A; 3University of Modena & Reggio Emilia, Modena, N/A; 4Krankenhaus Großhansdorf, Großhansdorf, Germany; 5Nycomed, Konstanz, N/A. (Tracking ID # 11086)

**BACKGROUND**: The Centers for Disease Control (CDC.gov) recently reported that chronic obstructive pulmonary disease (COPD) rose from previously being the 4th leading cause of death in 2008 to 3rd in the US and its incidence is believed to be increasing in the US. Despite current treatments, patients with COPD continue to experience exacerbations, which can accelerate the progression of the disease and increase mortality. Therefore, there is an important unmet need to achieve optimal treatment for patients to help reduce exacerbations of COPD. The selective phosphodiesterase 4 (PDE4) inhibitor roflumilast (ROF) was shown to significantly reduce the incidence of moderate or severe COPD exacerbations by 17% compared with placebo and to improve lung function in 2 identical 12-month pivotal trials in patients with severe airflow limitation, bronchitic symptoms, and a history of exacerbations. In two 6-month studies of moderate-to-severe COPD patients treated concomitantly with salmeterol or tiotropium, roflumilast also significantly improved lung function and reduced the proportion of patients experiencing a moderate or severe exacerbation. To further characterize this new treatment, the safety and tolerability of roflumilast were analyzed in a pooled COPD safety population.

**METHODS**: The COPD safety pool comprised 12,054 patients with moderate-to-severe COPD from 14 randomized, double-blind studies of ROF 250 μg (n=797) or 500 μg (n=5766) once-daily vs placebo (n=5491). The incidence of the most frequent (<2%) higher for ROF vs placebo (PBO) individual adverse events (AEs), serious AEs, and rates of withdrawals due to AEs are reported for all dose groups. The
incidence by severity (by system organ class [SOC]), duration, and time to onset for the most frequently experienced AEs are reported for the 500 μg dose.

**RESULTS:** AE incidence was 67.2%, 60.7%, and 62.8% and serious AEs was 13.5%, 7.2%, and 14.2% for ROF 500 μg, 250 μg, and PBO, respectively. Withdrawals due to AEs were 14.3% for ROF 500 μg, 8.9% for ROF 250 μg, and 9.2% for PBO. The most frequently reported AEs were exacerbations (19.8%, 21.2%, 23.1%), diarrrhea (10.1%, 4.9%, 2.6%), decreased weight (6.8%, 0.8%, 1.8%), nausea (5.2%, 2.3%, 1.4%), and headache (4.6%, 3.5%, 2.0%) for ROF 500 μg, 250 μg and PBO, respectively. For ROF 500 μg compared to PBO, between-treatment weight loss was ~2.14 kg (P<0.0001); ~80% of patients regained half of their lost weight by 3 months after ROF discontinuation. The incidence of infections was similar (25.9% ROF 500 μg vs 27.5% PBO), with no difference in pneumonia (1.8% vs 2.0%, respectively). Fewer cardiovascular AEs were reported with ROF 500 μg (5.7%) than PBO (9.9%); no difference in potential proconvulsant effects was seen. Mesentric vasculitis was not seen in any patient, and depression or suicidality affected very few patients in either group (3 for ROF and 1 for PBO during treatment and 2 for ROF 3 weeks after treatment cessation). AE frequency by SOC at any intensity was similar (±2% difference) for ROF 500 μg and PBO, except for moderate respiratory, thoracic, and mediastinal disorders, which were ≥2% lower with ROF and mild/moderate gastrointestinal disorders, or mild/moderate nervous system disorders were ≥2% higher with ROF. For time to onset for AEs, during the first 4 weeks AE incidence was higher with ROF 500 μg (27.6%) than PBO (14.1%), while the incidence of AEs with onset later than 4 weeks was higher with PBO (85.9%) than ROF 500 μg (72.4%). The majority of AEs in all treatment groups lasted <4 weeks. Weight decrease, diarrrhea, nausea, and headache were more often experienced for <4 weeks with ROF 500 μg vs PBO. For AEs of ≥26 weeks duration, there were slightly more AEs in patients in the ROF 500 μg group vs PBO. In most cases, COPD exacerbations and diarrrhea lasted <4 weeks.

**CONCLUSION:** In this large safety population of moderate-to-severe COPD patients, oral, once-daily roflumilast was well tolerated. No unexpected AEs related to roflumilast treatment were identified. The most common AEs were generally mild-to-moderate in severity and short-lived (<4 weeks).

**PERCEPTIONS OF ALERT FATIGUE BY PCPs USING AN INTEGRATED ELECTRONIC HEALTH RECORD**

**Hardeep Singh 1; Christiane Spitzmuller 2; Mona Sawhney 1; Donna Espadas 1; Varsha Modi 1; Affair Medical Center, Houston, Texas ;2Department of Psychology, Service (VA HSR&D) Center of Excellence, Michael E. DeBakey Veterans Science Center, Houston, Texas .**

**ABSTRACTS**

**METHODS:** We conducted a cross-sectional, web-based survey of VA PCPs to assess their perceptions and practices related to alert management. We developed initial survey items after an extensive literature review and refined the survey content after pilot testing with several PCPs and soliciting expert input. The final survey tested the following constructs: 1) follow-up action on high-priority alerts; 2) follow-up action on all alerts; 3) information overload; 4) alert fatigue. We also assessed individual PCP characteristics and their alert burden.

**RESULTS:** Of 5001 PCPs invited, 2590 (51.8%) responded. Characteristics of respondents included 55.4% female; 31.1% non-white, and 31.5% non-physician providers; 82.1% had 2 or more years in VA practice, and 49.0% had prior experience using a non-VA EHR. Respondents reported a median alert burden of 63 per day (range 1-2500); 54.1% perceived over half of their alerts to be unnecessary. Regarding actions on alerts, 93.2% reported they followed up on all high-priority alerts, whereas only 77.6% reported they followed up on all alerts. Just over two-thirds of PCPs reported perceived information overload (68.7%) and alert fatigue (67.3%). The majority (81.1%) believed managing alerts took too much time away from normal duties, and 87.3% reported that they used personal time (after hours or weekends) to manage alerts through remote EHR access or working in the office. About a third (30.5%) reported receiving some protected clinical time to manage alerts; compared to those without protected time, fewer respondents in this group indicated they experienced information overload (64.9% vs. 70.7%, P=0.004) and alert fatigue (64.4 vs. 68.5%, P=0.05).

**CONCLUSION:** In a national survey of VA PCPs, the majority of respondents endorsed information overload and fatigue related to large numbers of EHR-based asynchronous alerts. Not all EHR alerts were considered necessary, and responses suggest that a significant proportion of alerts are not acted upon. PCPs with protected (i.e., paid) time to manage alerts were marginally less likely to report alert fatigue. Future research is needed to quantify the various types of alerts PCPs receive and to review the necessity of all types of alerts to reduce alert volume.

**EFFECTS OF AN EDUCATIONAL INTERVENTION ABOUT TOBACCO USE ON MEDICAL STUDENTS IN ARGENTINA**

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**ABSTRACTS**

**METHODS:** At the beginning of the fourth year of the 6-year medical school, students assigned to rotations at the Universidad de Buenos Aires Hospital de Clínicas were divided into four groups. Each group attended classes at specific locations with different teachers and there was no structured contact among the different groups. Students were assigned to intervention or control based on a cluster-randomized trial design. All fourth year medical students from the Hospital de Clínicas were invited to participate in March 2009. Participants completed the Global Health Professions Student Survey (GHPSS). About half of the students then attended the modified Spanish version of the "Rx for
**Change Course**, about tobacco cessation for students in the health sciences. Three months later, all participants completed the GHPS again.

**RESULTS:** We invited 354 students to participate and 299 (84%) accepted. Of these 299, 70% were women, 26% had an outside job and 20% lived alone. The median age was 23 years. Although 88 (29%) were smokers, only 50 (57%) smoked cigarettes daily. Among smokers, 78% were women. Among the 299 students, 51% were exposed to second hand smoke (SHS) in their home in the previous week and 90% were exposed outside their homes. There was a high level of knowledge regarding tobacco consumption as 93% of the students answered correctly all the questions such as “Smoking during pregnancy increases the risk of disease in the newborn, such as Sudden Death Syndrome?” Only 3% of students had ever received information about smoking cessation and most were interested in receiving it for themselves or for their future patients. 40% of respondents considered that medical advice or smoking cessation counseling by physicians was not effective. No significant changes were observed in tobacco consumption or in the students’ beliefs about cessation counseling after the implementation of the educational intervention.

**CONCLUSION:** Providing knowledge on tobacco did not change student’s consumption or attitudes about tobacco use and cessation. Teaching medical students about helping their patients quit smoking should be a priority in Latin American medical education. New educational strategies will need to be developed to modify student’s attitudes and behavior about tobacco use.

**THE EFFECT OF ELECTRONIC MEDICAL RECORD ALERTS ON PROCESSES OF CARE RELATED TO PREVENTING FALLS IN COMMUNITY-DWELLING ELDERLY PATIENTS**

- David R. Goldfman
- Craig A Umscheid
- Peter Gabriel
- Mark Weiner
- Susan Day
- Asaf Hanish
- Jesse Chittams
- Bruce Kinosian
- University of Pennsylvania, Philadelphia, Pennsylvania
- University of Pennsylvania/Department of Veterans Affairs, Philadelphia, Pennsylvania

**BACKGROUND:** Falls represent a significant cause of morbidity and mortality for vulnerable elders. Electronic medical records (EMR) have the potential to educate providers about fall prevention and simplify mortality for vulnerable elders. Electronic medical records (EMR) have been used to improve provider education and patient care processes in general. During the study period, all 3 practices had an active alert regarding fall-risk related medication and a PT referral link was seen by clinicians in all 3 practices in Period 2; and (3) a passive alert recommending medical review (8 months), (2) a passive alert recommending physical therapy (PT) referral (6 months), and (3) an active alert recommending medical review for culprit drugs (6 months). Eligible patients (8 months), (2) a passive alert recommending physical therapy (PT) referral (8 months), and (3) an active alert recommending medical review for culprit drugs (8 months). Eligible patients 1) were 70 or older; 2) had been seen at least twice yearly during any of the two years prior to the beginning of the study by general internal medicine physicians in the three study practices (clinics A, B and C); and 3) responded during the study period to an eight-item health assessment questionnaire (HAQ), which included two items on past falls and fear of falling. The passive alert (Fig 1) containing fall-related assessment actions, resource links, and a PT referral link was seen by clinicians in all 3 practices in Period 2; the active alert (Fig 1) indicating that a high-risk fall medication was on the patients medication list and providing links to medication substitution protocols and other resources was seen in clinics B and C in Period 3. An educational intervention was delivered to all practices between the two alert periods. The passive alert was placed in the best practices section of the EMR; the active alert appeared on the screen and required a response before the provider could proceed. We compared PT referrals, change in high-risk medications, and responses to the alerts across the practices within periods and across periods.

**RESULTS:** In Period 1, 1377 of 3718 (37%) eligible patients answered the HAQ, with 392 of the 1377 (28.5%) answering positively to one or both falls questions. The percentage of those answering positively was not significantly different among the practices. In Period 2, 14/192 passive alert firings elicited a direct response from the clinician (7.3%); in Period 3, 41/184 passive alert firings elicited a direct response (22%). Of 21 concurrent active alert firings of the active alert in Period 3, all elicited a response. The medication list was reviewed in 12 (8.7%), and in 4 cases culprit drugs were stopped (19%). The Table illustrates how the proportion of PT referrals changed across the three study periods and practices.

**CONCLUSION:** One-time alerts to initiate preventive measures in elderly patients at increased risk for falls prompted a modest increase in PT referrals in 1 of 3 general internal medicine practices during a period in which an active alert regarding fall-risk related medication was operating concurrently. While very high-risk medications were present in only a minority of those elders at risk for falling, use of an active medication alert was associated with increased response to the passive PT referral alert.

**Table:**

| Practice | Practice A | Practice B | Practice C | Total |
|----------|------------|------------|------------|-------|
| Period 1 | 4/37 (10.8%) | 10/158 (6.3%) | 12/197 (6.1%) | 26392 (6.6%) |
| Period 2 | 5/60 (8.3%) | 6/63 (9.5%) | 6/111 (5.4%) | 17234 (7.3%) |
| Period 3 | 1/12 (8.3%) | 10/50 (20.0%) | 8/126(6.3%) | 19188 (10.1%) |

**COMMUNITY HEALTH CENTERS OUTPERFORM PRIVATE PHYSICIANS OFFICES ON AMBULATORY CARE PERFORMANCE MEASURES**

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- Max J. Romano
- Randall S. Stafford
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**BACKGROUND:** Community health centers (CHC) serve as a safety-net for many low-income and minority patients. Many are designated as Federally Qualified Health Centers, Federally Qualified Health Center look-likes,” and Indian Health Centers that receive cost-based reimbursement to provide comprehensive services to patients with higher burdens of chronic disease. Under health care reform, continued safety-net support will be predicated on demonstrated quality and efficiency. Currently, there is little data directly comparing the quality of safety-net care to that in private offices and none account for patient social and medical complexity.
METHODS: We examined the performance of CHC to private practice physicians on 18 previously established outpatient quality indicators using the 2006–2008 National Ambulatory Medical Care Survey, a national sample of office-based and community health center-based physician visits. CHC surveyed included Federally Qualified Health Centers, Federally Qualified Health Center “look-alikes,” and Indian Health Centers. Quality indicator performance was defined as the percentage of applicable visits receiving appropriate care. We compared unadjusted performance, as well as adjusted for patient age, sex, type of insurance, number of chronic diseases, depression, median zip code percent poverty and bachelor’s degree to account for visit complexity.

RESULTS: Across all U.S. providers, performance on the 18 indicators was variable. Adherence ranged from 14% to 100%. Compared to private office care, however, CHCs performed better on 6 indicators (p<0.05) and no differently on 11 indicators. Adjusting for visit complexity, CHCs performed better on 8 indicators and no differently on the remaining indicators.

CONCLUSION: CHC provide as good or higher quality care on select well established ambulatory care measures for patients in the setting of a greater chronic disease burden and socioeconomically complex patients. Future work should monitor performance on ambulatory care quality indicators with implementation of reimbursement modifications and performance incentives.

| Quality Indicators                                      | Private Practice | CHC | p value | Adjusted OR (95% CI) |
|---------------------------------------------------------|-----------------|-----|---------|----------------------|
| Antithrombotic Use in Atrial Fibrillation               | 70%             | 73% | 0.41    | 0.66 (0.21, 1.95)    |
| ACE Inhibitors/Angiotension Receptor Blockers           | 37%             | 52% | 0.04    | 0.44 (0.27, 0.73)    |
| CAD Treatment                                           | 60%             | 71% | 0.56    | 0.47 (0.24, 0.93)    |
| Beta Blockers in CAD                                     | 53%             | 66% | 0.67    | 0.49 (0.27, 0.88)    |
| Statin Use in CAD                                       | 43%             | 48% | 0.38    | 0.69 (0.51, 0.93)    |
| Inhaled Corticosteroids in Asthma, age >=20             | 44%             | 59% | 0.25    | 0.54 (0.33, 0.86)    |
| Inhaled Corticosteroids in Asthma, age <18              | 58%             | 62% | 0.01    | 0.97 (0.53, 1.79)    |
| Depression Treatment                                    | 57%             | 54% | 0.59    | 0.95 (0.74, 1.22)    |
| Lack of Benzodiazepine Use in Depression                | 84%             | 90% | 0.004   | 0.65 (0.51, 0.82)    |
| No Antibiotics in URIs                                   | 60%             | 64% | 0.82    | 0.79 (0.31, 2.06)    |
| Tobacco Education                                       | 25%             | 31% | 0.02    | 0.59 (0.25, 1.41)    |
| Diet/Nutrition Counseling, Age >= 20                   | 23%             | 27% | 0.37    | 0.81 (0.45, 1.48)    |
| Exercise Counseling, Age >= 20                         | 16%             | 14% | 0.08    | 1.00 (0.55, 1.83)    |
| Diet/Nutrition Counseling, Age <=18                     | 29%             | 18% | 0.08    | 1.85 (0.90, 4.28)    |
| Exercise Counseling, <=18                              | 22%             | 14% | <0.001  | 1.46 (0.60, 3.56)    |
| Blood Pressure Screening                                | 77%             | 90% | <0.001  | 0.45 (0.32, 0.62)    |
| Lack of Screening EKG                                   | 96%             | 100%| 0.001   | 0.16 (0.08, 0.36)    |
| Lack of Screening Urine Analysis                        | 87%             | 89% | 0.95    | 0.86 (0.47, 1.59)    |
| Inappropriate Medications in Elderly                    | 90%             | 86% | 0.40    | 1.26 (0.78, 2.03)    |

*CHC = Community Health Centers, ACE = Angiotension Converting Enzyme, CAD = Coronary Artery Disease, URIs = Upper Respiratory Infection

Table: Private Practice Compared to CHC Performance on Quality Indicators

ENHANCING RESIDENTS’ CLINICAL SKILLS IN SCREENING, BRIEF INTERVENTION, AND REFERRAL TO TREATMENT FOR SUBSTANCE USE DISORDERS Neda Ratanawongsa 1; Jennifer Manuel 1; Daniel Ciccarone 1; Jennifer Hettema 2; Brad Shapiro 1; Sharad Jain 1; Diana Coffa 1; Carrie Cangelosi 3; Jacqueline Tulsky 1; David Hersh 4; Paula Lum 1; 1UCSF, San Francisco, California ; 2University of Virginia, Charlottesville, Virginia ; 3San Francisco General Hospital, San Francisco, California ; 4San Francisco Department of Public Health, San Francisco, California . (Tracking ID # 110996)

BACKGROUND: Although substance use disorders cause significant morbidity and mortality in their patient populations, many internal medicine residents are not competent or confident in their skills with screening, brief intervention, or referral to treatment (SBIRT). In needs assessment surveys at our county hospital, residents who ranked discomfort and lack of experience as significant barriers were less confident in their abilities to engage in SBIRT, and half of our continuity clinic patients reported lack of counseling about substance use by their providers. To respond to this need for experiential clinical learning, we implemented and evaluated two specific methodologies within an SBIRT residency curriculum: a narrative reflection clinical case discussion and a clinical observation checklist exercise.

METHODS: Beginning in July 2009, we implemented an 8-week, 32-hour longitudinal SBIRT curriculum for internal medicine residents, comprised of small group discussions, motivational interviewing (MI) role-play, and site visits to local substance use treatment programs. To respond to gaps in experiential learning, we developed a narrative reflection-based case discussion facilitated by SBIRT-trained clinical faculty, in which residents were asked to write about and discuss “a memorable experience talking with a primary care patient about drug or alcohol use that was particularly rewarding or challenging.” Reflection prompts asked about challenges and rewards in the encounter, helpful people/resources, wishes for what could have been different, questions/insights in caring for patients with substance use disorders, and goals for the next conversation. In July 2010, adapting SBIRT skills card and the validated Behavioral Change Counseling Index, we developed a clinical observation checklist to track residents’ implementation of SBIRT skills with their continuity patients comprised of check-off boxes for specific SBIRT tasks, rating scales for communication style, and qualitative comments for what residents should “keep, stop, and start” doing. We implemented the checklist in a formative feedback exercise in which trained faculty observers rated residents’ interactions with 2 clinic patients, followed by a debrief and goal-setting for future
practice-based improvement. Using an editing analysis style, we coded the qualitative comments from the narratives, discussions, rating checklists, and debriefings about insights, challenges, and rewards in residents’ SBIRT interactions.

RESULTS: To date, 32 residents have participated in at least 2 clinical case reflection exercise discussions and at least 1 observation checklist exercise. Qualitative analysis from the narrative reflections/discussions reveals that residents felt increasing self-efficacy applying MI skills to engage in discussions about substance use with patients whom they found frustrating: “It was really nice to just set aside his other, numerous, health concerns and focus on this issue of central concern to him. For me, relaxing about the time pressures allowed much more of my recent and past training in strong interpersonal communication and motivational interviewing to come out, in a reasonably natural way” or “It was rewarding to listen to his perspective on his ETOH, why he drinks and his own very good insights into the negative sides of drinking.” However, residents cited lack of time, competing responsibilities, lack of precepting support, and patient resistance as continued barriers to applying SBIRT skills in clinic: “I wish I had had more time to talk about his alcoholism. Pt has other medical issues including diabetes, which he is very concerned about and he wanted to address that.” Analysis of qualitative checklist data revealed that residents screened skillfully for drug use disorders and employed patient-centered listening skills, while struggling with rolling with resistance and formulating specific action plans. Residents set objectives for themselves to assess for drug use disorders more systematically and employ MI skills more regularly across other behavior change topics.

CONCLUSION: In this SBIRT residency curriculum, reflective practice exercises using narrative-prompted facilitated discussions and clinical observation exercises revealed improving self-efficacy and improving MI skills in conversations with patients about substance use disorders, but also continuing challenges related to systems-based practice and rolling with patient resistance. These clinical exercises suggest that experiential learning, using structured reflection and observation tools, is a valuable educational method for identifying continuing needs and evaluating the impact of a competency-based SBIRT curriculum.

A CLINICAL RISK INDEX FOR LONG TERM SURVIVAL OF HOSPITALIZED OLDER PATIENTS

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BACKGROUND: Predicting long term survival in hospitalized older adults may help guide decision-making for patients, families and clinicians. There are no long-term prognostic indices for this population. Thus, our objective was to develop and validate a clinical index for older, hospitalized adults in a cohort with near-complete mortality data up to 15 years.

METHODS: We developed this prognostic index in 1482 patients >70 years discharged from the general medical service of a teaching hospital (mean age, 79.6 years; 61% female) and validated it in 1564 similar patients discharged from another teaching hospital (mean age 80.5 years, 67% female). All patients were followed until death or 10 years after discharge. Independent predictors of mortality were examined using Kaplan-Meier survival analysis. The clinical index was identified using multiple Cox proportional hazards analyses with a best subsets method of variable selection.

RESULTS: The cumulative incidence of death at 1, 5, and 10 years was 30%, 66%, and 86%, respectively. In the development group, independent (p, 0.01) risk factors for death were older age; male gender; >=2 dependent activities of daily living (ADL) at hospital discharge; body mass index=18; chronic kidney disease; congestive heart failure; chronic lung disease; cancer; and severe cognitive impairment. A clinical risk index with these risk factors stratified patients according to risk of death (Table 1).

CONCLUSION: Using clinical information at hospital discharge, this risk index accurately stratified hospitalized older adults according to their risk for death over 10 years. Risk for death over time differed greatly according to the clinical index: few patients with low predicted risk died in one year, and almost all patients with high predicted risk had died by 10 years.

Table 1. Death rates according to quintiles of predicted risk derived from the development cohort at 1, 5, and 10 years.

| Quintiles | Development | Validation | Development | Validation | Development | Validation |
|-----------|-------------|------------|-------------|------------|-------------|------------|
| 1st       | 6%          | 12%        | 29%         | 34%        | 61%         | 59%        |
| 2nd       | 12%         | 14%        | 46%         | 44%        | 83%         | 73%        |
| 3rd       | 24%         | 23%        | 63%         | 66%        | 89%         | 86%        |
| 4th       | 37%         | 39%        | 83%         | 80%        | 96%         | 96%        |
| 5th       | 60%         | 63%        | 96%         | 95%        | 100%        | 100%       |

C-statistic 0.78 0.75 0.80 0.77 0.80 0.82

MEDICARE POST-HOSPITALIZATION SKILLED NURSING BENEFIT IN THE LAST SIX MONTHS OF LIFE

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BACKGROUND: Older adults often transition to skilled nursing facilities (SNFs) following acute hospitalization in the last months of life under the Medicare SNF benefit. However, current Medicare policy prohibits concomitant payment for both SNF and Hospice services. We sought to examine patterns of SNF use following hospitalization in the last 6 months of life.

METHODS: We used the Health and Retirement Study (HRS), a nationally represented study of older adults, linked to Medicare claims data. From Medicare claims, we determined the number of individuals age 65+ who used the SNF benefit in the last 6 months of life following hospitalization, and their admitting diagnosis to SNF. Using linked data from the HRS, we examined demographic, social, and clinical correlates of SNF use.

RESULTS: Our sample included 4,516 patients who died between 1994 and 2006 (mean age 83 [SD 8], 54% female, 87% white). Age-adjusted use of the SNF benefit in the last 6 months of life increased from 17% in 1994 to 36% in 2006. The most common admitting diagnoses were heart failure (9%), hip fracture (6%), and rehabilitation (5%). Use of the SNF
benefit was greater among patients who were: older (>85 36%, <85 26%), poorer (lowest quartile of net worth 34%, highest quartile 28%), and did not have cancer (no cancer 32%, cancer 26%) (all p<.001). These differences persisted after adjustment for age, sex, race/ethnicity, marital status, educational attainment, region, chronic conditions, and year of death. After using the SNF benefit 18% of patients enrolled in hospice and 27% died in a hospital. Among patients who died in 2006, 14% used the post-hospitalization SNF benefit 2 or more times in the last 6 months of life.

CONCLUSION: Over one-third of older adults now receive care in a SNF at the end of life under the Medicare SNF benefit. Many older adults shuffle between the hospital and SNF at the end of life. Although Medicare policy prohibits payment for hospice when patients are using the SNF benefit, many patients use the benefit near the end of life, suggesting a need to incorporate palliative services into the Medicare SNF benefit.

FACTORS ASSOCIATED WITH OBESITY IN A PRIMARY CARE POPULATION Adam Gilden Tsai 1; Jeanne Rozwadowski 2; Rachael Meir 2; David Brody 2; Jeanette Waxmonsky 1. 1University of Colorado, Denver, Colorado; 2Denver Health and Hospitals, Denver, Colorado; 3Denver Health Managed Care, Denver, Colorado. (Tracking ID # 11102)

BACKGROUND: Obesity is more prevalent among African-Americans and Hispanics as well as persons of lower socioeconomic status (SES). Lack of health care access and lower SES may also be associated with minority status and obesity. This study attempts to determine whether, in an outpatient health care setting, the relationship between race/ethnicity and obesity could be explained by health care utilization or by poverty.

METHODS: This was a cross-sectional analysis of adult patients aged 18–65 seen in primary care clinics within the past year with documented weight and height. Underweight individuals and women who had been pregnant in the last year were excluded. Weight categories were defined by body mass index (BMI): normal weight (19–24.9 kg/m²), overweight (25–29.9 kg/m²), obesity (30–39.9 kg/m²), and morbid obesity (>40 kg/m²). The roles of demographic and clinical factors as predictors for being in a higher BMI category were analyzed using ordinal logistic regression. Socio-demographic factors (race/ethnicity, language, household income) were assessed from data collected routinely within clinical encounters. Burden of co-morbid disease was assessed using the Chronic Disease and Disability Payment System, a validated measure for use in Medicaid populations.

RESULTS: Of the 23,428 patients, 25% were non-Hispanic Whites, 51% were Hispanic, and 19% were African-American. Obesity prevalence was 43% overall (compared to 34% nationally). Whites had a lower prevalence of obesity (39%) than Blacks (44%) or Hispanics (47%); p<0.001 for both comparisons. In multivariate analyses, all factors were significant except language, % of federal poverty level, and number of visits (see tables). The factors most strongly associated with greater odds of obesity were: female gender, Latino ethnicity, African-American race, increasing age, increasing co-morbidity index, and use of >4 medications.

CONCLUSION: Female gender, Latino ethnicity, African-American race, increasing age, increasing co-morbidity, and medication count are independently associated with obesity. Household income (% of federal poverty level) was not associated with obesity in this analysis. This may be because our patient population is nearly all low income (97% of persons at or below 200% of federal poverty level in the current analysis). Alternatively, this may be explained by similar utilization of care within this system. These results suggest that, in a public health care system with a uniformly low SES group of patients, the association between race/ethnicity and obesity is not explained by poverty or by differential health care utilization.

SHARED DECISION MAKING IN PSA TESTING Alison Rose Landrey 1; Daniel D Matlock 2; Laura Andrews 1; Thomas D Denberg 1. 1University of Colorado Hospital, Denver, Colorado; 2University of Colorado Hospital, Aurora, Colorado; 3Atrius Health and Harvard Vanguard Medical Associate, Boston, Massachusetts. (Tracking ID # 11103)

BACKGROUND: With substantial evidence indicating the equivocal benefit of the prostate specific antigen (PSA) test in screening for prostate cancer, the United States Preventive Task Force suggests that “a clinician should not order the PSA test without first discussing with the patient the potential but uncertain benefits and the known harms of prostate cancer screening and treatment.” Other professional societies have similar recommendations. Evidence also suggests that many men are tested without this discussion. There is thus a need to develop effective ways to aid patients and physicians in having such discussions. This project examines if a low literacy, one-page flyer outlining the risks and benefits of the PSA test, and encouraging patients to talk to their provider about this test, increases the rate of discussions surrounding PSA testing.

METHODS: The flyer was developed iteratively among practitioners at the University of Colorado and was designed for people with a 4th grade reading level. Men between the ages of 50 and 75 who were scheduled for an upcoming annual visit were randomized to either receive the flyer in the mail or no intervention (n=303). Our primary outcome was documentation of discussion of PSA testing. Secondary outcomes included rate of PSA testing and results of a post-visit phone survey assessing patients’ perception of their participation in the decision making, patient knowledge of PSA testing, the control preferences scale, and acceptability of the flyer. Additionally, clinicians seeing patients in the intervention arm were randomized to receiving a reminder to discuss PSA screening prior to the visit or no intervention. Chi-Squared analysis was used to evaluate differences between the groups.

RESULTS: There were no differences in chart documentation of PSA discussions (17.6% in the flyer group vs. 13.7%, p=0.36) or the rate of PSA testing (62.5% vs. 58.5%, p=0.49). When clinicians were reminded to discuss the PSA test with their patients, there was a non-significant trend toward patients receiving more testing (72.9% vs. 55.4%, p=0.06). Response rate for the follow-up survey was 53.7% (55.2% in the flyer group vs. 13.7%, p=0.36) or the rate of discussions (17.6% in the flyer group vs. 13.7%, p=0.36). When clinicians were reminded to discuss the PSA test with their patients, there was a non-significant trend toward patients receiving more testing (72.9% vs. 55.4%, p=0.06). Response rate for the follow-up survey was 53.7% (55.2% in the intervention and 53.0% in the control). Of those patients who reported receiving the flyer, there was a non-significant trend toward patients receiving more testing (72.9% vs. 55.4%, p=0.06). When clinicians were reminded to discuss the PSA test with their patients, there was a non-significant trend toward patients receiving more testing (72.9% vs. 55.4%, p=0.06). Response rate for the follow-up survey was 53.7% (55.2% in the intervention and 53.0% in the control). Of those patients who reported receiving the flyer in the survey, significantly more reported having a discussion around PSA testing with their provider (91.5% vs. 85.1%, p=0.001) and reported sharing their feelings surrounding PSA testing (83.0% vs 56.7%, p=0.002). Patients who reported receiving the flyer generally scored better on knowledge questions regarding PSA testing, but this difference was significant for only one of the questions: 85.1% vs. 68.6% knew that the PSA test is conducted by a blood sample (p=0.003). The majority of patients preferred an active role in decision making, reporting that the decision should be made either the patient alone (19.7%), by the patient with providers input (32.2%), or by the patient and provider together (40.8%), with similar responses between the groups. Of those who received the flyer, 89% would recommend it to others.

CONCLUSION: Patients who reported receiving the flyer had more discussions with their provider and expressed more of their feelings around PSA testing. Additionally, the flyer improved
knowledge around PSA testing and was highly acceptable to the patients. However, it had no effect on the rate of PSA testing or the rate of documentation of discussions surrounding PSA testing. Interestingly, reminding the provider to discuss PSA testing resulted in a higher rate of PSA testing. Improving patient participation in PSA decision making is important regardless of the rate of PSA testing.

**LITERACY-COMPENSATORY STRATEGIES AND RESOURCES OF OLDER LATINOS WITH DIABETES** Kristina M. Cordasco 1; Gery Ryan 2; Blanca X. Dominguez 2; Alexis Huynh 2; Diana C. Homeier 3; Kathryn Pitkin Derose 2; Catherine A Sarkisian 3; The VA Greater Los Angeles Health Care System; The RAND Corporation; The University of California, Los Angeles, Los Angeles, California; 3LAC + USC Medical Center, Los Angeles, California; 4The VA Greater Los Angeles Healthcare System; The University of California, Los Angeles, Los Angeles, California. (Tracking ID # 11105)

**BACKGROUND:** Limited health literacy is associated with multiple health disparities. As a foundation for developing patient-centered interventions to decrease these disparities, we identified literacy-compensatory strategies and resources used by older Spanish-speaking Latinos with diabetes and limited health literacy.

**METHODS:** We conducted semi-structured interviews with monolingual Spanish-speakers who were illiterate (sTOFHLA=0), very low literate (sTOFHLA score=1–8), or limited health literate (sTOFHLA score=9–16); aged 65 years or more; patients of The Los Angeles County + University of Southern California Medical Center primary care clinics; had visual acuity ≥20/100; and diagnosed with diabetes for 1 or more years. We asked participants to describe how they manage the prevention, monitoring, responding, and communicating tasks associated with diabetes self-management (Table). All interviews were professionally translated and transcribed. Using content analysis, two team members (K.C. and B.D.) read the first 30 transcripts and then jointly listed and discussed themes of reported literacy-compensatory strategies and resources. After serially testing these themes against 6 intentionally-selected “test” transcripts, we presented them to the entire research team. Through discussion, the team further developed and clarified theme definitions. We then reviewed the remaining transcripts and labeled participants’ statements that illustrated these themes. Transcripts and labeling were managed with Atlas.ti 6.0.

**RESULTS:** Of the 91 participants, 23% were illiterate, 43% were very low literate and 34% had limited health literacy. Participants described using a range of strategies and resources for acquiring information, organizing information and acting on tasks. Strategies can be broadly classified as those in which the participant retains complete control for caring for their health, those in which the participant shares control with others, and those in which the participant relinquishes control to others. Those participants who retain complete control in managing their disease compensate for their literacy deficits by relying on alternative skills, such as memory, and procuring assistance from a variety of resources, including healthcare personnel, neighbors, and available strangers. A second category of participants share control with family members, consistently utilize one or two family-members as their resource when faced with literacy-dependent tasks. In a third category, some patients completely relinquish control of their health to others, so that a caregiver performs all tasks related to the participants’ health.

**CONCLUSION:** Older illiterate, low-literate, and limited health literate patients use a range of strategies and resources to compensate for their literacy limitations. Future work should examine if certain strategies and resources are more effective than others, potential determinants of effectiveness, and how interventions can be synergistic with patient’s strategies and resources.

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**Table: Tasks For Which Participants Were Asked To Describe Management**

| Prevention Tasks | Taking and Refilling Medications | Using Insulin | Caring for Feet | Maintaining a Diabetic Diet | Obtaining a Flu Shot | Monitoring and Responding Tasks |
|------------------|---------------------------------|---------------|----------------|---------------------------|---------------------|-------------------------------|
|                  |                                 |               |                |                           | Knowing             | Sigs/Symptoms of Hypo/Hyper-Glycemia |
| Monitoring Blood |                                 |               |                |                           |                     |                               |
| Glucose and Blood Pressure |                       |               |                |                           |                     |                               |
| Knowing how to respond to hyper/hypo-glycemia |                       |               |                |                           |                     |                               |
| Attending Appointments |                       |               |                |                           |                     |                               |
| Obtaining Regular Laboratory Assessments |                       |               |                |                           |                     |                               |
| Communicating Tasks | Seeking Information From Health Care Providers |               |                |                           |                     |                               |
| Does Not Understand Something Being Communicated |                       |               |                |                           |                     |                               |
| Seeking Clarification When The Patient |                       |               |                |                           |                     |                               |
| Seeking Information From, Utilizing, and Requesting Help From Family Members, Friends, and Community Resources |                       |               |                |                           |                     |                               |
| Revealing Limited Literacy Skills |                       |               |                |                           |                     |                               |
BLOOD PRESSURE CONTROL IN A HIGH PERFORMING HEALTHCARE SYSTEM: ARE WE OVERTREATING? Eve Kerr 1; Michelle Lucatorto 2; Rob Holleman 3; Leonard Pogach 4; Mary Hogan 3; Sarah Krein 1; Steven Bernstein 1; Timothy Hofer 1; 1VA Center for Clinical Management Research and University of Michigan, Ann Arbor, Michigan; 2VA Office of Quality and Performance, Washington DC; 3VA Center for Clinical Management Research, Ann Arbor, Michigan; 4Center for Healthcare Knowledge Management, East Orange, New Jersey. (Tracking ID # 11107)

BACKGROUND: In response to part in rigorous performance measurement, the Veterans Health Administration (VHA) and other high-performing healthcare systems have seen dramatic improvements over the past decade in the proportion of diabetic patients whose blood pressure (BP) is less than 140/90 mm Hg. However there is increasing concern that performance measures may also be motivating overtreatment of hypertension, resulting in dangerously low diastolic levels. In collaboration with clinical and research experts in hypertension, we have developed a tightly-linked clinical action measure, which is designed to encourage appropriate clinical action while minimizing unintended consequences like overtreatment; and a measure of potential overtreatment, designed to monitor for overly aggressive treatment in the face of low diastolic BP. We applied these measures to examine what proportion of VA diabetic patients are meeting appropriate treatment for hypertension and the degree of potential overtreatment.

METHODS: Using data from the national corporate data warehouse, we examined the proportion of diabetic Veterans passing a linked clinical action measure for hypertension between July 2009 and September 2010. The index BP was the last BP recorded prior to July 2010. Passing the measure was defined as: having an adequate index BP at the visit (BP<140/90; or SBP < 150 with either a low diastolic <65) or on >=3 moderate dose BP medications or having an appropriate action within 90 days of the index BP (BP medication intensification or repeat BP <140/90). We also examined overtreatment, defined as having an index BP <140/65 and either BP medication intensification within 90 days or being on >=4 BP medications at moderate or high dose. Variability across facilities was assessed using multilevel logistic models.

RESULTS: 696,504 diabetic patients in 129 facilities were eligible. Overall, 93% passed the linked action measure: 81% because they had a BP <140/90 at the visit; and an additional 12% with BP > 140/90 who passed on the basis of BP < 150/65(1%), SBP < 150 on >=3 medications (2%), medication intensification (8%) and repeat BP < 140/90 (1%). Facility pass rates varied significantly but over a limited range from 90% to 96% (p<.001). 144,264 patients (20%) had a BP < 140/65; of these, 25% had potential overtreatment (21% were intensified, 4% were on >=4 medications). Facility rates of potential overtreatment varied from 21% to 30% (p<.001). Facility rates of potential overtreatment varied from 21% to 30% (p<0.001). Facilities with higher rates of overtreatment had: (1) higher rates of meeting a stringent (and not promoted in VHA) BP control level of 130/80(p<0.05); and (2) higher proportions of patients on 4 or more antihypertensive agents (p<0.001).

CONCLUSION: Over 90% of diabetic Veterans are receiving appropriate hypertension care, as indicated by a linked clinical action measure, with moderate variation across facilities. Rates of potential overtreatment varied widely across facilities and were associated with higher facility rates of meeting stringent control levels and with complicated drug regimens. Our results show that overall rates of potential overtreatment are currently approaching the rate of under-treatment (5%-7%) and suggest that monitoring and reducing overtreatment may now be equally important for improving quality of care in VHA and possibly in other high performing healthcare systems.

FACTORS INFLUENCING QUALITY OF LIFE IN LATE LIFE DISABILITY
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BACKGROUND: While late life disability is widely assumed to negatively impact quality of life, factors influencing quality of life of elders with late life disability have not been well described. We therefore conducted a study of quality of life in a diverse population of elders with late life disability.

METHODS: We used qualitative methodology. Subjects were recruited from On Lok, the first Program of All-inclusive Care for the Elderly (PACE). All On Lok enrollees are disabled and meet Medicaid criteria for nursing home placement. Average life expectancy is 4.5 years following enrollment. We interviewed elders in English, Spanish, and Cantonese who had a mini-mental status >20. Respondents were asked to rate their overall quality of life on a 5 point scale (excellent to poor). Open ended questions explored the reasons for their rating, with specific probes about living with disability and dependence. Responses were tape-transcribed. Transcripts were analyzed using grounded theory methodology. Codes were grouped into themes. Recruitment stopped when no new themes emerged.

RESULTS: We interviewed 60 older adults (mean age 78, 62% women, 27% European American, 23% African American, 12% Latino, 37% Chinese American, mean 3 ADL dependencies). 76% of respondents rated their quality of life as good or better. 6 domains emerged that dependent elders felt were important to their quality of life: physical (disability, pain, non-pain symptoms); psychological (depression, anxiety, resilience); cognitive (cognitive impairment); ethical (autonomy, dignity); spiritual/religious (hope, religious coping); and social (life-space, isolation/support). Examples of representative quotes include: It is unfortunate that a lot of your family or other people feel that once you are old you do not know anything anymore and you just...kind of in the way (dignity: deserving of respect or esteem); Before I could take the bus to go out but last year since I fell until now I am too afraid to go out on my own life space: ability to function and participate in society).

CONCLUSION: In this diverse group of very disabled elders, most rated their quality of life as at least good. Many of the factors that influence quality of life, including life-space, resilience, religious coping, and respect for dignity, are missing from standard assessments of quality of life (e.g. SF-36).

“RESPECT THE WAY I NEED TO COMMUNICATE WITH YOU”: HEALTHCARE EXPERIENCES OF ADULTS ON THE AUTISTIC SPECTRUM
Christina Nicolaidis 1; Dora Raymaker 2; Katherine McDonald 3; Elesia Ashkenazy 2; Sebastian Dern 4; Cody Boisclair 5; Amanda Baggs 6; Enyinne Ejiasa 1; Roberta Delaney 7; Way Rhonda 8; 1UCSF, San Francisco, California; 2SFVAMC, San Francisco, California. (Tracking ID # 11117)

BACKGROUND: It is now estimated that up to 1% of the population may be on the autistic spectrum, but little is known about how to provide quality primary care to autistic adults. Our online survey research has found that autistic adults who use the Internet have statistically significant worse healthcare outcomes than non-autistic Internet users. The objective of this qualitative study was to obtain an in-depth understanding of autistic adults’ experiences with healthcare and recommendations for improving care.
METHODS: The Academic Autistic Spectrum Partnership in Research and Education (AASPIRE) is a partnership between researchers, autistic self-advocates, family members, healthcare workers, and disability service providers. We used a Community Based Participatory Research (CBPR) approach were community members served as equal partners in every stage of the project. We conducted semi-structured, open-ended, in-depth interviews via telephone, email, or instant messenger chat, with adult Internet users who considered themselves to be on the autistic spectrum. Participants had to reside in the US and either carry a formal medical diagnosis on the autistic spectrum or score 32 or greater on the Autism Quotient. We purposefully sampled participants from our earlier online survey to ensure diverse demographic characteristics, diagnosis type, age of diagnosis, preferred communication mode, and healthcare utilization and satisfaction. Interview questions addressed participants’ positive and negative experiences with healthcare and their recommendations for improving care. Academic and community partners jointly analyzed data using thematic analysis with an inductive approach (consistent with Grounded Theory), at a semantic level with an essentialist paradigm.

RESULTS: 27 autistic Internet users (12 men and 15 women), aged 20–64 years, participated in an individual interview. 63% were White, non-Hispanic. While education levels were high (88% with at least some college), the majority of the participants were unemployed and had a personal income of less than $25,000. We identified five common themes. 1) Difficulty with body awareness can affect ability to report symptoms: “I don’t know my own body. ...So when I feel all these different sensations, everywhere, I don’t know which is the real problem and which is just sensation.” 2) Preference for written communication is not always respected by physicians: “I prefer and find it easier to communicate in text... But with every doctor I speak to, they wave away the note-card and look at me to ask the same question I have just answered”. 3) Difficulty with open-ended questions or vague explanations: “BAD: ‘How do you feel?’ Too vague.” 4) Sensory issues can cause difficulty interacting with provider: “All of the sensory input makes my brain slow down.... I am not able to bring up my concerns because it is all I can manage to figure out what the doctor is saying so I can respond to his questions.” 5) Difficulty with “executive function” affects ability to navigate health system: “With my autism it is very difficult for me to understand and follow all the different appointments and procedures I have to schedule.... No one will help me since apparently people magically become competent at these things before they turn 21.” Participants offered many concrete suggestions for how providers can help improve healthcare interactions with autistic patients. Examples included asking specific, closed-ended questions, allowing patients to communicate in writing, allowing time for patients to process information, and reducing unnecessary sensory stimuli.

CONCLUSION: Autistic adults describe important factors that may adversely affect the health and healthcare of patients on the autistic spectrum and offer concrete ideas of how to improve care. Healthcare providers should be open to accommodations and strategies that may improve interactions with autistic patients, and thereby positively impact health outcomes. We are using information from this study to create interactive tools to improve the primary care of adults on the autistic spectrum.

USE OF COMPLEMENTARY AND ALTERNATIVE MEDICINE AMONG PATIENTS WITH END-STAGE RENAL DISEASE

Gurjeet Singh Birdee1; Kerri Cavanaugh 1; Russell Rothman 1; Talat Alp Kiziler 1; Russell S Phillips2; Gurjeet Singh Birdee1; Kerri Cavanaugh 1; Russell Rothman 1; Talat Alp Kiziler 1; Russell S Phillips2, 1Vanderbilt University, Nashville, Tennessee; 2Beth Israel Deaconess Medical Center, Boston, Massachusetts. (Tracking ID # 11120)

BACKGROUND: Few studies have examined the use of complementary and alternative medicine (CAM) among patients with chronic kidney disease including end-stage renal disease (ESRD). Mind-body practices, one type of CAM modality, may be a novel therapeutic option for patients with ESRD during dialysis. Examples of mind-body practices are breathing exercises, meditation and yoga. The purpose of this study was to identify the frequency of CAM use, perceptions of mind-body practice, and willingness to learn mind-body practices among patients with ESRD receiving in-center hemodialysis.

METHODS: Adult patients with ESRD on hemodialysis were surveyed at a dialysis center affiliated with an academic medical center in Boston, MA from September 2009 to July 2010. We queried patients regarding: use of 18 common CAM modalities and dietary supplements in their lifetime and the last month; perceived importance of mind-body interaction for health (Likert scale 0–10 for none to extremely important); and willingness to learn mind-body practices during hemodialysis. Data were analyzed using descriptive statistics for CAM use and bivariate analyses based on demographics including age, sex, race, and dialysis vintage. CAM therapies were grouped into categories based on conventional definitions according to the National Center for Complementary and Alternative Medicine: 1. biologically based practices (e.g. herbs); 2. manipulative/body based practices (e.g. chiropractic); 3. mind-body based practices (e.g. meditation); and 4. alternative medical systems (e.g. homeopathy). Continuous variables are reported as medians and inter-quartile range (IQR), and categorical variables as frequencies. Categorical variables were compared using Fischer’s exact test.

RESULTS: Among 106 eligible subjects, 89 subjects completed the survey (response rate 84%); 53% were male, 61% black, and their mean age was 62 years. More than half of patients (61%) reported using CAM for health in their lifetime. Among all subjects, the most frequent CAM modalities used in their lifetime were mind-body practices (42%) and manipulation and body-based practices (34%). The most common mind-body practices used were deep breathing exercises (27%), meditation (26%), and yoga (11%). Overall lifetime CAM use was similar among patients with regards to gender, race, and dialysis vintage. In the last month, 36% of patients reported using CAM for health. The most common CAM modalities used in the last month were mind-body practices (27%). Subjects reported that mind-body interactions were very important to health with a median score of 9 (IQR: 5,10). A majority of patients reported interest in learning mind-body practices (70%) and participating in a mind-body study during dialysis (75%). Of patients who had used mind-body practices in their lifetime, a large majority reported interest in participating in a mind-body study during dialysis (87%). In addition, a majority of patients who never used mind-body practices also reported interest in participation (65%).

CONCLUSION: CAM use, particularly mind-body practice, is frequent among patients with ESRD on hemodialysis. Most patients on hemodialysis perceive mind-body interactions as very important for health and are interested in learning mind-body techniques during dialysis. Mind-body therapies may be a feasible therapeutic intervention for patients with ESRD. Further research to develop and evaluate mind-body therapies in this population is warranted.

"WE’RE NOT GOING THERE": AN ANALYSIS OF PATIENT-PROVIDER COMMUNICATION ABOUT NARCOTIC ANALGESIA FOR CHRONIC NON-MALIGNANT PAIN

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BACKGROUND: Pain is a presenting symptom in over 80% of office visits, and chronic pain affects more Americans than diabetes, CHD,
and cancer combined. Patients in pain often seek pharmacologic relief, making analgesics the most frequently discussed therapeutic drug in outpatient visits. Anecdotally, negotiations about narcotic analgesics in this setting are frustrating for patients and providers. We conducted this study to better understand patient-provider communication about narcotic analgesia for chronic nonmalignant pain.

METHODS: We audio recorded 45 HIV providers interacting with 418 of their patients in routine outpatient encounters at four sites (Baltimore, Detroit, New York, and Portland) in the Enhancing Communication and HIV Outcomes (ECHO) Study. We transcribed each visit and used 20 narcotic-related search terms to identify transcripts containing conversations about narcotic analgesics. Through qualitative analysis of each encounter, we developed and applied a coding scheme to describe key features of this dialogue.

RESULTS: Providers had a mean age of 44.5 years, and were mostly female (58%) and white (69%). Patients had a mean age of 45.4 years, 66% were male, 58% were African American, and 34% had known their HIV provider for more than 5 years. Out of 418 encounters, 130 contained at least one narcotic-related search term. Of these, 48 encounters (11% of total) were found to contain substantive discussion of narcotic-related pain management. The most common causes of pain were musculoskeletal/back (31%) and neuropathic (17%); in 29% of encounters, the cause of pain was never mentioned. Most narcotic conversations were initiated by patients (58%), while providers more often ended the conversation (74%), sometimes abruptly (e.g. P: “The end of the night, where I sleep, my back hurt me real bad...that’s when I take the Percocet and...” D: “Let me ask a quick question for ya” P: “Uh Huh” D: “When was the last time you had a flu shot?”). In almost half of the encounters, providers verbalized concern about the narcotic regimen (46%), and suggested alternative therapeutic options (48%). A third of encounters (33%) contained dialogue suggesting a difference of opinion or conflict (P: “I can’t just stop takin’ em.” D: “Why?” P: “What do you want me to do, go crazy?” D: “You could slow down. Say go from four to three.” P: “Uh uh. I just want my regular prescription what you all been giving me every month”). Fewer than half of providers (42%) explicitly acknowledged the patient’s experience of pain. Providers more often offered/agreed than refused/disagreed to give the prescription (50% vs. 23%), sometimes reluctantly (“I’ll give you a little bit of oxycodone but you need to get off that, okay?”). However, in 27% of encounters, no decision seemed to be made about the issue.

CONCLUSION: Pain management discussions are relatively common in routine outpatient HIV encounters and are characterized by provider avoidance suggestive of ambivalence or discomfort, as well as patient-provider conflict. Further research and attention to this particular communication challenge is needed to determine and teach optimal communication about narcotic medications for chronic nonmalignant pain.

VARIATIONS IN DIABETIC OUTCOME MEASURES ACROSS LANGUAGE GROUPS FOLLOWED AT AN IMMIGRANT AND REFUGEE CLINIC Xiaoxue Huang 1; Tracy Boyd 1; Susan Onstad 1; Anita Leake 1; Azeb Gebrekidan 1; Rahel Habtemichael 1; ViLe 1; Mona Mussa 1; Carey-Jackson 1. 1University of Washington, Seattle, Washington. (Tracking ID # 11122)

BACKGROUND: The Institute of Medicine’s (IOM) report on health disparities, “Unequal Treatment,” identified the medical system’s inability to distinguish minority groups with meaningful specificity as a primary barrier to recognizing critical disparities in health care and outcomes. A recent follow-up report on “Race, Ethnicity, and Language Data” called for more detailed demographic data collection. Hospitals have historically identified patients according to five federal categories (Black/African American, White, Asian/Pacific Islander, American Indian/Alaska Native and Hispanic/Latino) and other. These may miss important language, literacy and ethnic variations in quality of care across groups, particularly those for whom English is a second language. This study evaluated the validity of self-reported primary language to detect disparities in diabetes care across language groups of first generation, mostly non-English speaking outpatients at an international clinic.

METHODS: The REAL (Race, Ethnicity and Language proficiency Level) study is across-sectional pilot study, surveying a convenience sample of immigrant and refugee patients receiving primary care at an urban, county hospital. REAL participants were eligible for this study if they had diabetes based on medical record data using a standard hospital quality improvement protocol and completed the REAL survey question about how many and what languages they speak, their reading ability in those languages, including English, and the culture they most identify with. Survey data were linked with medical record data that included hemoglobin A1C (HbA1C), low density lipoprotein (LDL) and systolic blood pressure (SBP). Diabetes control was evaluated across the 6 largest language groups.

RESULTS: A total of 640 patients were surveyed and no one refused. 250 patients were diabetics and eligible for the study (51.5% of all diabetic patients in the clinic). Common language groups were Vietnamese (n=60), Somali (42), Cambodian (31), Amharic (30), Chinese (23), Tigrinya (19) and other (45, representing 22 smaller language groups). The survey data were 90.84% concordant with registration data for primary language (kappa = 0.895). Mean HbA1Cs were lowest among Vietnamese patients (7.24, 95%CI 6.88-7.70), significantly lower than Somali patients (7.89, 95%CI 7.35-8.43, p=0.038). While 52% of Vietnamese patients had HbA1C <7, only 26% of Somali patients had HbA1C <7 (p=0.015). There were no statically significant differences across language groups in mean LDL level or SBP. Limitations: These are preliminary results that reflect a clinic sample that only cares for immigrants and refugees, which may not reflect population samples or other clinical experience. This study is ongoing, the number and percentage of eligible diabetic patients are expected to increase to almost double.

CONCLUSION: Results suggest that there is variability in diabetic outcomes across language groups in first generation immigrant communities. The observed differences may reflect aspects of relocation to the US not yet understood. Somalis are the most recently arrived refugee community, thus the least acculturated, least established and potentially most stressed of all immigrant communities in this study. Further inquiry into length of time in the US, length of time established in clinical care and qualitative work on dietary practices are warranted.

ASSESSING AFRICAN AMERICAN CONGREGATION MEMBERS’ READINESS TO PARTICIPATE IN RESEARCH Adebowale Ayoola Odulana 1; Mimi Kim 2; Yhenneko Taylor 1; Melissa Green 2; Moses Goldman 3; Paul Godley 2; Shelly-Ann Meade 2; Carlton Boyd 6; Daniel Howard 7; Giselle Corbie-Smith 2. 1University of North Carolina at Chapel Hill Cecil G. Sheps Center for Health Services Research, Raleigh, North Carolina; 2College of Human and Social Services University of North Carolina at Charlotte, Charlotte, North Carolina; 3Shaw University, Raleigh, North Carolina; 4University of North Carolina at Chapel Hill Department of Epidemiology, Chapel Hill, North Carolina; 5National Institute of Environmental Health Sciences, Durham, North Carolina; 6Robert Wood Johnson Foundation Center for Health Policy Meharry Medical College, Nashville, Tennessee. (Tracking ID # 11123)

BACKGROUND: Church based research has increasingly become a strategy for involving African Americans in research efforts to reduce
health disparities. While the role of the pastor and the church environment has been noted to be critical to the success of these efforts, few studies have independently evaluated African American church/pastor characteristics and congregant characteristics as organizational and individual constructs respectively, as they relate to attitudes towards research participation. In this study, we assessed the organizational and individual readiness of African American congregants to participate in research.

METHODS: We surveyed adult members of 11 predominately African American churches, all in regions with a high density of African Americans and significant health disparities. Respondents were asked to share their attitudes regarding research participation, and how willing, ready, and confident they were about participation; pastors were also surveyed and matched individual congregants through church identifier. The main outcome measure, the readiness index score, summed responses across the 3 domains (i.e. willingness, readiness and confidence in research participation). We constructed a series of logistic generalized estimating equations to adjust for clustering and to assess the independent contributions of church/pastor characteristics and respondent characteristics, to congregant’s readiness to participate in research.

RESULTS: Of the 1094 respondents, (response rate 83%) 72% were female, 57% were age 50 or older, 82% had at least a high school education, and 50% reported 2 or more health conditions. In surveyed churches, 79% had male pastors, 52% had a pastor age <45, and 97% had a pastor with a high school education or higher. Respondents who were concerned about paying for healthcare were more willing (1.55 CI 1.16-2.08), ready (OR 1.43 1.14-1.80), and confident (1.77 CI 1.39-2.25) about research participation. Churches with younger pastors (age <45) had members who felt ready (OR 1.32 CI 1.16-1.50) and confident (OR 1.91 CI 1.63-2.23) to participate in health research when controlling for respondent characteristics. Churches with a pastor with at least a high school education were confident (OR 2.49 CI 2.10-2.94) regarding research participation. Pastor age less than 45 (OR 1.28; CI 1.07-1.54) and higher pastor educational attainment (OR 1.56; CI 1.28-1.89) were independently associated with a congregants’ higher readiness scores. After controlling for these church level characteristics congregants’ concern about paying for health care (OR 1.53; CI 1.24-1.89) was the only individual characteristic that was associated with higher readiness scores.

CONCLUSION: Characteristics of the church leadership were significantly associated with congregant readiness for research participation, a finding that highlights the importance of the church context in relation to individual decisions regarding research participation. Church based research strategies that prioritize establishing commitment and buy in on an organizational level when conducting research may prove vital to acquiring and sustaining access to underrepresented African Americans.

PHYSICIANS’ ATTITUDES ABOUT RECOMMENDING SURGERY FOR EARLY STAGE LUNG CANCER AND POSSIBLE REASONS FOR TREATMENT DISPARITIES Samuel Cykert 1; Franklin McGuire 2; Paul Walker 1, Michael Monroe 4, Giselle Corbie-Smith 3, Peggye Dilworth-Anderson 5, Lloyd Edwards 5.

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BACKGROUND: Multiple reports have shown double digit gaps in lung cancer surgery rates for African-American patients (AA) with early stage disease compared to Whites (W). Physician attitudes could potentially influence the framing of surgical decisions and contribute to this disparity in care. As part of a recent prospective cohort study to examine possible causes of decisions against lung cancer surgery and lower surgical rates for African-Americans, we performed a companion survey of physicians caring for lung cancer patients.

METHODS: Using pulmonary, oncology, thoracic surgery, and general-ist practices in 5 communities, we enrolled 437 newly diagnosed patients with early stage, non-small cell lung cancer. Inclusion criteria were as follows; patients were required to be at least 18 years old, have a tissue diagnosis or >60% probability of non-small cell lung cancer using Bayesian methods, and be limited to Stage I or II disease by clinical and radiological testing. Patients were identified from direct referral from practices or through the utilization of a chest CT review protocol. After being informed of the diagnosis of probable or definite lung cancer, but before the establishment of a treatment plan, patients were adminis-tered a 100-item survey. We asked patients to identify the physician who had provided the most information about his or her lung cancer care. After informed consent was obtained, physician participants completed a 93-item survey that included statements followed by Likert-type response scales to assess attitudes about lung cancer communication, reasons for recommending against surgery, and possible causes of black-white treatment disparities.

RESULTS: One hundred physicians were identified by participating patients. Eighty-four completed the questionnaire. The median age of respondents was 45 yrs and 73% were W, 11% Asian, 7% Hispanic, and 5% AA. 48% practiced in academic settings while the remainder practiced in community settings. 20% were thoracic surgeons, 40% pulmonologists, 16% oncologists, and 20% were general internists. All respondents believed that comorbid illnesses were important in recommending against surgery with 76% regarding these as “extremely important.” 36% felt that patients deemed non-compliant should not go to surgery while 21% agreed that lower compliance was a reason that AA underwent surgery less. The percentage of respondents who felt that the following factors were important in recommending against surgery were: 51% difficult communication, 46% fear of surgery, 46% disbelief in diagnosis, 76% lack of social support, and 23% financial barriers. Percentages of agreement for specific reasons that AA do not receive surgery as often as W were: 23% difficult communication, 34% fear of surgery, 25% disbelief in diagnosis, 26% lack of social support, and 48% financial barriers.

CONCLUSION: The wide range of acceptable reasons for physicians’ recommendations against lung cancer surgery and their correlation with perceptions of why African-American patients do not go to surgery as often highlight the potential contribution of subjective decision making to disparities in cancer care. The connection of these attitudes to actual recommendations and outcomes requires further investigation.

PROMOTING ADVANCE CARE PLANNING IN PATIENTS WITH CANCER WITHOUT DIMINISHING HOPE OR RAISING ANXIETY: AN INTERACTIVE COMPUTER-BASED DECISION AID Michael Jay Green 1; Jane R Schubart 1; Elana Farace 1; Erik B. Lehman 1; Megan Whitehead 1; Benjamin H Levi 1; 1Penn State College of Medicine, Hershey, Pennsylvania. (Tracking ID # 11127)

BACKGROUND: Despite agreement that patients with advanced cancer ought to prepare for the future, most do not complete advance directives (AD), and even when they do, physicians often disregard the AD documents at key moments. Among the many reasons for this disregard are concerns that: 1) addressing the topic of advance care planning would diminish patients’ hope and raise their anxiety, and 2) lack of knowledge undermines patients’ ability to meaningfully complete AD
documents that physicians can trust. We developed an interactive computer-based decision aid to help people clarify and articulate their medical treatment preferences in the event they become unable to speak for themselves. The purpose of this study was to determine whether use of the decision aid by patients with advanced cancer would increase their knowledge of advance care planning without diminishing hope or increasing anxiety. The study was sponsored by the American Cancer Society and this in an interim analysis of results.

METHODS: We conducted a randomized controlled trial of advance care planning methods using standard advance directive materials vs. a computer-based decision aid (“Making Your Wishes Known: Planning Your Medical Future”). Patients with advanced cancer (stage 4 disease and life expectancy <2 years) were recruited from clinics in oncology, surgery, and radiation medicine at a mid-Atlantic academic medical center. Participants were randomly assigned to Control or Intervention Groups, and completed pre/post measures of anxiety (STAI) hope (Herth Hope Index), and knowledge (27 items). Changes in group mean scores from baseline to post-intervention were compared using a repeated measures mixed model adjusted for the baseline measure.

RESULTS: 139 individuals were enrolled and 138 completed the protocol (mean age 61 years, range 22–87; 39% female; 96% white; 52% with lung, breast, brain or liver cancer; 84% own their own computer). There were no demographic differences between groups. Baseline anxiety was low in both groups (mean=30 in Control and 29 in Intervention Group, where 20=low anxiety and 80=high anxiety), and did not increase significantly after advance care planning. Similarly, hopefulness was high (mean=41 in both groups, where 12=low hope and 48=high hope) and did not diminish after advance care planning. Knowledge scores increased in both groups, but significantly more (p<0.01) in the Intervention Group than the Control Group (13% vs 3%). Finally, participants in the Intervention Group expressed significantly greater mean satisfaction with the advance care planning method than those in the Control Group (p=0.03).

CONCLUSION: In this interim analysis, use of our decision-aid for advance care planning resulted in greater knowledge without increases in anxiety or decreases in hope. These findings counter concerns raised by some physicians about the benefits and risks of advance care planning.

USING UNANNOUNCED STANDARDIZED PATIENTS TO ASSESS QUALITY OF CARE: CHARTING AND OUTPATIENT SAFETY Sondra Zabar 1; Angela Burgess 1; Kathleen Hanley 1; David Stevens 2; Jessica Murphy 3; Mack Lipkin 1; Adina Kalet 4; Colleen Gillespie 1. 1NYU School of Medicine, New York, New York; 2Gouverneur Healthcare Services, New York, New York; 3Gouverneur Healthcare Services, New York, New York; 4NYU School of Medicine, New York, New York. (Tracking ID # 11137)

BACKGROUND: Accurate charting is critical to outpatient safety and yet little is known about residents’ completeness and accuracy in documenting the care they provide. Unannounced Standardized Patient (USP) can assess what residents do when behaving spontaneously in real practice. USP visits are used in this study to explore the degree to which residents may be over- or under-documenting or failing to document important information in the right place. In addition, we use chart data from these standardized clinical scenarios to explore the degree to which residents vary in their practices.

METHODS: 15 internal medicine residents each saw four Unannounced SPs (USP) over 6-months in their urban, outpatient, continuity practice. The 4 cases were new visits and reflected chief complaints and patient demographics common to this primary care practice. Neither clinic staff nor the residents knew which patients were actors; residents had been informed and consented that USPs would be introduced to the clinic during a 6-month period. After each visit, the highly trained USPs completed a comprehensive checklist and rating form and residents entered their notes believing these to be actual patients. The electronically charted notes for these visits (n=60) were then collected and abstracted. Core variables for these analysis included degree of correspondence between the chart and USP-report of 12 physical exam procedures in two relevant USP cases (over- or under-documentation); documentation of allergies in the chart field used as a fail-safe against prescription errors (documenting in the right place); and rate of variation in residents’ ordering of labs and scheduling of next visits.

RESULTS: The overall detection rate of the USP’s was approximately 38% (23 of first 60 visits) and varied across USP cases (14%; 47%; 31%; 71%, p=0.014). There was complete or almost complete (≤10%) agreement between the chart and the USP-report for 7 of the 12 physical exam procedures assessed. In 5 instances there was substantial over- or under-documentation: over-documentation was present in all 5 procedures (extremities 27%, neurological 20%, vitals 13%, heart 20%, and abdomen 20%) and two procedures involved both over- and under-documentation (extremities, vitals). In the one case involving allergies (if asked, the USP reported PCN allergy), while 88% of the residents charted the PCN allergy, only 29% noted it in the correct chart field (used by the pharmacy system to prevent prescription error). Residents ordered 78% of the labs deemed essential (SD 9%); 6/16 residents ordered <75% of essential labs. There was substantial variation in residents’ scheduling of next visits: across all four cases, most next visits were scheduled for 1 month (40–53% depending on the case); however 7% to 27% of visits, depending on the case, were PRN; 13–33% of visits were for less than 1 month (from 2 days to 3 wks); and 7–27% were for more than 1 month (from 2 months to 1 yr).

CONCLUSION: USP methodology is a feasible, practical way to assess actual resident behavior in clinical practice. Residents tend to over-document physical examination procedures. While residents documented allergies, most did so in the wrong place, with serious implications for patient safety. Follow-up practice (labs ordered and scheduling of next visits) varied substantially in even in this homogeneous resident physician population, especially striking given the standardized encounters. USP visits provide valuable insight into the accuracy of residents’ charting as well as the amount of resident-driven variation in practice, both of which are clearly determinants of patient safety.

DECISIONS OF CLINICIAN EDUCATORS TO ENCOURAGE ROUTINE HIV SCREENING AMONG TRAINEES Gail Berkenblit 1; Philip Korthuis 2; Michael Bass 3; Hirut Gebrekristos 4; Joseph Cofrancesco 5; Lynn Sullivan 6; Robert Cook 7; Marcia Edison 8; Philip Bashock 9; James Sosman 10. 1Johns Hopkins University, Baltimore, Maryland; 2Oregon Health and Science University, Portland, Oregon; 3University of Illinois College of Medicine, Chicago, Illinois; 4Johns Hopkins School of Public Health, Baltimore, Maryland; 5Johns Hopkins Hospital, Baltimore, Maryland; 6Yale, New Haven, Connecticut; 7University of Florida, Gainesville, Florida; 8University of Illinois, Chicago, Illinois; 9University of Wisconsin School of Medicine and Public Health, Madison, Wisconsin. (Tracking ID # 11130)

BACKGROUND: CDC recommendations for routine, voluntary HIV screening of all Americans age 13-64 have been slow to be adopted. One method to increase adherence to clinical practice guidelines is through medical school and residency training. The purpose of this study was to explore clinician educator (CE) attitudes, barriers, and behaviors regarding routine HIV testing.

METHODS: We conducted a subgroup analysis of CEs who responded to a 2008 survey of general internists who were active
SGIM members. Members were asked about their outpatient practices, knowledge and attitudes regarding the revised CDC guidelines, their role in trainee education. HIV testing practices and whether they encouraged trainees to perform routine HIV screening. Survey items were adapted from focus group findings and pilot tested among potentially eligible participants. Knowledge of the guidelines was rated as optimal (5 of 5 guideline questions answered correctly), high (>3 of 5 answered correctly) or low (<3 answered correctly). Positive attitudes were measured by agreement with statements that testing would benefit patients, improve public health, and/or not interfere with other medical needs. Associations between HIV testing knowledge and attitudes and encouraging trainees to perform routine screening were estimated using bivariate and multivariate logistic regression.

RESULTS: Of 1,592 active members approached, 515 (32%) responded to the survey. Of these, 367 (71%) indicated they supervised trainees in an outpatient general internal medicine clinic. CEs were primarily female (53%), white (76%), and practiced in university-based settings (60%) and communities with estimated HIV prevalence > 0.1% (73%). Although both those who supervised residents and those who did not reported high rates of awareness of CDC recommendations (85 and 95%, p=0.22), both had suboptimal knowledge (56% for both groups, p=0.89). Many in both groups reported continued risk-based testing (39 vs 47%, p=0.05). 193 (57%) of CEs reported that they encourage trainees to perform routine HIV testing. CEs who reported screening over 25% of patients in their own clinic were more likely to encourage testing (53% vs 22%, p<0.001). Higher knowledge scores (aOR 5.55, 95% CI 2.3, 12.8) and positive attitudes toward testing (aOR 9.77, 95% CI 4.81, 19.8) were independently associated with encouraging trainees to screen for HIV. Reasons for not encouraging trainees to perform HIV screening included perceived low local prevalence (37%), competing teaching priorities (35%), and a busy clinic environment (33%).

CONCLUSION: Clinician educators have a special role in the dissemination of the CDC guidelines in that they impact the knowledge and attitudes of newly practicing physicians. Despite awareness of CDC guidelines regarding HIV screening, many CEs do not recommend this practice to their trainees. Those CEs who do encourage testing among trainees have greater knowledge, better attitudes supportive of testing, and report a higher percentage of patients screened. Interventions that improve faculty knowledge of CDC HIV screening guidelines and address barriers to screening in resident clinic may improve medical education regarding routine HIV screening.

COMPARISON OF ROUTINE IMMUNIZATION IN THE GERIATRIC POPULATION AMONG TEACHING, NONTEACHING, AND GERIATRIC AMBULATORY PRACTICES AT A LARGE ACADEMIC MEDICAL CENTER Elisabeth Ihler1; Rubina Malik2. 1Montefiore Medical Center, New York, New York; 2Montefiore Medical Center, Bronx, New York. (Tracking ID # 11140)

BACKGROUND: Three vaccines are recommended for all geriatric patients: annual influenza vaccine, herpes zoster vaccine at age 60, and pneumococcal vaccine at age 65. However, attainment of universal vaccination has been difficult. There is some evidence that variation in preventive health practices is in part due to clinic factors rather than patient characteristics, with resident clinics faring worse than clinics with similar patient populations staffed by attending physicians and nurse practitioners. To assess this, we investigated differences in administration of these three vaccines between 3 groups of primary care practices operated by Montefiore Medical Center, including 5 resident teaching practices, 21 nonteaching practices, and one geriatrics practice. We hypothesized that the geriatrics practice would provide the most comprehensive vaccination coverage of the elderly.

METHODS: We compared vaccination practices for the elderly from 2008–2010 among primary care sites at Montefiore Medical Center. The 21 practices without residents were pooled as the nonteaching group, the 5 teaching sites that included internal medicine and family medicine residents as well as faculty were pooled as the teaching group, and the practice staffed by the geriatrics physicians and fellows was treated as the geriatrics group. The Montefiore Clinical Information System (CIS) was used to select patients for inclusion, collect demographic data (age, gender, race, ethnicity, primary language) and assess vaccination status via vaccine administration recorded in the electronic medication record.

To assess eligibility to receive the pneumococcal vaccine, we identified patients who were seen at least twice in the same practice from 1/1/2008 to 1/1/2010, and were at least 65 years old at the time of the first visit in the period. To assess eligibility to receive the herpes zoster vaccine, we identified patients who were seen at least twice in the same medical practice from 5/15/08 (the date of the formal ACIP recommendation) to 1/1/2010, and were at least 60 years old at the time of the first visit. To assess eligibility to receive the influenza vaccine, patients were assessed for both the 2008-2009 and 2009-2010 flu seasons. Patients over the age of 65 who were seen at least once in a medical practice between 10/1/08-4/1/09 or between 10/1/09-4/1/10 were included in the influenza groups.

Subgroups of patients with COPD and diabetes were targeted in this study due to medical indications for pneumococcal and influenza vaccination. They were identified using information from ICD-9 codes, electronic problem lists, and laboratory data.

We compared patient characteristics and vaccinations rates between practice sites using chi-square (for categorical variables) or one-way ANOVA (for continuous variables).

RESULTS: There were significant differences between the three practice groups in patient characteristics. The geriatrics group patients were older (mean 79.5 years) compared with teaching (72.8) and nonteaching groups (73.8). In addition, the geriatrics practice had more white and English-speaking patients than the two other groups. The teaching group had the most Hispanic and Spanish-speaking patients. The practices also differed in the prevalence of DM and COPD.

Overall, vaccination rates did not meet national goals in any practice. There were significant differences between practices for influenza vaccination rates for both the 2008–09 (39.9% nonteaching, 44.5% teaching, and 46.5% geriatrics, p<0.05) and 2009–10 flu seasons (30.4% geriatrics, 34.0% teaching, 34.7% nonteaching, p<0.05). Rates of pneumococcal vaccine were lowest in the geriatrics practice (25.6%) compared with the teaching (38.5%) or nonteaching (34.0%) practices (p<0.05). In addition, patients with DM received significantly more pneumococcal vaccine than patients without these conditions at the nonteaching (38.2% of diabetics vs 31.7% of nondiabetics) and teaching (41.4% vs 36.4%) groups (p<0.05), but not in the geriatrics group (25.5% vs 25.7%). In both the 2008–09 and 2009–10 flu season, patients with DM received more influenza vaccine than nondiabetic patients in all practices (p<0.05). The rates of vaccination with herpes zoster vaccine were very low across all sites, ranging from 0.9% in the geriatrics group to 2.1% in the teaching group (nonsignificant). There were some differences between groups for vaccinated vs. unvaccinated patients for race, ethnicity, primary language and gender but no consistent pattern emerged.

CONCLUSION: Overall, vaccination rates in all groups were substantially lower than the 90% coverage that is the national goal, but were
roughly comparable with national vaccination rates for minority patients. There were significant differences between nonteaching, teaching, and geriatrics groups for immunization coverage with all vaccines, as well as for the relationship between chronic disease and vaccination. There was no single practice with overall higher rates of vaccination. The geriatrics group's rates of pneumococcal vaccination for all patients and for patients with DM were surprisingly low, possibly reflecting in part the greater mean age of these patients, who may have received their pneumococcal vaccination after age 65 but prior to the implementation of the electronic medication record in 1997. Pneumococcal and influenza vaccination rates were higher for patients with DM in the nonteaching and teaching groups, but not in the geriatrics patients. This may indicate a greater awareness of age-related vaccination guidelines in the geriatrics practice. Limitations of the study include the thirteen-year limit on vaccination records as well as the inability to identify patients who may have received vaccination at an outside site or who were offered and refused vaccination. The institution of automated reminders for vaccines as part of the electronic medical record may improve vaccination rates in the future.

HEALTHCARE PROVIDERS MISS OPPORTUNITIES TO COUNSEL HIV-INFECTED PATIENTS ABOUT HIGH-RISK SEXUAL BEHAVIOR
Tabor Elisabeth Flickinger 1; Philip Todd Korthuis 2; Somnath Saha 2; Michael Barton Laws 2; Richard Moore 2; Mary Catherine Beach 1; 1Johns Hopkins University School of Medicine, Baltimore, Maryland; 2Oregon Health & Science University, Portland, Oregon; 3Brown University, Providence, Rhode Island. (Tracking ID # 11141)

BACKGROUND: Although HIV care guidelines recommend that providers counsel patients about safe sex, HIV-infected patients and providers report that discussion of sexual behavior is infrequent. Using audio-recorded clinical encounters between patients and their providers, we investigated the frequency and content of discussions regarding sexual behavior in HIV care.

METHODS: We performed a cross-sectional analysis of data from two sites of the Enhancing Communication and HIV Outcomes (ECCHO) Study. Patients were adults receiving HIV care who presented for routine outpatient follow-up with their provider. Clinical encounters were audio-recorded, transcribed and searched for discussion of patients' sexual behavior. We classified the encounters by whether or not the patient reported safe sex, and then according to whether the provider advised a change or maintenance of the recommended behavior (counseling) or not (missed opportunity). When counseling occurred, we further classified the type of behavior change discussed (e.g., condom use). When a missed opportunity occurred, we further classified the type of indication for a counseling session (e.g., diagnosis of STI).

RESULTS: Patients were 62% male, 54% African American, with a mean age of 45.0 (range 20–77). Providers were 59% female, 86% white, with a mean age of 42.8 (30–57). Of the 223 encounters, discussion of sexual behavior occurred in 92 (41.9%, 95% CI: 0.35–0.48). Of these 92 discussions, 11 patients denied sexual activity and were excluded from further analysis. Of the 25 patients who reported safe sex, providers missed opportunities to reinforce behavior in half of the encounters, 0.56 (0.35–0.76). Of the 56 patients with an indication of unsafe sex, providers missed opportunities to recommend behavior change in three quarters of encounters, 0.77 (0.64–0.87). The most commonly recommended behavior changes were condom use (n=13), disclosure of HIV status (n=5), and reduction in number of partners (n=5). The most commonly missed indications for counseling were STI symptoms (n=20) or STI screening (n=10).

Table 1: Number of encounters with discussion of safe or unsafe sexual behavior in which counseling was received.

| Patient reports safe sex | Counseling does not occur | Counseling occurs | Total |
|-------------------------|---------------------------|-------------------|-------|
| Patient reports safe sex | 14 missed opportunities to reinforce patient's safe sex practice | 11 encounters with reinforcement of patient's safe sex practice | 25 |
| Patient gives indication of unsafe sex | 43 missed opportunities to address behavior change toward safer sex | 13 encounters addressing behavior change toward safer sex | 56 |
| Total | 57 | 24 | 81 |

PUBLIC OPINIONS ABOUT PAYING PEOPLE TO QUIT SMOKING
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BACKGROUND: Paying people to quit smoking has been shown to be at least as effective as more traditional pharmacologic approaches (Volpp and Das, 2009). Randomized trials comparing the use of financial incentives to conventional care have demonstrated abstinence rates of 20.9% vs. 11.8% for usual care at 6 months (Volpp et al, 2009). Despite their effectiveness, financial incentives remain controversial. Social and ethical concerns include the appearance of rewarding individuals for unhealthy lifestyle choices, a sense of undermining personal responsibility, and the acceptability of money as a treatment. To understand the extent of these concerns, a randomized controlled public opinion survey was performed.

METHODS: Study population: In order to reflect broad public representation, individuals 18 years or older waiting at major transportation depots in Philadelphia were approached between June and August 2010. Participants were compensated with a candy bar for completing the questionnaire.

Questionnaire design: One of three versions was randomly distributed to participants. All participants were asked whether they would support a $25 increase in their annual health insurance premium to pay for a smoking cessation treatment. In version 1, the question was prefaced by “According to research, a new treatment helps some people to quit smoking.” “New treatment” was changed to “new medication” in version 2 and “paying people” in version 3.

In addition to smoking status, political affiliation, and sociodemographic information, participants were asked to assign responsibility for smoking cessation among individuals, other people/society, and chance/luck using 9 statements adapted from the Multidimensional Health Locus of Control Questionnaire (Wallston et al, 1994). Using a 6-point Likert scale, 3 items for each domain were used.

Analysis: Chi-square tests were used to compare rates of support. Multivariate logistic regression was used to identify predictors of willingness to support a smoking cessation policy on the entire sample
and on those responding separately to each of the three versions. Hypotheses were generated prior to data collection. Statistical testing was two-sided and significant for p-values < 0.05.

RESULTS: 1,010 individuals completed the question about willingness to support the policy. 52.8% were female, 26.0% African-American, 17.5% current smokers, and 46.3% had a household income <$40,000. Overall support for increasing health insurance premiums by $25 to pay for any smoking cessation treatment was 41.6%. The financial incentive survey received the lowest support rate (39.3%) but did not statistically differ from the treatment (45.8%, p=0.14) or medication (41.7%, p=0.58) versions.

In subgroup analyses, current smokers’ overall support for a smoking cessation policy (54.9%) was significantly higher than previous smokers (41.5%, p=0.009) or lifetime non-smokers (36.9%, p<0.001). Within each smoking category, participants showed similar support for each of the three versions. Within the lower income group (household income < $40,000), the financial incentive version (34.8%) was statistically lower than the medication version (49.4%, p=0.04) but not the generic treatment (47.2%, p=0.06).

Participants with Democrat affiliation had a higher overall support rate (45.7%) than Republicans (30.3%, p=0.001). When considering the financial incentive, Republicans (23.3%) had a significantly lower support rate than Democrats (40.6%, p=0.04).

Multivariate logistic regression revealed that current smoking status (OR 2.95; 95% CI: 1.90-4.60), age in ten year increments (OR 1.22; 95% CI: 1.08-1.38), Democratic affiliation (OR 1.11; 95% CI: 1.00-1.23), and endorsement of an external locus of control for smoking cessation (OR 1.10; 95% CI: 1.05-1.16) were associated with willingness to support any smoking cessation policy. When considering the financial incentive policy, endorsement of an internal locus of control for smoking cessation (OR 0.87; 95% CI: 0.78-0.96) was a negative predictor of the willingness to support the policy.

CONCLUSION: Only 41.6% of the participants supported any investment in smoking cessation treatment, although that support varied by sociodemographic characteristics, political affiliation, and expressed views on the locus of responsibility for smoking cessation. The financial incentive policy received the lowest rate of support, but that support did not differ significantly compared to medication or generic treatment policies. This research suggests that a financial incentive would be perceived no differently than currently used medications for smoking cessation treatment, although that support varied by race, and activation stage and quality of 5As counseling.

For any smoking cessation treatment was 41.6%. The financial incentive version (34.8%) was statistically lower than the medication version (49.4%, p=0.04) but not the generic treatment (47.2%, p=0.06). Participants with Democrat affiliation had a higher overall support rate (45.7%) than Republicans (30.3%, p=0.001). When considering the financial incentive, Republicans (23.3%) had a significantly lower support rate than Democrats (40.6%, p=0.04).

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CONCLUSION: Only 41.6% of the participants supported any investment in smoking cessation treatment, although that support varied by sociodemographic characteristics, political affiliation, and expressed views on the locus of responsibility for smoking cessation. The financial incentive policy received the lowest rate of support, but that support did not differ significantly compared to medication or generic treatment policies. This research suggests that a financial incentive would be perceived no differently than currently used medications for smoking cessation. Rather, much of the negative perceptions involving financial incentives and tobacco cessation may be targeted to the broader issue of whether to help people with a socially stigmatized health behavior.

IS AN OBESITY COUNSELING CURRICULUM FOR RESIDENT PHYSICIANS ASSOCIATED WITH PATIENT WEIGHT LOSS IN PRIMARY CARE? Melanie Jay 1; Colleen Gillespie 1; Sheira Schlair 2; Stella Sivarimuthu 1; Daniel Erek 3; Scott Sherman 4; Sondra Zabar 1; Adina Kalel 1; New York University School of Medicine, New York, New York; Montefiore Medical Center, New York, New York; West Virginia School of Osteopathic Medicine, Lewisburg, West Virginia; New York Harbor VA, New York, New York. (Tracking ID # 11144)

BACKGROUND: There is little evidence that physician training in evidence-based obesity counseling techniques affect patient outcomes. Intensive counseling has been proven to reduce weight while evidence on brief, focused physician-delivered counseling, like the 5As model (assess, advise, agree, assist, arrange), has been inconclusive. We use patient exit interviews and chart reviews to explore whether patients’ weight status is associated with resident training after a 5As obesity counseling curriculum.

METHODS: Twenty-three primary care residents were scheduled into either an intervention (5-hr 5As obesity counseling curriculum, n=12) or control group (standard residency training, n=11). Over a 7-month period, we interviewed 158 of the residents’ obese patients (Body Mass Index > or = 30 kg/m2) post medical visit about the nature and quality of obesity counseling that occurred, during that index visit. We then conducted chart reviews to determine weight at all subsequent medical visits within 6 months and calculated weight change by subtracting the patients’ weight (kg) measured at the latest time point within the 6 month period from the index visit weight. Quality of obesity counseling was calculated as the percent of 21 possible 5As practices that the patient reported the resident physician used during the index visit. We characterized weight loss/gain by both patient (BMI, gender, race, language, motivation and intention to lose weight, patient activation) and resident variables (quality of obesity counseling, participation in the curriculum) and then used exploratory regression analyses to identify the combined influence of patient and resident characteristics on weight loss/gain.

RESULTS: Fifty-six percent (88/158) of patients had visits within a 6 month period subsequent to the index visit, mean number of visits was 4.8 (SD=3.7), 53% of follow-up visits were with the same resident (SD=4.3) with a mean of 3.8 patients/resident (range 1-11). Over a 6 month period following the index visit, the mean weight change in all patients was -32 kg (SD=2.3, range -8.2 - +5.8). Mean weight loss among patients initially seen by a resident who completed the obesity counseling curriculum (-7.7 kg, SD=2.4, n=43) tended to be greater than mean weight loss for patients initially seen by residents who had not completed the curriculum (+1.1 kg, SD=2.2, n=45) (p=.084). Six percent of patients of curriculum residents lost >5% of body weight compared with none of the patients of control residents (p=.092). The exploratory regression model explained 11% of weight change variance (p=.039).

Having a resident physician who completed the curriculum accounted for 5% of the variance (p=.037) after controlling for patient BMI, gender, race, and activation stage and quality of 5As counseling.

CONCLUSION: Patients of resident physicians who had completed a 5As-based obesity counseling curriculum lost slightly more weight (< 1 kg) than patients of residents who had not completed the curriculum, but the magnitude of weight loss was small and significant only after controlling for patient and resident variables. Further research is needed to better understand how much physician training is needed to more substantially affect patient weight outcomes.

PALLIATIVE AND ONCOLOGIC CO-MANAGEMENT: SYMPTOM MANAGEMENT FOR OUTPATIENTS WITH CANCER Kara Bischoff 1; Vivian Weinberg 1; Michael Rabow1; UCSF, San Francisco, California. (Tracking ID # 11144)

BACKGROUND: Although outpatient palliative care clinics are increasingly common, evidence of their clinical efficacy is limited. This prospective study assessed the impact of palliative care co-management on symptoms and quality of life among ambulatory patients at a comprehensive cancer center.

METHODS: 267 adult outpatients with cancer were referred by their oncologist and seen for at least 2 visits within 120 days at the UCSF Symptom Management Service. 152 of these patients were also seen for a third visit within 240 days of the first. Patients completed a modified Edmonton Symptom Assessment Scale and a validated spiritual well-being questionnaire prior to each visit. Overall change in symptom severity from the first to subsequent visits was calculated using two-tailed analysis of variance (ANOVA) methods for repeated measures; a test for a trend in scores over time was defined by a linear contrast. ANOVA models and Kruskal-Wallis tests were used to determine the difference in means and distributions, respectively, for baseline symptoms and for pairwise change in symptoms according to demographic and clinical variables.
RESULTS: At baseline, mean age of studied patients was 57.3 years (SD 13.9). Median time since cancer diagnosis was 17.5 months (range 18–256). Fifty-four percent of patients were female; 67% were Caucasian. Prostate, breast, gastrointestinal, and gynecologic cancers were the most common diagnoses. Fifty-nine percent of patients had metastatic disease at baseline. During the study period, 68% of patients received oncologic treatment (chemotherapy, hormonal therapy or radiation) and only 3% were enrolled in hospice. At baseline, severity of evaluated symptoms did not differ significantly by presence of metastatic versus localized disease. However, female gender, African-American ethnicity, and non-prostate cancer diagnoses were associated with greater baseline pain (p=0.02, p<0.001, p<0.001, respectively) and fatigue (p=0.05, p=0.02, p<0.001, respectively). Second clinic visits were on average 41 days after the first. Between the first and second clinic visits there was a significant improvement in pain (p<0.001), fatigue (p<0.001), anxiety (p<0.001), depression (p<0.001), quality of life (p=0.002) and spiritual wellbeing (p<0.001), but not nausea (p=0.14) or relationship problems (p=0.31). For the subset of patients with evaluable data who were seen for a third visit, the improvement in pain, fatigue, anxiety, depression, quality of life and spiritual wellbeing observed at the second visit persisted to the third visit (p<0.005 for each symptom).

CONCLUSION: Palliative care, provided in a symptom management clinic concurrent with oncologic care, was associated with significant improvement in nearly all symptoms evaluated. A sustained effect is suggested by the subset of patients seen for a third visit. Although cancer stage has a key impact on prognosis, cancer patients with localized disease had a symptom burden similar to patients with metastatic cancer. To control for the impact of time and non-palliative treatments, as well as for referral bias, randomized controlled studies of outpatient palliative care are indicated.

COMORBID DIABETES AND EXPENDITURES AMONG MEDICARE BENEFICIARIES WITH HEART FAILURE Saul Blecker 1; Frederick Brancati 1. 1Johns Hopkins University School of Medicine, Baltimore, Maryland. (Tracking ID # 11146)

BACKGROUND: Diabetes is common in heart failure patients and has been associated with an increased mortality rate. We examined whether diabetes was associated with increased expenditures, procedures, and hospitalizations among a nationally representative sample of Medicare beneficiaries with heart failure near the end of life.

METHODS: We performed a cross-sectional analysis of resource utilization among Medicare beneficiaries with heart failure during the last six months of life. Data were obtained from a 5% sample of beneficiaries with Medicare Parts A and B. We included all beneficiaries over the age of 65 who had a diagnosis of heart failure and died in 2007. Our primary exposure was presence of diabetes. Diagnoses of heart failure and diabetes were established using the International Classification of Diseases, Ninth Revision (ICD-9) codes 428 and 250, respectively, listed as either a hospital discharge diagnosis or in at least two physician claims in the year preceding the last six months of life. The primary outcome was total Medicare expenditures during the last six months of life. Secondary outcomes were other markers of utilization, including number of hospitalizations, number of intensive care unit (ICU) days, and performance of procedures, including cardiac catheterization, implantable cardiac defibrillator (ICD), and cardiac resynchronization therapy (CRT). Characteristics between individuals with and without diabetes were compared using chi-squared tests for categorical variables and Wilcoxon rank sum tests for continuous variables. We used negative binomial and log-linear regression models to compare utilization between beneficiaries with and without diabetes with adjustment for covariates, including age, gender, race, geographic location, comorbidities, and prior hospitalizations.

RESULTS: The prevalence of diabetes was 41.7% (n=6,922) among 16,613 Medicare beneficiaries with heart failure who died in 2007. Individuals with comorbid diabetes were younger (81.8 vs 85.8, p<0.001), more likely to be male (45.9% vs 40.2%, p<0.001), had higher numbers of hospitalizations in the prior year (mean 2.6 vs 1.8, p=0.02), and had higher rates of hypertension, cardiovascular disease, and kidney disease as compared to individuals without diabetes. Diabetes was associated with higher total expenditures (mean $839,042 vs $299,003, p<0.001), even after adjusting for covariates (adjusted cost ratio 1.08, 95% CI 1.05–1.12). For both diabetics and non-diabetics, over half of Medicare expenditures were related to hospitalization costs (mean $22,516 vs $15,721, p<0.001). When compared to their counterparts without diabetes, beneficiaries with diabetes had higher rates of hospitalization (adjusted incidence rate ratio (aIRR) 1.09, 95% CI 1.05–1.12) and days spent in the ICU (aIRR 1.19, 95% CI 1.09–1.29). However, after adjustment, diabetes was not associated with a significant increase in performance of cardiovascular procedures, including cardiac catheterization (adjusted prevalence ratio (aPR) 1.03, 95% CI 0.87–1.21), ICD (aPR 1.03, 95% CI 0.75–1.41), and CRT (aPR 0.94, 95% CI 0.59–1.49).

CONCLUSION: In our nationally representative sample of Medicare beneficiaries with heart failure near the end of life, comorbid diabetes was extremely common. Comorbid diabetes was associated with significantly higher Medicare expenditures, much of which appeared to be driven by increased rates of acute and intensive care hospitalizations. Rates of invasive cardiovascular procedures were, however, similar in individuals with and without diabetes. To reduce the substantial costs associated with diabetes among heart failure patients, clinicians and policy makers should focus on programs designed to prevent hospitalizations in this high-risk population.

SCREENING FOR PERIPHERAL ARTERIAL DISEASE IN ASYMPTOMATIC INDIVIDUALS: A SYSTEMATIC REVIEW AND META-ANALYSIS Amy Tu Wang 1; Mohammad Hassan Murad 2; Rafael Malgor 3; Ahsan Rizvi 4; Tariq Elmfadhli 2; Melanie Lane 2; Larry Prokop 2; Victor Montori 2; 1Mayo Clinic, Rochester, Rochester, Minnesota; 2Mayo Clinic, Rochester, Rochester, Minnesota; 3Stony Brook University Medical Center, Stony Brook, New York; 4Minneapolis Heart Institute Foundation at Abbott Northwestern Hospital, Minneapolis, Minnesota. (Tracking ID # 11148)

BACKGROUND: Peripheral arterial disease (PAD) is estimated to affect 8 million Americans and is associated with increased risk of morbidity and mortality. PAD can be reliably detected via a widely available, non-invasive, and inexpensive tool, the Ankle Brachial Index (ABI). Although only 10% of individuals with PAD present with classic symptoms, the United States Preventive Services Task Force issued 2003 recommendations against screening for PAD in asymptomatic individuals, while other groups including the American Heart Association recommend for ABI screening in asymptomatic individuals. Given these disparate recommendations, we performed an updated systematic review to include new evidence in hopes of shedding light on this controversial issue.

METHODS: We conducted a systematic review and random-effects meta-analysis of electronic bibliographic databases for studies that evaluated the outcomes of using ABI to screen asymptomatic individuals for PAD.

RESULTS: Thirty-one studies reported the yield of screening asymptomatic individuals for PAD to average 16% (range 1–42%). Yield of screening increased with age and risk factors for cardiovascular disease. PAD was fairly uncommon in younger and lower risk populations.
Nineteen studies reported on the association between PAD and all-cause mortality and cardiovascular mortality. Compared to patients without PAD, patients with PAD were at higher risk of all-cause mortality (pooled hazard ratio 2.99; 95% confidence interval (CI), 2.16-4.12) and of cardiovascular mortality (2.35; 95% CI, 1.91-2.89). Five studies reported outcomes of interventions provided to asymptomatic PAD patients identified via screening. These studies used different outcomes making it difficult to draw meaningful conclusions. No studies compared effects of utilizing screening ABI versus no screening in asymptomatic individuals in terms of patient important outcomes.

**CONCLUSION:** The current available evidence demonstrates that the yield for screening ABI to identify PAD in asymptomatic individuals is fairly high especially among older patients and those with cardiovascular risk factors. Our review also showed that PAD is associated with a 2 to 3 fold increase in mortality. Unfortunately, there were no studies that directly compared outcomes in groups receiving screening versus those that did not. Thus, we could not recommend for routine screening for PAD in asymptomatic individuals. This further underscores the need for a thoughtful design study that answers this patient-important question.

**USABILITY TESTING FOR THE DEVELOPMENT OF AN ELECTRONIC HEALTH RECORD INTEGRATED CLINICAL PREDICTION RULES IN PRIMARY CARE** 

**Devin Mann 1, Andre Kushniruk 2, Thomas McGinn 3, Alice Li 4, Daniel Edonyabo 5, Lucas Romero 6, Jacqueline Arciniega 7, Dillon Chrim 8, Joseph Kannry 3**

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**BACKGROUND:** Usability testing assesses both the ease of use and ability of clinicians to successfully interact with a prototype patient-oriented computer tool. Usability testing is a critical but underutilized step in the development of health information technology tools. The rapid growth of electronic health records (EHR) in primary care has only increased the need for usability in primary care interventions. In theory, clinical decision support (CDS) systems help EHR users deliver more efficient and effective care. The integration of evidence based medicine (EBM) into EHR systems using CDS tools at the point of care is a critical step towards using HER’s to facilitate EBM in primary care. Clinical prediction rules (CPR) such as the Walsh and Heckerling criteria for Strep and Pneumonia, respectively, formally incorporate EBM diagnostic probabilities and provide primary care providers well-validated resources for care delivery. As part of a planned randomized controlled trial testing a new EHR embedded CPR tool (termed iCPR) for strep throat and pneumonia, we conducted usability testing to help develop and refine the new tool.

**METHODS:** We conducted usability testing to evaluate the main functionalities of the iCPR tool: alerting, risk calculator, bundled ordering, progress note and patient instructions. Eight primary care providers interacted with the prototype iCPR tool using two written clinical scenarios (1 for strep and 1 for pneumonia). Using the “think aloud” protocol analysis method, providers were encouraged to verbalize their thoughts as they interacted with each component of the tool. Screen capture software and audiotaping were used to record all human-computer interactions. Audio transcriptions of subjects’ verbalizations were annotated with relevant screen movements (e.g. menu selections, etc.) to provide a holistic recording of the provider-iCPR interaction. This data was then coded using thematic protocol analysis by two trained coders with disagreements resolved by consensus.

**RESULTS:** A total of 263 coded observations were recorded that dealt with the following 7 themes (# of unique codes): usability (33), navigation (26), content (25), usefulness (13), understandability (9), visibility (9), and workflow (27). Code frequency was evenly distributed across providers with the following breakdown across iCPR functionalities: 53 alert, 16 risk calculator, 22 progress note, 14 patient instructions, 93 bundled order set, and 65 global coded segments. Common issues included perceived excessive “clicks” and readability of text as noted by one user, “It’s becoming a lot of clicking and reading and you want to do this thing quickly, especially if you have a lot of patients waiting.” Providers had generally positive perceptions on how the tool would affect their workflow, along with suggestions for optimizing its implementation. This usability feedback led to critical changes throughout the prototype tool including redesigning the alert mechanism, adjusting the contents of the bundled order sets, revising the progress note templates and reorganizing the patient instructions.

**CONCLUSION:** Usability testing provides critical feedback from users regarding potential barriers towards implementation of a new EHR embedded CDS tool. This data has been used to refine the development of the iCPR tool and will help achieve enhanced workflow integration and acceptance by providers.

**ASSOCIATIONS BETWEEN HEALTH LITERACY, CALORIE KNOWLEDGE AND NUMERACY AND FAST-FOOD MENU SELECTION** 

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**BACKGROUND:** Calorie labeling laws require fast-food chain restaurants to post calorie information on menu boards. Initial evaluations of the impact of this law suggest that it may only affect calories purchased in a minority of consumers. The Patient Protection and Affordable Care Act mandates that calorie labeling be implemented nationwide and in addition to posting calorie information, calorie recommendations must also be posted. We sought to examine whether health literacy, calorie knowledge, or numeracy may affect calories purchased among a primary care adult population.

**METHODS:** We surveyed 131 adult patients attending a public hospital clinic in the Bronx, NY. Consecutive patients were recruited from the clinic waiting room to complete a 65-item questionnaire administered by interview. The questionnaire included frequency of fast food restaurant use, calorie knowledge, weight loss attempts within the past year, health literacy and subjective numeracy. Participants were asked to select food choices from 2 fast-food menus, the first menu had no calorie information, and the second menu had the calorie information. Body mass index was determined from chart documentation of height and weight. Calorie knowledge was determined by asking participants if they knew on average how many calories most Americans should eat each day. Health Literacy was assessed with the 6-item Newest Vital Sign, which asks 6 questions about a nutrition food label (response range 0–6). Numeracy was assessed with Fagerlin’s Subjective Numeracy Scale which asks 8 questions about preference for numerical data and perceived ability to work with numbers (response range 0–6). The sum of the calorie items selected from the menus with and without the calorie information was calculated. Unpaired t-tests examined whether mean scores of calories selected differed among those with higher vs. limited health literacy, those who knew calorie recommendations compared to those who did not, and those with high vs. low numeracy.

**RESULTS:** In this population, mean (+/- SD) age was 43+/-16, mean (+/-SD) BMI was 31+/–8, and 63% reported trying to lose weight in the past 1 year. Thirty-seven percent reported going to a fast-food restaurant one or more times in a week, with some respondents going as often as 10 times a week. Forty percent of survey respondents correctly chose 2000 calories as the average number of calories most...
adult Americans should consume daily. Mean (+/− SD) response on the health literacy scale was 2.6+/−1.9, with 35% of respondents having a score of less than 2 suggesting limited health literacy. Participants selected an average of 763+/−448 calories on a fast-food menu without calorie information, compared to 511+/−336 calories (p<0.005) when calories were added. Of 131 participants, 48 completed all survey measures. Among these participants, the sum of calories selected by those with limited health literacy was (1198+/−1094); significantly higher than the calories selected by participants with higher health literacy (762+/−435), p=0.04. Adults who knew the calorie recommendations chose 854+/−716 calories and those who did not know the calorie recommendations chose 801+/−438 calories, p=0.76. Participants below the median level of numeracy selected 876+/−547 calories and those above the median selected 827+/−700 calories, p=0.79.

CONCLUSION: Our findings suggest that health literacy may be an important factor in calories selected at a fast-food restaurant. While participants with higher knowledge and higher numeracy selected fewer calories, this was not statistically significant in our sample. As calorie labeling is implemented nationally it will be important to examine knowledge, health literacy and numeracy as potential barriers in using calorie information.

GENDER CONCORDANCE OF PATIENTS AND PROVIDERS: BALANCING PATIENT PREFERENCE WITH EDUCATIONAL NEEDS Amy Devlin 1; Long Ngo 1; Carol K. Bates 1; Diane Brockmeyer 1. 1Beth Israel Deaconess Medical Center, Boston, Massachusetts. (Tracking ID # 11159)

BACKGROUND: Prior studies show patients prefer same-sex physicians; we believe this drives gender imbalance in our resident outpatient panels. Among our senior residents, males have 65% male patients, and females have 80% female patients. This limits resident experience managing gender specific issues. Our clinic graduates 44 residents annually, transferring 3500 patients to new interns. We preferentially transitioned patients to opposite gender interns over the past 2 years. Patient assignments were made to interns of the opposite gender of the patient 67% of the time. 86% of patients were assigned to an intern who was the opposite gender of their prior resident PCP. Exceptions were made to assign equal numbers of patients to new interns, to match language for non-English speaking patients, and for preceptor continuity for sicker patients. Patients were notified of their new PCP via letter. This study examines the impact of change in physician gender on the likelihood of patient follow-up.

METHODS: In this retrospective cohort study, patient follow-up visits were recorded for the 12 months after assignment to new PCP for the June 2008 and 2009 graduation cohorts. The primary exposure was assignment of a new, opposite-sex primary care physician (female-to-male PCP or male-to-female PCP) vs. unexposed groups (male-to-male PCP, female-to-female PCP). 6150 patients were switched to opposite gender PCPs and 987 patients remained in the unexposed group (N=7137). The binary outcome variable was “follow-up” vs. “no follow-up” with assigned PCP, or with any MD or NP in the practice. Logistic regression was used to estimate unadjusted and adjusted odds ratios of the effect of switching patients to opposite gender PCPs on the probability of follow-up with PCP and with any provider. Two linear contrasts from the logistic regression models were used to obtain odds ratios for the comparison between female-to-male versus female-to-female PCP, and male-to-female versus male-to-male PCP switch. To address confounders, covariate adjustments were made for age, gender, diabetes, chronic narcotic use, known significant illness, and language (English vs. non-English speaking).

RESULTS: At 12 months after assignment to new PCP, 48% of patients had follow up in the practice, and 16% of patients followed up with the assigned new PCP. If the new PCP was the same gender as prior PCP, rates were 55% and 23%. If the new PCP was different gender from prior PCP, rates were 47% and 11%. Patients with existing illness, diabetes, pain treated with narcotics and non-English speaking patients had greater follow-up rates. Multivariable models were used to adjust for potential confounders of age, gender, illness, diabetes, narcotic use, and non-English speaking patients. For rates of follow up with assigned PCP, adjusted odds ratios showed patients transitioned from female-to-male vs. those continuing with female PCPs were 52% less likely to follow-up with the assigned PCP (OR=0.48, CI=0.38-0.60). Patients transferred from male-to-female PCPs were 26% less likely to follow-up than male-to-male PCPs (OR=0.74, CI=0.56-0.98).

CONCLUSION: Resigning patient panels to opposite gender PCPs appeared to decrease patient follow-up. Further investigations are needed to optimize continuity of care for patients while providing a balanced resident educational experience.

ADHERENCE TO CHRONIC DISEASE MEDICATIONS AMONG NEW YORK CITY MEDICAID ENROLLEES Kelly A Kynko 1; Robert Franklin 2; Sonia Angell 3. 1Yale School of Medicine, New Haven, Connecticut; 2New York State Department of Health, Albany, New York; 3New York City Department of Health and Mental Hygiene, New York, New York. (Tracking ID # 11162)

BACKGROUND: Adherence to medications for hypertension, diabetes, and dyslipidemia is a critical component of primary and secondary cardiovascular disease prevention and control. While provider and payer organizations such as Medicare/Medicaid have traditionally been involved in introducing medication adherence initiatives, local public health departments can play a unique role in monitoring, piloting and promoting best practices, and in facilitating systems-level changes designed to increase adherence rates. To better understand factors related to adherence in the New York City (NYC) Medicaid population on chronic disease medications, and to establish a method for evaluating potential interventions, the NYC Department of Health and Mental Hygiene, in collaboration with the New York State Department of Health, aimed to 1) determine the rate of medication adherence among NYC Medicaid enrollees with chronic disease (diabetes, hypertension, or dyslipidemia) on maintenance medications, 2) identify predictors of medication adherence, and 3) describe prescribing patterns (number of days supplied).

METHODS: We performed a retrospective analysis of pharmacy claims data from the New York State Medicaid system. Included were individuals ages 20-64 continuously enrolled in Medicaid and who had at least two fills of an eligible medication for dyslipidemia, diabetes, or hypertension during the observation period from July 1, 2008-June 30, 2009, and at least one fill in the three months prior. Adherence was measured using the medication possession ratio, with adequate adherence defined as ≥80%. Multivariable logistic regression was used to predict medication adherence as a function of race/ethnicity, age, gender, number of medications, and number of conditions.

RESULTS: Data were analyzed for a total sample of 160,238 patients, involving over 3.5 million prescription fills. Overall, 63% of enrollees were adherent to their chronic disease medication regimens. In multivariable logistic regression older age and taking a larger number of medications were significantly associated with increased adherence. Compared with whites, Asians were more likely to be adherent (OR=1.28, CI: 1.24-1.33), whereas blacks were less likely to be adherent (OR=0.84, CI: 0.81-0.86). The majority of prescriptions filled were for 30 days supply, rather than 60 or 90 days (95.9%, 0.6% and 2.5%, respectively).
CONCLUSION: In a population of NYC Medicaid recipients on stable medication regimens for hypertension, diabetes, and/or dyslipidemia, adherence to medications for these conditions was inadequate and racial disparities were identified. Results from this study may be used by health departments and other providers to inform development and evaluation of future medication adherence programs. Because prior studies have shown improved adherence with use of prescriptions greater than 30 days’ supply, the low prevalence of these larger prescriptions in our analysis identifies a potential target for local systems-level interventions designed to improve medication adherence and address health disparities.

KNOWLEDGE LEVEL ABOUT HPV AMONG AN UNDERSERVED LATINA POPULATION IN METRO-ATLANTA: NEW OPPORTUNITIES FOR TARGETED INTERVENTIONS Anna Acosta 1; Loida Bonney 2; Michael Fost 3; Victoria L Green 4; Carlos del Rio 5. 1Emory Internal Medicine Residency, Atlanta, Georgia ; 2Emory School of Medicine, Department of Medicine, Atlanta, Georgia ; 3Emory School of Medicine, Department of Obstetrics and Gynecology, Atlanta, Georgia ; 4Emory School of Public Health, Atlanta, Georgia . (Tracking ID # 11163)

BACKGROUND: Human papillomavirus (HPV) is the leading cause of cervical cancer. Currently there is a two-pronged approach employed to prevent development of cervical cancer: 1) secondary prevention via Papanicolaou smear screening, used in the U.S. since the 1950 s, and 2) primary prevention with use of the recently introduced HPV vaccine. Despite the availability of effective secondary prevention, Latina women are disproportionately affected by cervical cancer incidence and mortality, with death rates more than 50% higher than in non-Hispanic white women. Explanations for these findings include lack of access to healthcare, lack of knowledge and health literacy, poor follow-up, immigration status, and cultural beliefs, among others. Improving HPV vaccination coverage is critical in order to decrease this health disparity.

Recent data from our group suggests that lack of knowledge about cervical cancer and its cause may play a crucial role in shaping cervical cancer prevention health service use, and thus, incidence of disease among Latina women. Because the Southeastern U.S., and especially the metro Atlanta area, is beginning to support increasing numbers of Latino immigrants, it is important to address the specific knowledge gaps that impact this population.

The objective of this study is to evaluate the level of knowledge of HPV in a sample of Latinas living in metro Atlanta, and to assess the factors correlated with differing levels of knowledge.

METHODS: This study is a secondary analysis of data from a cross-sectional survey of a convenience sample of Latina women recruited from the waiting room of two clinics serving an indigent population. Women completed the Survey using Computer Assisted Personal Interview (CAPI) with Audio Computer Assisted Self Interview (ACASI) components. Knowledge level of HPV was measured by the number of correct responses to five questions. Thus each survey respondent received a score between 0 and 5. The score was then tested for correlation with demographic factors and other characteristics of the survey respondents by Fisher’s exact test (SAS, version 9.2; SAS Institute, Cary, NC). P-values < 0.05 were considered significant.

RESULTS: A total of 86 Latina women responded to the knowledge items, which included five questions regarding HPV knowledge. Eighty percent of these women were of Mexican origin. Among the study participants, 54% correctly identified HPV as the most common sexually transmitted infection (STI), 54% responded incorrectly that herpes was the most common STI, 74% correctly responded that HPV causes cancer, 29% correctly answered that HPV can cause penile cancer, and 12% responded correctly that HPV may not have symptoms.

Multivariate analysis revealed that those who already had received the vaccine scored higher on the knowledge questions (p=0.0054). Additionally, there were higher scores in those who feel they speak English best, as opposed to Spanish (p=0.061), those who read or speak primarily in English (p=0.0309), those who primarily think in English (p=0.0433), and those who speak in English with friends (p=0.0474). Although not significant, there was a trend that first generation Latinas scored lower on the knowledge questions (p=0.16).

Further examination found that those who speak or read primarily in English (p=0.0049), those who think in English (p=0.0384), those who feel they speak English best (p=0.0079), and those that speak in English with friends (p=0.0312) were more likely to have received the vaccine. First generation Latinas were also less likely to have received the vaccine (p=0.0306).

CONCLUSION: Among a convenience sample of underserved Latinas recruited from outpatient clinics, most were aware that HPV is associated with cervical cancer. However, the highest level of knowledge appears to be associated with those who are more comfortable with the English language. Additionally, this subset of the population is largely the same persons who have already been vaccinated. Therefore, further strategic educational interventions in this population should target first-generation women or those less comfortable with the English language. The most critical intervention to decreasing the incidence of cervical cancer may be improving access to education and increasing English proficiency.

COLORECTAL CANCER SCREENING IN PRIMARY CARE Craig Daniel Seaman 1; Bruce Ling 2; Maria Mor 2. 1University of Pittsburgh Medical Center, Glenshaw, Pennsylvania ; 2Veteran’s Affairs Medical Center, Pittsburgh, Pennsylvania . (Tracking ID # 11164)

BACKGROUND: Colorectal cancer is the 3rd most common cancer and 2nd leading cause of death due to cancer. The United States Preventive Services Task Force (USPSTF) recommends annual fecal occult blood test (FOBT), flexible sigmoidoscopy in combination with FOBT, or colonoscopy as colorectal cancer screening (CRC) methods. CRC screening is significantly underutilized with CRC screening rates estimated between 55-63%. Effective patient-provider communication is necessary in all aspects of medical care. Our study assessed whether or not increased level of discussion regarding CRC screening between patient and provider is associated with increased CRC screening rates.

METHODS: The study consisted of males 50–74 years of age due for CRC screening during the 12 month period following enrollment. Transcribed audiotaped visits between patient and provider, an attending physician, at a single Veteran’s Affairs Medical Center in Pittsburgh, PA, were categorized as CRC screening absent, CRC screening mentioned, or CRC screening discussion present. Outcomes were determined by reviewing electronic medical records 15 months after enrollment in the study with outcomes defined as completion of FOBT, flexible sigmoidoscopy, or colonoscopy. Two sided p values were calculated with Fisher’s exact methods.

RESULTS: The analytic cohort consisted of 66 patients due for CRC screening that had transcribed audiotaped visits. 22 (33%) patients completed CRC screening with 8 (36%) categorized as CRC screening absent, 11 (50%) categorized as CRC screening mentioned, and 3 (14%) categorized as CRC screening discussion present. 44 (67%) patients did not complete CRC screening with 22 (50%) categorized as CRC screening absent, 12 (27%) categorized as CRC screening
mentioned, 9 (20%) categorized as CRC screening discussion present, and 1 (3%) whose transcript was missing (p value=0.30). 42.1% of patients that agreed to CRC screening during the encounter with the provider did not complete CRC screening. These patients were compared with patients that reported intent to complete CRC screening and did so. Multiple variables were analyzed with a statistically significant difference present between the aforementioned groups with respect to prior history of CRC screening (p value=0.001). Among patients that voiced intent to complete CRC screening and did so, 12 (75%) previously completed screening compared with 4 (25%) that never completed screening. Among patients that voiced intent to complete CRC screening but failed to do so, 2 (12%) previously completed screening compared with 14 (88%) that never completed screening.

CONCLUSION: The level of discussion between patient and provider does not predict completion of CRC screening. In addition, very limited discussion occurs between patient and provider regarding CRC screening. Among patients that voiced intent to complete CRC screening, a prior history of CRC screening predicts subsequent completion of screening. Furthermore, I hypothesize that increased level of discussion between provider and patient regarding CRC screening is negatively associated with completion of CRC screening because patient reluctance results in increased level of discussion (as opposed to increased level of discussion resulting in patient reluctance). Also, focusing additional efforts on individuals agreeing to CRC screening that have never completed screening may increase screening completion rates.

MISSED OPPORTUNITIES FOR ADVANCE CARE PLANNING IN PRIMARY CARE Sangeeta Ahluwalia 1; Jennifer Levin 1; Karl Lorenz 1; Howard Gordon 2. 1Veterans Administration, Los Angeles, California; 2University of California, Los Angeles, California.

BACKGROUND: Advance care planning (ACP), a process of patient-provider communication by which a patient can make their preferences for future care known, is particularly relevant for patients with heart failure (HF), who face a highly variable trajectory characterized by periods of medical crisis, and where considerable uncertainty exists about the timing and nature of death. There is indirect evidence to suggest that ACP discussions are limited in the primary care setting; such discussions are often avoided until death is imminent. A key barrier to engaging in ACP reported by primary care clinicians is the lack of opportunity during a busy clinic visit to raise this complex topic with their patients. The purpose of this study was to 1) determine the frequency and type of ACP communication between HF patients and their primary care providers (PCP) during clinic visits following discharge from a HF hospitalization and 2) to characterize missed opportunities for engaging in ACP during the visit.

METHODS: We conducted a content analysis of 76 post-discharge primary care clinic visits, that were recorded and transcribed, with veterans ≥65 years with HF and their PCP. Transcripts were analyzed for the presence of 5 components of ACP as defined by existing literature: explanation of disease trajectory, prognosis communication, discussion or completion of formal directives, discussion or identification of a surrogate decision-maker, and personal and psychosocial planning for the future. Transcripts were also analyzed using grounded theory methods for missed opportunities for providers to engage in ACP, defined as direct communication by the patient providing information regarding their thoughts, concerns, or questions related to any of the 5 components of ACP that was not fully encouraged or adequately responded to by their provider.

RESULTS: Out of the 76 unique clinic visits analyzed, only one contained a discussion of all 5 components of ACP. Of the remaining 75 visits, 15% (n=11) included an explanation of disease trajectory, 23% (n=17) included prognosis communication, 4% (n=3) included a discussion of formal directives, 0% (n=0) included discussion of a surrogate decision-maker, and 4% (n=3) included personal and/or psychosocial planning for the future. The following categories of missed opportunities for engaging in ACP emerged from the analysis: i) emotional opportunities, where veterans expressed concern or worry regarding their prognosis, future functional abilities and likelihood of decline, or their overall expected health state, ii) information-seeking opportunities, where veterans sought information on their prognosis, specific treatment options, or future care, and iii) social-support opportunities, where veterans discussed their future health within the context of their family/caregiver or broader social environment. Categories of provider responses to these communications included: i) incomplete responses, where the physician did not fully explore the comment, ii) misdirected responses, where the provider bypassed the comment by engaging in a related discussion and iii) terminated responses, where the provider invalidated or ignored the veteran’s thoughts or feelings.

CONCLUSION: These findings demonstrate particularly limited engagement in ACP by PCPs with their patients with HF. Patients actively seek information, empathy and guidance from their providers regarding their illness that may be overlooked or inadequately addressed by their provider. The missed opportunities for ACP identified here represent meaningful entrees into discussions about planning and preparing for future care: active recognition of these opportunities may help providers to initiate what is already a difficult and complex topic.

SOCIAL DISPARITIES IN MAIL-ORDER PHARMACY USE: AN EXAMPLE OF THE INVERSE CARE HYPOTHESIS Andrew J Karter 1; Julie A Schmittdiel 1; Melissa M Parker 1; Dean Schillinger 2; Howard H Moffet 1; Wendy T Dyer 1; James Chan 1; William H Herman 3; O. Kenrik Duru 4. 1Kaiser Permanente, Oakland, California; 2University of California, San Francisco, San Francisco, California; 3University of Michigan Medical Center, Ann Arbor, Michigan; 4University of California, Los Angeles, Los Angeles, California.

BACKGROUND: A third of all chronic disease prescriptions in the US are filled by mail. Use of Mail-Order Pharmacy (MOP) has been associated with improved adherence, better LDL-C control, and cost savings for health plan operations when compared to community (walk-in) pharmacies. Tudor-Hart’s inverse care hypothesis posits lagging uptake of innovations by vulnerable populations due to resource and access barriers (resulting in more care for those who need less, and less care for those who need more). While we have reported ethnic disparities, there has not been formal evaluation of disparities in mail-order pharmacy across other social indicators, or studies of how incentives to increase use of MOP may affect existing disparities in MOP utilization.

METHODS: We evaluated social disparities in prevalent use of MOP (defined by any mail order refills in year prior to baseline survey) in a sample of 17,758 Kaiser Permanente patients with diabetes who responded to a survey (62% response rate) from the Diabetes Study of Northern California (DISTANCE). Each subject had a pharmacy benefit and had filled a cardiometabolic medication (diabetes, anti-hypertensive, or lipid-lowering) in the year prior to baseline. We also evaluated new MOP use (i.e., incident use among subjects without previously recorded MOP use) during the 12 months after a new financial incentive was offered to promote MOP in specific subsets of
TREATMENT DELAYS AT A FREE URBAN CLINIC: MAKING A CASE FOR POINT OF CARE A1C TESTING

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BACKGROUND: The management of chronic diseases, including diabetes, can be particularly challenging for free medical clinics. In addition to the struggles of limited medical resources, limited continuity, and complicated social situations, accessing laboratory testing can also be challenging. The Birmingham Free Clinic, a free, primary care, volunteer-driven clinic in Pittsburgh, Pennsylvania, serves a large population of uninsured patients, many of whom have diabetes. The clinic has no on-site phlebotomy services but currently partners with a local hospital (approximately one mile away) for free limited laboratory testing for the patients. Point of care (POC) testing, specifically for hemoglobin A1C (A1C), offers potential advantages in managing chronic diseases in this setting, POC testing allows clinicians to make immediate treatment decisions at the point of care rather than requiring patients to make separate trips to the lab. We believe that POC A1C testing can offer particular advantages for a patient population that is low income, has difficulty accessing transportation, and may have transient housing situations. However, with a very limited budget, the clinic has to develop cost effective protocols and interventions. In order to assess the potential advantages of implementing POC testing in a free clinic we first investigated the treatment delays that were associated with the current lab-based, off-site A1C testing.

METHODS: We performed a retrospective chart review of all known patients with diabetes seen at the clinic between June 2010 and October 2010. Data was abstracted from the period of June 2008 through October 2010. Data abstracted included basic demographic information, housing status, monthly income, date(s) that A1C was ordered, date(s) the test was obtained at the lab, and date(s) that patients had clinic follow-and the A1C lab result was acted upon by a clinician. The University of Pittsburgh Institutional Review Board approved this project.

RESULTS: A total of 56 patients were included in the chart review. The majority of the patients were African American (50.9%) men (75%). The mean monthly income was $589.71 (SD 580.04). Mean driving distance from home to clinic was 6.32 miles (SD 5.56). Mean A1C over this time period was 8.88% (SD 2.23). At the time of the analysis, 25% of the patients were homeless, including 5.5% in a drug and alcohol rehabilitation facility attached to the clinic and 20% doubled-up. Over this period, 175 A1Cs were ordered of which 101 (58%) were obtained by patients. It took a mean 65 days (SD 103) for patients to obtain their blood work after receiving a lab requisition. The mean time from date A1C was initially ordered until the A1C results were acted upon was 110 days (SD 124).

CONCLUSION: Our study shows significant delays in care when patients have to go to an offsite lab to obtain tests. In this analysis, we found that it takes more than 2 months for many patients to go to the lab after receiving a laboratory requisition. An additional month often passes before any changes are made to therapy based on those results. POC testing could potentially get patients to goal faster and prevent or delay expensive, life-altering complications. It may also minimize transportation costs and time barriers for patients. Further investigation into the cost effectiveness of POC testing for this population could aid in decisions regarding resource allocation.

COMPARATIVE SAFETY AND EFFECTIVENESS OF DIABETES MEDICATIONS IN SUBPOPULATIONS OF ADULTS WITH TYPE 2 DIABETES

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BACKGROUND: Although many studies have examined the comparative effectiveness and safety of medications for type 2 diabetes, clinicians need better guidance on how to tailor treatment according to demographic and clinical characteristics of individual patients.

METHODS: As part of a comprehensive systematic review, we searched MEDLINE, EMBASE, and Cochrane databases from inception through April 2010 and hand-searched journals and reference lists using search terms for type 2 diabetes and all FDA-approved diabetes medications. Two investigators independently reviewed citations to identify studies that compared the effectiveness and safety of diabetes medications as monotherapy or in combination for sub-populations of patients with type 2 diabetes. We abstracted data from eligible articles and assessed study quality.
RESULTS: We identified 28 studies (21 randomized controlled trials [RCTs] & 7 observational studies) that reported outcomes in subgroups of patients. Five studies examined the impact of age on glycemic control, but we were unable to draw conclusions regarding comparative medication effectiveness in older adults with diabetes. Two RCTs conducted subgroup analyses by sex for the outcome of fracture. One 4-year study showed an increased risk of fracture among women treated with rosiglitazone compared with metformin or sulfonylurea (hazard ratio [HR] 1.57 [1.13-2.17]; p=0.007 and 1.61, respectively [1.14-2.28]; p=0.007). The second 6-year trial confirmed an excess fracture risk in women treated with rosiglitazone plus metformin or sulfonylurea compared with metformin plus sulfonylurea (RR in women 1.82 [1.37-2.41] and in men 1.23 [0.85-1.77]). Two RCTs favored metformin over sulfonylurea among obese patients in terms of weight loss. In one study, obese patients gained on average 3.7 kg (-0.5 to 7.9 kg) on sulfonylurea and lost on average 1.3 kg (-5.8 to 3.2 kg) on metformin (p<0.001). Eleven RCTs evaluated comparative effects on glycemic control by subjects’ baseline hemoglobin A1c (HbA1c) level, and found a greater absolute reduction in HbA1c among those with higher baseline HbA1c. Two studies examined all-cause mortality in patients with baseline heart disease. One study of patients with congestive heart failure reported decreased all-cause mortality risk in patients taking metformin compared with sulfonylurea (adjusted HR 0.70 [0.54-0.91]) at a median follow up of 2.1 years. The second study found increased all-cause mortality in patients with ischemic heart disease taking metformin compared with sulfonylurea or repaglinide (adjusted HR 3.82 [1.22-11.9; p=0.02]).

CONCLUSION: Effectiveness and safety of oral diabetes medications may depend on patient sex, pre-treatment HbA1c level, and the presence of heart disease. Overall, strength of evidence was low because studies were not powered to assess differences within or between subpopulations. Future research is needed to address medication effects in populations. Future research is needed to address medication effects in subgroups of patients. Five studies examined the impact of age on glycemic control, but we were unable to draw conclusions regarding comparative medication effectiveness in older adults with diabetes. Two RCTs conducted subgroup analyses by sex for the outcome of fracture. One 4-year study showed an increased risk of fracture among women treated with rosiglitazone compared with metformin or sulfonylurea (hazard ratio [HR] 1.57 [1.13-2.17]; p=0.007 and 1.61, respectively [1.14-2.28]; p=0.007). The second 6-year trial confirmed an excess fracture risk in women treated with rosiglitazone plus metformin or sulfonylurea compared with metformin plus sulfonylurea (RR in women 1.82 [1.37-2.41] and in men 1.23 [0.85-1.77]). Two RCTs favored metformin over sulfonylurea among obese patients in terms of weight loss. In one study, obese patients gained on average 3.7 kg (-0.5 to 7.9 kg) on sulfonylurea and lost on average 1.3 kg (-5.8 to 3.2 kg) on metformin (p<0.001). Eleven RCTs evaluated comparative effects on glycemic control by subjects’ baseline hemoglobin A1c (HbA1c) level, and found a greater absolute reduction in HbA1c among those with higher baseline HbA1c. Two studies examined all-cause mortality in patients with baseline heart disease. One study of patients with congestive heart failure reported decreased all-cause mortality risk in patients taking metformin compared with sulfonylurea (adjusted HR 0.70 [0.54-0.91]) at a median follow up of 2.1 years. The second study found increased all-cause mortality in patients with ischemic heart disease taking metformin compared with sulfonylurea or repaglinide (adjusted HR 3.82 [1.22-11.9; p=0.02]).

CONCLUSION: Effectiveness and safety of oral diabetes medications may depend on patient sex, pre-treatment HbA1c level, and the presence of heart disease. Overall, strength of evidence was low because studies were not powered to assess differences within or between subpopulations. Future research is needed to address medication effects in patients with co-morbid conditions.

PATIENT REPORTED BARRIERS TO ENROLLMENT IN A PATIENT PORTAL
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BACKGROUND: With the introduction of meaningful use criteria and the advancement of electronic health records (EHRs) generally, use of “tethered” personal health records, or “patient portals,” is becoming more commonplace. Previous studies have found low rates of enrollment in patient portals overall and significant disparities in enrollment by race and ethnicity, but the reasons for these findings are not well understood. Our study aims to identify patient-reported barriers to enrollment in a patient portal.

METHODS: Patients were eligible if they had an attending physician within the General Internal Medicine (GIM) clinic, two face-to-face visits in the past 18 months, and an order placed by their physician to activate the electronic patient portal, but did not enroll within 30 days of the order being placed. After generating lists of eligible patients, we randomly selected patients for the telephone survey. Lists were stratified by race as recorded within the EHR to ensure adequate sampling of non-white patients. Patients who were contacted and agreed to participate completed a 15 minute survey that used closed and open-ended questions to examine: (1) whether participants recalled a discussion with their provider about the patient portal (2) whether participants attempted enrolling in the patient portal (3) experiences of those attempting to enroll (4) reasons for not attempting to enroll (5) access to and typical use patterns of the internet and (6) perceptions of benefits of the patient portal. We used content analysis to categorize responses to open-ended questions. Analyses were performed in SAS. Racial differences in responses were analyzed using Fisher’s exact test for categorical variables; p<0.05 was considered significant.

RESULTS: The survey response rate was 61%. Participants’ mean age was 51 years; 72% were female, 70% had a college degree or greater, 48% were black.

Reasons for not enrolling in the patient portal. Twenty-six percent of respondents did not remember discussing the patient portal with their providers, 63% did not attempt to enroll despite remembering a discussion with their providers, and 11% attempted to enroll, but did not succeed. Differences by race were not significant.

Reasons for not attempting to enroll. Among those who did not attempt to enroll in the patient portal, 60% endorsed reasons related to low priority or inattention as the primary reason for not attempting to enroll, 30% reported attitudinal barriers and 8% reported technical barriers. Differences by race were not significant.

When asked whether specific factors contributed to not attempting to enroll, black respondents were significantly less likely than whites to report that they forgot (52% vs. 74%, p<0.05) or were too busy to enroll (30% vs. 59%, p<0.05). There were no significant differences in access to the internet as a reason for not attempting to enroll.

Attitudes towards patient portals. Overall, respondents favorably viewed a variety of benefits that patient portals provide; however, black respondents were less likely than whites to endorse as important or very important features that assisted self-management: getting test results (69% vs. 86%, p<0.05), managing medical problems (58% vs. 82%, p<0.05) and seeing when you are due for screening tests (72% vs. 88%, p<0.05). There were no significant differences in attitudes towards administrative tasks such as scheduling appointments or refilling medications.

CONCLUSION: Strategies to increase uptake of the patient portal need to ensure patients understand the features of a patient portal, remember being invited to enroll, and receive follow-up reminders to enroll. In addition, interventions to eliminate racial disparities in patient portal enrollment must address attitudinal barriers and not focus solely on improving access.

SCREENING, BRIEF INTERVENTION AND REFERRAL TO TREATMENT (SBIRT) FOR OPIOID ABUSE IN AN URBAN HOSPITALIZED POPULATION: A PILOT STUDY
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BACKGROUND: BACKGROUND: Numerous studies demonstrate the deleterious health outcomes associated with substance abuse and dependence. To intervene early in the course of substance use, Screening, Brief Intervention, and Referral to Treatment (SBIRT) has been advocated by many. In primary care settings and emergency departments, SBIRT has been successful in screening for and identifying populations with problematic alcohol use, providing brief interventions to them and referring them for treatment, leading to improved outcomes. Although substance use disorders are common among hospitalized patients, few studies have examined the feasibility of or outcomes associated with conducting SBIRT in hospitalized patients. Although data regarding SBIRT for drug use has been sparse, with the rise in opioid use, abuse, and dependence, many...
advocate for SBIRT specifically for drug use. We sought to test the feasibility of conducting SBIRT for problematic opioid use targeting patients hospitalized on the medical wards of a large urban academic medical center.

**METHODS:** METHODS: On 22 days between October 2009 and 2010, we identified all adult patients who were admitted within 24 hours to four different floors of the medical wards of a large urban academic medical center in the Bronx. A research assistant attempted to reach all admitted patients who were 18–75 years old, fluent in English or Spanish, and alert and oriented. Patients who were intubated, restrained, or on contact isolation were excluded. We administered audio computer-assisted self-interviews (ACASI) to patients, collecting sociodemographic information and risk of problematic opioid use (using the Alcohol, Smoking, Substance Involvement Screening Test [ASSIST] questionnaire, developed by the World Health Organization [WHO]). According to the WHO criteria, patients were categorized as having no opioid use, or low, moderate, or high risk of problematic opioid use. Those who had moderate or high risk problematic opioid use received a brief computer-based intervention in which they were informed about their risk and opioid addiction treatment options, and invited to receive additional information and referrals to treatment. We conducted simple frequencies to describe patients’ sociodemographic and clinical characteristics.

**RESULTS:** RESULTS: Of the 231 patients who were newly admitted to the medical wards, we were unable to reach 42 (18.2%) (they were already discharged, not in their rooms, or otherwise occupied with health care providers) and 42 (18.2%) refused to participate. Of the remaining 147 patients, 61 (41.5%) were ineligible for the following reasons: age >75 years (n=37), on contact isolation (n=12), disoriented (n=8), in severe pain (n=2), blind (n=1), and not fluent in English or Spanish (n=1). In addition, computer issues resulted in incomplete interviews in 3 patients. Of the 75 patients included in this analysis, the mean age was 48.6 years, and the majority were women (65.3%), Hispanic (49.3%) or black (38.7%), had high school education (68.0%), and had public insurance (66.7%). In terms of opioid use in the prior 3 months, 42 (56.0%) reported no opioid use, 4 (5.3%) low risk, 26 (34.7%) moderate risk, and 3 (4.0%) high risk of problematic opioid use. Of the 29 patients with moderate or high risk, 19 (65.5%) were interested in referral to treatment and 27 (93.1%) reported that the brief computerized intervention was useful.

**CONCLUSIONS:** In a large urban academic medical center, we found moderate or high risk of problematic opioid use in 39% of patients hospitalized on the medical wards. Our data suggest that in the inpatient medical setting, ample opportunity exists to identify patients with problematic opioid use, to provide a brief intervention, and to refer them to treatment. In fact, of those with moderate or high risk of problematic opioid use, over half were interested in referral to treatment, and nearly all reported usefulness of the brief intervention. Despite this, we question whether a model of conducting SBIRT like ours—with a dedicated person outside of the team delivering health care—is feasible. Of all patients newly admitted to the hospital, only one-third were screened for problematic opioid use, as approximately one-fifth were unable to be contacted, one-fifth refused to be screened, and one-fourth were ineligible. Because moderate or high risk of problematic opioid use appears to be common in hospitalized patients on medical wards and has substantial consequences, further research examining SBIRT related to problematic opioid use in hospitalized patients is warranted.

**UNDERSTANDING PROVIDER PERSPECTIVES ON CARE TRANSITIONS FROM HOSPITAL TO HOME: FINDINGS FROM A 360 DEGREE QUALITATIVE EVALUATION** Honora Englander 1; Melinda Davis 1; Devan Kansagara2; Oregon Health & Science University, Portland, Oregon 1; Portland VA Medical Center, Portland, Oregon 2

**BACKGROUND:** Patients are vulnerable to experiencing poor quality, fragmented care as they transition from acute hospital care to home. Transitional care improvements are a growing priority for health reform and are an opportunity to accomplish the triple aim of lowering health care costs, improving quality, and increasing patient satisfaction. Understanding gaps in care and barriers to improvement from both patient and provider perspectives informs the development of transitional care interventions. Prior qualitative work has found that patients and their caregivers feel poorly prepared for self-care after discharge. Few studies, however, have examined transitional care deficiencies from a health care provider perspective. We conducted a qualitative assessment to evaluate multidisciplinary inpatient and outpatient provider perspectives of roles, barriers, and facilitators to effective care transitions from hospital to community-based care.

**METHODS:** Investigators conducted in-depth semi-structured interviews (2) and focus groups (13) from October 2010 to January 2011. Participants were drawn from the general medicine and cardiology services at an urban, academic hospital; three partnering outpatient primary care clinics; and one Medicaid managed care plan. Standard qualitative analytic techniques were applied to verbatim written transcripts.

**RESULTS:** The seventy-five participants included internal medicine residents (6), inpatient hospital attendings (5), outpatient general medicine attendings (5), subspecialty attendings (4), community clinic providers (9), pharmacists (8), nurses (14), case managers (8), social workers (1), and hospital executives (15). The following themes emerged as key contributors to poor transitions of care: 1) lack of clarity of roles and responsibilities among providers and across settings, 2) lack of multidisciplinary communication, and 3) patient barriers such as no insurance, lacking a usual source of care, substance abuse, and complex medication regimens. Many providers noted the irrationality of providing high cost ‘rescue’ hospital care for the uninsured without adequate transitional care. Providers also noted that the uncertainties associated with unsatisfactory transitions negatively impact job satisfaction. Finally, providers noted opportunities to expand education and competencies in care coordination across disciplines and facilities.

**CONCLUSION:** Many providers from a range of disciplines are involved in transitions of care across settings. Providers’ experiences underscore that communication across settings and, importantly, across disciplines may be critical to enhancing care transitions. Clarity about roles and responsibilities as well as education that promotes collaboration is likely to improve transitional care. In addition, barriers unique to specific patient populations such as the uninsured are particularly challenging and may be an additional opportunity for focused care transitions improvements.

**PREDICTING 30 DAY READMISSIONS WITH ADMINISTRATIVE DATA** John W. Showalter 1; Nicole Swallow 1; Colleen Rafferty 1; Penn State University, Hershey, Pennsylvania 1

**BACKGROUND:** Readmissions within 30 days of hospital discharge have been shown to be frequent and costly. Published studies that have successfully reduced 30 day readmissions involve time and
labor intensive interventions; many institutions may not have adequate resources to apply similar interventions to all admitted patients. Development of a risk assessment tool that identifies patients at highest risk of readmission could help institutions to focus interventions on the highest risk patients. Previously published risk assessment tools are limited because their use requires direct patient contact, large amounts of clinical data, and they cannot be done at the time of admission. The objective of this study is to create a risk assessment tool for 30 day readmissions which uses easily obtainable administrative data, requires no patient contact, can be done at the time of admission, and performs better than published risk assessment tools.

METHODS: An expert system (rule based computer learning program) was created using data from all adult patients discharged from the Penn State Hershey Medical Center Internal Medicine service between November 1, 2008 and October 31, 2009. The expert system was developed from subjects randomly assigned to a training data set and was validated against the remaining subjects (testing data set). The expert system was then further validated against an independent data set that included all patients discharged from the Internal Medicine service between November 1, 2009 and October 31, 2010. The primary outcome was all-cause 30 day readmissions to any service at our institution and the secondary outcome was all-cause 30 day readmissions to the Internal Medicine service. Four input variables were used to develop the expert system: 1. number of diagnoses billed, 2. presence of an outpatient clinic visit, 3. presence of an inpatient admission and 4. presence of an Emergency Department visit. All were restricted to the year prior to the date of inpatient admission and to data from our institution. The decision making process of the expert system was based on certainty factor analysis. Certainty factor analysis refers to a mathematical method of handling uncertainty, originally designed for medical decision making. Using the training data set, certainty factors for utilization were determined by calculating the readmission rates for the eight unique patterns of utilizing outpatient, inpatient and Emergency Department services. Certainty factors for number of diagnoses billed were determined for subjects with zero, 1–15 and greater than 10 diagnoses billed, also based on the training data set. A composite certainty factor for readmission (CFR) was then calculated based on those numbers for all subjects. Threshold values of CFR were used to predict subjects with a high risk of readmission were calculated using receiver operator characteristic (ROC) curve analysis.

RESULTS: The total study population consisted of 4,191 subjects with 1,244 in the training, 1,244 in the testing and 2,743 in the independent validation set. There was no statistical difference between these three data sets with regard to age, sex or race. The independent validation set had a significantly (p-value < 0.01) increased rate of readmissions (14.8%) as compared to the training (12.8%) and testing (11.8%) sets. Using a threshold CFR value of 0.352 the system was able to identify patients at high risk for readmission. Readmission rates for patients with a CFR above the threshold value were greater than 30 percent for all data sets. In the independent validation set, 9.8 percent of patients were above the threshold. This high risk group accounted for 27.1 percent of readmissions to the Internal Medicine service. Additionally, subjects in the independent validation set with a CFR below 0.2 had a readmission rate to the Internal Medicine service of only 5.4 percent.

CONCLUSION: Using only administrative data which is readily available at the time of admission, our expert system was able to identify a group of patients who had a greater than 30 percent chance of readmission. The size of the group identified, 9.8% of the total population, is almost twice as large as other published clinical risk assessment tools. Identifying this high risk group early in their clinical course allows them to be the focus of interventions shown to be effective, and may result in an even larger reduction in readmissions than previously observed. Further study of this expert system will include adapting it for use at other institutions and validating it within their patient populations.

HIV SCREENING PRACTICES IN AN URBAN OUTPATIENT RESIDENT CLINIC Michelle Doll1; Lawrence Ward2; Robert Bettiker2; Rafik Samuel2; Temple University Hospital, Philadelphia, Pennsylvania ; Temple University School of Medicine, Philadelphia, Pennsylvania . (Tracking ID # 11204)

BACKGROUND: Routine HIV testing for all patients has been advocated by the CDC since 2006. However, many patients continue to receive HIV diagnoses late in the course of the disease. Late diagnoses have devastating consequences both for public health and for the health of the individual. We reviewed the HIV screening practice of internal medicine residents in our outpatient clinic. We also surveyed physicians and patients to determine acceptability of screening.

METHODS: A retrospective chart review was conducted of 205 patients. Eligible patient charts contained at least 2 office visits and a visit within the last year. Data collected included age, sex, race, comorbidities, and HIV risk factors. A separate data collection was performed using surveys, which were given to clinic patients, resident physicians, and attending physicians. The patient surveys included a self-risk assessment, degree of willingness to be tested, reasons for declining testing, and history of prior screenings. The physician surveys included a self-assessment of success in HIV screening efforts, ranking of priority of HIV screening compared with other primary care issues, identification of barriers to screening efforts, and comfort level in performing HIV counseling.

RESULTS: HIV screening was offered to 38% (79) of our patients and 35% (71) went on to complete the testing and have a documented result. One patient was HIV positive, while the other 70 tested were non-reactive. 28 resident physicians and 8 attending physicians completed surveys. Residents estimated that they were screening 49% of their patients for HIV, while attending physicians estimated 42%. 64% of physicians said they would screen more people if rapid testing were available in their clinic. Time constraints and competing health issues were cited as the biggest barriers to screening by physicians in our study. Our clinic population does have a high prevalence of chronic medical conditions, with an average of 5 problems per patient requiring ongoing medical care. There was also a high prevalence of HIV risk factors. Alarmingly, in the subset of patients not offered testing for HIV, 29% had the presence of a risk factor such as past or present drug and alcohol abuse, high risk sexual practices, or history of hepatitis or STDs. Patient surveys were completed by 29 individuals. The vast majority of patients surveyed believed themselves to be very low or no possible HIV risk. However, most patients were still agreeable to HIV testing with the only 4 out of 29 indicating that they would decline testing. Those four all cited no possible risk as the reason to decline testing.

CONCLUSION: While there is an overall positive patient perception of HIV testing, we are falling far short of CDC recommendations. Perhaps most concerning is the lost opportunities for HIV testing in patients with clear risk factors. Since time constraints and competing health issues are cited as significant barriers to HIV screening efforts by physicians, tools for quick and concise counseling regarding testing may be of benefit. In addition, ongoing physician education may help us to prioritize HIV testing.
STUDENTS’ PROGRESSIVE MASTERY OF COMMUNICATION SKILLS OVER THE FIRST YEAR OF MEDICAL SCHOOL Kathleen Hanley 1; Sondra Zabar 2; Adina Kalat 3; Nina Yebouah 1; Colleen C. Gillespie 1; 1NYU School of Medicine, New York, New York; 2NYU School of Medicine, New York, New York; 3NYU School of Medicine, Brooklyn, New York. (Tracking ID # 11205)

BACKGROUND: Students enter medical school with diverse backgrounds and skill sets and can be expected to respond in different ways to education and training. Recognizing this, medical education curricula in the 21st century should be designed to identify students’ strengths and weaknesses and to be sensitive to specific patterns of development over time. We designed and implemented a baseline and end-of-first year assessment of medical students’ communication skills in order to better understand students’ communication skills development.

METHODS: Within the first 2 weeks of matriculation, incoming medical students (n=165) participated in a 3-station Standardized Patient (SP) Examination. SPs assessed communication skills in 3 broad domains (information gathering, relationship development, and patient education and counseling; Cronbach’s alphas > .82) using a validated, behaviorally anchored checklist with a 3-point response scale (not done, partly done, well done). Scores were calculated as % items well done. At the end of students’ first year of medical school, as part of their Practice of Medicine course, students completed another 3-station SP examination using the same communication skills checklist. Changes in students’ communication scores from the beginning to the end of their first year of medical school are described using paired t-tests and the degree to which individual students’ relative communication skills’ standing (>1 SD below their class mean, +1 SD of the mean, >1 SD above their class mean) changed over time is also explored.

RESULTS: Mean communication scores (% well done) for incoming medical students were as follows: overall communication=57.2%, well done, SD 15.5%; information gathering=62.2%, SD15.6%; relationship development=61.4%, SD 18.3%; patient education and counseling=42.9%, SD 20.4%. By the end of the year, mean change in scores (on different albeit similar cases) was as follows: communication score mean=+10.5%, SD 18.6, p<.001; information gathering mean=+7.6%, SD 20.4, p<.001; patient education and counseling mean=+27.0%, SD 22.6, p<.001. Relationship development mean improvement=+3.8%, SD 25.2, p=.054. Overall, for 56% of the students, their relative standing stayed the same between assessment time points; 23% of students saw their relative standing decrease over time; and 20% of students saw their relative standing increase over time. 68% (n=21) of the 31 students who scored >1 SD below the mean at baseline improved in their relative standing at the end of the year (scoring within 1 SD of the mean or more than 1 SD above the mean), and their overall communication score increased, on average, by 37% (SD 10%). 74% (n=20) of the 27 students who scored >1 SD above the mean at baseline saw their relative standing decrease at the end of the year (scoring within 1 SD of the mean or >1 SD below the mean), experiencing a mean decrease in scores of 11%, SD12%.

CONCLUSION: Medical students’ overall communication abilities, as assessed by SPs in 3-station OSCEs, appear to increase during their first year of medical school. The largest increases were seen in their patient education and counseling, a skill set that was lower than the other communication skills at baseline and one to which the curriculum devotes substantial time. Aggregate changes however, can mask important individual level changes: while most students’ relative standing didn’t change over time, most high-scoring students saw their relative standing decrease slightly probably largely due to ceiling effects and regression to the mean, and the majority of low-scoring students saw their relative standing increase fairly dramatically across all 3 domains. Each of these patterns has different implications for assessing and evaluating student mastery of core clinical skills and more importantly for tailoring education and remediation. Following this cohort of students throughout their education will help us better understand how to develop and enhance the communication skills students bring to us.

SICKLE CELL PATIENT’S CARE IN THE EMERGENCY DEPARTMENT Allison E. Jordan 1; Cory R. Walker 1; Kit N. Simpson 1; Cheryl P. Lynch 1; 1Medical University of South Carolina, Charleston, South Carolina. (Tracking ID # 11206)

BACKGROUND: One in 500 African-American children has sickle cell disease (SCD), and is managed in pediatric clinic settings. In the late adolescence to young adult phase, patients with SCD face a difficult transition from pediatric to adult care. Consequently, frequent visits to the emergency department (ED) serve as their regular source of care. Many patients with SCD are often perceived as drug seeking because they require high levels of narcotics to manage their pain, especially during sickle cell pain crises. Patients greater than 20 years old with frequent painful events have the greatest risk of early death, indicating that continuity of care is important to minimize morbidity and mortality. Currently, there is no consistent widespread comparable practice among SCD patient providers to assess neither efficacy of treatment nor for consistent experience of patients. The Medical University of South Carolina (MUSC) ED treats approximately 1,400 adult SCD patients per year. The purpose of the study was to determine processes of care among SCD patients presenting to the adult ED for pain crisis.

METHODS: Of 576 ED visits between November 2008 and March 2009, a retrospective review was performed of 10 randomly selected patient electronic medical charts. Since patients with SCD had more than one ED visit during the specified time period, there was a greater likelihood of selecting frequent ED users. However, no duplicate charts were reviewed; each visit was taken as a separate event. Demographic, clinical and utilization data (vital signs including pain rating, processes of care, and medication) were abstracted with special attention to nursing documentation.

RESULTS: The selected patients were 70% female with mean age of 29 years (range 19–51). Mean pain score on admission was 9.3 (range 7–10). Home pain medication was recorded for 80%, but only 40% of these records had the doses recorded. Fifty percent of patients had a primary care physician (PCP) recorded.

Table 1. Treatment Processes During Emergency Department Visit

Table 2. Return Visits to Emergency Department

South Carolina state discharge data shows that each ED visit costs $1200 and 58% of patients with SCD are Medicaid recipients. In 2007, South Carolina hospitals had 2,772 admissions for sickle cell pain crisis.
with total charges of $58 million and an estimated $18.6 million for South Carolina hospitals.

**CONCLUSION:** Adult SCD patients’ use of the ED poses both quality of care and economic issues. To facilitate the transition of pediatric sickle cell patients to adult care, a medical home model should be used to introduce patients to their new PCPs, case managers, and nurses. Sickle cell pain crisis protocols must be implemented, and better documentation of a patient’s home medications is needed to adequately treat their pain in the ED.

**INAPPROPRIATE DISPENSING OF ELECTRONICALLY DISCONTINUED MEDICATIONS: AN EMERGING PATIENT SAFETY CONCERN** Adrienne Allen 1; Thomas Sequist2. 1Brigham and Women’s Hospital, Boston, Massachusetts ; 2Brigham and Women’s Hospital, Newton, Massachusetts. (Tracking ID # 11207)

**BACKGROUND:** Electronic medication prescribing is greatly facilitated by the adoption of electronic health records with direct links to pharmacies to initiate prescriptions. These systems do not support the transmission of medication discontinuation orders from the electronic record to the pharmacy, creating the potential for inappropriate dispensing of previously ordered medications.

**METHODS:** We used electronic data within a large multi-site group practice using a common electronic health record to identify adult patients (>18 years) with an electronically discontinued anti-hypertensive or statin medication during a 12 month period during 2008 to 2009. Pharmacy dispensing records were reviewed to determine if these medications were dispensed in the 12 months following the discontinuation order. Patient demographic and clinical data were obtained from the electronic health record. We fit hierarchical multivariable logistic regression models to identify predictors of dispensing discontinued medications after adjusting for patient sociodemographic characteristics (age, sex, race and insurance status), total number of prescribed medications, and presence of comorbid conditions (diabetes, hypertension, and cardiovascular disease).

**RESULTS:** We identified 63,615 patients who had 140,245 anti-hypertensive medications and statins discontinued during the study period. 2,565 (1.8%) of these medications were dispensed to 1297 (2%) patients following electronic discontinuation within the electronic health record, including 2% of anti-hypertensive medications and 1.3% of statins. The vast majority (93%) of these medications were dispensed at least 1 day after the medication was discontinued, with 7% being dispensed on the day of the discontinuation order. Among the 2,565 inappropriately dispensed medications, 44% were refilled more than once during the 12 months following the discontinuation order, with an average of 2.0 erroneous refills per medication during this time. Patients with more than 5 medications on the electronic medication list, statin discontinuation, non-white race, and Medicaid insurance were more likely to have had a discontinued medication dispensed by the pharmacy (Table).

**CONCLUSION:** Dispensing of discontinued medications does occur and poses an important risk to patient safety, particularly among those patients receiving multiple prescription medications. Further work should evaluate patient harm from this dispensing and explore methods to improve communication between physician offices and pharmacies.

**THE COURTEOUS CONSULT: RESIDENT REFLECTIONS ON INPATIENT CONSULTATIONS** Lauren Peccoralo 1; Anna Podolsky 1; Katherine Krauskopf 1; Kristofer L Smith 1; David Stern1. 1Mount Sinai School of Medicine, New York, New York. (Tracking ID # 11210)

**BACKGROUND:** The quality of clinical consultations varies for physician trainees in academic centers. Prior work demonstrates that poor quality consult interactions can lead to lower quality of care, decreased patient satisfaction and an unprofessional work environment. Little is known about barriers to consult quality in the physician trainee setting. We explored trainees’ perceptions of consultation interactions on the inpatient wards 1) to generate hypotheses about elements of and barriers to high-quality, professional consults and 2) to develop a quantitative study and an educational intervention to improve the consistency, quality and courtesy of consult interactions.

**METHODS:** We conducted our qualitative study in one urban academic medical center. Participants were internal medicine (IM) residents in their second and third post graduate years (PGYs). Investigators developed a moderator script to guide the one hour-long semi-structured focus group. During the session, the moderator asked trainees to discuss perceptions about positive and negative consult interactions, elements of a good consult and downstream effects of consult interactions. The focus group was audio recorded and transcribed verbatim. Investigators used a grounded theory approach with inductive-deductive code generation for data analysis. Two investigators independently coded the transcript. Investigators decided on final codes, categories and themes via consensus.

**RESULTS:** The focus group consisted of eight IM residents, half in their second PGY and half in their third PGY. Five of the participants were female and all had functioned in both the roles of a consultant and...
SMOKING CESSEATION-RELATED INFORMATION, MOTIVATION, AND BEHAVIORAL SKILLS SPECIFIC TO HIV-INFECTED SMOKERS

James Sosman 1; Laura Thibodeau 1; Nasia Safdar 1; Doug Jorenby 1; Sheryl Catz 2; Ben Balderson 3; Jennifer McClure 3; K. Rivet Amico 3.

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BACKGROUND: The intersection of the tobacco and HIV/AIDS epidemics represents an area of growing clinical and public health importance. Until recently, cigarette smoking among HIV + persons received little attention because of limited life expectancy. Effective antiviral treatments have resulted in dramatically increased life expectancies. In the U.S., the prevalence of cigarette smoking is estimated to be 50-70% among HIV + persons vs. 20.8% in the general population. Smoking is associated with reduced quality of life, increased incidence of bacterial pneumonia, risk of malignancies, and increased mortality compared to HIV + non-smokers. We hypothesize that many people are unaware of the ways in which HIV and tobacco use may interact, and some may have low motivation or lack skills relevant to smoking cessation.

METHODS: We recruited a cross sectional convenience sample of HIV + adult smokers from two HIV clinics to participate in structured quantitative interviews. The interview included an HIV specific measure of smoking-related information, motivation, and behavioral skills and standard measures of current smoking behavior, smoking history, self-efficacy for quitting smoking, knowledge of smoking consequences, and demographic and psychosocial characteristics. Participant medical records were abstracted for year of HIV/AIDS diagnosis, HIV viral load, CD4 lymphocyte count, and antiretroviral medication use (HAART). Descriptive statistics were computed for all study variables.

RESULTS: Of eligible smokers approached, 70% (61) consented and 58 completed the interview. Most were men (77%), 81% were Caucasian, median age 46 years and were HIV + for 9 years. Most were on HAART (79%) with a median CD4 count 473 cells/ul and 65% had undetectable HIV viral loads. Participants had on average initiated smoking at age 17 and smoked for 25 years. Fifty-five percent indicated that their HIV diagnosis had “no effect” on their smoking, while 32% reported that their HIV diagnosis had “increased” their smoking. Sixty-seven percent reported that they were “seriously considering quitting smoking” in the next 6 months, and 28% were considering quitting in the next 30 days. The mean time that smokers had quit was 12 months. Fifty-eight percent had not used any cessation medication/aides in the past. Thirty-eight percent did not know how smoking affects the course of HIV disease; however, 91% thought they understood smoking risks for HIV-negative people. Seventy-five percent thought smoking was a way to relax, and 44% thought smoking was a good way to cope with feeling down or stressed. Primary motivations included: 81% worried that smoking may have long term negative effects on their health; 89% were ready to make positive changes in life to improve their health; 73% believed that family and friends think they should quit smoking. Self-efficacy for cessation skills was low: 37% felt confident that they could quit smoking; 64% thought it would be hard or very hard to go through a normal daily routine without a cigarette. However 49% accepted the telephone number for the Tobacco Quit Line when offered at the end of the interview. Seventy-one percent reported alcohol use with median AUDIT-C score of 6 (range 1–10); 58% thought it would be hard or very hard to drink alcohol without smoking.

CONCLUSION: This formative effort describes the broader context of smoking-related IMB (information, motivation, behavioral) strengths and deficits among HIV + smokers. Most were life- long smokers who recognized the general health risks of smoking but less the effects on HIV. Most believed their HIV diagnosis had no effect on their smoking. Most wanted to improve their health but were not confident they could quit smoking. Tailored smoking cessation interventions are needed to build on HIV + smokers’ motivation to quit.

RATES OF NON-EVIDENCED BASED TREATMENT FOR RURAL VETERANS WITH POST TRAUMATIC STRESS DISORDER Thad Abrams 1; Brian Lund 2; Peter Kaboli 1. 1University of Iowa, Iowa City, Iowa ; 2VA, Iowa City, Iowa . (Tracking ID # 11214)

BACKGROUND: Rural veterans comprise a disproportionate share of active duty military personnel and have been identified as a population at risk for inferior healthcare outcomes. Recent work has focused on identifying variations in use of non-evidenced based benzodiazepines (BZD) among veterans with PTSD. Variations in BZD use have been found to be correlated with comorbidity, gender, utilization, and geographic region. However, little is known about BZD use variations among rural veterans with PTSD, and if found to what degree use of BZD may reflect higher comorbidity, issues with access, mental health stigma, or other factors.

METHODS: A cross-sectional study design was used to identify all veterans with a visit for PTSD (n=498,081) in fiscal year 2009. BZD use was identified using electronic pharmacy data and defined BZD use by the receipt of at least one prescription fill for 90 days. Rural residence was determined using Rural Urban Commuting Area (RUCA) codes. Chi square tests were used to
compare BZD use between rural and urban veterans with multivariable logistic regression models to adjust BZD use for demographics, period of service, utilization, and location of PTSD diagnosis.

RESULTS: Average age was 53.8 [SD 14.6] and 93% were male; overall, BZD fills were identified in 30.6% of veterans. Use of BZDs was significantly higher for rural veterans compared to urban veterans (33.2% vs. 29.4%; P < .001). Multivariable logistic regression models indicated that veterans from rural areas were 17% more likely to use a BZD (P < .001). Additionally, veterans from rural areas had fewer outpatient visits (mean 7.9±13.7 versus 9.3±17.0 [P < .001]) and less likely to have an inpatient visit than veterans from urban areas (6.6% vs. 7.5%; P < .001).

CONCLUSION: This study finds that rural veterans with PTSD are more likely to be prescribed non-evidenced based BZD, yet at the same time are less likely to utilize outpatient and inpatient services relative to urban veterans. As BZD use among veterans with PTSD remains high in the VA, efforts to explain the degree to which contributing factors (e.g., access, mental health comorbidity, or stigma) are necessary in order to reduce the use of BZD among veterans with PTSD.

DELINEATING HYponATREMIA IN THE COMANAGED ORTHOPAEDIC PATIENT George Ou 1; Eileen Henrikkus 2; Abdulla Damluji 3; Aaron Baker 1. 1Penn State College of Medicine, Hershey, Pennsylvania; 2Penn State, Hershey Medical Center and College of Medicine, Hershey, Pennsylvania; 3Penn State, Hershey Med Center and College of Medicine, Hershey, Pennsylvania. (Tracking ID # 11215)

BACKGROUND: Introduction: Hyponatremia is independently associated with increased mortality and longer length of hospital stay. Among the 15 comorbidities that SS Waikar et al (Am J Med 2009:122,9) evaluated, the odds ratios for death in patients with versus those without hyponatremia is highest among orthopedic surgery patients. Hyponatremic orthopedic patients have a higher odds ratio of death without hyponatremia is highest among orthopedic surgery patients. Among the 15 comorbidities that SS Waikar et al (Am J Med 2009:122,9) evaluated, the odds ratios for death in patients with versus those without hyponatremia is highest among orthopedic surgery patients. Our results found that the majority of hyponatremia compared to other adult orthopedic surgical procedures. It is not due to the age, sex or race of the patient. A 6 mEq/L median drop in sodium within 24 hours suggests significant intercellular electrolyte and fluid shifts peri-operatively that could explain the increase in mortality that other authors have found. Even the normonatremic group had a 3 mEq/L median drop in sodium. We are currently extracting data on comorbidities and medications, especially as it might relate to the pre-operative hyponatremic patients. That new hyponatremia develops within 24 hours of surgery, suggests, as was found in the spine literature, that some patients are prone to an inappropriate surge in antidiuretic hormone within a few hours postoperatively that is exacerbated by the infusion of hypotonic fluids. Examining in this population, duration of surgery, and perioperative fluids, blood loss, hypotension, pressors, and urine output may clarify why some patients develop hyponatremia. If we can identify the etiology of the orthopedic patients’ hyponatremia, we may be able to alter current fluid management practices in the perioperative period. If we find that adjustments in the type and amount of fluids used in perioperative resuscitation can alleviate the incidence of hyponatremia, we will have succeeded in improving the mortality of the orthopedic patient.

Objectives:
1. To define the occurrence and timing of hyponatremia in the orthopedic patients: present on admission, immediately following surgery or while convalescing in the hospital.
2. Define any association with age, race or sex
3. Define orthopedic procedures that have the highest incidence of hyponatremia

METHODS: Retrospective chart review of all adult, age >21, hospitalized orthopedic surgical patients admitted to Penn State Hershey Medical Center during a one-year period. Age, race, sex and orthopedic procedures were categorized. Sodium (Na) levels were documented preoperatively, first day postoperative, and day of first hyponatremia. Hyponatremia was defined as Na < 135 mEq/L. Sodium was corrected for hyperglycemia using the formula: Measured Na + 2.4 X (glucose - 100)/100. Results are reported as proportions and medians, and compared using chi-square, Fisher exact, or Wilcoxon rank-sum tests, as appropriate. Data analyses were performed with STATA 11.0 software (Stata Corporation, College Station, TX).

RESULTS: Of the 1302 orthopedic surgical patients, 997 patients had both pre and post-operative sodium levels documented. 71 (5%) of patients had pre-existing preoperative hyponatremia and were excluded to calculate the incidence rate. 250 patients developed first new postoperative hyponatremia, giving an incidence of 25%. Of those patients, 237 (95%), developed hyponatremia within one day postoperatively, an additional 4% developed it by the second day and 1% developed it beyond two days after the procedure. The median negative change in sodium, defined as postoperative minus preoperative sodium level was 6 mEq/L in hyponatremic group versus 3 mEq/L in the normonatremic group (P Value < .0001). No statistical differences were found for the occurrence of hyponatremia according to age, sex or race. When categorizing orthopedic procedures, we found the highest incidence of hyponatremia in hip arthroplasties, 34% followed by knee arthroplasties, 23% and all other orthopedic procedures, 20%. Hip arthroplasties had the distinction of being the only procedure that had a higher proportion of hyponatremic patients than normonatremic patients: 36% vs. 23% respectively.

CONCLUSION: We found that hyponatremia is prevalent in orthopedic surgical patients. Our results found that the majority of hyponatremia did not pre-date the surgery, nor did it develop during a long protracted hospitalization. It occurred within the first 24 hours postoperatively. Hip arthroplasties have the highest incidence of hyponatremia compared to other adult orthopedic surgical procedures. It is not due to the age, sex or race of the patient. A 6 mEq/L median drop in sodium within 24 hours suggests significant intercellular electrolyte and fluid shifts peri-operatively that could explain the increase in mortality that other authors have found. Even the normonatremic group had a 3 mEq/L median drop in sodium. We are currently extracting data on comorbidities and medications, especially as it might relate to the pre-operative hyponatremic patients. That new hyponatremia develops within 24 hours of surgery, suggests, as was found in the spine literature, that some patients are prone to an inappropriate surge in antidiuretic hormone within a few hours postoperatively that is exacerbated by the infusion of hypotonic fluids. Examining in this population, duration of surgery, and perioperative fluids, blood loss, hypotension, pressors, and urine output may clarify why some patients develop hyponatremia. If we can identify the etiology of the orthopedic patients’ hyponatremia, we may be able to alter current fluid management practices in the perioperative period. If we find that adjustments in the type and amount of fluids used in perioperative resuscitation can alleviate the incidence of hyponatremia, we will have succeeded in improving the mortality of the orthopedic patient.

Table 1

| Post-op day | normonatremic | hyponatremic | Total |
|-------------|--------------|-------------|-------|
| 0           | 27           | 0           | 27    |
| 1           | 697          | 237         | 934   |
| 2           | 11           | 140         | 241   |
| 3           | 18           | 8           | 26    |
| 4+          | 36           | 36           | 72    |
| total       | 100.00       | 100.00      | 200.00|

Table 2

| Procedure   | Normonatremic | Hyponatremic | Total |
|-------------|---------------|--------------|-------|
| Hip         | 176           | 92           | 268   |
| Arthroplasties | 32.39       | 86.80        | 326.91|
| Knee        | 412           | 86.80        | 498.64|
| Arthroplasties | 32.39       | 86.80        | 326.91|
| All others  | 258           | 66           | 324   |
| total       | 100.00        | 250          | 100.00|
CORRELATION OF SOCIAL DISTRESS AND A1C

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BACKGROUND: Diabetes mellitus is an example of a chronic disease in which patient participation, coupled with social and health systems support, is paramount. Good glycemic control requires patient knowledge and substantial motivation to comply with multiple medications, frequent injections, glucose monitoring, exercise and dietary restrictions, yet little is known regarding specific social factors that may interfere with patients’ ability to comply with complex medical regimens. The objective of this study was to develop a scale to measure social distress in diabetic patients and to correlate the scale to clinical outcomes.

METHODS: We conducted a case-control study of diabetic patients aged ≥18 years from 2 academic ambulatory care centers in Western Massachusetts. Patients with a diagnosis of type II diabetes mellitus and an average hemoglobin A1C level ≥9% (cases) or ≤7% (controls) were eligible to participate. Patients were surveyed over the telephone regarding 20 sources of social stress and 10 sources of support in themselves or their family. Patients also completed validated measures of behavior (Diabetes self-care inventory and Diabetes self-care questionnaire), Depression (PHQ-9), and Knowledge (Brief Diabetes Knowledge Test (DKT)). Clinical measurements were obtained by chart review. The primary outcome was glycemic control.

Bivariate examinations of glycemic control with social stress, depression, self-care and demographics were conducted using unpaired t-tests, Kruskal-Wallis rank tests or Spearman’s correlation, and χ² tests. Multiple logistic regression models were built to examine adjusted odds ratios for poor control as a function of social stress scores. The extent to which depression or self-care mediated stress scores’ association with control was quantified by examining the change in the stress score β coefficient when each covariate was removed from the model.

RESULTS: Our sample included 123 patients with A1C ≥9 and 123 with A1C <9. Patients with A1C ≥7 were older (mean age 56.2 vs. 49.2 yrs., P<0.001), less likely to be employed (8% vs. 18%, P<0.01), less likely to have systolic blood pressure >140 mmHg (28% vs. 44%, P<0.05) less likely to be obese (68% vs. 77%, P=0.09), and scored lower on the DKT (47% vs. 58%, P=0.003). A1C did not vary by gender (P=0.51), race/ethnicity (P<0.10), income (P=0.43), education (P=0.28), self-care behavior (P=0.21) or PHQ-9 scores (P=0.27). Social stress scores for 221 patients ranged from 0 to 19 (mean # of items/SD 6.3/4.0). Scores were higher in patients with A1C ≥9 (6.9 vs. 5.7, P<0.03). However, only four items correlated meaningfully with A1C: difficulty paying for medical care (Spearman’s ρ=0.15, P=0.02), lack of access to transportation (ρ=0.21, P=0.001), job stress (ρ=0.13, P=0.04), and difficulty sending money or gifts to relatives (ρ=0.11, P<0.09). The median score of the 4-item scale was significantly higher in patients with A1C ≥9 (2 vs. 1, P=0.0009, Kruskal-Wallis rank test). Social support scores were available for 223 patients with an average score of 5.6/SD 2.0. Support scores were not significantly correlated with A1C (5.7 vs. 5.6, p=0.85). Before adjustment for covariates in a logistic regression model, the four-item stress score was associated with odds of A1C ≥9 (OR 1.37, 95% CI 1.11, 1.69). Adjustment for age, employment status and BMI did not diminish the association between social stress and control appreciably (OR 1.33, 95% CI 1.046, 1.68). Self-care, depression, and knowledge scores were tested as mediators in the model, but their addition did not change the stress score’s association with A1C by more than 4%.

CONCLUSION: A 4-item social distress scale appears to be independently associated with diabetes control. In contrast, social supports were not associated with diabetes control.

IMPACT OF INDWELLING CATHETER USE IN PATIENTS ADMITTED WITH CONGESTIVE HEART FAILURE

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BACKGROUND: Congestive heart failure (CHF) is a leading cause of inpatient admission in the United States. It accounts for nearly one million admissions per year with an approximate 20% readmission rate. Indwelling urinary catheters may allow accurate assessment of fluid balance and response to diuretic therapy in patients hospitalized for CHF, but may be associated with increased risk of urinary tract infection (UTI). Thus, although indwelling urinary catheters are frequently used in hospitalized patients with CHF, it is unclear if the potential benefit (more accurate assessment of fluid balance) is offset by the potential harm (increased risk of UTI). The goal of this study was to assess the use of indwelling urinary catheters in patients hospitalized with heart failure exacerbations and determines if catheter use was associated with improved clinical outcomes. Specifically, we sought to examine the association between indwelling urinary catheter use and rates of infection, length of stay (LOS), readmission and mortality in patients hospitalized with exacerbations of CHF.

METHODS: In this retrospective observational cohort study we examined all admissions of patients >18 years of age to an urban academic medical center with a primary discharge diagnosis of CHF from July 2007–June 2008. Patients with and without an indwelling urinary catheter were compared with respect to baseline characteristics and outcomes. Baseline characteristics included age, gender, ethnicity, Charlson co-morbidity score, Laboratory-based Acute Physiology Score (LAPS), ejection fraction, admission to intensive care, use of inotropic medications, and duration of catheter use. The outcomes evaluated were rates of hospital acquired UTI, LOS, 30-day readmission rate, and 30-day mortality. Data were extracted from the hospital’s clinical information system, charts and social security death registry. Patient groups (catheter vs. no catheter) were compared with respect to baseline characteristics using t tests, chi-square tests, and rank sum tests, as appropriate. Logistic and Poisson regression models were used to examine the independent association between indwelling urinary catheter use and each outcome, after adjustment for baseline characteristics.

RESULTS: 389 patients with an indwelling urinary catheter and 465 patients without a catheter were examined. Catheterized patients were significantly older (73.4 vs. 65.1), more likely to be female (63.5% vs 40.9%), white (32.1% vs.18.9%), have more co-morbidities (Charlson score 3.9 vs. 3.4) and have a higher ejection fraction (44.5% vs 40.0%). For all comparisons of baseline patient characteristics, the p value was less than 0.001. Indwelling urinary catheter use was associated with a higher rate of hospital acquired UTI’s (11.3% vs 3.2%, p<0.01) and a longer length of stay (11.0 days vs 5.9 days, p<0.001). There was a significant linear association between duration of indwelling urinary catheter use and increased risk of UTI. Each day an indwelling urinary catheter was in place was associated with a 9.8% increased odds of UTI. (figure) The readmission rates did not differ between groups. After adjustment for patient related covariates the use of indwelling catheter was not associated with increased mortality at 30 days. (table)
CONCLUSION: Despite the potential benefit of an indwelling urinary catheter in assessing fluid balance, we found no benefits of catheter use in patients admitted with CHF. We found a significant linear association between rates of catheter associated UTI and number of catheter-days. Although the use of indwelling urinary catheters might potentially shorten inpatient LOS by allowing accurate measurement of fluid balance and fine titration of treatment, we found no such benefit. In fact, the use of indwelling urinary catheters is associated with practically double the length of stay. We found no association between indwelling urinary catheter use and 30-day readmission, or 30-day mortality. Routine use of indwelling urinary catheters in patients admitted with CHF should be discouraged. Further, if used, catheters should be frequently assessed and removed as soon as possible.

METHODS: A cross-sectional study design was used to identify all veterans with a visit for PTSD (n=498,081) in fiscal year 2009 using three PTSD coding algorithm methods: 1) one or two outpatient visits, 2) three or more outpatient visits, or 3) at least one inpatient visit. BZD use was identified using electronic pharmacy data and defined by receipt of at least one prescription fill for 90 days. Unadjusted analyses used chi square to compare demographics (e.g., age, sex, period of service, residence, and location of PTSD diagnosis) multivariable logistic regression models adjusted BZD use for demographics.

RESULTS: Average age was 53.8 (SD 14.6) and 93% were male; overall, BZD fills were identified in 30.6% of veterans. BZD fills varied substantially by coding algorithm. For method 1, 20% of veterans with PTSD had a BZD fill; for method 2, 34% of veterans had a BZD fill; and for method three, 44% of veterans identified with PTSD by one or more inpatient codes had a BZD fill. Multivariate logistic regression models indicated that veterans with an inpatient PTSD code had an odds ratio of 1.92 (95% CI, 1.83–2.10) for BZD fill relative to veterans with one or two outpatient codes. Odds for the receipt for a BZD correlated with increasing use of outpatient visits with a diagnosis of PTSD.

CONCLUSION: BZD use remains high among veterans identified with PTSD and the identification such veterans using administrative data strongly depends on the coding algorithm employed with an observed period prevalence varying from 44% to 20%. As BZD have received a Class D guideline recommendation (e.g. no benefit with significant chance for harm) efforts to reduce the use of BZD among veterans with PTSD remain a priority in the VHA. This study suggests that those efforts should perhaps be focused first on veterans receiving care from the inpatient setting.

| Table. Primary Outcomes        | Univariate | Multivariate |
|-------------------------------|------------|--------------|
| UTI                           | 3.83       | 2.73         |
| (2.09 - 6.99)                 | (1.43 - 5.18) |
| 30-d Readmission              | 0.92       | 0.82         |
| (0.66 - 1.28)                 | (0.57 - 1.13) |
| 30-d Mortality                | 2.36       | 0.98         |
| (1.21 - 4.56)                 | (0.47 - 2.05) |

VARIATIONS IN NON-EVIDENCE BASED TREATMENT AMONG VETERANS WITH POST TRAUMATIC STRESS DISORDER Thad Abrams 1; Brian Lund 2; Mary Sarrazin 1. 1University of Iowa, Iowa City, Iowa ; 2VAMC, Iowa City, Iowa . (Tracking ID # 11224)

BACKGROUND: Post Traumatic Stress Disorder (PTSD) is one of the signature wounds afflicting returning veterans from Iraq and Afghanistan. Although recent efforts from the Veterans Health Administration (VHA) have focused on improving guideline based prescribing, non-evidenced based benzodiazepines (BZD) remain the third most commonly prescribed class of medications among veterans with PTSD. Evidence generating these estimates has relied heavily on the use of administrative data. Yet, multiple coding algorithms exist and there is little agreement on an optimal algorithm for identifying PTSD. Thus, we sought to examine the variation in benzodiazepine use by three common PTSD coding algorithms.

METHODS: Investigators conducted a cross-sectional survey IM of residents at two academic medical centers: Mount Sinai School of Medicine in New York City, NY and Temple University School of Medicine in Philadelphia, Pennsylvania . (Tracking ID # 11225)

BACKGROUND: Despite the increased time devoted to ambulatory training in Internal Medicine (IM) residencies, the percentage of IM residents entering primary care has decreased from 50% in 1998 to 20% in 2006. Little is known about the association of residents’ satisfaction with ambulatory continuity practice and career choice, specifically General Internal Medicine (GIM). This study sought to determine if IM residents’ satisfaction with ambulatory continuity care experience is associated with their interest in GIM careers.

METHODS: During the survey assessed satisfaction with elements of ambulatory continuity practice using a modified version of the VA Learner’s Perception Survey, which asks residents to rate their satisfaction with 35 elements of clinic in the following five domains: clinical preceptors, learning environment, working environment, clinical environment and personal environment. Investigators dichotomized responses for analysis from 4-point Likert responses to either very satisfied or not very satisfied (somewhat satisfied, somewhat dissatisfied and very dissatisfied). Consideration of a career in GIM was measured using a 4-point Likert scale of responses to the question: "AS A RESULT of
your continuity clinic experience, how likely would you be to consider a future employment opportunity in General Internal Medicine?" Investigators dichotomized responses for analysis into either likely or unlikely. The authors examined bivariate associations between satisfaction of clinic elements and considering a career in GIM using the Chi-square test. A logistic regression model tested the association between elements on the satisfaction survey and GIM career plans as a result of the clinic experience, adjusting for demographic characteristics and the residents' baseline interest in a GIM career before the clinic experience. Investigators conducted collinearity diagnostics of the predictors and a literature review of the most relevant clinic factors to achieve balanced representation of domains in final adjusted model.

RESULTS: A total of 192 residents completed the survey (92% response rate). Fifty one percent were Mount Sinai residents, 49% percent were female, and participants were equally distributed across postgraduate years. In the bivariate analysis, residents who were very satisfied with 15 of the 35 specific clinic elements were more likely to report considering a GIM career than those who were not very satisfied. The adjusted model included 8 clinic elements and the collected demographics. In the final adjusted model, residents who were very satisfied with continuity with patients (OR 3.2, p=0.03), the number of patients per session (OR 6.5, p=0.02) and room availability for seeing patients (OR 3.3, p=0.04), and those who intended to enter GIM before the clinic experience (OR 30.8, p=0.001) were more likely to consider a career in GIM as a result of the clinic experience. Gender, postgraduate year, and training site were not associated with intention to enter GIM in the adjusted model.

CONCLUSION: IM residents’ satisfaction with ambulatory continuity practice is associated with a proclivity towards entering a career in GIM. More research is needed to determine the impact of various clinic experiences on residents’ career decision-making process.

SCREENING FOR OSTEOPOROSIS IN HIGH RISK, MENOPAUSAL WOMEN: A RANDOMIZED TRIAL OF INTERACTIVE VOICE RESPONSE

Leonie Heyworth 1; Ken Kleinman 2; Stephanie Oddleifson 2; Lydia Bernstein 2; Judith Frampton 2; Karen Salvato 2; Thomas W. Weiss 3; Steven Simon 4; Maureen Connelly 5. 1Brigham and Women's Hospital, Boston, Massachusetts; 2Harvard Pilgrim Health Care, Boston, Massachusetts; 3Dept. Population Medicine, Harvard Medical School; and Harvard Pilgrim Health Care, Boston, Massachusetts. [Tracking ID # 11226]

BACKGROUND: Osteoporotic fractures are a major cause of disability and mortality. Among women older than age 50, 40% will experience at least one fracture; therefore, menopausal women, especially those with additional risk factors for fracture, are an important group to target for osteoporosis screening. Bone mineral density (BMD) is the best predictor of fractures in this age group. Whether interactive voice response (IVR) calling can increase rates of BMD screening is unknown.

METHODS: We identified 4685 women age 50–64 and at high risk for osteoporosis in a large not-for-profit health plan in New England. We randomly allocated 1562 women to a patient mailing, 1565 to IVR, and 1558 to usual care. The mailing intervention included educational materials about BMD screening, and the IVR was a single interactive outreach call to engage women in a discussion of bone density screening and barriers to care. The IVR directed women who were overdue for BMD screening to schedule this test with their primary care physician. The primary endpoint was any BMD screening in the 12 months following the intervention. We used logistic regression with generalized estimating equations to determine whether the mailing and IVR interventions differed from usual care and to account for clustering among women by physician. We performed these analyses on an intention-to-treat basis.

RESULTS: A total of 192 residents completed the survey (92% response rate). Fifty one percent were Mount Sinai residents, 49% percent were female, and participants were equally distributed across postgraduate years. In the bivariate analysis, residents who were very satisfied with 15 of the 35 specific clinic elements were more likely to report considering a GIM career than those who were not very satisfied. The adjusted model included 8 clinic elements and the collected demographics. In the final adjusted model, residents who were very satisfied with continuity with patients (OR 3.2, p=0.03), the number of patients per session (OR 6.5, p=0.02) and room availability for seeing patients (OR 3.3, p=0.04), and those who intended to enter GIM before the clinic experience (OR 30.8, p=0.001) were more likely to consider a career in GIM as a result of the clinic experience. Gender, postgraduate year, and training site were not associated with intention to enter GIM in the adjusted model.

CONCLUSION: IM residents’ satisfaction with ambulatory continuity practice is associated with a proclivity towards entering a career in GIM. More research is needed to determine the impact of various clinic experiences on residents’ career decision-making process.

COLORECTAL CANCER SCREENING IN FQHCs: DOES LITERACY IMPACT PATIENTS’ KNOWLEDGE, BELIEFS, BEHAVIOR, AND PHYSICIAN RECOMMENDATION?

Connie Lea Arnold 1; Pat F Bass, III 1; Alfred Rademaker 2; Dachao Liu 2; Esther Platt 1; Terry C Davis 1. 1LSU Health Sciences Center, Shreveport, Louisiana; 2Feinberg School of Medicine, Northwestern University, Chicago, Illinois. [Tracking ID # 11230]

BACKGROUND: Few patients in Louisiana Federally Qualified Health Centers (FQHCs) are receiving colorectal cancer (CRC) screening within the recommended timeframe. In order to determine effective strategies to increase initial and repeat CRC screening, we are conducting a randomized control trial in 6 FQHCs in North Louisiana. The purpose of this report is to present baseline data on CRC knowledge, beliefs, self-reported behavior and physician recommendation by literacy level.

METHODS: Eligible patients (men and women aged 50 and over who had not been screened or who were not up-to-date with CRC screening) in six FQHCs were given a CRC structured interview and literacy test.

RESULTS: Of the 812 patients interviewed to date: 68% are AA, 32% are white; 33% have not completed high school and 50% are reading less than a 9th grade level. Overall, awareness of CRC was high for both lower literate (LL) patients (less than a 9th grade) and those with higher literacy (HL) (9th grade or above) with no significant difference by literacy level of having heard of CRC (96% vs. 97%). Knowledge was lowest for LL patients. LL patients were significantly less likely to be able to explain what CRC is than their HL counterparts (29% vs. 14%, p<0.0001) or to report they have heard of tests to screen for CRC (44% vs. 65%, p<0.0001). Overall both groups had heard of colonoscopy more than Fecal Occult Blood Tests (FOBTs): LL patients were less likely than their HL counterparts to have heard of a colonoscopy (79% vs. 93%, p=0.0001) and more likely to have heard of FOBTs (47% vs. 35%, p=0.012). LL patients were less likely to have
positive attitudes about CRC screening. They were less likely to believe it is very helpful to find CRC screening early (76% vs. 92%, p < 0.0001); that if CRC is found early their chances of survival were very good (57% vs. 69%, p = 0.005); or that having an FOBT will decrease their chances of dying from CRC (8% vs. 19%, p = 0.0001). LL patients were more likely than their HL counterparts to agree that FOBT instructions will be confusing (12.7% vs. 4.3%, p = 0.0001) and that doing an FOBT is embarrassing (15.0% vs. 8.7%, p = 0.0001) and messy (23% vs. 18%, p = 0.0001). Physician recommendation was low for both groups (38% LL vs. 39% HL), as was FOBT self-reported completion rate with LL patients being less likely to report completion (26% vs. 29%, p = 0.037). Results remained significant after adjusting for age, race, and location.

CONCLUSION: Eligible patients cared for in FQHCs have a high awareness of CRC but few reported having completed screening or being offered screening. Lower literate patients had less knowledge and poorer attitudes about CRC screening and were less likely to have ever been screened than their higher literate counterparts. Louisiana FQHCs serve vulnerable populations that need better access to plain language screening education and cost effective CRC screening.

REPEATED COMPUTERIZED TOMOGRAPHY IMAGING AMONG YOUNG VETERANS WITH AND WITHOUT POST TRAUMATIC STRESS DISORDER. Thad Abrams 1; Kelly Richardson 2; Mary Sarrazin 3. 1University of Iowa, Iowa City, Iowa; 2VA, Iowa City, Iowa; 3University of Iowa, Iowa City, Iowa. (Tracking ID # 11237)

BACKGROUND: The Veterans Health Administration (VA) has been faced with a substantial increase in the number of patients with post traumatic stress disorder (PTSD) as a result of the conflicts in Iraq and Afghanistan. As an invisible wound of war, PTSD may complicate the management of other conditions and impact utilization of healthcare resources. We completed this study to examine the influence of PTSD on the receipt of one specific high intensity resource, computerized tomography (CT), in veterans less than 35 years of age.

METHODS: We performed a retrospective cohort study of 131,373 new veteran enrollees aged less than 35 years with at least one outpatient visit in 2006. PTSD was identified by specific ICD-9 CM diagnosis codes in a prior outpatient encounter. The use of CT scans during the subsequent three years (2007–2009) was identified using common procedural terminology codes ‘70160 - 75635.’ CT scans were categorized into four anatomical areas: brain, head/neck, chest/abdomen/pelvis, and spine. Overall rates of CT imaging and rates of repeat CT imaging (i.e., repeat CT scan in the same anatomical category within 180 days) were compared among veterans with and without PTSD. Generalized linear mixed models were then used to adjust the receipt of CT scans using fixed effects for demographic and comorbid conditions and random intercepts to account for hospital-level variation.

RESULTS: PTSD was identified in 15.3% (20,125) of patients and 7.0% (9,220) received at least one CT scan between 2007 and 2009. Veterans with PTSD had substantially higher rates of CT scans relative to those without PTSD (18.1% vs. 5.0%; p < 0.001). Anatomical categories with the highest differences between those with and without PTSD were the brain (9 vs. 2%; p < 0.001) and chest/abdomen/pelvis (7 vs. 2%; p < 0.001). Repeat imaging was also substantially higher among those with existing PTSD relative to those without (1.5 vs. 0.4%; p < 0.001). In multivariate analyses for the receipt of any repeat imaging, there was a strong association with a diagnosis of PTSD (OR, 2.97; 95% CI, 2.5 - 3.49; p < 0.001).

CONCLUSION: These findings indicate that PTSD strongly influences the receipt of costly and resource intense CT examinations. More importantly as younger patients, these veterans are likely to have the highest potential risk for the associated consequences of repeated radiation exposure.

HAND HYGIENE—FOLLOW THE LEADER? Lisa Shieh 1; Stephanie Carr 2. 1Stanford Hospital, Stanford, California; 2Stanford Medical School, Stanford, California. (Tracking ID # 11242)

BACKGROUND: Considerable resources have been devoted to improving hand hygiene compliance, yet true compliance remains unacceptably low especially among physicians. Estimates from U.S. hospitals conclude that 2 million hospital-acquired infections occur yearly, resulting in 100,000 deaths and direct costs of $30-$40 billion. Few studies have observed physician team dynamics in relation to hand hygiene compliance. We aimed to determine whether the compliance of attendings (and/or first person entering/exiting the patient room) influenced the compliance of physician teams. By studying team dynamics, we may be able to create a new focus for hand hygiene compliance efforts.

METHODS: Four medical students individually shadowed physician teams in a variety of departments as they conducted morning rounds. The students measured hand hygiene compliance on entering and exiting each patient room. They collected data on hand hygiene compliance of the attending, the first person entering or exiting the room, and the entire team. Compliance was defined as using the gel dispenser or sink. The students also noted whether any member of the team had contact with the patient or the room environment. Physician teams were not informed that their hand hygiene compliance was being measured so as to not influence their habits.

RESULTS: Observations of 349 hand hygiene opportunities during physician team rounding showed a hand hygiene compliance rate of 40% among physicians. When broken down into entering versus exiting a patient room, compliance rates were 31% and 48%, respectively. A subset of two teams within internal medicine and inpatient oncology was then observed for compliance in relation to the attending and first person entering (n=103 opportunities). Overall analysis (for combined in and out) showed that when the attending washed, a greater percentage of the team washed (90% versus 71%, p=0.03). When broken down by in/out, the attending always washed when entering. On exiting, a greater percentage of the team washed if the attending washed (90% vs. 71%, p=0.05). Overall analysis for when the first person entering the room washed was identical to when the attending washed (90% vs. 71%, p=0.03) because the occurrences where the attending did not wash were the same as when the first person did not wash. When there was patient/environment contact, there were no observations where the attending/first person did not wash.

CONCLUSION: Physician team members were more likely to wash their hands on entering and exiting patient rooms if their attendings or if the first person entering the room washed. Additional team observations are being conducted to better study the influence of
attending versus first person entering, as well as to conduct root cause analysis.

GLYCEMIC CONTROL AND FUNCTIONAL DECLINE IN FRAIL ELDERS WITH DIABETES MELLITUS
Celia Yau 1; Catherine Eng 2; Irena Stijacic Cenzer 3; Kathy Rice-Triamble 2; Sei Lee 3; University of California, San Francisco and San Francisco VA PRIME Program, San Francisco, California; 2On Lok LifeWays, San Francisco, California; 3San Francisco VA and University of California, San Francisco, Division of Geriatrics, San Francisco, California (Tracking ID # 11256)

BACKGROUND: The American Geriatric Society (AGS) recommends a Hemoglobin A1c (A1c) less than or equal to 7% for frail elders. Diabetes mellitus has been shown to be a strong risk factor for functional limitations in elders. However, it is unclear whether A1c levels are associated with functional outcomes in the frail elderly.

METHODS: We examined the relationship between A1c and 2 year decline in activities of daily living (ADL) in frail, nursing-home eligible elders with diabetes enrolled at On Lok Senior Health between October 2002 and December 2008. 1,579 A1c measurements in 367 elders were divided into 4 categories (<7, 7-7.9, 8-8.9, and 9+). At baseline and at 2 year follow-up, nursing or occupational therapy categorized each enrollee’s ability to perform 5 ADLs as independent, partially dependent or completely dependent, allowing us to identify elders who had declined in ADLs. We used a population averaged mixed-effects Poisson regression to determine the risk of worsening function across A1c values, accounting for clustering of A1c values by patients and adjusting for age, gender, race/ethnicity, length of time at On Lok, baseline function, hospitalizations, ER visits, and comorbidities. We performed analyses stratified by treatment (insulin vs oral antihyperglycemics) to determine whether the A1c-ADL relationship differed across treatments.

RESULTS: The mean age was 80 years, and 116 patients (32%) were taking oral antihyperglycemics, and 185 patients (50%) were taking insulin. ADL function declined after 58% of A1c measurements. Lower A1c (<7) and patients with higher A1c (8-8.9) was associated with 18% and 13% decreases in ADL decline (p=0.006 and 0.08, respectively). For elders taking oral medications, A1c <7% was associated with a 20% increase in ADL decline (p=0.04). For elders taking insulin, A1c 8-8.9 and 9+ was associated with 18% and 13% decreases in ADL decline (p=0.006 and 0.08, respectively).

CONCLUSION: Among frail, nursing-home eligible community-living elders, higher A1c levels (≥8) is not associated with worse function and may be associated with better function. Our results suggest that the current American Geriatrics Society A1c target of less than or equal to 8% for frail elders may be lower than is necessary to maintain function for this vulnerable population.

2 Year Decline in ADL Function

| A1c (n) | Functional Decline | RR (95% CI) |
|---------|--------------------|-------------|
| <7 (698)| 63%                | 1.07 (0.98, 1.18) |
| 7-7.9 (412)| 58%            | Ref         |
| 8-8.9 (223)| 52%              | 0.88 (0.78, 0.99) |
| 9+ (246)| 50%                | 0.94 (0.81, 1.08) |

RANDOMIZED CONTROLLED TRIAL OF INTEGRATION OF CLINICAL PREDICTION RULES WITHIN AN ELECTRONIC HEALTH RECORD
Thomas McGinn 1; Joseph Ramny 2; Alice Li 1; James Stulman 1; Daniel Efonyabo 2; Lucas Romero 2; Jacqueline Arciniega 2; Devin Mann 3; Mt Sinai School of Medicine, New York, New York; 2Mt Sinai Hospital, New York, New York; 3Boston University School of Medicine, Cambridge, Massachusetts (Tracking ID # 11258)

BACKGROUND: Practicing evidence-based medicine at the point of care has been a major challenge because of the difficulty in integrating evidence into the clinical decision-making process. Clinical decision supports (CDS) have been developed as platforms within electronic health records (EHRs) to help introduce evidence-based medicine (EBM). In theory, CDS should seamlessly integrate EBM into EHR systems to support the physician in delivering effective care at the point of care. Currently, prior attempts at integrating these EBM delivery platforms into EHRs have been limited by the lack of usability testing of the CDS interface and inadequate provider training prior to use. As a platform for building EBM into EHRs, CDS could significantly improve clinical workflow and quality delivery by providing access to many well-validated frontline decision aids like clinical prediction rules (CPRs) that are currently underutilized. CPRs improve clinician accuracy by generating probabilities for risk stratification for specific prognosis and/or diagnostic assessments, but these rules have not been regularly implemented for day-to-day care due to inaccessibility at the point of care. We have developed an Integrated Clinical Prediction Rules Clinical Decision Support program (iCPR) that incorporates two well-validated CPRs (Walsh CPR for Streptococcal Pharyngitis and the Heckerling CPR for Pneumonia) into an outpatient EHR system used at over 30% of the nation’s academic health centers. The two main aims of this study were (1) to assess adoption of the iCPR program in primary care and (2) to assess the impact of the iCPR program on test ordering and treatments.

METHODS: The current study is a randomized controlled trial of the effectiveness of the iCPR program in changing provider-ordering behaviors within the ambulatory care department of an urban primary care center using a large commercial EHR system (EpicCare). Formal usability testing with 15 primary care providers prior to study launch was conducted to guide the iCPR development process. Both faculty and housestaff are randomly allocated to have access to the iCPR program as part of their EHR experience. Providers randomized to the intervention arm receive an hour-long training session to learn how to interact with the interface and, after training, gain access to the interface. Providers randomized to the control arm receive background papers on the validation of the 2 CPRs used for this trial. Intervention providers voluntarily use the iCPR interface when the interface is automatically triggered through specific chief complaints, diagnoses, and/or orders that these clinicians input at the point of care. The interface then generates the appropriate iCPR pathway to aid in the clinical decision-making process by risk stratifying the patient and then facilitating the generation of medication orders, notes, supportive therapies and patient instructions. Weekly reports of aggregated encounters are compiled to monitor incident use of the interface. Monthly reports of de-identified encounters that display diagnoses, procedures, imaging, and/or chief complaints as well as accompanying CPR scores and orders are produced to monitor provider ordering patterns.

RESULTS: To date, 44% of the targeted 140 providers have been trained and randomized. In the intervention arm, there have been
2,068 total clinical encounters of which 81 triggered the ICPR interface using criteria that fit the use of either the Walsh or Heckerling CPR. Of these 81 encounters, 78% used the risk stratification section and 60% continued on to use the bundled ordering option associated with the ICPR interface. In the control arm, there were have been 1,833 total clinical encounters of which 85 encounters fit the triggering criteria we used for the ICPR interface. The rate of triggering has been similar in the intervention and control arms (3.92% and 4.64% respectively) suggesting successful randomization.

CONCLUSION: Our preliminary data suggest that the automated integration of CPRs into EHR has been successful with over 70% of providers adopting the use of the risk stratification section of the ICPR interface. The development and implementation of the ICPR system depended upon the pretrial usability testing and the intervention provider training. These two factors likely contributed to the observed early success of the study.

REDUCING BARRIERS TO MENTAL HEALTH AND SOCIAL SERVICES FOR IRAQ AND AFGHANISTAN VETERANS: OUTCOMES OF A NEW INTEGRATED PRIMARY CARE CLINIC Karen Hope Seal 1; Greg Cohen 2; Daniel Bertenthal 2; Beth Cohen 3; Shira Maguen 2; Aaron Daley 2.

1University of California, San Francisco, San Francisco, California; 2San Francisco VA Medical Center, San Francisco, California; 3San Francisco VA Medical Center and University of California, San Francisco, San Francisco, California. (Tracking ID # 11264)

BACKGROUND: Despite high rates of post-deployment psychosocial problems in Iraq and Afghanistan veterans, mental health and social services are under-utilized. We sought to evaluate whether a new Department of Veterans Affairs (VA) Integrated Care (IC) clinic (established in April 2007), offering an initial three-part primary care, mental health and social services visit, improved psychosocial services utilization in Iraq and Afghanistan veterans compared to Usual Care (UC), a standard primary care visit with referral for psychosocial services as needed.

METHODS: This was a retrospective study using VA administrative data to compare clinical outcomes of UC after 2007 to both UC before 2007 and IC after 2007. The study population included 526 Iraq and Afghanistan veterans initiating primary care at a VA medical center between April 1, 2005 and April 31, 2009. Multivariable models compared the independent effects of primary care type on VA mental health and social services utilization.

RESULTS: Compared to UC patients before April 2007, veterans presenting to UC after April 2007, were significantly more likely to have had an initial mental health evaluation (25% versus 59%, p < 0.01) and were further increases in initial mental health evaluations in the IC versus UC primary care clinic (92% versus 59%, p < 0.01). In particular, female veterans, younger veterans, and those with positive mental health screens were independently more likely to have had mental health and social services evaluations if seen in the IC versus UC clinic. Among veterans who screened positive for >1 mental health disorder(s), there was a median of 1 follow-up specialty mental health visit within the first year in both the UC and IC clinics.

CONCLUSION: Among Iraq and Afghanistan veterans new to primary care, an integrated primary care visit further improved the likelihood of an initial mental health and social services evaluation, but did not improve retention in specialty mental health services. Future studies can test interventions targeted at enhancing mental health services retention in combat veterans.

A CLUSTER RANDOMIZED CONTROLLED TRIAL OF AUTOMATED NOTIFICATION OF POST-DISCHARGE MICROBIOLOGY RESULTS Robert El-Kareh 1; Christopher Roy 2; Eric G. Poon 3. 1UCSD, La Jolla, California; 2Brigham and Women’s Hospital, Boston, Massachusetts; 3Partners Healthcare, Wellesley, Massachusetts. (Tracking ID # 11265)

BACKGROUND: Test results are often pending at the time patients are discharged from the hospital. These post-discharge results are frequently missed, potentially leading to delays in diagnosis and treatment. Microbiology cultures are among the most common pending results and often require urgent action. We sought to create, implement and evaluate an automated system to notify physicians of post-discharge microbiology results potentially requiring treatment.

METHODS: We created an electronic system at a large academic hospital to identify blood, urine, cerebral spinal fluid and sputum bacterial culture results whose antibiotic susceptibilities returned post-discharge, represented likely true infections, and were not treated with an antibiotic to which they were susceptible. The system automatically sent email-based alerts to the inpatient and outpatient physicians. From February 2009 to June 2010, we conducted a cluster randomized controlled trial to evaluate the system’s impact on clinician follow-up of these results. In the intervention group, alerts were sent the first morning the culture results were finalized. In the control group, they were sent 3 days after finalization. Our primary outcome measure was evidence of follow-up of the result prior to 3 days after finalization with either an antibiotic order or note referencing the post-discharge result. We created a multivariable logistic regression model using the generalized estimating equations approach to assess the impact on test result follow-up after adjusting for repeated measures within the hospital-based physician, patient age, type of culture and primary hospital service.

RESULTS: Our system sent alerts for 97 eligible culture results to 73 inpatient physicians in our intervention group and 60 culture results to 48 inpatient physicians in our control group. Urine cultures comprised 138/157 (88%) of these results. We found evidence of follow-up action with 27/97 (28%) intervention results compared with 8/60 (13%) control results (aOR 3.0, 95%CI 1.2-7.7, p=0.014). Evidence of follow-up was more likely for urine cultures than non-urine cultures (aOR 5.2, 95%CI 1.2-22.4, p=0.008), less likely for each increasing decade of patient age (aOR 0.72, 95%CI 0.57-0.91, p=0.02), and did not vary by primary hospital service (adjusted p=0.09).

CONCLUSION: Email-based alerts significantly increased the proportion of potentially untreated post-discharge bacterial culture results
THE OPTIMAL INTERVAL OF HBA1C TO DETECT DIABETES IN HEALTHY ADULTS: A LARGE COHORT STUDY IN JAPAN Osamu Takashishi 1; Paul Glazsouz 2; Rafael Perera 3; Gautam Deshpande 4; Sachiko Ohde 5; Takuro Shimbo 6; Tsuguya Fukui 1; St.Luke’s International Hospital, Tokyo, N/A; Bond University, Queensland, N/A; University of Oxford, Oxford, N/A; University of Hawaii, Honolulu, Hawaii; St.Luke’s Life Science Institute, Tokyo, N/A; National Center for Global Health and Medicine, Tokyo, N/A. (Tracking ID # 11271)

BACKGROUND: To identify adults at risk of cardiovascular disease, hemoglobin A1c (HbA1c) screening is important but in determining the validity of tests and optimal monitoring interval for re-screening, few studies have accounted for the measurement variability. We aimed to determine the optimal interval for rechecking HbA1C levels below the diagnostic threshold of 6.5% for healthy adults by estimating the variation in long-term change of HbA1C level (‘signal’) and within-person variation (‘noise’).

METHODS: Population-based, cohort from 2005 to 2008 in Tokyo, Japan. In healthy adults not taking diabetes medication, we measured the serum HbA1C annually for 4 years. We calculated the ratio of ‘signal to noise’ by dividing change in HbA1c by within-person variance and estimated the optimal interval of screening when this ratio is over one.

RESULTS: At baseline, the 16,313 people (53% female) with a mean age of 50 years old (SD: 12 years, range: 21 to 92), had a mean fasting plasma glucose level of 99.2 mg/dl (SD: 12.7 mg/dl) and a mean HbA1c level of 5.4 % (SD: 0.5 %). Within-person variation of HbA1c were 0.02 (coefficient of variation (CV): 2.7%) and 0.03 (CV: 3.0%) for those with HbA1c at baseline of <6.0 % and 6.0-6.4%, respectively. The trend mean HbA1C levels slightly increased over 3 years from 5.3 % to 5.5% (0.07% per year) for those with HbA1C at baseline of <6.0% and from 6.1% to 6.2% (0.03% per year) for those with HbA1C at baseline of 6.0-6.4%. The signal-noise ratios were 0.2 at 1 year, 0.03 at 2 years, and 0.4 at 3 years, respectively, for those with HbA1c at baseline of <6.0 %, and 0.8, 3.3, 3.3, respectively, for those with HbA1c at baseline of 6.0-6.4 %.

CONCLUSION: In those with an HbA1c <6.0% at baseline, the signal-noise-ratios of HbA1c measures for re-screening are very weak and decisions placed on such measures are potentially misleading. The optimal interval for re-screening healthy adults should be more than 3 years for those with baseline HbA1c of <6.0 % and 2 years with baseline HbA1c of 6.0-6.4%.

TEAMWORK AND WORKING AT ‘TOP OF LICENSE’ AMONG PHYSICIANS, NURSING, AND NON-PROFESSIONAL STAFF AT TEACHING AND NON-TEACHING AMBULATORY PRACTICES Erin J. Goss 1; Jason Fletcher 2; Claudia Lechuga 2; Paul Meissner 2; Arthur Blank 2; David Loundsbury 2; Diane McKee 2. Montefiore Medical Center, New York, New York; Albert Einstein College of Medicine, Bronx, New York. (Tracking ID # 11277)

BACKGROUND: The 2007 Joint Principles of the Patient Centered Medical Home (PCMH) call for comprehensive, coordinated, quality and easily accessible care delivered by a personal physician together with a team within a practice who collectively take responsibility for ongoing patient-centered care. Results from the National Demonstration Project show that practice transformation to a team-based approach to care can be challenging. The transformation requires shifts in roles and mindset rather than just a series of practice changes but ideally allows more staff members to fully use their training and skills, or work at ‘top of license’ by redistributing tasks. In preparation for Montefiore Medical Center’s (MMC) transition of its ambulatory sites into PCMH practices, we sought to measure staff perceptions of teamwork and the amount of work done at top of license at distinct sites. We hypothesized that prior to PCMH transformation at Montefiore ambulatory sites, where lean ancillary staffing is common, staff would rank their sites as exhibiting low levels of teamwork, but that teaching sites would report greater teamwork. Caring for resident’s patients intrinsically requires a team based approach to deal with issues that present when the resident is performing other housestaff duties. The choice to work in an educational environment may invoke feelings of camaraderie that bolster communication and teamwork. We also hypothesized that professions that report less time working at “top of license,” would report less teamwork.

METHODS: We administered a brief survey to all staff at 4 MMC ambulatory sites, including two teaching sites with a total of 57 residents. Participation was voluntary and anonymous. The survey included the Healthcare Team Vitality Instrument (HTVI), a 10-item questionnaire that was developed to assess team vitality of licensed and unlicensed personnel working in healthcare teams in inpatient hospital units. For this study, questions were adapted to the outpatient setting. Responses were collected using a 5-point Likert scale (1, strongly disagree and 5, strongly agree) with higher scores indicating better team vitality. The 10 questions were grouped into 4 previously validated factors: support structures (3 questions), engagement and empowerment (3 questions), patient care transitions (2 questions), and team communication (2 questions). Scores for questions relating to a particular factor were averaged to create an overall factor score. Mean factor scores between practices and professions were compared using t-tests. The survey included two questions that asked staff to estimate the amount of time spent doing tasks that did or did not require them to work at top of license, and collected demographic information including profession, site, and number of years worked at the current ambulatory site. Results are reported as simple percentages compared using t-tests.

RESULTS: 226 out of 322 (70%) employees participated in the survey including 115 (61%) of employees from teaching sites and 111 (83%) of employees from non-teaching sites. Thirty three respondents (15%) were nursing and ancillary clinical staff (RN, LPN, social work, pharmacists), 73 (33%) were physicians (attendings or residents), and 118 (52%) were nonprofessional support staff (administration, clerical, patient care technicians, and patient support representatives). There was no difference between how staff at teaching compared to non-teaching sites rated their practices with regards to team communication (4.1 ± 0.8 vs 3.9 ± 0.9; p > 0.1) or organization and engagement (3.5 ± 1 vs 3.3 ± 1; p > 0.1), however there were lower scores for support structures (3.5 ± 1 vs 3.8 ± 0.9; p < 0.01) and significantly lower scores for patient care transitions (3.3 ± 0.9 vs 3.6 ± 0.9; p < 0.05) at the teaching clinics compared to the non-teaching clinics. Physicians reported the least amount of time spent working at top of license. Only 20% of physicians spent more than 75% of their time performing tasks that fully required use of their training, compared to 39% of nurses and only 55% of nonprofessional staff (p < 0.001). Results were similar at teaching and non-teaching sites. Physicians rated access to support structures lower than nursing/ancillary staff and non-professional staff (3.4 ± 0.9 vs 3.7 ± 0.9 and 3.8 ± 1 respectively; p < 0.05), but there were no differences between staff and others with regards to the other three factors calculated on the HTVI.
CONCLUSION: The Healthcare Team Vitality Index allows researchers to look at four different factors of a well-functioning team and is validated for the healthcare field. Contrary to our hypothesis, practices involved in resident education scored lower on measures of support structures and patient care transitions than non-teaching sites, although actual differences were small. Further investigation is needed to determine why teaching sites report lower levels of teamwork, in order to improve the likelihood of a successful transition to team-based care within a PCMH. Potential explanations include unfamiliarity between team members due to rapid resident turnover, competing housestaff duties outside the clinic, and limited accountability. Physicians reported more time spent doing tasks that did not require them to fully use their level of training compared to nurses/ancillary clinical staff or non-professional staff; however there was little difference in how these groups rated teamwork at their sites.

GEOPOLITIC VARIATION IN THE IMPACT OF MASSACHUSETTS HEALTH REFORM ON USE OF REFERRAL-SENSITIVE INPATIENT PROCEDURES AMONG MINORITIES AND LOW INCOME POPULATIONS
Amresh D Hanchate 1; Karen Lasser 2; Danny McCormick 3; Meredith D’Amore 4; Nancy Kressin 5; Meredith D’Amore 3; Nancy Kressin 2; 1Boston University School of Medicine, Boston, Massachusetts; 2Boston University School of Medicine, Chestnut Hill, Massachusetts; 3Harvard Medical School, Cambridge, Massachusetts; 4Boston Medical Center, Boston, Massachusetts; 5Boston University School of Medicine, West Roxbury, Massachusetts. *(Tracking ID # 11281)*

BACKGROUND: While the landmark 2006 Massachusetts (MA) health reform sharply increased insurance coverage to near-universal levels, little is known about the extent to which it increased access to care, the variation in gains across the state and the mediating role of local physician availability. Specifically, few prior studies have examined the impact of the reform on use of inpatient surgical procedures whose receipt is sensitive to outpatient physician referral and to the presence of insurance coverage. Such procedures are typically underutilized by minority and low-income populations.

METHODS: Using discharge data from all non-federal MA hospitals from 2004–09 (N=5,177,087 discharges), we identified all non-obstetrical major therapeutic procedures for patients aged >=40 and for which >=70% of hospitalizations were initiated by outpatient physician referral (“high-referral rate” procedures). For pre- and post-reform periods, defined as the 21 months preceding and following implementation of health reform (7/1/2006 -12/31/2007), we estimated county-level procedure rates, and their changes, for those aged 40-64. We adjusted for secular changes unrelated to health reform by capturing corresponding changes for those aged >70, as they are covered by Medicare and unaffected by the health reform. We used the county-level Health Professional Shortage Area designation from the Department of Health and Human Services as the indicator of local primary care practitioner availability. Using procedure counts aggregated at the county-level, and stratified by sex, age, race/ethnicity and income and year (N=2,240), we estimated hierarchical Poisson regression models with a difference-in-difference specification treating those aged >70 as the comparison cohort. Statistical significance was assessed at a p < 0.05 level.

RESULTS: We identified 22 high-referral rate procedures for which the outpatient referral proportion averaged 90%; these included musculoskeletal (joint replacement), cancer treatment (colorectal resection) and cardiovascular (heart valve) surgical procedures. Adjusted for secular changes unrelated to health reform, the post-reform statewide procedure rate for those aged 40-64 increased by 6.7%; the corresponding increase was larger among lower income populations (low income=12%; medium income=13%; high income=2%) and among Hispanics (Hispanics=19%; Blacks=5%; Whites=6%). Variation in post-reform changes in procedure rates across the counties was large, with an interquartile range of [2%,12%]. Corresponding post-reform procedure rate changes among subpopulations were also large: low income population (interquartile range=[8%,12%]; Hispanics (interquartile range=[11%,77%]; Blacks (interquartile range=[0%,18%]). Increase in procedure use was significantly greater among the 6 counties with greater primary care physician shortages than the remaining 8 counties (11.4% vs. 5.4%).

CONCLUSION: Following health reform, use of major inpatient surgical procedures that are primarily initiated by outpatient referral increased among those aged 40-64, including among minority and lower income subpopulations, indicating improved access to care. Variation in these gains by county was substantial. Counties with greater primary care provider shortages experienced larger increases in procedure rates. Further research is needed to better understand the causal processes underlying the geographic variations.

THE ACCESS PARTNERSHIP: A MODEL TO IMPROVE ACCESS TO SPECIALTY CARE FOR THE UNINSURED? Lauren Block 1; Sai Ma 2; Matthew Emerson 3; Anne Langley 2; Desiree de la Torre 3; 1Johns Hopkins Hospital, Baltimore, Maryland; 2Johns Hopkins School of Public Health, Baltimore, Maryland; 3Johns Hopkins Medical Institution, Baltimore, Maryland. *(Tracking ID # 11282)*

BACKGROUND: A patchwork of access to primary care exists for the uninsured across the U.S., but meeting the specialty care needs of this population remains a challenge, particularly as 25% of primary care visits end with a specialty referral. The Access Partnership (TAP) is a novel cooperative program between primary care and specialty physicians at an academic medical center program designed to provide access to needed specialty care for uninsured and underinsured patients. Providers refer patients from designated zip codes to needed specialty care and diagnostics. If the medical director agrees as to medical necessity, patients pay a nominal fee to enter the program, and a care coordinator schedules the appointment and any needed follow-up, including imaging and procedures, without any additional charges. We sought to evaluate program impact by examining patient satisfaction, perceived access to care, follow-through rates at specialty appointments, and emergency department utilization before and after initiation of the TAP program.

METHODS: A program evaluation survey was created using a RAND questionnaire and administered via phone by trained interviewers. Answers were graded using Likert scales and positive answers grouped and tallied. Visit and claims data were analyzed for the first year of program activity. We then selected Medicaid patients from the same zip codes with matched specialty care referrals during the same period and surveyed 248 of these patients.

RESULTS: Between May 2009 and April 2010, 726 specialty referrals were made for 336 patients, 309 patients had approved referrals, and 214 of these patients chose to enter the program. Of those patients who entered the program, we reached 136 (63%) by phone. Analysis of administrative data revealed that 89% of referrals for patients who entered the program were completed, which is comparable to specialty care show rates found in the literature. Referrals to diagnostic tests and specialty physicians were more likely to be completed than referrals to ancillary care and pain management providers. 21% of patients surveyed reported completing specialty referrals in the year prior to joining TAP (pre-TAP), compared with 88% in the time since joining TAP (post-TAP) (p<0.001). Patient-reported access to care increased signif-
CONCLUSION: TAP enrollment was associated with significantly increased access to and satisfaction with care. Patient-reported ability to complete specialty referrals and decreased ED utilization correlated with administrative data. Limitations include recall bias and lack of comparison group visit and claims data. Future work will evaluate financial, administrative, and patient outcomes through comparison of administrative data with the matched cohort of Medicaid patients.

DO WORKFORCE CHARACTERISTICS EXPLAIN DIFFERENCES IN DIABETES QUALITY OF CARE IN AN INTEGRATED DELIVERY SYSTEM? Calle Santana 1; James Grigg 1; Yuming Ning 1. 1Montefiore Medical Center, Bronx, New York . (Tracking ID # 11287)

BACKGROUND: Integrated delivery systems are one type of Accountable Care Organization (ACO). ACOs are promoted in the Affordable Care Act due to their potential to reduce costs and improve both quality and the patient experience. Montefiore is an integrated system in Bronx, NY with four hospitals and 21 primary care sites. These sites are managed centrally but are heterogeneous in their payer mix and teaching status. There are three main site types: (1) commercial-dominant payer mix (n=10), (2) mixed-payer and teaching (n=5), and (3) mixed-payer and non-teaching (n=6). These sites also differ in the workforce of their diabetes teams-four (all commercial) offer diabetes care management by nurses and three (all mixed/teaching) have nutritionists on staff. Our previous work showed significant differences in diabetes quality of care across sites within this integrated system. We sought to measure the association between workforce characteristics and quality of care for patients with diabetes across all primary care sites in our system. We hypothesized that the presence of diabetes nurses and of nutritionists would be associated with higher performance in quality measures.

METHODS: Workforce characteristics (diabetes nurses, nutritionists) were gathered via a survey completed by the medical directors of each site. Diabetes HEDIS performance outcomes were gathered from Montefiore's Clinical Information System. Our study population included patients age >18 with one visit in 2009 followed by at least one visit in 2010. Patients who were pregnant or died during 2010 were excluded. Of these, we chose patients with diabetes defined as a diabetes ICD9 code, Hemoglobin A1c (HbA1c) >6.5, or diabetes in the electronic problem list between 2006 and 2010. Outcomes considered the most recent value for 2010, and included: (1) HbA1c <8%, (2) LDL <100 mg/dL, (3) microalbumin checked at least once, and (4) blood pressure <140/90, and (5) blood pressure <130/80. If the value was not checked at least once in 2010 the measure was considered unmet. We measured the bivariate association between each workforce characteristic and each dichotomous outcome using a 2-level mixed effects logistic regression with sites having random effects. This technique accounts for clustering of patients within sites when using patient-level outcomes.
and site-level independent variables. The models were adjusted for patient-level age, sex, race/ethnicity and insurance. We also studied HbA1c and LDL values as continuous outcomes in 2-level mixed effects linear regression models.

RESULTS: Our study population included 26,225 patients. In general, commercial sites had the highest performance followed by mixed/teaching sites and then mixed/non-teaching sites. In our population, 59.6% had controlled HbA1c (62.5% in commercial sites, 56.0% in mixed/teaching, and 57.3% in mixed/non-teaching). For LDL, 43.1% of patients achieved control (44.4%, 41.8%, and 40.6% across commercial, mixed/teaching, and mixed/non-teaching sites, respectively). About half of the patients (55.0%) had their microalbumin levels checked at least once in 2010 (63.3% in commercial sites, 49.3% in mixed/teaching, and 32.9% in mixed/non-teaching). Blood pressure of < 140/90 was achieved in 59.0% of patients (61.7% in commercial, 58.9% in mixed/teaching and 46.3% in mixed/non-teaching sites, respectively). Tighter blood pressure control (< 130/80) occurred in 45.0% of patients (48.4%, 43.1%, and 35.0% for commercial, mixed/teaching, and mixed/non-teaching sites, respectively). The differences between site types was significant for all five outcome measures (p<0.001). No one individual site was consistently the best or the worst performer across all outcomes. Presence of nutritionists was associated with a 0.25 increase in HbA1c measured continuously (p=0.03). There was no significant association between diabetes nurses or nutritionists and all other outcomes, after adjusting for patient-level demographics.

CONCLUSION: We hypothesized that the presence of diabetes nurses and nutritionists would be associated with improved performance in diabetes quality of care measures. Instead, we found equivalent (or higher A1Cs in the case of nutritionists) in the settings with these diabetes quality of care measures. Instead, we found equivalent (or even better) in these sites. We did not find any significant association between diabetes nurses or nutritionists and all other outcomes, after adjusting for patient-level demographics.

CONCLUSION: We hypothesized that the presence of diabetes nurses and nutritionists would be associated with improved performance in diabetes quality of care measures. Instead, we found equivalent (or higher A1Cs in the case of nutritionists) in the settings with these personnel. In this integrated, centrally-managed primary care network, differences in workforce characteristics did not explain heterogeneity in diabetes process and outcome measures across sites, after accounting for patient-level factors. The presence of nutritionists may be a marker for determinants of worse diabetes control—both patient-level and organizational. In addition, availability of diabetes nurses might not be a robust enough intervention. The true effectiveness of these workforce characteristics will be measured in future studies where changes in diabetes measures over time are the main outcomes. Our study supports the role of additional patient-level factors (e.g. adherence) and non-personnel site resources (e.g. teamwork) on quality of care in diabetes. The determinants of differences in quality of care among sites in an integrated system must continue to be carefully measured and corrected. At this point, the efficiencies of system integration in the system we evaluated have not corrected these differences.

IN VOL TUN AL USE OF OUT-OF-NETWORK PHYSICIANS IN PRIVATE HEALTH PLANS Kelly A Kyunko 1; Leslie Curry 2; Susan H Busch 2; Yale School of Medicine, New Haven, Connecticut; 3Yale School of Public Health, New Haven, Connecticut. (Tracking ID # 11288)

BACKGROUND: Health insurance plans that provide reimbursement for out-of-network services are popular, providing enrollees with greater physician choice, but at higher cost-sharing and additional costs due to balance billing. However, there is increasing interest among policymakers in the issue of involuntary use of out-of-network physicians, especially in the inpatient setting. A patient may involuntarily use an out-of-network physician for at least three reasons: 1) during a medical emergency; 2) if it is not disclosed that a physician is out-of-network; or 3) if at in-network hospital but seen by a out-of-network hospital-affiliated physician, such as an anesthesiologist, that has chosen not to contract with an insurer. Despite recent legislative activity at federal and state levels, little is known about the scope of this issue. We aimed 1) To determine the percent of privately insured individuals who used an out-of-network physician in the last year, 2) To determine how much out-of-network use was involuntary, and 3) To describe the characteristics of individuals using out-of-network physician services (i.e., health status, income) and the types of services used (i.e., inpatient versus outpatient).

METHODS: An internet survey was conducted in December 2010 with participants in KnowledgePanel®, a probability-based online research panel designed to be statistically representative of the U.S. population. An online survey was constructed from existing literature, lay press articles, key informant interviews, and investigator hypotheses and was tested through cognitive interviewing and pilot samples. The survey was administered to panelists ages 18–64 enrolled in health insurance plans with provider networks.

RESULTS: The study completion rate was 51%; enrollment was closed after 10 days when a previously established number of participants screened in. Of those participants that used any health services in the last year, 9% used at least one out-of-network physician (N=585, representing 901 out-of-network physicians). Surprisingly, individuals with household incomes less than $35,000 were significantly more likely to use out-of-network services than higher income individuals (OR=1.4, p=0.004). This result held even after controlling for health status. 41% of individuals that used out-of-network services had involuntarily used an out-of-network physician. Non-whites and those with fair or poor self-reported health status were significantly more likely to have involuntary use (OR=2.8, p =0.001 and OR=2.4, p=0.005, respectively). Involuntary use was more common in the inpatient setting, with 56% of out-of-network inpatient encounters involuntary as compared to 15% in the outpatient setting. Among involuntary out-of-network inpatient encounters, 52% occurred at an in-network hospital.

CONCLUSION: Involuntary use of out-of-network physicians is common, especially in the inpatient setting and among vulnerable populations. These results suggest that greater efforts are needed to protect patients from involuntary out-of-network charges. The impact of various solutions afforded by state legislation, such as bans on balance billing, transparency efforts, and hold harmless provisions and recently introduced regulation in the Affordable Care Act pertaining to emergency care should be evaluated on their ability to protect patients from involuntary excessive cost-sharing charges while preserving physician choice.

LINAGLIPTIN IMPROVES GLYCEMIC CONTROL INDEPENDENT OF BODY MASS INDEX IN PATIENTS WITH TYPE 2 DIABETES Marc Rendell 1; Steven Chrysant 2; Angelina Trujillo 3; Angela Emser 7; Maximilian von Eynatten 4; Sanjay Patel 5; Hans-Juergen Woerle 4; Creighton Diabetes Center, Omaha, Nebraska; 2Oklahoma Cardiovascular & Hypertension Center, Oklahoma City, Oklahoma; 3Boehringer Ingelheim Pharmaceuticals, Inc. Ridgefield, Connecticut; 4Boehringer Ingelheim Pharma GmbH & Co, Ingelheim, Germany; 5Boehringer Ingelheim, Bracknell, Berkshire, United Kingdom. (Tracking ID # 11290)

BACKGROUND: Three randomized, double-blinded, placebo-controlled, phase 3 trials for the DPP-4 inhibitor linagliptin examined its safety and efficacy of glycemic control as monotherapy, as add-on to metformin, or as add-on to metformin + sulfonylurea in patients with type 2 diabetes (T2D). Identical endpoints, linagliptin dosing, and a large cohort size (more than 2.200 patients) facilitate subgroup analyses using the pooled dataset. Given the need for evaluation of the safety and efficacy of new antidiabetic agents on a background of other medications and patient comorbidities, we analyzed pooled patient data to evaluate the effect of key patient characteristics on the safety and efficacy of linagliptin. Some research studies have shown a reduced treatment response in obese individuals with T2D, thus we determined the response to linagliptin treatment in overweight and obese patients.

ABSTRACTS
METHODS: The primary efficacy outcome in all three pooled studies was mean change from baseline in HbA1c at 24 weeks. The incidence of any adverse events (AE) were recorded. Patients were categorized according to baseline BMI: normal weight (<25; n=496), overweight (25 to <30; n=894), or obese (≥30; n=834).

RESULTS: The mean (±SD) patient age and baseline BMI were 57±10 years and 29.0±4.9 kg/m2, respectively. Patients were predominantly White (58%) and Asian (42%), with an equal gender distribution. Overall, 57% of patients had a mean disease duration of >5 years, 40% of patients were overweight (mean BMI 27.5±1.4), and 38% were obese (mean BMI 34.1±3.0). Mean baseline HbA1c (±SD) and HOMA-IR were 8.1% (±0.8) and 4.7±5.3 mU/L/mmol/L, respectively. In the pooled analysis of efficacy, linagliptin showed significant reductions in HbA1c levels in all 3 groups with no significant difference based on BMI. In the linagliptin-treated group, mean change from baseline in HbA1c levels among obese patients was -0.61% (±0.79), compared to a similar reduction of -0.60% (±0.85) in overweight patients and -0.66% (±0.93) in patients with normal BMI. The overall AE rate did not differ significantly between the 3 groups, and the most commonly observed AE was hypoglycemia; however the overall hypoglycemic event rate with linagliptin as monotherapy and as add-on to metformin therapy was very low (≤1.0%) and comparable to placebo. A higher rate of hypoglycemic events only occurred in the study that used a background therapy with metformin and a sulfonylurea; this was expected due to the combination with SU.

CONCLUSION: Treatment with linagliptin provided clinically meaningful HbA1c reductions in patients with T2D, independent of BMI, with a safety profile comparable to placebo. Treatment with linagliptin resulted in mean HbA1c reductions of 0.60–0.66% at 24 weeks across BMI categories. The reductions in HbA1c were consistent with results from the primary phase 3 trials.

PRIMARY CARE RESIDENTS’ COMFORT AND EXPERIENCE WITH ALCOHOL SCREENING AND BRIEF INTERVENTION  David P Miller 1; J Aaron Johnson 2; Kristy B Le 1; David C Parish 2; Hunter Woodall 3; Denice C Clark 2; J Paul Seale 2, 4Wake Forest University School of Medicine, Winston-Salem, North Carolina  ;  2Mercer University School of Medicine, Macon, Georgia  ;  3AnMed Health, Anderson, South Carolina .

BACKGROUND: One-third of adult Americans have engaged in binge drinking or abused alcohol within the last year. Screening and brief intervention (SBI) for unhealthy alcohol use is recommended by the U.S. Preventive Services Task Force; however, SBI is often not performed. Given the prevalence and importance of alcohol disorders, primary care residents should be trained to provide alcohol SBI. To inform the development of a region SBI training program, we conducted a needs assessment to determine residents’ comfort with and experiences conducting alcohol SBI.

METHODS: We surveyed residents in 4 primary care training programs in the Southeast (2 internal medicine and 2 family medicine residency programs). The survey contained 83 items addressing residents’ attitudes, beliefs, and current practice pertaining to intervening with hazardous drinkers. Survey items were a mixture of multiple-choice questions, yes/no items, and Likert scale items. A series of questions assessed how often residents screened patients for alcohol misuse and performed interventions. We also asked residents how often their interventions included three key recommended elements: feedback, advice, and goal-setting. One point was assigned to each element the residents reported “usually” or “always” including in an intervention, yielding an intervention score ranging from 0 (no elements included) to 3 (all elements included).

RESULTS: Out of 180 residents, 155 (86.1%) completed the survey. Slightly more than half of residents (58%) reported they “usually” or “always” screen for alcohol misuse during an initial visit, but only 14% reported screening at acute care visits. Most residents who reported screening patients for at-risk alcohol used either quantity-frequency questions (48%) or the CAGE (64%); only 17% used the AUDIT, AUDIT-C, or single alcohol screening question. When a brief intervention was performed, only 24% of residents usually or always included the 3 recommended elements of feedback, advice, and goal-setting, while 24% included none of these. Only 21% of residents felt confident they could help their at-risk patients cut down or quit using alcohol, and only 16% of residents thought they had been successful in the past. The most frequently reported barriers to discussing alcohol use with patients were lack of adequate training (56%), the belief that talking with patients is unlikely to make a difference (43%), and being too busy (37%). Residents reported a mean of 9.3 hours of alcohol training (95% CI 5.6 – 13.1 hours), with no significant increase in training hours across three years of residency.

CONCLUSION: Residents report a limited number of training hours in alcohol SBI, and more than half feel they lack adequate training. More than 40% of residents do not usually screen for alcohol misuse at initial clinic visits, and those who do rarely use instruments designed to detect at-risk drinking. Only one-fourth of residents who do brief interventions include the three recommended elements. These findings indicate the need for increased SBI training.

USING INPATIENT MORTALITY DIFFERENTIAL FROM WEEKEND ADMISSION TO IDENTIFY THE ROLE OF HOSPITAL STRUCTURES: THE CASE OF ISCHEMIC STROKE  Anresh D Hanchate 1; Lee Schwamm 2; Elaine Hylek 1. 1Boston University School of Medicine, Boston, Massachusetts  ;  2Massachusetts General Hospital, Boston, Massachusetts .

BACKGROUND: A challenge in identifying factors underlying differences in hospital outcomes is the potential confounding from differences in unobserved patient characteristics across hospitals. Taking the case of hospitalizations for acute ischemic stroke, for which inpatient mortality (IM) rates are high and vary widely by hospital, little is known about the role of hospital structures, i.e., the setting in which care is delivered. To estimate the impact of hospital structures, we use a unique study design based on exploiting the within-hospital variation in IM between weekday and weekend admissions, thereby attenuating the confounding from unobserved patient differences across hospitals.

METHODS: Discharge and American Hospital Association data were merged for all hospitalizations for ischemic stroke (N=234,408) from all hospitals (N=407) from four states (2005–07 for FL, MA and NJ, and 2006–08 for AZ). We only included Emergency Department (ED) admissions that did not result in transfer to another hospital and excluded admissions for patients aged <18, non-ischemic strokes and in hospitals without AHA data. We examined hospitals with >25 weekend admissions. We estimated a discharge-level hierarchical (hospital fixed effects) regression IM model, including interactions of weekend admission and hospital structure indicators. Patient risk factors were based on patient demographics and secondary diagnosis codes. We report the ratio of weekend/weekday adjusted IM for hospitals with a structure (e.g., bed capacity level).

RESULTS: We examined 106,146 ischemic stroke admissions from 188 hospitals, of which 27% were during a weekend. While there was no significant difference in overall weekday-weekend IM (weekend=4.5%; weekday=4.4%; p=0.36), variation across hospitals was considerable: the median hospital-level ratio of weekend/weekday IM was 1.04 with an interquartile range of 0.66 to 1.38. In contrast, differences between patient risk factors of weekend/weekday patients were smaller, with interquartile range of expected IM of 0.94 to 1.06. We examined ten hospital structure indicators (see Table); of these three were associated with higher excess weekend IM–hospitals with a) absence of hospitalists providing care (excess
weekend IM ratio=1.33, p<0.01), b) safety-net hospital (ratio=1.15, p=0.06), and c) <80 ED daily volume (ratio=1.31, p=0.08). 27% of weekend admissions were in hospitals that exhibited one of these three structures.

**CONCLUSION:** Absence of hospitalists, safety-net status and lower emergency department daily volume were associated with significant excess inpatient mortality from weekend admission for ischemic stroke.

| Hospital Structure                        | # hospitals | # admissions | Weekday Adjusted Inpatient Mortality | Ratio of Weekend/Weekday Adjusted Inpatient Mortality | p-value |
|------------------------------------------|-------------|--------------|-------------------------------------|------------------------------------------------------|---------|
| Absence of hospitalist providing care    | 29          | 14,504       | 3.5%                                | 1.33                                                 | 0.006   |
| Safety-net hospital (>20% Medicaid admissions) | 60          | 32,251       | 4.0%                                | 1.15                                                 | 0.06    |
| Low ED volume (<80 all admissions daily)  | 44          | 16,414       | 3.5%                                | 1.31                                                 | 0.08    |

Other hospitals structures examined and found to be not significantly associated with excess weekend inpatient mortality were: nurse staffing, licensed practitioner nurse ratio, average daily hospital census, # hospital beds, # ICU beds, teaching status and trauma level of hospital.

**CONTROLLED STUDY OF OUTCOMES FROM A RESIDENT SCHOLARSHIP CURRICULUM** Colin P West 1; Andrew J Halvorsen 1; Furman S McDonald 1, 1Mayo Clinic, Rochester, Minnesota. (Tracking ID #11305)

**BACKGROUND:** Training in research is an important component of residents’ preparation for their future careers, whether their focus will be on appraisal and application of the scientific literature to the care of their patients or on the academic pursuit of knowledge through independent scholarship. Recognizing this, the Accreditation Council for Graduate Medical Education requires accredited training programs to implement and support research curricula. The Mayo Clinic Internal Medicine (IM) Residency Program has developed a multifaceted research curriculum to meet this requirement. This curriculum is available to residents online and spans the full three years of training. Additional key elements include rigorous review of mentor-approved research elective proposals and a comprehensive mentorship structure. We assessed residents’ peer-reviewed scholarly output associated with this program to that of peers training elsewhere.

**METHODS:** For residents beginning training in 2003 through 2006, we conducted MEDLINE searches for peer-reviewed articles between July of their match year and the end of their expected graduation calendar year. To provide an appropriate comparison, we evaluated outcomes for applicants who matched to Mayo relative to those of applicants who were ranked higher than the lowest ranked Mayo-matched applicant (i.e., were ranked to match) but matched elsewhere due to personal preference. Only data from ERAS (name, medical school) and the NRMP (matched residency program) were considered eligible search parameters to avoid potential familiarity bias for Mayo residents. Outcomes included mean peer-reviewed articles and case reports per applicant, the proportion of applicants with at least 1 publication, and the median 2009 journal impact factor of the resident publications.

**RESULTS:** The study included 192 Mayo-matched and 429 ranked-to-match non-Mayo residents. Results are displayed in the Table. The curriculum was associated with more than three times as many peer-reviewed articles (2.1 vs. 0.6 per resident) and over four times as many case reports (0.57 vs. 0.13 per resident) than alternative research curricula (both p<0.0001). Nearly twice as many Mayo-matched residents published at least 1 article (65.6% vs. 36.0%, RR=1.82; p<0.0001). The median journal impact factor for articles associated with this curriculum was also greater. (p=0.003).

**CONCLUSION:** When compared to their equally-qualified peers, residents participating in a multifaceted research curriculum produced more peer-reviewed articles, more case reports, were more likely to publish at least 1 paper, and published in higher impact journals. Many factors contribute to these results, but the Mayo IM resident scholarship curriculum is a key part of the research environment fostering this productivity. Understanding the successful components of this curriculum, and the resources necessary to implement them, may assist other training programs in developing effective research curricula.

| Outcomes                              | Mayo (n=192) | Non-Mayo (n=429) | P-value       |
|---------------------------------------|--------------|------------------|---------------|
| Peer-reviewed articles, No. (per resident) | 397 (2.1)    | 276 (0.6)        | <0.0001       |
| As first author, No. (% of articles)  | 227 (57.1%)  | 132 (47.8%)      | 0.01          |
| Case reports, No. (per resident)      | 109 (0.57)   | 56 (0.13)        | <0.0001       |
| At least 1 article, No. (% of residents) | 126 (65.6%)  | 155 (36.0%)      | <0.0001       |
| 2009 Journal Impact Factor, Median    | 4.6          | 3.6              | 0.003         |
MEASURING CARE COORDINATION. CAN WE USE DATA FROM THE ELECTRONIC HEALTH RECORD? Brooke Herndon 1; Timothy P Stabilein 2; Carey J. Field 3; Denise L. Anthony4. 1Dartmouth Medical School and Dartmouth-Hitchcock Medical Center, Norwich, Vermont; 2Dept. of Sociology, Dartmouth College, Hanover, New Hampshire; 3Dartmouth-Hitchcock Medical Center, Lebanon, New Hampshire; 4Dept. of Sociology, Institute for Security, Technology, & Society, Dartmouth College, Hanover, New Hampshire. (Tracking ID # 11307)

BACKGROUND: There is widespread agreement that care coordination is a hallmark of high quality health care at all levels. At a national level, the Institute of Medicine recommends focusing on care coordination as a key strategy for improving quality of care for the nation. At a systems-level, researchers have shown that organized, integrated systems of care provide higher quality at lower cost. At a clinical level, numerous professional societies, including the American College of Physicians and the Society of General Internal Medicine, advocate a re-designed primary care environment (The Advanced Medical Home) that emphasizes care coordination. Unfortunately, there is no agreed-upon approach to measuring this critical activity. Due to the resources required, it is not usually feasible to observe large samples of providers or patients directly. However, providers using an electronic health record (EHR) routinely communicate electronically, and this activity is captured and stored digitally. We sought to determine whether the data recording these communications could be retrieved and used to measure intensity of care coordination.

METHODS: We collected data from a convenience sample of 12 primary care physicians (7 family medicine physicians and 5 general internists) working at 3 separate locations (Lebanon, Manchester, and Nashua New Hampshire) within a single health care system in which all providers use the same home-grown EHR. Trained observers (an internal medicine resident and post-doctoral fellow in qualitative research) shadowed each physician for an entire shift and recorded all care coordination activities. Technical support staff from the same institution developed a data query that allowed retrieval of all electronic communications initiated and the same home-grown EHR. Trained observers (an internal medicine resident and post-doctoral fellow in qualitative research) shadowed each physician for an entire shift and recorded all care coordination activities. Technical support staff from the same institution developed a data query that allowed retrieval of all electronic communications initiated and received by these same physicians on the day that they were observed. We then compared the number of care coordination activities observed directly with the communication events retrieved electronically for each physician and used Spearman’s rho to assess the strength of the association.

RESULTS: A total of 888 care coordination tasks were recorded via direct observation, while the EHR query retrieved a total of 534 communication events. For the 12 individual physicians, the observed counts ranged from 19 to 170 (mean 74), and the electronic counts ranged from 23 to 95 (mean 44). The observed counts were higher than the electronic counts for all but one of the 12 physicians as the electronic counts did not include phone, email, or in-person activities. The difference between the observed and electronic counts ranged from 4 to 49 with a mean difference of 22. Using physicians as the unit of analysis, the Spearman’s correlation between observed and electronic counts was 0.77 (p<0.01). Physicians with the highest observed counts were also more likely to have higher rates of self-initiated electronic communication events (p<0.01).

CONCLUSION: It is difficult to promote and reward care coordination if it can’t be measured. Our findings suggest that EHR data can be used to create a measure of care coordination that is highly correlated with the relative intensity of care coordination measured via direct observation - the gold standard. Additional studies with larger samples and different EHRs are needed to validate these findings.
BACKGROUND: Peer review for medical journals is an important, but poorly studied process. Our study’s purpose was to evaluate the predictive validity of the peer-review process at the Journal of General Internal Medicine (JGIM). Specifically, this study examines the impact of original research manuscripts both published and rejected by JGIM, using subsequent manuscript publication and citation number as measures of impact.

METHODS: We included research submissions to the Journal of General Internal Medicine for 1 year (July 2004-July 2005). We selected this window to allow time for rejected manuscripts to be published elsewhere. For articles sent out for review by JGIM, we abstracted peer reviewer ratings of article quality in five domains (interest, originality, statistics, validity, clarity) as well as reviewer’s publication recommendation (accept, minor revision, major revision, reject). We determined publication status for articles rejected by JGIM by searching PUBMED and contacting authors. For all published articles, we measured the 3-year article citation rate (from ISI) and calculated an impact factor (Rw) by dividing its 3-year citation number by the average citations for 3 years among general medicine journals. An Rw > 1.0 indicates above average impact. Desirable outcomes (from the journal’s perspective) would be to accept articles with high impact (Rw > 1.0) and reject those with low impact (Rw < 1.0). Because the data were skewed by outliers with high impact, nonparametric tests were used to compare groups.

RESULTS: Among 507 JGIM research submissions, 223(44%) were rejected without review, 142 (28%) were rejected after review and 142 (28%) were accepted. Among rejected articles 243 (48%) were published elsewhere and 136 (27%) were not published. Articles rejected without review were less likely to be published elsewhere than those rejected after review (RR: 0.63, 95% CI: 0.42-0.95). The median JGIM articles impact was 1.1 (range 0-7.2). Articles published in JGIM had greater impact than rejected articles (p=0.0001), but there was no difference in Rw between articles rejected with or without review (Rw: 0.6 vs. 0.8, p=0.28). Reviewer quality ratings had good internal consistency (Cronbach alpha: 0.79) and there was strong correlation between quality ratings and the reviewer’s recommendation regarding publication (r=0.7). The reviewer’s quality rating also correlated with article citation rates; a one point increase in average quality rating increased the impact (Rw) by 0.2 (95% CI: 0.02-0.4). However, there was no quality rating cut point that accurately distinguished high from low impact articles. On multivariable analysis, interest to JGIM readers (OR 1.3, 95% CI: 1.1-1.7), originality (OR: 1.4, 95% CI: 1.2-1.8) and validity of conclusions (1.7, 95% CI:1.4-2.1) increased the likelihood of acceptance. However, there was low inter-rater agreement between reviewers for either quality ratings or publication recommendations. Seventy-one percent of submissions had “desirable” outcomes (18% accepted with Rw > 1.0, 53% rejected with Rw < 1); undesirable reviewer outcomes occurred in 29% of submissions. There was evidence that a greater number of reviewers collectively increased the accuracy in discriminating articles with higher or lower impact.

CONCLUSION: The editorial publication decision accurately discriminated high and low impact articles in 71% of submissions. While there was good evidence reviewers were internally consistent, there was poor agreement between reviewers for either quality ratings or publication recommendations. The accuracy of sorting is improved with a greater number of reviewers. Our data was not sufficient to determine the optimum number of reviewers.

INCREASED BMI IS ASSOCIATED WITH DECREASED MORTALITY IN SEPTIC PATIENTS Ethan F. Kuperman 1, John W. Showalter 2, Erik B. Lehman 1, Jennifer L. Kraschnewski 2, Milton S. Hershey Penn State College of Medicine, Hershey, Pennsylvania ; 2Penn State Milton S. Hershey Medical Center, Hummelstown, Pennsylvania . (Tracking ID # 11312)

BACKGROUND: Sepsis is associated with substantial inpatient morbidity and mortality, and early recognition of patients with severe sepsis can lead to improvements in patient outcome. Obesity affects 30% of Americans, and is characterized by alterations in inflammatory regulators of sepsis (i.e. IL-6 and TNF-a). Previous studies found increased mortality among obese trauma and surgical patients, but conflicting results on the impact of obesity for nonsurgical admissions and limited investigations for septic patients. We hypothesized, due to immune dysregulation, obesity would be a negative prognostic factor for inpatients with sepsis.

METHODS: After receiving approval from the Penn State Institutional Review Board, we performed a retrospective chart review on all adult patients admitted to a 450-bed tertiary university hospital with a primary billing diagnosis of sepsis (based on ICD-9 codes 38.0-38.9) between July 1, 2007 and June 30, 2010 (n=830). A diagnosis of sepsis was determined by confirming patients met 2 of 4 SIRS criteria. Modified APACHE II scores were calculated using vital signs, mean arterial pressure, laboratory values, oxygenation, Glasgow Coma Scale, age, and presence of chronic disease.

To analyze the correlation between BMI as a continuous variable and mortality, gender, and race a two-sample T-test or analysis of variance was used. For age, APACHE II score, and length of stay, a Pearson correlation was used. Chi-square testing was used to analyze the association of BMI (in categories) with mortality, gender, and race, and an analysis of variance was used for age, APACHE II score, and length of stay. A Cochran-Armitage test for trend was used to determine if there was a trend in the mortality rate as BMI increased.

RESULTS: Seven hundred and ninety-two charts met inclusion criteria. Of these patients, 129 expired during their admission and 663 patients survived to discharge. Bivariate analysis revealed a lack of correlation between BMI and age, gender, race, and review (RR: 0.63, 95% CI: 0.42-0.95). The median JGIM articles impact was 1.1 (range 0-7.2). Articles published in JGIM had greater impact than rejected articles (p=0.0001), but there was no difference in Rw between articles rejected with or without review (Rw: 0.6 vs. 0.8, p=0.28). Reviewer quality ratings had good internal consistency (Cronbach alpha: 0.79) and there was strong correlation between quality ratings and the reviewer’s recommendation regarding publication (r=0.7). The reviewer’s quality rating also correlated with article citation rates; a one point increase in average quality rating increased the impact (Rw) by 0.2 (95% CI: 0.02-0.4). However, there was no quality rating cut point that accurately distinguished high from low impact articles. On multivariable analysis, interest to JGIM readers (OR 1.3, 95% CI: 1.1-1.7), originality (OR: 1.4, 95% CI: 1.2-1.8) and validity of conclusions (1.7, 95% CI:1.4-2.1) increased the likelihood of acceptance. However, there was low inter-rater agreement between reviewers for either quality ratings or publication recommendations. Seventy-one percent of submissions had “desirable” outcomes (18% accepted with Rw > 1.0, 53% rejected with Rw < 1); undesirable reviewer outcomes occurred in 29% of submissions. There was evidence that a greater number of reviewers collectively increased the accuracy in discriminating articles with higher or lower impact.

CONCLUSION: In contrast to trauma patients, septic inpatients who were obese had decreased mortality. These results add to the growing body of evidence that obesity, although detrimental to long term survival and cardiovascular health, may be protective in the critically ill setting. Further research is necessary to determine if malnutrition should be added to existing prognostic models. If this trend is reproducible, early identification of septic patients who are also underweight may aid in triage and improve patient outcomes.

CLINICAL RESPONSIBILITIES OF FIRST-YEAR RESIDENTS DURING EARLY INTERNSHIP Mark R. Raymond 1, Janet Mee 2, Ann King 2, Marcia Winward 2, Susan Jacovino 2, Steven A. Hais 1, 1National Board of Medical Examiners, Philadelphia, Pennsylvania ; 2NBME, Philadelphia, Pennsylvania . (Tracking ID # 11314)

BACKGROUND: The United States Medical Licensing Examination (USMLE) is undergoing a comprehensive review. One recommendation from this review is to support two decision points: entry into supervised practice and entry into unsupervised practice. A multi-phase practice analysis is being conducted to better inform exam content decisions. The first phase included a survey of new interns to determine required clinical responsibilities.

METHODS: The survey assessed 39 clinical activities, degree of attending supervision, and demographics. The survey also included an open-ended statement, “Please list one or two activities that you...
performed in August that you found particularly challenging.” The activities included in the survey were based on the ACGME competencies, an AAMC report on medical school clinical skills curricula, published internal medicine and surgery residency requirements, and a literature review. The surveys were sent to residency program directors in 10 specialties (anesthesiology, emergency medicine, family medicine (FM), internal medicine (IM), neurology, OB/GYN, pediatrics, psychiatry, surgery, and urology) at 354 randomly selected institutions to be distributed to all interns (1,104 residency programs and 8,793 interns). The initial survey was sent in September 2009. Descriptive statistics were used to illustrate the findings.

RESULTS: A total of 3,003 surveys were returned for a 34% response rate; 2,523 surveys met various selection criteria for use. Most respondents (94.8%) completed 2–4 months of residency. Time spent in each setting was 16.5% ER, 12.2% ICU, 50.5% other hospital unit, 15.1% outpatient clinic, and 5.7% other. Most (90%) new interns educated patients about disease course, 95% counseled patients about lifestyle changes, 86% had to manage an angry patient or family member, and 74% told patients bad news. Also, 41% and 83% obtained informed consent for major and minor procedures, respectively, and 89% had to interpret chest x-rays, 88% ECGs, and 71% arterial blood gases. Lumbar puncture and central venous line insertion were performed by 23% and 24% of the interns, respectively. Care with other professionals within their system was arranged by 93% of the interns, and with outside agencies by 73%. Regarding supervision, for the 8 procedures listed in the survey, the attending was in the room 10%–37% of the time. There were differences by specialty, e.g., arranging care with an outside agency occurred more often with IM or FM interns. Lastly, 98% of respondents used electronic databases to obtain diagnostic or treatment information related to patient care.

CONCLUSION: Some of the findings will directly affect the content of USMLE. Interns early in training obtain informed consent, counsel and educate patients, manage angry patients and family members and deliver bad news. These findings will influence changes to the Step 2 Clinical Skills Examination. Procedures with potential significant complications (central venous catheter insertion) were often performed. Based on this information, USMLE will need to assess an examinee’s procedural knowledge and explore how to specifically assess the associated skill. The amount of inpatient, ICU, and outpatient content of the USMLE assessing readiness for supervised practice should reflect the current intern experience by setting. The findings may impact undergraduate and graduate medical education as well. Enhancements to communication skills training and training in common procedures may be warranted.

A NOVEL APPROACH TO MEASURING CONTINUITY OF HOSPITAL CARE
Ryan Thompson, Timothy Ferris, Massachusetts General Physicians Organization, Boston, Massachusetts (Tracking ID # 11319)

BACKGROUND: The increasingly technical nature of high-quality hospital care often involves multiple specialized caregivers in the care of a single patient. At the same time, continuity of care - the successful bridging of information, management plan, and relationships between episodes or sites of care - remains an essential characteristic of high-quality, patient-centered care. Given these competing realities, we undertook an effort to improve care continuity for hospitalized patients, starting with the development of a measurement system for inpatient continuity. We then piloted this measurement system on 104 patients. We describe here our measurement approach for inpatient care continuity and the results of our measurement pilot.

METHODS: During a patient hospitalization, each transition in provider and setting has the potential for care discontinuity, and therefore a measurement opportunity. Using the individual patient as our unit of measurement, we conducted face-to-face surveys of patients at three time points during a patient’s inpatient episode: 1) the emergency room, 2) an inpatient unit, and 3) by telephone after discharge (Figure 1). We defined eight continuity of care “measurement concepts” (Figure 2), and assigned each concept to one of three domains of continuity as defined in the literature - 1) continuity of information, 2) continuity of management plan, and 3) continuity of patient-provider relationships. We then developed and tested 33 questions to measure these concepts, including 5 emergency room questions, 20 ward inpatient questions, and 8 post-discharge questions. Survey item pre-testing included cognitive testing and key informant interviews. We pilot tested our measurement system on randomly-selected adults awaiting admission in our emergency room. A single trained surveyor conducted a majority of the surveys. We excluded patients who were clinically or psychologically unstable or were unable to provide consent. Of the 104 patients surveyed in the emergency department, 57 and 54 patients completed the inpatient and post-discharge portions of the survey, respectively. Reasons patients did not complete the inpatient survey included short length of stay, absence due to testing or procedures, clinical or psychological instability, and removal of consent. Reasons patients did not complete the discharge portion of the survey included incorrect telephone number, inability to contact patients despite multiple attempts, and removal of consent. We excluded patients from the discharge portion of the survey who were discharged to a destination other than home.

RESULTS: Figure 2 shows the results of the survey, organized by continuity of care domain and measurement concept. We present the proportion of respondents indicating patients’ “top box” perception of care continuity (e.g. “strongly agree,” “very confident,” “yes”). No items demonstrated a significant ceiling effect. Responses showed sufficient variance for statistical analysis. We also show concept scores by gender and insurance status (Medicare or private). Of 1824 total questions asked of 104 patients in the pilot (average of 17.5 questions per patient), 1168 were “top box” responses, giving an overall continuity score of 64%. Of the three continuity domains, scores were highest for perceived continuity of management plan (73%), and lowest for continuity of patient-provider relationships (50%). Differences in male and female patient responses were not significant except for provider coordination: 79% of men felt strongly that their providers coordinated with each other, compared to 60% of women (p < 0.05). Additional differences by insurance type, age, and admitting service may prove to be significant with a larger sample currently being collected.

CONCLUSION: Continuity of care is central to the patient experience of care, and is at risk of continued decline as hospital care becomes increasingly complex and fragmented. An effective strategy to measure and monitor care continuity is an important precursor to making improvements. Our pilot represents proof-of-concept that continuity of care can be measured by directly surveying patients across an inpatient episode. We found that continuity of care can be measured and assessed within each domain of care continuity - information, management plan, and relationships. Our pilot results suggest significant opportunity for improving continuity of care for our inpatient population. Data from continuity measurement can be used by hospital leaders to draw attention to areas of needed improvement. Our pilot data represents a small sample of patients, and was limited by suboptimal rates of inpatient and post-discharge surveys. Subsequent data collection efforts will need to improve the percentage of patients that complete inpatient and discharge parts of the survey. We expect larger sample sizes will yield greater understanding of variation in the patient experience of continuity based on demographic factors, reason for admission, and admitting clinical service.
TESTOSTERONE AND ABNORMAL GLUCOSE METABOLISM IN AN INNER-CITY COHORT

Anne Monroe 1; Adrian Dobs 1; Joseph Cofrancesco 1; Todd Brown 1; Joseph Hopkins University School of Medicine, Baltimore, Maryland. (Tracking ID # 11327)

BACKGROUND: Low testosterone has been independently associated with insulin resistance and diabetes mellitus (DM) among men in large cross-sectional and prospective studies. Although prior studies included ethnically diverse men, they did not target for inclusion individuals with opiate use, Hepatitis C virus (HCV), or HIV, which disproportionately affect inner-city populations. These factors may alter the relationship between testosterone and DM, as previous studies have linked opiate use, HCV, and HIV to both hypogonadism and DM. We present data from an inner-city cohort examining the association between free testosterone (FT) and abnormal glucose metabolism and exploring other factors contributing to abnormal glucose metabolism in this group.

METHODS: The Study of HIV, Injection Drug Use, Nutrition, and Endocrinology (SHINE) is a cross-sectional study of volunteers recruited from medical and HIV clinics, community methadone maintenance programs, an existing cohort of injection drug users, and homeless shelters in Baltimore City from 2001–2004. We limited the current analysis to male study participants. The independent variable was FT from a morning blood sample, log-transformed to account for non-normal distribution. The two outcomes studied were 1) insulin resistance and 2) presence of prediabetes or DM. Insulin resistance was calculated using the homeostasis model assessment of insulin resistance (HOMA-IR): fasting glucose (mmol/L) × fasting insulin (μU/mL)/22.5. Prediabetes was defined as fasting blood glucose (FBG) between 100 and 125 mg/dL or 2-hour OGTT result of 140 to 199 mg/dL. DM was defined as FBG ≥ 126 mg/dL, 2-hour OGTT result ≥ 200 mg/dL, self-reported use of DM medication or DM diagnosis. We used multiple linear regression to examine the relationship between log FT and insulin resistance. We used multiple logistic regression to...
DIFFICULTY MEASURING SYMPTOMS OF CO-MORBID DEPRESSION AND HEART FAILURE

Bernice Ruo 1; George Mark Holmes 2; David Baker 1; Dean Schilling 3; Darren A DeWalt 4; Kirsten Bibbins-Domingo 4; Morris Weinberger 5; Aurelia Macabasco-O’Connell 5; Grady Kathleen 1; Kimberly Brouckesou 5; Michael Pignone 5; 1Northwestern University, Chicago, Illinois; 2University of North Carolina, Raleigh, North Carolina; 3University of California, San Francisco, San Francisco, California; 4University of North Carolina, Chapel Hill, North Carolina; 5Regenstrief Institute, Inc, Indianapolis, Indiana; 6Indiana University Purdue University Indianapolis, Indianapolis, Indiana.

BACKGROUND: Questionnaires for depression are increasingly used for screening, diagnosis, and monitoring treatment. These questionnaires include items to assess both emotional (e.g. feeling sad) and physical (e.g. fatigue) symptoms. However, many medical conditions, including heart failure (HF), have physical symptoms that overlap with depression. Therefore, depression questionnaires may overestimate the prevalence or severity of depression among patients with HF, and HF-related quality of life questionnaires may overestimate HF severity among patients with depression.

METHODS: We analyzed data from ambulatory patients at 4 academic medical centers with symptomatic HF (NYHA class II-IV). HF symptoms were assessed using the HF Symptom Scale (HFSS), a 7 item questionnaire that assesses: a) difficulty over the past 4 weeks doing (physical activity) because you are feeling "tired," and b) limitations resulting from heart failure (how much of the time heart failure stopped you from doing (physical activity). HFSS scores range from 0 (worse) to 100 (better). Depressive symptoms were measured using the 8-item Patient Health Questionnaire (PHQ8). PHQ8 scores range from 0 to 24 with higher scores representing more depressive symptoms. We performed a factor analysis on items from the HFSS and PHQ8 to identify the main underlying latent variable(s) being measured, the loading of items from the questionnaires on the factor(s), and the amount of overlap of the content being measured by these 2 questionnaires.

RESULTS: The 595 participants had a mean age of 61 years: 48% were female; 39% were African-American and 16% Latino; 27% had less than a high school education; 58% had an ejection fraction of less than 0.45; 31% were NYHA class III or IV. The mean HFSS score was 56+/-23, and 33% had moderate or greater depressive symptoms (PHQ8 score >=10). We found 2 main factors (eigenvalues 6.7 and 1.9). Four HFSS questions (limitations from shortness of breath; difficulty getting dressed, walking on level ground at a normal pace, walking fast or climbing stairs) loaded heavily onto factor 1 and weakly onto factor 2. Seven PHQ8 questions (feeling depressed, having little interest in doing things, having trouble falling or staying asleep, poor appetite or overeating, feeling bad about oneself, trouble concentrating, and moving or speaking slowly) loaded heavily onto factor 2 and weakly onto factor 1. Three HFSS questions (limitations from needing to rest during the day, not sleeping well at night, fatigue) and one PHQ8 question (feeling tired/ little energy) loaded substantially onto both factors.

CONCLUSION: Symptoms of tiredness, fatigue, and difficulty sleeping can be due to HF or depression. Questionnaires that incorporate these concepts together with more specific characteristics of HF symptoms may be less responsive to treatment effects targeted toward HF in patients that have HF and depression. To more accurately measure the distinct factors (e.g. physical and mental health) among patients with HF, better measurement tools are needed that attempt to avoid conflation of the two illnesses.

SURROGATE-CLINICIAN COMMUNICATION FOR HOSPITALIZED OLDER ADULTS: A QUALITATIVE STUDY OF SURROGATE EXPERIENCES

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BACKGROUND: Many hospitalized older adults have impaired cognition and require the assistance of family members or other surrogates to make medical decisions. Surrogates often face high stress due to the patient’s serious illness, yet must navigate the hospital, process medical information and make decisions. Good communication with clinicians is crucial to these tasks. The present study describes communication experiences of surrogate decision makers for hospitalized older adults.

METHODS: Interviews were conducted at an urban, public hospital and a university-affiliated tertiary care referral center. Surrogates were eligible for an interview if they had made a decision for a patient aged 65 or older regarding one of the following issues: life sustaining care; procedures and surgeries; or nursing home placement. The interview guide was developed based on literature review in interpersonal communication, medical ethics, and health communication. Interviews were conducted by one of two investigators, within 4 weeks of hospitalization for surviving patients or 3 to 6 months after hospitalization if the patient died. Interviews were audio-recorded, transcribed verbatim, and analyzed using the constant comparative method. To conduct the first-order analysis, the first ten interviews were read and independently coded by three investigators, who met to reach consensus on developing codes and themes. Subsequent interviews were coded by one of the three investigator and code-checked by all three. These investigators met after every 3 to 5 interviews to discuss emerging themes and codes. Interviews and analysis continued until theme saturation was reached.
RESULTS: There were 34 interviews yielding 759 double-spaced pages of transcribed text. Surrogates were 79% female, 44% white and 56% African American. Surrogates began the hospitalization with a Frame of References that impacted the current hospital experience. Prior experiences with the health care system framed Expectations and impacted Trust. Surrogates rarely stated expectations explicitly but revealed them through stories of their hospital experiences regarding the hospital environment, patient care, or communication. Such stories revealed how the hospital experience either reinforced or violated their expectations. Surrogates described intense emotions such as anxiety, distress, and obligation. Surrogates formed Relationships with a “Team” of clinicians rather than with individuals, due to frequent staff changes and multiple clinicians. Surrogates were often Unable to Name individual clinicians, even those who were especially important in the patient’s care. In spite of the lack of continuity, expressions of Emotional Support were highly valued. Surrogates expressed a need for Frequent Communication and stressed the Importance of Information about the patient, whether or not a decision had to be made. Despite its importance, several patients reported a Struggle for Information. Medical Jargon was a frequent barrier. Surrogates were appreciative of information provided by any member of the clinical team, including nurses, social workers, and physicians. Conflict was rare but highly intense and stressful.

CONCLUSION: In the hospital, relationships with clinicians are often fragmented and brief, yet expressions of support and exchanges of information can occur and are highly valued by surrogates. The high need for information and support suggests that frequent contact with the surrogate should be a standard part of providing care to patients with cognitive impairment. Because surrogates appreciate contact from many members of the health care team, clinician-surrogate communication can rely on an interdisciplinary approach.

PAIN MANAGEMENT IN PRIMARY CARE: A QUALITATIVE ANALYSIS OF PROVIDER EXPERIENCE AND ATTITUDE Lesley Lincoln 1; Linda Pellico 2; Robert Kerns 3; Daren Anderson 4. 1Yale University, West Haven, Connecticut; 2Yale University, New Haven, Connecticut; 3Yale University/Veterans Administration Health Care System, New Haven, Connecticut; 4Community Health Center, Inc, Middletown, Connecticut. (Tracking ID # 11336)

BACKGROUND: Pain is the most frequent presenting complaint in the ambulatory setting and the majority of patients with chronic non-cancer pain are cared for by primary care providers (PCPs). Previous studies report high frustration among PCPs caring for patients with chronic pain. Exploring PCPs experience and attitudes towards pain management through qualitative analysis may yield specific areas to target quality improvement initiatives.

METHODS: We used a descriptive qualitative design to analyze comments PCPs provided to three survey questions: I. Describe some barriers that you feel limit your ability to manage chronic pain. II. Can you describe some of the positive aspects related to caring for patients with chronic pain? III. What are some of the negative aspects about caring for patients with chronic pain? All PCPs in the VA Connecticut Healthcare System in two academically affiliated VA institutions and five community based clinics were invited to participate by mail. 45 PCPs responded, for a response rate of 75%. All responses were coded by a multidisciplinary team. Data were grouped according to Krippendorff’s analytical technique of clustering to identify responses that could be gathered around similar characteristics. Content analysis using Krippendorff’s method was used to identify recurrent themes.

RESULTS: I. Barriers to managing Chronic Pain: 1) Inadequacies of education including diagnostic deficiencies in musculoskeletal exam skills and knowledge of the appropriate use of imaging, uncertainty about utilization of non-pharmacologic modalities of treatment, creating individualized treatment plans, and assessing response to treatment. 2) Lack of consultant support spanning multiple disciplines and pain specialists in particular. 3) Psychosocial complexity. A high prevalence of co-morbid mental illness, substance abuse, and alcoholism was reported in veterans with chronic pain. 4) Time pressure. PCPs felt limited in adequately addressing pain and other medical problems in a primary care visit. 5) Skepticism expressed towards the quality of evidence, patients’ motivation and participation, and efficacy of consultants’ advice. 6) System impediments in transfer of disgruntled patients between providers, handwritten monthly opiate refills, and coordination of urine drug testing. II. Positive aspects of caring for patients with chronic pain were rewards and challenges. 1. Rewards were reported in building strong relationships with patients, and in improving patient mood, quality of life, and return to work. 2. Challenges included providing holistic care, obtaining accurate diagnoses, and communicating effectively. III. Negative aspects of caring for patients with chronic pain: 1) Challenging patient encounters. PCPs were challenged by confronting patients misusing opiates, non-adherent patients, and unrealistic expectations of patients. Patients demanding opiate escalations were described as manipulative, explosive, and abusive. 2) Provider frustrations. These included feeling pressured to prescribe opiates, fear of being deceived by patients, fear of regulation, and a sense of hopelessness when patients remained in pain.

CONCLUSION: PCPs experience substantial difficulties in caring for patients with pain while acknowledging certain positive aspects. Targeting barriers and negative aspects of pain care while reinforcing providers’ perceptions of efficacy and personal reward in the care of patients with chronic pain may improve the overall quality of care of chronic pain patients in the primary care setting.

MOTHERS AVOIDING DEPRESSION THROUGH EMPOWERMENT INTERVENTION TRIAL (MADE IT) Elizabeth A Howell 1; Amy Balbierz 2; Wang, Jason 1; Leventhal Howard 2; 1Dept. of Health Evidence & Policy, Mount Sinai School of Medicine, New York, New York; 2Institute for Health, Health Care Policy and Aging Research, Rutgers University, New Brunswick, New Jersey. (Tracking ID # 11346)

BACKGROUND: Postpartum depression negatively affects the quality of life and daily functioning of mothers. Postpartum depression is particularly problematic for low-income black and Latina women who often don’t have adequate mental health care coverage and are less likely to receive depression treatment. The objective of this study was to evaluate the effectiveness of a behavioral educational intervention to prevent postpartum depression among self-identified black and Latina postpartum mothers.

METHODS: We conducted a randomized controlled trial at a large urban hospital. Mothers were recruited during their postpartum hospital stay (N=540) and randomized to a 2-part behavioral educational intervention or enhanced usual care. Eligible subjects were black or Latina, women ≥18 years of age, English or Spanish speaking, had working telephones, and had infants whose birthweights were ≥2500 grams and 5-minute Apgar scores >6. Participants randomized to the intervention arm received a culturally-tailored 2-step intervention that prepares and educates mothers about modifiable factors associated with postpartum depression (physical symptoms, low social support, low self-efficacy, and infant factors), bolsters social support, enhances management skills, and increases participants’ access to resources. Enhanced usual
care participants received a list of community resources and received a 2-week control call. Participants were surveyed prior to randomization during their postpartum hospital stay, at 1-month, at 3-months, and at 6-months postpartum to assess depressive symptoms. For ethical reasons, all women who had severe depressive symptoms were referred for psychiatric assessment/treatment and a priori subgroup analyses were planned to assess impact of the intervention on mothers who did not receive psychiatric referral at baseline. The primary outcome, depression, was assessed using the Edinburgh Postnatal Depression Scale (EPDS ≥ 10 vs. <10). Study attrition rate was low (20% at 6 months) and equivalent across treatment groups. By examining baseline data for drop outs versus those retained in the study, we concluded that the data were likely missing at random. We used repeated measure analysis to assess changes in depression over time.

RESULTS: Among the 668 mothers approached and for whom contact could be made prior to discharge, 128 refused (19%) and 540 enrolled. Mean age of participants was 28 (range 18-46); 62% were Latina and 38% were black. Sixty-three percent had Medicaid insurance, 56% earned ≤ $30,000 annually, 35% were foreign born, and 21% spoke Spanish. There was only one significant difference between enhanced usual care vs. intervention at baseline: presence of comorbid conditions was higher among enhanced usual care vs. intervention (27% vs. 20%, respectively). Analyses including mothers referred at baseline for psychiatric assessment/treatment (N=540), showed those in the enhanced usual care group as compared with the intervention group were more likely to exceed depression criteria at all time points but significant only at one month (15.3% vs. 8.8%, p=.03 respectively). Excluding the 45 mothers referred for psychiatric assessment/treatment at baseline, positive depression screens were significantly more common among the enhanced usual care group than the intervention group post hospitalization: at 1-month (14.4% vs. 7.1%, p=.01), at 3-months (11.4% vs. 6.3%, p=.058) and at 6-months (13.1 vs. 7.5%, p=.068). In repeated measure analysis for up to 6-months of follow up, the intervention was protective against a positive depression screen with an OR of 0.57 (95% CI: 0.37-0.88).

CONCLUSION: A simple, culturally tailored intervention prevented postpartum depression among black and Latina mothers in an urban setting. More research is needed to determine whether this intervention is effective in other settings.

RACIAL/ETHNIC DIFFERENCES IN 6-MONTH POSTPARTUM BREASTFEEDING RATES Elizabeth A Howell 1; Jessica Block 2; Amy Balbierz 2; Wang Jason 2; Caron Zlotnick2. 1Dept. of Health Evidence & Policy, Mount Sinai School of Medicine, New York, New York ; 2Mount Sinai School of Medicine, New York, New York . (Tracking ID # 11347)

BACKGROUND: Racial/ethnic differences in breastfeeding rates are well documented. Although breastfeeding duration rates overall are below Healthy People 2010 goals, rates for black and Latina mothers are much lower than their white counterparts. Little research has examined which factors may influence racial/ethnic differences in breastfeeding rates. The objectives of this study were to examine the association between race/ethnicity with 6-month breastfeeding rates, and to explore whether such differences can be accounted for by clinical factors, breastfeeding support, or additional demographic factors.

METHODS: Data were obtained from 2 postpartum depression prevention randomized controlled trials implemented at a large urban hospital. Both trials tested the same intervention: 1 trial enrolled self-identified black and Latina women, the other trial enrolled white and other minority women. Eligible participants were postpartum mothers who had uncomplicated deliveries at a large urban hospital, ≥18 years of age, English or Spanish speaking, had working telephones, and had infants whose birthweights were ≥ 2500 grams and 5-minute Apgar scores ≥6. This study includes 889 (of the 1080 enrolled) mothers who completed both the baseline and 6-month surveys. All participants were surveyed during their postpartum hospital stay prior to randomization, at 1-month, at 3-months, and at 6-months postpartum and answered a series of questions on depressive symptoms, breastfeeding, breastfeeding support, self-identified race/ethnicity, and other factors. We conducted bivariate statistics to examine the association between race/ethnicity, other demographic factors, clinical factors, depression, and breastfeeding support with 6-month breastfeeding status. Multivariable logistic regression models assessed the independent association between race/ethnicity, other factors, and 6-month breastfeeding rates.

RESULTS: Mean age was 30 (range 18-46); 48% were black or Latina. Thirty-one percent had Medicaid insurance, 33% earned ≤ $30,000 annually, and 31% were foreign born. Overall, 49% of mothers breastfed at 6 months postpartum. Breastfeeding at 6-months was more common among white/Other vs. black/Latina mothers (64% vs. 33%, p<.0001) and mothers born outside of the US vs. born (63% vs. 43%, p<.0001). Mothers who were married, 30 or older, privately insured, had annual incomes > $30,000, did not have comorbid conditions at baseline, delivered vaginally, and those who didn’t screen positive for depression at baseline were more likely to be breastfeeding at 6-months. Mothers who thought breastfeeding was extremely/moderately important were much more likely to be breastfeeding at 6-months compared with mothers who did not think breastfeeding was as important (56% vs. 18%, p<.0001) and partner support was strongly associated with breastfeeding at 6-months. After controlling for demographic factors, breastfeeding support, and clinical factors, black and Latina women remained significantly less likely to breastfeed at 6-months as compared with white and other women (adjusted OR=0.26 95% CI: 0.16-0.40).

CONCLUSION: Black and Latina mothers are less likely than white mothers to continue to breastfeed for the first 6-months postpartum. Although mother’s view of breastfeeding and breastfeeding support are important correlates of breastfeeding at 6-months, they do not explain racial/ethnic differences in breastfeeding rates. Further research is needed to investigate the origins of racial/ethnic differences in breastfeeding rates. Culturally appropriate interventions stressing the importance of breastfeeding support and presenting the benefits of breastfeeding to mothers and families may extend the duration of breastfeeding for all racial/ethnic groups.

ESTIMATING THE HEALTH EFFECTS OF DIFFERENT DELAYS IN ACHIEVING SYSTOLIC BLOOD PRESSURE CONTROL IN ADULTS WITH DIABETES Neda Laiterekopong 1; Priya M. John 1; David O. Meltzer 1; Elbert S. Huang1. 1University of Chicago, Chicago, Illinois. (Tracking ID # 11348)

BACKGROUND: In major clinical trials, blood pressure control that lowers systolic blood pressure (SBP) from 155 to 145 mmHg has been shown to decrease complication rates which improve quality of life in adults with type 2 diabetes. However, in real world clinical practice, patients with elevated blood pressure levels may routinely experience prolonged delays in achieving optimal blood pressure control due to a combination of patient and physician factors (clinical inertia). While delays in achieving control are commonplace, the health effects associated with different delays are not well known. We used decision analytic modeling to estimate the effects on health outcomes of different delays in achieving SBP control.

METHODS: We used the diabetes complication model from the United Kingdom Prospective Diabetes Study, which is a Monte Carlo simulation
model that is framed by simultaneous progression through diabetes complications (heart disease, myocardial infarction, heart failure, stroke, amputation, renal failure, and blindness) and mortality. We studied adults aged 50 to 59 years old with new onset Type 2 Diabetes. To estimate the health effects of delays in achieving SBP control, we compared hypothetical populations who experience initial suboptimal SBP (150 mmHg) for different durations of delay (from 1 to 45 years after diagnosis) followed by optimal SBP, to a baseline population who has a lifetime of optimal SBP (130 mmHg). We present rates of non-fatal complications and the decrease in life expectancy and quality of life as a result of delays in SBP control for different durations.

RESULTS: Compared to a lifetime of optimal SBP, we found that increasing delays in achieving optimal SBP led to an increased risk of complications, decreased life expectancy, and decreased QALY. Notably, a 5-year delay results in a lifetime 1% relative risk increase of any diabetes-related complication, a 27-day decrease in life expectancy, and a 37-day decrease in quality of life. (Table) Delays ranging between 5 and 20 years had the steepest decline in quality of life. (Figure)

Table. Health effects of delays in achieving optimal SBP control.

| Delay (years with suboptimal SBP) | No. of individuals with any lifetime non-fatal complication (per 10,000 patients) | Relative risk increase of any lifetime non-fatal complication | Decrease in life expectancy (days) | Decrease in quality of life (quality-adjusted days) |
|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| 0                               | 5046                            | 1.000                           | 0                               | 0                               |
| 1                               | 5056                            | 1.002                           | 0.3                             | 2.2                             |
| 5                               | 5110                            | 1.013                           | 26.8                            | 37.1                            |
| 10                              | 5214                            | 1.033                           | 85.7                            | 109.5                           |
| 20                              | 5487                            | 1.087                           | 170.0                           | 216.2                           |
| 45                              | 5653                            | 1.120                           | 195.5                           | 249.8                           |

CONCLUSION: Notable clinical effects begin to appear at 5 years of delay in achieving optimal systolic blood pressure in patients with type 2 diabetes. Quantifying the health effects of delays in achieving optimal blood pressure may be useful in medical decision-making regarding the frequency of visits and rate of treatment intensification, especially for patients with historically poor blood pressure control over five years.

DISPARITIES IN ENROLLMENT IN AND USE OF AN ELECTRONIC PATIENT PORTAL  Mita Sanghavi Goel 1; Tiffany Brown 1; Adam Williams 1; Romana Hasnain-Wynia 1; Jason Thompson 1; David Baker 1.

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BACKGROUND: The Health Information Technology for Economic and Clinical Health Act aims to accelerate the “meaningful” use of electronic health record (EHR) technology. One key strategy for realizing a variety of meaningful use criteria is providing patients access to their EHR (i.e., a “tethered” personal health record or “patient portal”). If patient portals are going to increasingly become a standard part of care delivery, it is important to ensure they are accessible to everyone and to minimize disparities in their use. Currently, little is known about the use of patient portals; therefore, we aimed to examine variations in enrollment in, and use of, an electronic patient portal by race/ethnicity, gender and age among patients directly offered this service by their providers.

METHODS: We performed an observational, cross sectional study of established patients with attending physicians at one urban, academic
general medicine practice who received electronic orders from their providers requesting their enrollment in a patient portal. Our primary outcomes of interest were: (a) enrollment in the patient portal, (b) solicitation of provider advice among those enrolled, and (c) request for medication refills among those enrolled.

The primary independent variable was race/ethnicity, as determined by the EHR; internal reviews determined the kappa between EHR and self-reported race/ethnicity to be 0.98. Age, gender and provider were extracted from the EHR. Educational attainment and income were determined by linking individual patients’ home addresses to census block group (CBG) level data and determining the percent of people in the CBG who completed high school and the percent below the federal poverty level.

To examine differences in enrollment by sociodemographic characteristics, we used chi-square statistics and performed multivariable logistic regression adjusting for race/ethnicity, age, gender, imputed education, imputed income, and provider. For regression analyses, we also adjusted variances to account for clustering of patients by provider.

Lastly, we repeated similar analyses for our other outcomes: use of the advice and refill functions among those who had enrolled in the patient portal. We considered p<0.05 significant for all analyses.

RESULTS: Overall, 69% of 7088 patients with electronic orders enrolled in patient portals; however there were significant differences by race/ethnicity. All minority patients were significantly less likely to enroll in the portal than whites: 55% of blacks, 64% of Latinos and 66% of Asians compared to 74% of whites (chi-square p<0.05 for all pairwise comparisons). These differences persisted in adjusted analyses, although differences between Asians and whites were no longer significant. In addition, those who were 65 years and older were significantly less likely to enroll in the portal than those ages 18–34 years (adjusted OR 0.79, 95% CI 0.65–0.97). Of those 4091 patients enrolled in the portal, 76% solicited provider advice and 22% requested medication refills. There were no racial/ethnic differences in either advice solicitation or medication refills in unadjusted or adjusted analyses. There were however, differences by age and gender. The youngest patients, ages 18–34 years, were significantly less likely to solicit provider advice or request medication refills than any other age group in unadjusted and adjusted analyses.

Similarly, male patients were less likely to solicit provider advice or medication refills than women, although only the disparity for soliciting provider advice remained significant after adjustment.

CONCLUSION: Future efforts to expand use of the patient portal need to address potential mechanisms for these disparities to ensure this technology is accessible to diverse patient populations.

CLASSIFYING OLDER ADULTS WITH DIABETES BY COMORBID DISEASES
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BACKGROUND: One of the great challenges of caring for older adults with diabetes is that they are highly heterogeneous in terms of comorbid disease. Comorbid diseases, which occur individually or in complex combinations, may alter the risks and benefits of intensive glycemic control. Despite the potential importance of comorbid diseases, there is no commonly accepted approach to categorizing comorbid diseases in older people with diabetes. One potential approach is to identify categories (classes) of older diabetes patients using Latent Class Analysis (LCA), a method that identifies latent variables and is the categorical analog to factor analysis. In this study, we use LCA to identify classes of older adults with diabetes by comorbid diseases and then compare the classes in terms of their treatment intensity and functional status.

METHODS: This study was based on a nationally representative sample of 750 respondents with diabetes, 57–85 years old, who participated in the National Social Life, Health and Aging Project survey. Using LCA, we specified comorbid diseases (arthritis, cancer, dementia, depression, emphysema, falls, heart failure, hypertension, incontinence, kidney disease, myocardial infarction, obesity, stroke, and thyroid disease) to identify latent variables. We then categorized the sample into classes based on these latent variables. To compare the classes, we used measures of treatment intensity (total medication count, insulin use, and HbA1C levels) and self-reported functional status. We used chi-square analysis, one-way ANOVAs, and multivariate logistic regression to describe classes in terms of their treatment intensity and functional status.

RESULTS: We found three distinct classes of older adults with diabetes. Sixty percent of the sample were relatively healthy (Class 1), but still had a high prevalence of hypertension (62%), obesity (54%), arthritis (44%), incontinence (33%), depression (21%), and falls (17%). In addition to a higher prevalence of most of these comorbid diseases, the other 2 classes were distinctive in their prevalence of specific comorbidities. Thirty percent were chronically ill with especially high rates of cancer (24%) and kidney disease (19%) (Class 2). Ten percent were chronically ill with particularly high rates of heart disease (CHF, 100%; MI, 98%) (Class 3). Both Classes 2 and 3 had a higher total medication count than Class 1 (12.01 (2), 9.06 (3), 6.39 (1), p<.001) and both classes were at least twice as likely to be on insulin compared to Class 1. All of the classes had very similar mean HbA1C levels with Class 2 having the lowest (6.8% (2), 7.0% (3), 7.0% (1), p=.02). Classes 2 and 3 reported significantly more functional disability than Class 1 for all activities of daily living.

CONCLUSION: In this nationally representative sample of older adults with diabetes, we found that 60% are relatively healthy, but that the remaining 40% in the two other classes are distinctive in their high prevalence of specific comorbid diseases, including cancer, kidney disease, and heart disease. Compared to the relatively healthy class, the chronically ill classes are treated more intensely than the relatively healthy class and have worse functional disability. Future work should evaluate how these classes compare in terms of long-term outcomes and treatment effects.

A SYSTEMATIC REVIEW OF SOCIAL FACTORS ON RISK OF READMISSION AND DEATH AFTER HOSPITALIZATION WITH PNEUMONIA OR HEART FAILURE: IMPLICATIONS FOR PAY FOR PERFORMANCE
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BACKGROUND: Rates of readmission and death after hospitalization for community acquired pneumonia (CAP) and heart failure (HF) are publically reported and will be tied to reimbursement. Safety net hospitals will be disproportionately affected if reimbursement policies do not account for important patient-level social determinants that may increase risk of readmission and death. We performed a systematic review to assess the impact of social factors on readmissions or death in CAP and HF.
FITNESS MEMBERSHIPS AND FAVORABLE SELECTION IN MEDICARE ADVANTAGE PLANS Amal Trivedi 1; Alicia Cooper 2.

1Providence VA Medical Center, Providence, Rhode Island; 2Brown University, Providence, Rhode Island. (Tracking ID # 113668)

BACKGROUND: Within the last decade, many Medicare Advantage (MA) plans have begun offering coverage of fitness memberships in addition to the mandated standard benefits. Using a quasi-experimental study design, we examined whether Medicare Advantage plans experienced favorable selection of enrollees after adding coverage for fitness memberships.

METHODS: We identified 11 health plans with continuous participation in MA from 2002 to 2008 that offered a new fitness membership benefit in 2004 or 2005 without changing prescription drug coverage or ambulatory care copayments. We matched these case plans to 11 control MA plans in the same Census region or division that did not offer coverage for fitness memberships from 2002 to 2008. We employed a difference-in-differences (DID) approach to compare the self-reported health status of new entrants after the fitness membership benefit was instituted with the health status of enrollees entering prior to the addition of the benefit. Self-reported health status was assessed via the 2006 to 2008 Medicare Health Outcomes Survey (response rate 69%), which surveys MA enrollees at baseline and at two years and includes information about when each enrollee entered their plan. We used generalized linear models with generalized estimating equations to adjust for age, sex, year of enrollment, clustering by health plan, and repeated measurement of beneficiaries. The study population included 4,852 Medicare Advantage enrollees age 65 and older in 11 plans that added fitness membership benefits in 2004 or 2005, and 5,064 Medicare enrollees age 65 and older in 11 matched control plans.

RESULTS: Among the 11 case plans, the proportion of enrollees reporting excellent or very good health was 29 percent among enrollees that entered prior to plan offering a fitness membership benefit and 35 percent among new enrollees. The proportion of new enrollees without limitation in moderate activity was 10 percentage points greater (95% CI 8 to 13), and the proportion of new enrollees without difficulty walking was 8 percentage points greater (95% CI 6 to 10) than the rates reported by prior enrollees. Among the 11 control plans, the difference in self-reported health status, disability, and walking ability between new entrants and prior enrollees was 1 percentage point or less for each measure. The adjusted DID was 5 percentage points for general health (95% CI 2 to 9), 9 percentage points for limitation in moderate activity (95% CI 5 to 13), and 7 percentage points in difficulty walking (95% CI 4 to 10). Patterns persisted in two-year follow-up responses for both activity limitation (7 percentage points, 95% CI 3 to 11) and difficulty walking (10 percentage points, 95% CI 5 to 15), but not self-rated health.

CONCLUSION: Plans offering coverage of fitness memberships may attract and retain a healthier subset of the Medicare population. Despite requirements for a mandated minimum benefits package and guaranteed issue of coverage, some MA plans may effectively cream-skim by designing insurance benefits that selectively appeal to the healthy.

EXPLORING PHYSICIANS’ EXPECTATIONS AND ACTUAL EXPERIENCES OF USING A PORTABLE BIOFEEDBACK DEVICE TO MANAGE STRESS: A QUALITATIVE STUDY Jill de Grood 1; Jean E. Wallace 2; Jeffrey P Schaefer 2; Adriane Lewin 2; Jane B Lemaire 2. 1Ward of the 21st Century Research Center, University of Calgary, Calgary, Alberta; 2University of Calgary, Calgary, Alberta. (Tracking ID # 113669)

BACKGROUND: Given the nature of their work duties and work environment, physicians often experience occupation related stress that may lead to personal harm and impaired professional performance. A variety of stress management techniques exist and their use likely varies depending on the individual physician. We set out to explore physicians’ expectations and actual experiences of using a portable biofeedback device to manage stress.

METHODS: Semi-structured, open-ended interviews were conducted with a volunteer sample of 40 physicians practicing in a large urban teaching hospital. They all participated in a related intervention study where they were asked to use a portable biofeedback device for stress...
management for 28 days. We interviewed them before and after the intervention study. During the initial interview prior to the intervention, we explored the physicians’ everyday experiences with stress, their current use of stress management and/or biofeedback techniques, and their expectations of the portable biofeedback device. During the second interview after the intervention, we explored the physicians’ actual experiences of using the biofeedback device including their perceptions of the device meeting their expectations, its effectiveness, and their intentions for continued use. Interview recordings were transcribed and analyzed independently by two of the researchers with differences reconciled by discussion.

RESULTS: Prior to the intervention, participants reported using a variety of stress management techniques including exercise, quiet time, relaxation techniques (e.g., breathing, meditation imagery, visualization) and taking a time out or break. A number of individuals indicated they informally practiced biofeedback to relieve stress (e.g., were aware of their heart rate or breathing), however none used any formal biofeed-

back monitoring devices. When asked how they felt that participating in the biofeedback study would benefit them, the major themes that emerged were the following: acquiring another tool to better cope with stress; satisfying their curiosity and interest in learning about biofeedback; reducing anxiety and stress; increasing awareness, mindfulness and identification of stress; increasing the likelihood of practicing stress reduction techniques; and improving personal well being and happiness. Following the intervention, the majority of participants felt that study biofeedback device met their expectations. Many described how the device raised their awareness about stress and coping strategies, allowed them to achieve an extra level of calmness and focused their attention to the task at hand. A few participants found the device distracting, difficult to use, and stress generating due to the sense of pressure to use it. A majority of participants felt the biofeedback device made a difference in how they coped with stress. They described being more self-aware and feeling more in control of their reactions to stressful situations. Nearly all of the participants said they intended to continue to use the portable biofeedback device as it helped them to recover more quickly from stressful events and confirm their ability to be successful in a variety of stress management techniques including exercise, quiet time, relaxation techniques (e.g., breathing, meditation imagery, visualization) and taking a time out or break. A number of individuals indicated they informally practiced biofeedback to relieve stress (e.g., were aware of their heart rate or breathing), however none used any formal biofeed-

back monitoring devices. When asked how they felt that participating in the biofeedback study would benefit them, the major themes that emerged were the following: acquiring another tool to better cope with stress; satisfying their curiosity and interest in learning about biofeedback; reducing anxiety and stress; increasing awareness, mindfulness and identification of stress; increasing the likelihood of practicing stress reduction techniques; and improving personal well being and happiness. Following the intervention, the majority of participants felt that study biofeedback device met their expectations. Many described how the device raised their awareness about stress and coping strategies, allowed them to achieve an extra level of calmness and focused their attention to the task at hand. A few participants found the device distracting, difficult to use, and stress generating due to the sense of pressure to use it. A majority of participants felt the biofeedback device made a difference in how they coped with stress. They described being more self-aware and feeling more in control of their reactions to stressful situations. Nearly all of the participants said they intended to continue to use the portable biofeedback device as it helped them to recover more quickly from stressful events and confirm their ability to be successful in a healthier physiological response to stress. Barriers identified were time constraints within the busy work environment and having to carry the device around, both of which made it difficult to use at work.

CONCLUSION: Physicians practice a variety of stress relieving techniques to help them cope with the day-to-day stresses of their jobs. The physicians who volunteered to participate in the biofeedback intervention, not surprisingly, had very positive expectations of the portable biofeedback device enhancing their stress management tools and furthering their understanding of the mind-body connection. The participants’ reports of their actual experiences suggest that their expectations were met to a great degree.

COMPARING WORK ATTITUDES AND EXPERIENCES OF MEDICAL TEACHING UNITS’ HEALTH CARE PROVIDERS: A CROSS SECTIONAL STUDY Aleem Bharwani1; Gabriel Fabreau1; Jean E. Wallace1; Meghan Elliot1; Sunell Khanna1; Evan Minty1; Garielle Brown2; Jill de Grood1; Adriane Levin1; Janet Gilmour1; Jane B Lemaire1. 1University of Calgary, Calgary, Alberta; 2Ward of the 21st Century Research Center University of Calgary, Calgary, Alberta. (Tracking ID # 11370)

BACKGROUND: Healthcare provider (HCP) wellness is being increasingly linked to quality of patient care. On Medical Teaching Units (MTUs), health care providers with diverse job descriptions collaborate to form multidisciplinary teams. These HCPs face the same challenging work environment and share a common goal of providing quality patient care within the acute care hospital system. The purpose of this study is to compare the work attitudes and experiences of three groups of HCPs working on two MTUs.

METHODS: For this cross sectional study, a survey was sent to all residents (n=65) staff physicians (n=35) and nurses (n=190), (response rates 94%, 60%, and 34% respectively) with work experience on either one of two university hospital MTUs of a single internal medicine training program during 2010. The survey was constructed to measure work attitudes and experiences of HCPs with a 5-point Likert response set coded as strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4), strongly agree (5) with reverse coding where appropriate. Single survey items were used to measure emotional exhaustion and communication, and multi-item scales were used to measure workload, team strength, job control, and work spillover into personal life. Mean scores were calculated and differences across groups were assessed using analysis of variance. Higher values indicate experiencing more of the work attitude or experience.

RESULTS: The residents, staff physicians and nurses working on the two MTUs reported a range of work attitudes and experiences (Table 1). The significant differences across the groups of HCPs were their perceptions of job control, with the residents reporting the lowest mean score, and work spillover into personal life and intradisciplinary communication, with the nurses reporting the lowest mean scores. All three groups reported experiencing similar levels of emotional exhaustion, workload, team strength, and interdisciplinary communication.

CONCLUSION: Within the shared work environment and goals of MTU multidisciplinary teams, physicians, medical residents and nurses report both similar and different work attitudes and experiences. Future research could explore whether these findings are confirmed in larger studies. Appreciating these similarities and differences may help to promote a well functioning multidisciplinary team and foster a healthy workplace.

REGIONAL VARIATION IN TRANSPLANT WAITLIST: A CONTRIBUTOR TO TRANSPLANT DISPARITIES Milda R Saunders1; Hyo Jung Tak1; Lainie Friedman Ross1; G. Caleb Alexander1. 1University of Chicago Medical Center, Chicago, Illinois. (Tracking ID # 11371)

BACKGROUND: There is substantial regional variation in healthcare quality in the United States. African Americans and Whites are not distributed equally among regions in the US. The objectives of this study were to quantify regional differences in access to the renal transplant waitlist, and to examine how these differences may contribute to racial disparities in waitlist access.

METHODS: Using the United States Renal Data System (USRDS), we examined non-Hispanic Whites (n=166,874) and Blacks (n=133,474) aged 18–70 who initiated dialysis between January 2000 and December 2006. We linked U.S. 2000 Census Data to USRDS data using subjects’ zip code at dialysis initiation. We defined our outcome variable as time to transplant waitlist after dialysis initiation. We used the 11 United Network for Organ Sharing (UNOS) regions as indicator variables in order to account for geographic and administrative boundaries. First, we used Cox proportional hazards to
identify the association between UNOS region and time to transplant waitlist while adjusting for individual (age, gender, insurance and employment status, BMI, and co-morbidities at dialysis initiation) and neighborhood (proportion female headed households, male unemployment, percent poverty and proportion without high school diploma) characteristics. UNOS Region 3 was used as the reference group because it was largest and had longest time to transplant waitlist. Then we used Cox proportional hazards to compare time to transplant waitlist for Whites and African Americans within a given region after adjusting for the individual and neighborhood characteristics above.

**RESULTS:** The average time to renal transplant waitlisting was 23.7 months and was significantly shorter for Whites (22.1 months) than African Americans (25.8 months, p=0.001). Women, those with coronary artery disease, greater neighborhood disadvantage, Medicaid or no insurance at dialysis initiation had a longer average time to waitlisting than their counterparts (all p-values < 0.05). Compared to patients in Region 3 (see Table 1), patients in eight of the ten other regions were more likely to appear on transplant waitlist (adjusted HR 1.1-1.6, p-values < 0.05). Compared to Whites within the same region, African Americans had similar times to transplant waitlist in all but three regions. African Americans had a longer time to transplant waitlist than their White counterparts in regions 3 and 4, but waited less time in region 5. Over 30% of the African American population with end stage renal disease resided in Regions 3 and 4 which have both longer times to transplant waitlist overall and disparities between African Americans and Whites.

**CONCLUSION:** African Americans are over-represented in geographic regions with longer times to renal transplant waitlist. Within these regions they face “double disadvantage” due to racial disparities in time to transplant waitlist. These regional differences may play an important role in transplant waitlist disparities.

| Table 1: Transplant Waitlist Outcomes by Region |
|-----------------------------------------------|
| UNOS region | States | Hazard Ratio (HR) transplant waitlist | White-African American HR within region | Total population (n=300,348) | Proportion African American |
|----------------|-------------|-----------------|-----------------|-----------------|-----------------|
| I              | CT, VT, MA, NH, RI | 1.86 (<0.01) | 1.10 (0.14) | 10630 |             |

**RESULTS:** Both internal medicine residents and staff physicians feel that 24 hour shifts make it difficult for senior residents to achieve general wellness, expose senior residents to personal harm, and lead to rotation disruptions. Neither group perceive that the extended work hours required undue expenditure of emotional labour. Significant differences include the following: staff physicians are more likely to feel that the senior residents have access to relationship support and teach successfully than the senior residents, but less likely to feel that the senior residents provide continuity of care when working 24 hour shifts.

**CONCLUSION:** Both internal medicine residents and staff physicians perceive some important negative impacts of 24 hours shifts upon senior resident wellness and medical education experience and overall have similar perceptions of the impact of the 24 hour shifts.

**UTILIZATION OF SERVICES IN MEDICARE ADVANTAGE AND TRADITIONAL MEDICARE: A NATIONAL COMPARISON** Bruce E Landon 1; Joseph P Newhouse 1; Alan M Zaslavsky 1; John Z Ayanian 1; 1Harvard Medical School, Boston, Massachusetts. *(Tracking ID # 11373)*

**BACKGROUND:** Relative to traditional Medicare (TM), clinically integrated health plans that participate in Medicare Advantage (MA) may be able to treat a given patient more efficiently, using fewer resources with equal or superior quality, through their flexibility in benefit structure, network contracting, and ability to coordinate and manage care. Little prior research, however, has compared the utilization of services within
Utilization rates for MA enrollees are substantially lower than those that began enrolling patients in later years. Sensitivity analyses indicate a deep lack of understanding of healthcare finances - both the accuracy of physician estimates of hospital charges and reimbursement was poor. For all diagnostic tests and hospital room costs, providers grossly underestimated actual hospital charges. The mean % error for all providers for actual hospital charges was ~41.4% (on average, providers underestimated the cost by 41.4%). For nearly all diagnostic tests, providers grossly over-estimated Medicare reimbursement. The mean % error for all providers for Medicare reimbursement was +190.2% (on average, providers overestimated the reimbursement by 190.2%). For example, the mean estimate for the Medicare reimbursement for a blood culture was $76.60 while the actual cost is $14.42. The range of physician estimates for all diagnostic tests was extremely wide. For example, estimates of the actual hospital charge for a chemistry panel (blood test) ranged from $5 to $700 (actual charge=$8422). There was no correlation between estimate accuracy and years in practice. Both faculty and residents rated their personal knowledge of charges for diagnostic tests as poor (2.00 and 2.08 out of 5 respectively) and their interest in receiving education about costs as high (4.21 and 4.25 respectively).

CONCLUSION: At a single academic medical center, hospitalist attending and internal medicine residents demonstrated poor awareness of the actual hospital charges for diagnostic tests. Furthermore, they grossly over-estimated Medicare reimbursement. This research indicates a deep lack of understanding of healthcare finances - both the actual burden of inappropriate diagnostic testing but also the complex reimbursement structure. As providers expressed interest in receiving further education, future research should focus on the effects of a curriculum designed to increase charge awareness but also enhanced understanding of national healthcare finances.

PREDICTING TIES IN GEOGRAPHICALLY DEFINED PHYSICIAN NETWORKS Bruce E. Landon 1; Nancy L Keating 2; Alistair J O’Malley 1; Michael Lawrence Barnett 3; Sudeshna Paul 1; Jukka-Pekka Onnela 1; Nicholas A Christakis 1, 3Harvard Medical School, Boston, Massachusetts ; 4Harvard Medical School, Newton, Massachusetts ; 5Harvard Medical School, Brookline, Massachusetts . (Tracking ID # 11380)

BACKGROUND: Informal interactions can define networks of physicians. Such networks differ from formal organizational structures (e.g., physician interactions dictated by a health plan or a hospital) by not necessarily conforming to the boundaries established by formal networks. Understanding more about such informal physician networks provides an opportunity to discover novel ways of influencing physician practices and understanding the transmission of ideas and new treatments among physicians.

METHODS: We employ novel methods from the field of network science to define social networks among physicians within defined geographic areas. We identify networks based on shared patients (ties), and we examine how such networks vary across different geographic regions. Using dyadic regression, we then identify physician and patient-population networks.
RESULTS: We studied a total of 4,955,568 Medicare beneficiaries living in 51 randomly sampled hospital referral regions (HRR). We were defined using encounter data from the Carrier File for the Medicare program for calendar year 2006 for 100% of Medicare beneficiaries living in 51 randomly sampled hospital referral regions (HRR). 51 HRRs were defined using encounter data from the Carrier File for the Medicare program for calendar year 2006 for 100% of Medicare beneficiaries living in 51 randomly sampled hospital referral regions (HRR).

ASSOCIATIONS BETWEEN RESIDENT PHYSICIAN WELL-BEING AND ASSESSMENTS OF KNOWLEDGE AND CLINICAL PERFORMANCE

Thomas Beckman 1; Darcy Reed 1; Tait Shanafelt 1; Colin West 1. Mayo Clinic College of Medicine, Rochester, Minnesota. (Tracking ID # 113833)

BACKGROUND: Medical knowledge and clinical performance ratings, which are the major criteria for assessing resident physicians, should solely reflect resident abilities to care for patients and work in teams; but these assessments may be influenced by other factors. Resident empathy has been shown to be associated with resident assessments of faculty. However, the relationship between resident well-being and the performance assessments that residents receive remains unclear. Resident distress is common and it is known that the learning environment and interpersonal relationships play crucial roles in learning. Therefore, we used a prospective longitudinal study design to investigate the hypothesis that resident well-being and empathy influence assessments of medical knowledge and clinical performance.

METHODS: We studied 730 clinical performance assessments completed by peers, supervisors, and allied health professionals: 193 mini-clinical evaluation exercise (mini-CEX) evaluations; and 260 in-training examinations (ITE) of Mayo Clinic internal medicine residents in January 2009, August 2009, January 2010, and August 2010. Resident characteristics were obtained from a longitudinal survey of resident well-being (the Mayo IMWELL Study) that uses standardized instruments measuring empathy and multiple domains of well-being including quality of life, burnout, fatigue, and depression. Validity of the mini-CEX, ITE, Maslach Burnout Inventory (MBI), and Interpersonal Reactivity Index (IRI) has been established. The 6-item Mayo clinical performance assessment, which occurs on a 5-point scale, has also been shown to be reliable and valid. Multivariate generalized estimating equations were used to evaluate associations between resident knowledge and clinical performance assessments and resident well-being and empathy. This study sample provided 80% power for a medium-to-small Cohen effect size of 0.3 for all outcomes. The threshold for statistical significance was set at p<0.01 to account for multiple comparisons.

RESULTS: A total of 202 residents (84% of all eligible) provided both well-being and assessment data. In multivariate models, resident scores on the IRI measure of the tendency to adopt the psychological view of others were associated with higher peer ratings on desirability as a physician for a family member (beta =.022, 95% CI=.006-.038, p =.007). Consequently, a 5-point increase in this empathy score was associated with a 0.1-point increase in resident ratings as desirable physicians. Additionally, burnout as measured by the MBI was associated with higher supervisor ratings of communication (beta =.305, 95% CI=.098-.513, p =.004). Hence, burnout was associated with a 0.3-point increase in resident communication score. There were no statistically significant associations between resident ITE or mini-CEX scores and quality of life, burnout, fatigue, depression, or empathy.

CONCLUSION: In this sample, most measures of resident well-being were not associated with assessments of resident knowledge and clinical performance. This supports the trustworthiness of these standardized measures as criteria for assessing resident competency, despite the possibility of varying levels of resident well-being. Nonetheless, the associations between resident empathy and burnout and assessments by peers and supervisors suggest that resident ratings may be influenced by personal factors. These relationships require further study.

THE EFFECT OF PATIENT PARTICIPATION IN HEALTH DECISIONS: AN EVIDENCE-BASED REVIEW

Jennifer Webb 1; Gregory Makoul 2; Jennifer Webb 1; Carma Bylund 3; Betty Chewning 4; Neeraj K Arora 5.

Northwestern University, Chicago, Illinois; 2St. Francis Hospital System, Hartford, Connecticut; 3Memorial Sloan Kettering Cancer Center, New York, New York; 4University of Wisconsin School of Pharmacy, Madison, Wisconsin; 5National Cancer Institute, Rockville, Maryland. (Tracking ID # 11386)

BACKGROUND: Many authors assert that patient participation in health decisions is desirable, in terms of both moral reasoning and patient outcomes. We conducted a review of articles published through the end of 2009 to identify the extent to which patient participation about decisions in the medical encounter is associated with measured outcomes.

METHODS: We conducted a PubMed (Medline) search through the end of 2009, using the MeSH headings (Physician-Patient Relations[MeSH] OR Patient Participation[MeSH]) and the terms (decision OR decisions OR option OR options OR choice OR choices OR alternative OR alternatives) in the title or abstract. The search excluded non-English language and animal studies. We reviewed all available abstracts of the 7041 citations found through the search. Of these, 5579 were rejected because they were not about the topic, not empirical, were not specific to decision making, were not in the context of physician-patient decisions, or lacked either a measure of patient participation or an outcome measure. We obtained the remaining 1462 articles, subsequently rejecting 1379 because, upon closer examination, they did not meet the inclusion criteria. In order to remain in the sample, articles had to have a measure of patient participation, confirmation that a decision was part of the physician-patient encounter, and an outcome measure (psychosocial or biological). Thus, we retained 83 of the original 7041 Pubmed citations. A secondary search reviewed references of these 83 articles. We conducted 119 full article reviews on non-redundant referenced articles, yielding an additional 12 articles for data abstraction. Of these 95 articles, only 6 were randomized controlled trials (RCTs). As RCTs provide the strongest evidence regarding potential effects of patient participation, we include only those 6 studies in our final sample.

RESULTS: Of the 6 included studies, there is wide variation in measurement of patient involvement (ranging from the coding of audio recordings to patient-reported involvement in decision making) and patient outcomes. Patient involvement reportedly increased in each of the intervention groups. However, two of the studies found no effects of patient participation in decision making and measured outcomes. Four studies found positive effects: two studies reported less decisional conflict among those with more
participation; one study found fewer hospitalizations among those with more participation; and one study reported lower anxiety, although 3 studies found no relationship between anxiety and participation.

CONCLUSION: We found very few randomized controlled trials with measures indicating actual participation in a decision and a relationship to a health outcome. Those that do exist have little consistency in how these items were measured. It is important to note that the seminal RCTs by Greenfield, Kaplan and Ware, which are widely cited as evidence for the beneficial effects of patient participation in decisions, were not included among the 6 RCTs that met our criteria. This is because those authors measured items including patient question asking, but there was no indication that these questions were related to decision making. There is a great need for well-designed studies that include measures of patient participation and clinically relevant psychological and biological outcomes of patient participation in medical decisions.

HOSPITAL-ACQUIRED CONDITIONS AND PAY-FOR-PERFORMANCE: THE IMPACT OF RISK-ADJUSTMENT
Jennifer Meddings 1; Laurence F. McMahon, Jr. 1. 1University of Michigan, Ann Arbor, Michigan.

BACKGROUND: The Centers for Medicare and Medicaid Services no longer pay for specific hospital-acquired conditions (HACs), as a form of pay-for-performance. Hospitals can lose payment regardless of a patient’s risk to develop HACs. Hospital rates of HACs without risk-adjustment will soon be reported by Medicare’s Hospital Compare website. Reduced pay for all hospitalizations will occur in 2015 for hospitals in the top quartile of risk-adjusted HAC rates. The underlying premise is that hospital performance rather than patient characteristics determine a hospital’s HAC rate. Our primary objective was to describe how hospital comparisons by HAC rates would be modified with even simple risk-adjustment.

METHODS: We evaluated claims data for 462,176 adult Medicare discharges from 125 acute care Michigan hospitals using the 2007 Healthcare Cost and Utilization Project State Inpatient Dataset. Using the examples of catheter-associated urinary tract infections and decubitus ulcers, cases were identified using ICD9-CM codes for these conditions when listed only as secondary diagnoses, meaning not the principal reason for admission. We assessed how hospital comparisons would be modified by basic risk-adjustment when comparing rankings by observed (unadjusted) HAC rates to comparisons using observed/expected ratios based on each hospital’s number of discharges per Diagnosis-Related Group (DRG) assigned at discharge and each DRG’s statewide mean rate of urinary tract infections (UTIs) and decubitus ulcers as secondary diagnoses. Because very few cases of UTIs were identified as catheter-associated using the catheter code 996.64 (and medical record reviews support many UTIs in claims data are in fact catheter-associated UTIs), hospitals were compared by UTI rates (including cases of catheter-associated UTIs).

RESULTS: Hospital rates (unadjusted) of UTIs as secondary diagnoses for any discharge ranged from 7 to 24% (mean 14%, SD 3.4%); hospital rates (unadjusted) of decubitus ulcers as secondary diagnoses ranged from 0 to 11% (mean 3%, SD 1.5%) of discharges. Hospital rates of UTIs and decubitus ulcers also varied greatly by common DRGs, as shown in the Table. The Figure shows how each hospital’s performance compared when using observed-to-expected ratios of UTIs (ranging from 0.6 to 1.8) using each hospital’s discharge DRGs. As demonstrated in the Figure, of the 31 hospitals identified in the top quartile (identified by black bars) as poor performers using unadjusted UTI rates, 8 were reassigned to better quartiles after simple risk adjustment using observed-to-expected ratios of UTI cases by each hospital’s discharge DRGs. Similarly, 5 of 31 hospitals identified in the top quartile as poor performers by unadjusted decubitus ulcer rates were reassigned to better quartiles after using observed-to-expected ratios of decubitus ulcer cases using each hospital’s discharge DRGs.

CONCLUSION: Even with simple risk-adjustment by discharge DRGs, many hospitals identified as poor performers by UTI rates (1 in 4) and by decubitus ulcer rates (1 in 6) would be reassigned as better performers; thus, risk adjustment should be developed carefully prior to public reporting and hospital pay modifications by hospital-acquired complication rates.

| Diagnosis-Related Group (DRG)* | Hospital Rates of UTI** by DRG mean (range) | Hospital Rates of Decubitus Ulcer by DRG, mean (range) |
|-------------------------------|---------------------------------------------|-----------------------------------------------|
| 576, Septicemia without Mechanical Ventilation | 60% (20-100%) | 17% (3-50%) |
| 575, Septicemia with Mechanical Ventilation | 54% (11-100%) | 35% (5-100%) |
| 316, Renal Failure | 30% (7-100%) | 6% (0.5-100%) |
| 462, Rehabilitation | 30% (11-44%) | 8% (0.5-18%) |
| 014, Intracranial Hemorrhage/Cerebral Infarction | 19% (4-50%) | 3% (0.5-7%) |
| 127, Heart Failure & Shock | 14% (3-36%) | 3% (0.3-7%) |
| 089, Simple Pneumonia with CC*** | 14% (3-30%) | 4% (0.5-17%) |
| 544, Major Joint Replacement or Reattachment of Lower Extremity | 8% (7-20%) | 1% (0.1-7%) |
| 088, Chronic Obstructive Pulmonary Disease | 7% (8-16%) | 2% (0.5-5%) |

*DRG = Diagnosis-Related Group assigned as major reason for hospitalization, version 24
**UTI = Urinary Tract Infections as secondary diagnoses, including catheter-associated UTIs
***CC = Complications or Comorbidities

++Infect Control Hosp Epidemiol. Jun 2010;31(6):627–633.
SMOKING HABITS AND CESSATION EFFORTS AMONG DEPLOYED SOLDIERS

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BACKGROUND: Smoking has significant financial and health implications on US military service members (SM). Deployment overseas appears to play a role in these smoking behaviors, including recidivism. Past studies have examined smoking rates among SMs while deployed, but no studies have been done examining smoking cessation among this population. The purpose of this study is to better define smoking habits and smoking cessation patterns among deployed personnel.

METHODS: This is a descriptive study, utilizing a survey with 56 component questions. Members of the 4th Brigade Combat Team, 82nd Airborne Division were recruited in theatre while they waited for a post deployment health assessment. The survey tool consisted of questions regarding basic demographics, current smoking status, and smoking cessation behaviors. Demographic information was described using means, as well as simple frequencies. Univariate analysis was performed using analysis of variance and chi square, with the primary outcome being smoking cessation attempt.

RESULTS: Approximately 450 SM were approached and 313 surveys were completed (69.6%). The mean age was 25.7 years (range 19–47 years). The group was predominantly male (96.2%). The group was 65.2% white, 9.3% black, 8% Hispanic, and 3.5% Asian. Current smoker (>100 cig in lifetime, >1 cigarette in the past month) comprised 44.1% (138/313) of the group. This group reports smoking for an average of 6.6 years, with an average of 2 quit attempts in the past. Of the current smokers, 44.9% (62/138) said they attempted to quit during their current deployment. Most of these SM did so “cold turkey,” with 37% (23/62) reporting no use of a cessation aid. Predictors of a cessation attempt via univariate analysis included confidence in ability to quit (p=0.00), successful quit attempt in past (p=0.002), and higher scores on a scale of how much they want to quit in the next month (p=0.035).

CONCLUSION: This study reveals that a surprisingly large proportion of deployed SMs are attempting to quit smoking while deployed. However, most of these soldiers are not utilizing medications or nicotine replacement in these efforts, possibly given limited availability. The univariate correlates reveal that certain SMs may be more likely to attempt to quit while deployed. Future studies are needed to determine availability of smoking cessation aids in theatre and if their use can improve rates of cessation in the deployed setting.

PROSPECTIVE ASSOCIATION BETWEEN BODY MASS INDEX (BMI) AND RECEIPT OF PREVENTIVE SERVICES: RESULTS FROM THE CENTRAL PENNSYLVANIA WOMEN’S HEALTH STUDY (CEPAWHS)

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BACKGROUND: Optimizing preventive service receipt, as recommended by the U.S. Preventive Services Task Force and the Centers for Disease Control and Prevention, is important for providing high-quality, comprehensive primary care for reproductive-aged women. Previously published, cross-sectional studies have not conclusively shown whether overweight and obesity affect receipt of these services. Some studies suggest underutilization of preventive services in women who are overweight and obese, perhaps due to physician bias, whereas other studies show the opposite, perhaps due to greater need for preventive services associated with obesity-related comorbidities. Utilizing a unique, prospective population-based cohort, we investigate the effect of body mass index (BMI) on the receipt of guideline-concordant preventive services among reproductive-aged women. We employ the behavioral model of healthcare utilization to determine the association between BMI and preventive service receipt.

METHODS: We used data from the Central Pennsylvania Women’s Health Study (CEPAWHS) population-based longitudinal survey of women ages 18–45. The analytic sample consisted of 1,420 women who completed a telephone survey during 2004/05 and a follow-up survey 2 years later. Women who were either underweight (BMI <18.5; n=23) or pregnant at baseline during the study period (n=54) were excluded from the analysis. Multiple logistic regression models assessed the independent contribution of BMI category (normal weight [BMI 18.5–24.9), overweight [BMI 25–29.9], and obese [BMI >30]) to the receipt of preventive screenings (pap smear, cholesterol screening, diabetes screening) and counseling services (dietary/nutritional, exercise, weight management), and reproductive counseling (defined as counseling for pregnancy planning, birth control or preconception care). All models controlled for variables that predispose individuals to use of health services (age, race/ethnicity, educational level), variables that enable healthcare access (having a usual healthcare provider or using an obstetrician-gynecologist, poverty status, and continuous health insurance coverage), and need-based variables (overall health status, a single item from the Short Form 12 and metabolic comorbidities [at least one of the following: hypertension, high cholesterol or diabetes mellitus]).

RESULTS: Overall, women who were obese were older, had lower educational attainment, and were more likely to be in or near poverty status. Additionally in unadjusted analysis, women who were obese were less likely to see an obstetrician-gynecologist, had lower overall self-rated health status and higher rates of co-morbidities (hypertension, high cholesterol, diabetes mellitus). In multivariable analyses, women who were overweight and obese did not differ from normal weight women in receipt of pap smear or reproductive care counseling, but did...
receive greater rates of cholesterol (51.4% and 65.8% vs. 42.3%, p<0.001) and diabetes screening (44.6% and 57.1% vs. 35.7%, p<0.001) as well as greater preventive counseling for diet or nutrition (50.3% and 65.8% vs. 28.5%, p<0.001), exercise or physical activity (47.0% and 59.2% vs. 32.6%, p<0.001), and weight management (37.0% and 62.5% vs. 11.5%, p<0.001) (see Table).

CONCLUSION: Overall rates of preventive services received in this study were low, below levels expected for optimal primary care. Of particular concern is the low rate of reproductive care counseling provided to overweight and obese women of reproductive age, given their elevated risk for adverse pregnancy outcomes. Reassuringly, our data suggest that primary care physicians are appropriately targeting women who are overweight and obese for services that address comorbidities associated with increased BMI (i.e., cholesterol and diabetes screening, and counseling on nutrition, physical activity and weight management). However, these services remain underutilized, provided to less than half of overweight and less than two-thirds of obese women in this study. The overall low rates of preventive services and counseling suggest future work is necessary to improve the receipt of these important services, particularly among the overweight and obese population.

| Preventive Service | Rate of Receipt, Unadjusted (%) | Adjusted OR * [95% CI] |
|--------------------|---------------------------------|------------------------|
| Pap Smear          | Normal weight (control) 86.3 | overweight 86.5 obese 82.4 | 0.9 [0.6-1.4] 0.8 [0.5-1.2] |
| Cholesterol Screening | 42.3 | 51.4 | 65.8 | 1.4 [1.0-1.8] 2.1 [1.5-2.8] |
| Diabetes Screening  | 35.7 | 44.6 | 57.1 | 1.4 [1.1-1.9] 2.0 [1.5-2.7] |
| Preventive Counseling | | | | |
| Dietary            | 28.5 | 50.3 | 65.8 | 2.5 [1.9-3.3] 4.5 [3.2-6.1] |
| Exercise           | 32.6 | 47.0 | 59.2 | 1.8 [1.3-2.3] 2.0 [1.6-3.7] |
| Weight Management  | 11.5 | 37.0 | 62.5 | 4.7 [3.3-6.6] 13.4 [9.2-19.3] |
| Reproductive Care  | 41.3 | 35.7 | 25.0 | 0.8 [0.6-1.1] 0.7 [0.5-1.0] |

* Adjusted for age, race/ethnicity, education, geographic location, having a regular healthcare provider, seeing an obstetrician, poverty status, continuous health insurance coverage, co-morbidities, and self-rated health status.

WHAT DO NEW INTERNS SAY IS CHALLENGING? Steven A. Haist 1; Susan Jacovino 2; Mark R. Raymond 2; Janet Mee 2. 1National Board of Medical Examiners, Philadelphia, Pennsylvania; 2NBME, Philadelphia, Pennsylvania. (Tracking ID # 11395)

BACKGROUND: The United States Medical Licensing Examination (USMLE) is undergoing a comprehensive review. One recommendation from this review is to support two decision points: entry into supervised practice and entry into unsupervised practice. A multi-phase practice analysis is being conducted to better inform examination content decisions. The first phase included a survey of new interns to determine required clinical responsibilities during their first few months of training.

METHODS: The survey assessed clinical activities, supervision from attending, demographics and an open-ended statement, "Please list one or two activities that you performed in August that you found particularly challenging." The survey was sent to residency program directors in 10 core specialties at 354 randomly selected institutions (8,793 interns) in September 2009. A total of 3,003 surveys (response rate 34%) were returned (2,523 usable). Most (1,716) interns provided at least one write-in response to the open-ended statement and 876 provided two responses. Two reviewers independently coded a random sample of 450 responses following the same procedure. The following are samples of responses: "Intubating a 350-lb patient who was vomiting everywhere during a code," and "Managing end-of-life issues, both medical and social."

RESULTS: The number of challenging activities coded to each major category were: Patient Care (PC), 59.6%; Interpersonal and Communication Skills (IPCS), 19.5%; Professionalism, 0.4%; Systems Based Practice (SBP), 11.2%; PI, 8.6%. For various reasons, medical knowledge and practice-based learning were not useful as categories (e.g., almost all write-in responses involved knowledge). Procedures accounted for 120 (30%) of PC responses (e.g., Lumbar Puncture, 29; Central Line Placement, 26). Overall, 62 responses involved Specific Patient Populations (e.g., Pediatric, 30; patients with psychiatric conditions, 14). DNR/withdrawal of care accounted for 14 responses, only 4 responses involved clinic. IPCS included Telling Bad News, 46 responses; Life/Death Discussions, 26; and Angry Patients or Families, 18. SBP challenges included 19 responses associated with Medical Records (dictating, electronic medical records) and 18 with Cross-Cover/Night Float. The PI responses (58) included Workload and Time Management (32) and role transition (18).

CONCLUSION: The findings will directly affect content of USMLE. Early interns note that discussing bad news and death and dying, and communicating with angry patients and families were challenging. These findings will influence changes to the Step 2 Clinical Skills Examination. Procedures with potential significant complications were often deemed challenging. Based on this information, USMLE will need to assess procedural knowledge.
and explore how to assess the associated skill. The findings may impact undergraduate and graduate medical education. Preparing trainees for their role transition, addressing time management, and training in dictating should ease the transition to supervised practice.

**MORTALITY AND CAUSES OF DEATH AMONG HOMELESS ADULTS IN BOSTON** Travis P. Baggett 1; Nancy A. Rigotti 2; Erin Stringfellow 3; Stephen W. Hwang 4; E. John O’Rorke 5; James J. O’Connell 3. 1Massachusetts General Hospital, Boston, Massachusetts; 2Harvard Medical School, Boston, Massachusetts; 3Boston Health Care for the Homeless Program, Boston, Massachusetts; 4University of Toronto, Toronto, Ontario; 5Brigham and Women’s Hospital, Boston, Massachusetts. (Tracking ID # 11402)

**BACKGROUND:** An estimated 2.3-3.5 million Americans experience homelessness each year. Understanding the mortality patterns and causes of death among homeless adults would inform health care goals and improve service delivery strategies for this marginalized population. Our specific aim was to determine overall and cause-specific mortality rates among homeless adults in Boston.

**METHODS:** We retrospectively assembled a cohort of all individuals aged 18 years and older who had any contact with the Boston Health Care for the Homeless Program (BHCHP) between 1/1/2003 and 12/31/2007. We used probabilistic record linkage software (LinkPlus, version 2.0) to cross-link individuals from the BHCHP cohort to the Massachusetts Department of Public Health annual death files spanning the same years. The linkage algorithm generated a match probability score for record pairs on the basis of first name, middle name, last name, date of birth, social security number, gender, and race/ethnicity. Record pairs meeting a minimum threshold match score were manually reviewed and accepted as true matches if they satisfied the criteria specified by the National Death Index. ICD-10 cause of death codes were extracted from the death certificates of decedents and classified according to convention. Overall and cause-specific mortality rates were calculated by dividing the number of deaths by the person-time of observation. We used the Chi-square goodness-of-fit test to determine whether deaths were uniformly distributed across seasons of the year, weeks of the month, and days of the week.

**RESULTS:** The study cohort was comprised of 24,459 adults followed for a median of 2.9 years, generating 68,239 person-years of observation. The mean age at cohort entry was 41 years. Two-thirds of participants were male, 30% were black, and 19% were Hispanic. There were 1029 deaths during the study period, yielding a crude mortality rate of 1508 per 100,000 person-years. The mean age at death was 51 years (range 19–93). Mortality rates were significantly higher in men than women (1819.0 vs. 882.4; rate ratio 2.1, 95% CI 1.8-2.4). There were no temporal variations in mortality. Overall, the leading causes of death were heart disease (230.1 per 100,000 person-years), cancer (224.2 per 100,000 person-years), and poisoning (209.6 per 100,000 person-years). More than 80% of poisoning deaths were due to narcotics and other illicit drugs. The leading cause of death was poisoning among 18-24 year olds and 25-44 year olds. Lung cancer accounted for the highest proportion of cancer deaths in both men (96.5 per 100,000 person-years) and women (44.1 per 100,000 person-years).

**CONCLUSION:** The age-adjusted mortality rate in this cohort of homeless adults in Boston was 2.5-fold higher than that seen in the general population of Massachusetts. The preponderance of deaths due to heart disease and cancer suggests that the high prevalence of tobacco use in this population may be a useful target for health interventions. The alarming rate of drug-related deaths underscores a continuing need for addiction services for homeless people.
TEAM-BASED CARE: BARRIERS AND FACILITATORS TO ITS ADOPTION IN THE PATIENT CENTERED MEDICAL HOME Robert A Gabhay 1; Heather L Stuckey 2; Jessica Huntley 3; Dana Naughton 4; Michelle Miller-Day 5. 1Penn State College of Medicine and Penn State Hershey Medical Center, Hershey, Pennsylvania; 2Penn State Hershey College of Medicine, Department of General Internal Medicine, Hershey, Pennsylvania; 3Penn State College of Medicine, Hershey, Pennsylvania; 4Penn State University College of Liberal Arts, University Park, Pennsylvania; 5Penn State University College of Medicine, Hershey, Pennsylvania. (Tracking ID # 11404)

BACKGROUND: Team-based patient care is an essential element of both the Patient Centered Medical Home (PCMH) and the Chronic Care Model (CCM), and is widely accepted as a way to improve the quality of care for patients with chronic conditions. Twenty-five primary care practices in Southeast Pennsylvania that started implementing the CCM in May 2008 and became NCQA-recognized PCMHs were studied to understand their adoption of team-based care. The practices were part of the first regional rollout of the Pennsylvania Chronic Care Initiative, led by the Governor’s Office of Health Care Reform. The practices participated in a multi-year learning collaborative and received financial incentives to transform from six of the region’s health insurers. The initial target disease was on improving diabetes with subsequent rollout to other chronic illnesses.

METHODS: Domains investigated were (1) knowledge and motivation of the team, (2) relationships within the team, (3) characteristics of a successful team, (4) satisfaction of team members, (5) leadership of the team, and (6) communication. Providers and non-providers on the improvement teams at each of the 25 practices were surveyed (n=98), and interviews and focus groups were completed at 10 practices. Survey responses were analyzed for internal consistency using Cronbach’s Alpha and for difference in paired groups using the Wilcoxon test with each domain and demographic characteristic. Qualitative transcripts were coded and analyzed using Nvivo. No significant differences were noted in responses between providers and non-providers.

RESULTS: Key findings that contributed to team-based care include the importance of regularly scheduled meetings, use of standing orders to empower team members, an overall redistribution of workload, recognition and rewards, facilitative leadership, an electronic medical record system to facilitate communications, and collaborative learning and sharing with other practices. Some practices more fully adopted team-based care than others, but overall participants were appreciative of the sharing with other practices. Some practices more fully adopted team-based care than others, but overall participants were appreciative of the sharing with other practices.

CONCLUSION: With more and more primary care practices nationwide embracing the PCMH, these findings should help practice teams understand factors that may facilitate or hinder team-based care in their transformation work. Our research indicates that transformation and adoption of team-based care is an ongoing journey for most primary care practices.

FIVE-YEAR TIME-SERIES ANALYSIS OF A VA SYSTEMS REDESIGN INITIATIVE TO IMPROVE PATIENT FLOW Justin Glasgow 1; Peter Kaboli 1. 1Iowa City VAMC, Iowa City, Iowa. (Tracking ID # 11405)

BACKGROUND: For the healthcare system to achieve its goal of improving quality of care and patient safety, hospital systems and providers must understand which quality improvement (QI) programs are successful. Unfortunately, most QI efforts are analyzed using a pre-post intervention analysis which cannot account for temporal trends nor determine whether improvements are sustained. This abstract outlines a time-series analysis of a Veterans Administration (VA) systems redesign initiative. This initiative, the Flow Improvement Inpatient Initiative (FIX), was a nationwide collaborative with goals of reducing bottlenecks, delays, waste, and errors associated with inpatient care. Two focuses of FIX were to reduce hospital length of stay (LOS) and to increase the proportion of patients discharged before noon. Our objective is to use a time-series analysis to understand the improvements associated with FIX in five outcome measures and whether any improvements are sustained in the two years after implementation.

METHODS: Continuous piecewise linear regression modeling of five risk-adjusted patient outcomes; LOS, in-hospital mortality, 30-day mortality, 30-day all-cause readmission, and rates of patients discharged before noon. Analyzed data covers a 5 fiscal year period (FY05 - FY09) consisting of 1,690,191 discharges from 126 VA facilities. Models were evaluated in SAS version 9.2 using Proc AUTOREG allowing for evaluation of and correction for any autocorrelation between measurements. The analysis focuses on identifying whether there was any change during FIX (FY05-06) for each outcome measure and then identifying the pre-FIX trend (FY05-06) for any improvements are sustained in the two years after implementation. The modeled rate of change per year for each outcome is displayed in Table 1. Of the outcome measures, LOS, 30-day mortality and discharge before noon show improvements in FY07 that are in the desired direction and statistically different than the change predicted by the baseline rate. Both LOS and 30-day mortality show continued improvements throughout FY08 and FY09. Conversely, discharges before noon shows a leveling in FY08 and a decline in FY09. In-hospital mortality and 30-day all-cause readmission show significant changes in the undesired direction during FY07.

CONCLUSION: These results show that during FIX improvements beyond baseline temporal trends occur in three of the outcome measures, with two of them showing signs of sustainability. In contrast, if FIX was analyzed
using a pre-post study design, likely all five outcome measures would exhibit improvements during FIX. Most importantly this analysis highlights the difficulties of quality improvement in healthcare by showing that achieved results are not always successfully sustained. It appears that VAs continued focus on reducing LOS has led to not only sustaining the results of FIX but the achievement of additional improvements. However, there has been less long term focus on discharges before noon and it appears those results have not been sustained. Lastly, this time-series analysis shows that FIX did not lead to improvements in outcomes beyond its scope, with in-hospital mortality and 30-day all-cause readmission rates remaining that FIX did not lead to improvements in outcomes beyond its scope, with in-hospital mortality and 30-day all-cause readmission rates remaining.

DIFFERENCES BY GENDER AND RACE IN ACADEMIC MEDICINE LONG-TERM CAREER SUCCESS

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BACKGROUND: There is a paucity of longitudinal data on the association of gender and race with career success among medical school faculty. Previous cross-sectional research has suggested disparities in research success by gender and race. We conducted a 15 year follow up of a nationally represented group of faculty over-sampled for senior women and minorities surveyed in 1996, to identify if gender and race/ethnicity is associated with increased likelihood of research success in 2010, as measured by independent federal research funding.

METHODS: The study involved a subsample selected from a cohort of 1224 medical faculty recruited in 1996 from 24 randomly selected medical schools balanced for Public/Private status and geographic region of the US. The subsample included 263 individuals who reported spending greater than 20% of time in research when surveyed in 1996. We used the NIH RePORTER database to assess independent federal grant funding from the period of 1996 to December 2010. Bivariate, logistic and linear regression analyses were used to assess significant associations between race (white, under-represented minority, and non-underrepresented minority) and gender with our key outcome variables: total number of grants, total dollar amount of funding, and receipt of a major federal grant (e.g. R01, P01, M01, etc.) All analyses were adjusted for number of years as a faculty member, academic rank in 1996, marital status, number of children, and age.

RESULTS: Overall, 20% of men and 23% of women (p=0.18), 22% of white, 18% of under-represented and 21% of non-under-represented faculty spent greater than 20% of time in research in 1996 (p=0.53). Of the 263 faculty who reported spending greater than 20% of time in research, 45% had federal funding. There were no differences in federal funding rates between men (45%) and women (45%), and differences between white (44%), non-underrepresented (38%) and underrepresented (59%) faculty were not statistically different (p=0.24). There was no significant difference in type of grant, or funding amount between men and women in this sample. Academic rank appeared to be the strongest predictor of receiving federal funding, type of federal funding, and total dollar amount of funding.

CONCLUSION: This is the first study to track outcomes of faculty longitudinally. These results are limited by small sample size and lack of data on number of grants submitted and non-federal funding. Of those who reported spending greater than 20% of their time in research, there was no difference by gender or minority status. The results suggest that women and minorities who were actively involved in research achieve success in federal funding similar to their male and majority counterparts.

ARMODAFINIL IMPROVES SEVERE SLEEPINESS, AS MEASURED BY SLEEP LATENCY TIME, COMPARED TO PLACEBO IN PATIENTS WITH SHIFT WORK DISORDER

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BACKGROUND: In a previous study (Czeisler, 2009), armodafinil significantly improved wakefulness in patients with excessive sleepiness associated with shift work disorder (SWD), as measured by the Multiple Sleep Latency Test (MSLT) given at night. This post-hoc analysis of the same study examined the effect of armodafinil on improving severe nighttime sleepiness based on MSLT sleep latency time.

METHODS: In a multi-center, 12-week, randomized, double-blind, placebo-controlled, parallel-group study, permanent or rotating night shift workers with nighttime sleep latencies of <6 minutes on MSLT who were diagnosed with moderate to severe SWD were administered 150 mg armodafinil or placebo 30–60 minutes before a laboratory night shift, after 3 consecutive night shifts. Patients were administered the MSLT at 2400, 0200, 0400, 0600, and 0800 at baseline and at Week 12. For this analysis, severity of sleepiness was categorized using MSLT sleep latency time as follows: <5 minutes (severe), 5 to 10 minutes (diagnostic “grey area”), and 10–20 minutes (normal). Improvements in severely sleepy SWD patients were determined by calculating the percentage of those whose sleep latency time was >5 minutes after completing the night shift.

RESULTS: A total of 226 patients were included (armodafinil, n=112; placebo, n=114). At the end of the study, 38% of armodafinil-treated patients had sleep latencies >5 minutes (17% for placebo). The percentage of patients with sleep latency >5 minutes at 2400 hours was 49% in the armodafinil group and 30% in the placebo group. These percentages decreased throughout the night for armodafinil (42% at 0200, 33% at 0400, 22% at 0600) and for placebo (27% at 0200, 12% at 0400, 7% at 0600). There was a slight increase at 0800 for both treatment groups (26% armodafinil, 12% placebo).

CONCLUSION: Armodafinil improved MSLT sleep latencies compared with placebo in patients with SWD and severe excessive sleepiness. Armodafinil resulted in sustained improvements in MSLT sleep latencies and attenuated the decline of sleep latency throughout the night shift. A percentage of patients in both groups had sustained MSLT sleep latency times that remained <5 minutes.

Czeisler CA, Walsh JK, Wenes KA, Arora S, Roth T. Armodafinil for treatment of excessive sleepiness associated with shift work disorder: A randomized controlled study. Mayo Clin Proc. 2009;84:958-72. This research was sponsored by Cephalon, Inc., Frazer. The original study is registered on clinicaltrials.gov (NCT00080288).

USING ELECTRONIC TRIGGERS TO IDENTIFY PATIENTS AT RISK FOR DIAGNOSTIC DELAYS IN PROSTATE CANCER

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BACKGROUND: Delays in prostate cancer diagnosis can lead to malpractice claims and many of these delays result from lack of follow-up of abnormal prostate specific antigen (PSA) tests. Identifying patients at risk for delayed diagnosis with traditional methods, such as chart reviews, is
inefficient and cost-prohibitive when evaluating large numbers of patients. We developed an electronic health record (EHR)-based methodology using “triggers” (i.e., signals that prompt record review) to selectively identify records of patients at high risk of delays in prostate cancer diagnosis.

**METHODS:** We used literature reviews and input from specialists to develop an electronic query that identified patients at high risk for lack of timely follow-up after a newly elevated PSA test. Although we tested the trigger retrospectively, it was designed for prospective application to proactively identify delays. In our preliminary work, we did not find PSAs >15 to be associated with high risk for lack of follow-up and therefore we defined elevated PSA as a result between 4.1 and 15 ng/mL. High risk was defined as lack of any of the following actions within 90 days after the elevated PSA: 1) requesting a urology referral or prostate biopsy or 2) ordering a repeat PSA test. We applied the trigger to the EHR data repository of a large, tertiary care Veterans Affairs (VA) facility to identify a test cohort of patients. We then iteratively refined the trigger by conducting sequential chart reviews that identified additional clinical criteria to exclude certain patients, such as those diagnosed with prostatitis within 30 days prior to or 90 days after the PSA date, receiving palliative care, or deceased. The refined trigger was applied to all male patients between ages 40 and 70 seen at the facility between January 1 and December 31, 2009. A physician reviewer performed chart reviews using a standardized, pretested data collection instrument to assess the positive predictive value (PPV) of the trigger program. We also collected reasons for false positive triggers.

**RESULTS:** The trigger was applied to 51,491 patients in our study cohort; 30,012 (58.3%) had PSA tests performed, of which 869 (2.9%) had a newly elevated PSA result. The trigger further excluded 420 (48.3%) patients for whom appropriate follow up actions could be detected and an additional 84 (9.7%) who had expired or had prostate cancer, active prostatitis, or a terminal illness. In the remaining 363 patients at high risk (0.7% of all patients, 41.7% of those with elevated PSA), chart reviews have been performed thus far on 109 patients and revealed 88 true positive triggers. The refined trigger was applied to all male patients between ages 40 and 70 seen at the facility between January 1 and December 31, 2009. A physician reviewer performed chart reviews using a standardized, pretested data collection instrument to assess the positive predictive value (PPV) of the trigger program. We also collected reasons for false positive triggers.

**CONCLUSION:** EHR-based triggers appear to be useful in detecting patients with elevated PSAs at high risk for loss of follow-up. Our trigger facilitates the detection of potential delays in prostate cancer diagnosis in a large cohort of patients and thus is far more efficient in delay detection than non-selective record reviews. Future application and testing of these triggers can potentially identify delays in diagnosis of cancer prospectively.

**WHAT FACTORS INFLUENCE THE ACCURACY OF PHYSICIANS’ PERCEPTION OF PATIENTS’ HEALTH LITERACY**

Letitia J. Wright, Margaret M. Huizinga, Sande Okelo, Hsin-Chieh Yeh, Lisa A. Cooper.

**BACKGROUND:** Physicians tend to poorly assess patients’ health literacy, which may contribute to poor quality of care and health outcomes; however, it is unclear whether patient and patient-physician relationship factors are associated with the accuracy of physicians’ perception of patients’ health literacy. We sought to determine factors associated with physicians’ perception of patients’ health literacy. We hypothesized that patient factors, including older age and greater than high school education would be associated with overestimation of health literacy, while black race, female sex, and lack of health insurance would be associated with underestimation of health literacy. We further hypothesized that relationship factors (i.e., race concordance, gender concordance, and familiarity) would be associated with accurate physician perceptions of patients’ health literacy.

**METHODS:** We performed a cross-sectional study of baseline data from the primary care visits of 237 hypertensive patients and 41 physicians from 15 urban, community-based practices enrolled in a clinical trial. Patients completed the Rapid Estimate of Adult Literacy in Medicine (REALM) and were categorized as having adequate health literacy if they had a score of at least 61. Physicians rated individual patients’ health literacy on a 5-point Likert scale from 1 (functionally illiterate) to 5 (fully literate) (patients with a score of 5 were considered literate by physicians). The outcome variable was the accuracy of physicians’ perception of patients’ health literacy, categorized as accurate (physician’s rating matches patient’s literacy level by REALM), underestimated (physician rates patient as not literate when patient has adequate literacy by REALM), and overestimated (physician rates patient as literate when patient’s literacy is not adequate by REALM). Patient predictor variables were age, race/ethnicity, gender, health insurance status, and educational attainment. Relationship predictors were race and gender concordance within the dyad, and familiarity (e.g., how well the patient was known by the physician). We used multivariable multinomial logistic regression with generalized estimating equations (to account for clustering of patients within physicians) to identify factors associated with physician perceptions of patients’ health literacy.

**RESULTS:** The trigger was applied to 51,491 patients in our study cohort; 30,012 (58.3%) had PSA tests performed, of which 869 (2.9%) had a newly elevated PSA result. The trigger further excluded 420 (48.3%) patients for whom appropriate follow up actions could be detected and an additional 84 (9.7%) who had expired or had prostate cancer, active prostatitis, or a terminal illness. In the remaining 363 patients at high risk (0.7% of all patients, 41.7% of those with elevated PSA), chart reviews have been performed thus far on 109 patients and revealed 88 true positive triggers. The refined trigger was applied to all male patients between ages 40 and 70 seen at the facility between January 1 and December 31, 2009. A physician reviewer performed chart reviews using a standardized, pretested data collection instrument to assess the positive predictive value (PPV) of the trigger program. We also collected reasons for false positive triggers.

**CONCLUSION:** EHR-based triggers appear to be useful in detecting patients with elevated PSAs at high risk for loss of follow-up. Our trigger facilitates the detection of potential delays in prostate cancer diagnosis in a large cohort of patients and thus is far more efficient in delay detection than non-selective record reviews. Future application and testing of these triggers can potentially identify delays in diagnosis of cancer prospectively.
factors that are independently associated with the accuracy of physicians' perceptions of patients' health literacy.

RESULTS: The average age of patients was 61.7 years; approximately 35% had adequate health literacy. About 64% were women, and 62% were Black. Ninety percent had health insurance and nearly 70% were high school graduates. Almost 45% of patients saw a race-concordant physician and about 60% had physicians of the same gender. Over 39% were well known by their physicians. One hundred fifty-five (65.4%) had their health literacy level accurately judged by physicians, 54 (22.8%) were underestimated, and 28 (11.8%) were overestimated. In multivariate analyses (see table), patients with health insurance [Relative Risk Ratio (RRR) 2.83; 95% CI, 1.07 to 7.46; P = 0.04] and patients in gender-concordant relationships with their physicians (RRR 1.74; 95% CI, 1.03 to 2.96; P = 0.04) had higher odds of having their health literacy underestimated. In contrast, patients in race-concordant relationships had lower odds of having their health literacy underestimated (RRR 0.49; 95% CI, 0.25 to 0.98; P = 0.04). Patients who were well known by their physicians had higher odds of having their health literacy overestimated (RRR 2.21; 95% CI, 1.06 to 4.63; P = 0.04) than accurately perceived. No patient demographic factor, other than health insurance, was associated with accuracy of the physicians' assessment of patient health literacy.

CONCLUSION: Most patient demographic factors are not associated with accuracy of perceptions of health literacy by physicians. Relationship factors may result in both underestimation and overestimation of patients' health literacy. These results reinforce the need for objective measures of patient health literacy in clinical care. Future work should examine whether the accuracy of physicians' perceptions of health literacy influences quality of care and health outcomes.

PROJECTED EFFECT OF DIETARY SALT REDUCTIONS ON FUTURE CARDIOVASCULAR DISEASE IN ARGENTINA Raul Mejia 1; Daniel Ferrante 2; Eliseo J Perez-Stable 3; Kirsten Bibbins-Domingo 4; Pamela Coxson 5; Lee Goldman 6; Andrew Moran 7; Hospital de Clínicas, Buenos Aires, N/A; 8Ministry of Health, Argentina, N/A; 9UCSF, San Francisco, California; 10University of California San Francisco, San Francisco, California; 11University of California San Francisco, San Francisco, California; 12Columbia University, New York, New York. (Tracking ID # 11423)

BACKGROUND: The average per capita consumption of salt in Argentina is about 12 grams per day with the majority coming from processed-foods. Reducing dietary salt may have a beneficial effect on public health by reducing consequences of elevated blood pressure because elevated blood pressure explains nearly 50,000 deaths per year.

METHODS: The Coronary Heart Disease(CHD) Policy Model is a national-scale computer model of CHD and stroke. We theCHD Policy Model to Argentinian population to quantify the benefits of a 3 g per day reduction in dietary salt. Data sources for the model included vital statistics mortality data, morbidity data from clinical sites, and cost data from public and private sectors. We estimated therates and costs of cardiovascular disease in subgroups defined by age and sex and for the next ten years. Based on the assumption that the effect of saltreduction on blood pressure reduction was linear over the range of 0 to 3 g per day we determined the cost-effectiveness of salt reduction considering a higheffectiveness scenario (5.6 mmHg reduction in the systolic blood pressure) and low effectiveness scenario (3.6 mmHg reduction in the systolic blood pressure) scenarios.

RESULTS: Reducing dietary salt by 3 g per day is projected to reduce the incidence of CHD by 10%, stroke by 12%, and myocardial infarction by 7.3% and to reduce the annual number of deaths from any cause by 2.5%, considering the high efficacy scenario. All segments of the population would benefit. The cost of implementing a salt reduction program, including processed foods reduction through agreements with food industry and population education campaigns during 10 years would be estimated at $14 million in US dollars. Because of the reduction in hospital admissions and other health care costs, the implementation of this program will save $974 millions US dollars in ten years (discounted). In the high efficacy scenario the salt reduction will save 262,100 Quality Adjusted Life Years (QALYs); in the low efficacy scenario this program will save 161,500 QALYs.

CONCLUSION: A 3 g per day reduction in dietary salt could dramatically reduce cardiovascular events and medical costs and should be a public health target. This potential impact contributes to raise this intervention in the public health policy agenda.

USE OF CLOSE FOLLOW-UP AS A STRATEGY TO MITIGATE HARM FROM DIAGNOSTIC ERROR IN PRIMARY CARE Hardeep Singh 1; Traber Davis Giardina 2; Samuel Fortjourn 3; Michael Reis 4; Steven Kosmach 5; Myrna Khan 6; Eric Thomas 7; VA Health Services Research and Development Service (VA HSRR&D) Center of Excellence, Michael E. DeBa, Houston, Texas; 8VA Medical Center and Baylor College of Medicine, Houston, Texas; 9Scott & White Healthcare System and A&M Health Science Center, Temple, Texas; 10University of Texas at Houston–Memorial Herman Center for Healthcare Quality and Safety, Houston, Texas. (Tracking ID # 11426)

BACKGROUND: Diagnostic errors in primary care are harmful but not well studied. Ensuring close follow-up might be one strategy to minimize harm from diagnostic error, but little empirical work has examined diagnostic error and the quality of follow-up in primary care. Because visits with errors might involve greater provider uncertainty, we hypothesized that follow-up practices (e.g., scheduling follow-up, scheduling follow-up at an appropriate time interval) by providers would differ in situations involving diagnostic errors versus those with no diagnostic errors.

METHODS: We applied electronic trigger queries to electronic health record (EHR) repositories at two large health systems between October 1, 2006 and September 30, 2007 to identify records likely to contain a diagnostic error. One site was an urban VA facility with 5 on-site and 5 satellite clinics, the other a large private health care system with 4 community-based clinics. Both sites provided longitudinal care in relatively closed systems and had integrated and well-established EHRs. Trigger queries were 1) primary care index visits followed by unplanned hospitalization within 14 days, and 2) primary care index visits followed by >1 unscheduled visit(s) within 14 days. Two physicians independently reviewed cases meeting either criterion for evidence of diagnostic errors and follow-up practices. For each index visit, reviewers recorded whether the provider scheduled any future follow-up visit, and if so, whether the provider scheduled routine follow-up (i.e., non-urgent, next available follow-up for routine medical issues usually in several months) or close follow-up (i.e., within 7 or 30 days depending on the clinical situation and specifically given for uncertain diagnosis or close monitoring). Reviewers also rated whether the time to follow-up was optimal for the clinical presentation at the index visit. We compared follow-up practices between index visits with and without diagnostic error.

RESULTS: In 212,165 visits, we found diagnostic errors in 177 of 997 (17.8%) triggered records. Errors included a large variety of clinical conditions, and no single condition accounted for more than 10% of all errors. Index visits with and without diagnostic errors were equally likely to have had any future follow-up scheduled by the provider (57.0% v. 60.9%, P=.34). Similarly, comparable proportions of patients in error visits received close follow-up compared to those without errors (56.6% v. 58.8%, P=.21). Quality of follow-up was no different between visits with and without errors. Therefore, close follow-up may not be an effective strategy to mitigate harm from diagnostic error in primary care.
of index visits with and without diagnostic errors were scheduled for future “routine” follow-up (rather than close follow-up) at the time of the visit (43.6% vs. 42.3%, P=.81). The time interval between the index visit and follow-up was judged suboptimal (i.e. not close enough) in a higher proportion of index visits with errors, although this was not statistically different from index visits without errors (36.6% v. 9.3%, P=.07).

CONCLUSION: There were no differences in follow-up practices between primary care visits with and without diagnostic errors, suggesting that close follow-up might be underutilized to mitigate harm in certain visits with diagnostic error. Our findings suggest that providers might not always perceive greater clinical uncertainty or the need to initiate close monitoring in situations involving diagnostic errors. Future investigation on describing and utilizing appropriate follow-up practices in primary care might prevent patient harm from diagnostic error.

DEFINING ENHANCEMENT: RESULTS FROM A PHYSICIAN SURVEY
Timothy Dawson Hotze 1; Kuwita Shah 2; Emily E Anderson 3; Matthew K Wynia 4; 1American Medical Association, Chicago, Illinois; 2Thomas Jefferson University Hospital, Philadelphia, Pennsylvania; 3University of Illinois at Chicago, Chicago, Illinois. (Tracking ID # 11443)

BACKGROUND: Medical interventions are increasingly being used in efforts to enhance human athletic, aesthetic and cognitive performance. But determining whether an intervention is an “enhancement” or a “therapy” can be murky. In particular, the same medical intervention might be considered therapeutic for some patients but an enhancement for others, based on several factors. We investigated how physicians think of the term “enhancement,” whether certain interventions that might be considered enhancements would be acceptable to prescribe for differing conditions, and whether these interventions should be covered by insurance.

METHODS: Mailed survey of a national random sample of 1,500 US-licensed physicians in patient-care specialties. The survey asked physicians a series of questions on how they define “enhancement” as opposed to “therapy,” whether a set of proposed medical interventions are acceptable to prescribe given different underlying patient conditions or concerns, and whether these interventions should be covered by insurance.

RESULTS: Of the 633 (46.4% adjusted response rate) physicians who responded, most (81%) agreed that a medicine is an “enhancement” if it “makes a person perform better than humans have ever been able to person in the past.” Only slightly lower agreement existed if the medicine “gives a person non-medical advantages in life” (76%) or makes a person “better than normal for their age” (67%). However, only 45% think a medicine that “prevents normal deterioration due to aging” is an enhancement, and nearly one-third (32%) believe it is “often impossible to distinguish between medicine used for enhancement and that used for therapy.” Considering the same interventions used for differing reasons, vast differences were seen in physician willingness to prescribe them and the belief they should be covered by insurance: e.g., 10% would prescribe a medicine to enhance memory for a student, but 66% would do so for a patient with Alzheimer’s; and 46% would prescribe a medicine to restore sexual functioning after surgery, but only 3% would do so to help a patient achieve above-normal performance. Physicians generally felt insurance should cover medicines they were willing to prescribe.

CONCLUSION: The circumstances in which medical interventions are considered to be “enhancements” rather than therapies is of increasing importance for economic, political and social reasons. We found a lack of consensus among physicians on when specific interventions comprise an enhancement, which could lead to unequal access to beneficial enhancements as well as dissemination of interventions by some physicians that are viewed by many other physicians as dangerous.

IMPACT AND COST EFFECTIVENESS OF THE IMPLEMENTATION OF A NEW TOBACCO CONTROL LAW IN ARGENTINA
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BACKGROUND: In Argentina 27% of the population smokes regularly and second hand smoke exposure affects 70% of homes. Tobacco use is responsible for 16% of adult mortality. As in the US, there is no national and comprehensive tobacco control law, but only regionallaws with variable components. In 2010, Argentina’s lower chamber of congress passed a tobacco control law mandating 100% smoke free environments for thecountry, strong pictorial health warnings on packaging of tobacco products and comprehensive advertising ban. However, Argentina’s senate has not approved the law to date. Our objective is to estimate the impact and cost-effectiveness of the implementation of this law from 2010 to 2020.

METHODS: The Coronary Heart Disease(CHD) policy model, a national-scale computer model of CHD and stroke, was adapted with data from Argentina and used to project future clinical outcomes and costs. Data sources for the model included vital statistics mortality data, morbidity data from clinical sites, and cost data from public and privatesectors. The 2005 National Risk Factor Survey provided tobacco useestimates. Based on previousstudies, the effectiveness of interventions was estimated: 60% reduction of second hand smoke exposure due to 100% smoke free policies, 1% yearly reduction of tobacco consumption due to health warnings and, 2% yearly reduction oftoffice smoke consumption due to the comprehensive ban on advertising, promotion and sponsorship. Results were expressed as lives saved, quality adjusted life years saved(QALYs), and coronary heart disease and strokes avoided yearly and in the 10-year period between 2010 and 2020. For the cost-effectiveness analysis, the incremental cost-effectiveness ratio was reported, considering the current scenario of no national law, current level of tobacco use and second-hand smoke exposure.

RESULTS: In the 2010–2020 period, 180,000 all cause deaths, 45,000 coronary heart disease deaths, 110,000 myocardial infarctions and 177,000 strokes could be avoided due to the full implementation and enforcement of this law. 756,000 QALYs could also be saved. The yearly reduction could be 21.9% for myocardial infarctions, 21% for stroke, 14.2% for CHD death and 7% for all cause deaths. With full implementation ofthe interventions, net savings from the health system perspective could be 895 million discounteds in ten years, even after including the intervention costs.

CONCLUSION: The final enactment of this law would produce significant public health benefits in Argentina similar tothe experience in California. Strong advocacy is needed at national andinternational level to get these laws approved and enforced.

DOES IMPROVED CONTINUITY OF PRIMARY CARE REDUCE AMBULATORY CARE SENSITIVE HOSPITALIZATIONS IN VA?
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BACKGROUND: Recent changes in healthcare delivery, including the movement toward more team-based care, have reduced the likelihood of...
patients seeing the same primary care provider (PCP) at repeated visits. Prior studies suggest that decreased longitudinal continuity of care (COC) increases emergency department visits and unplanned hospitalizations, but evidence is mixed. The aim of the study is to evaluate the association between longitudinal continuity of care (COC) and hospitalizations for ambulatory care sensitive conditions (ACSCs) in VA outpatients.

METHODS: We conducted a retrospective cohort study of 170,487 VA outpatients who were assigned to a VISN 23 primary care provider (PCP) and had at least one primary care visit to physicians or physician extenders during each of three years (FY2007-09). Data from the 2007 Patient Care Management Module were linked to VA outpatient and inpatient datasets (including non-VA admissions to private sector hospitals that were paid for by the VA). Clinic stop codes were used to identify primary care visits: telephone contacts, home-based contacts, or contacts with a non-PCP were excluded. Three measures of longitudinal COC, Usual Provider of Continuity (UPC), Modified Modified Continuity Index (MMCI), and Known Provider Continuity (K index), were calculated for each eligible VISN 23 primary care patient (on a scale of 0–1, where 1 is perfect continuity); each measure was grouped into high, intermediate, and low COC categories. Using Proc GLIMMIX, multivariable random effects logistic regression models were used to predict hospitalization for ACSCs (based on AHRQ quality indicators) during FY2009. Separate models were fit for each COC measure, controlling for demographics, disability status, chronic medical and psychiatric conditions (Elixhauser comorbidities plus generalized anxiety disorder and post-traumatic stress disorder), history of prior ACSC hospitalization during FY2007-2008, and usual site of care (modeled as a random effect).

RESULTS: The mean number of primary care outpatient visits was 4.3, and 1.9% were hospitalized for an ACSC during FY2007-08. The mean values of UPC, MMCI, and K-index were 0.77, 0.76, and 0.75, respectively; 51% of outpatients had high continuity (UPC=1), whereas 35% and 14% had intermediate (UPC=0.50-0.99) and low (UPC < 0.50) continuity, respectively. In multivariable models, low and intermediate UPC was associated with an increased odds of ACSC hospitalization: adjusted OR (95% CI)=1.53 (1.34, 1.74) and 1.46 (1.32, 1.63), respectively. Using the K-index, which explicitly accounts for number of providers, low and intermediate UPC groups demonstrated an increased odds of ACSC hospitalization: adjusted OR (95% CI)=1.27 (1.09, 1.47) and 1.56 (1.40, 1.73), respectively; similar results were obtained for the MMCI measures.

CONCLUSION: Longitudinal continuity of VA primary care compares favorably to that reported in non-VA settings. Reductions in PCP continuity may significantly increase the risk of ACSC hospitalizations. Innovative models of care such as the Patient Centered Medical Home need to be monitored for unintended reductions in continuity with the patient’s PCP.

THE DISCONNECT BETWEEN HEMOGLOBIN A1C VALUES AND PATIENT PERCEPTIONS IN POORLY CONTROLLED DIABETES Anjali Gopalan 1, Haley Moss 1, Jingyuan Zuo 1, Sarah Windawi 1, Kevin Volpp 1
1University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania. (Tracking ID # 11446)

BACKGROUND: Numerous studies have shown that maintaining a hemoglobin A1c value less than 7% is associated with lower rates of diabetes-related complications. The hemoglobin A1c is the standard way that information regarding current diabetes control and risk of future complications is conveyed to patients. However, it is unclear how well understood these values are to diabetic patients who have poor glycemic control. To many such patients, particularly those with low numeracy or of lower socioeconomic status, the A1c may seem like a meaningless number that is not particularly intuitive or easily understood.

METHODS: Diabetic patients seen at three of the University of Pennsylvania internal medicine practices who had a recent hemoglobin A1c value greater than 8% were contacted regarding potential enrollment in a RCT testing different approaches to providing patient feedback on glycemic control. As part of this trial, we conducted phone surveys to collect information regarding socioeconomic status, diabetes history and participant perceptions of current disease control and disease-associated risk. Also included in this survey was the Schwartz 3-item numeracy assessment tool. Using the electronic medical record, the participants’ hemoglobin A1c values at the time of enrollment were also collected. The primary outcomes examined for the present analyses were the relationships between a participant’s hemoglobin A1c value and perception of disease control and disease-associated complication risk. Comparisons were made using unpaired t-test and chi-squared analysis.

RESULTS: We enrolled 177 patients in the study between May 2010 and November 2010. Of the enrolled participants, 55% reported no formal education beyond high school and 50% reported an individual annual income of less than $20,000. The numeracy of enrolled participants was quite poor, with 90% of respondents answering none or only one of the Schwartz assessment tool questions correctly, and only 1 participant of the 177 able to answer all three questions correctly. The average hemoglobin A1c of enrolled participants at baseline was 9.85%. Several of the findings suggest low comprehension of A1c scores. For example, 24% of enrolled participants described their current level of diabetes control as “excellent” or “good,” while 37% described their level of diabetes control as “poor” or “terrible” on a five-point Likert scale. No statistically significant difference in hemoglobin A1c values was noted between these two groups (9.78% vs 10%, p=0.52). Further, there was no statistically significant difference in hemoglobin A1c values between the 21% of participants who reported to be “not at all” or “slightly” worried about complications and the 64% of respondents who reported being “very” or “extremely” worried about diabetes-related complications (9.52% vs 9.99%, p=0.13).

CONCLUSION: Many patients with poor glycemic control do not appear to understand the hemoglobin A1c value in assessing their diabetes control or future diabetes-related complication risk. The poor numeracy noted amongst this population may contribute to this problem. Given this, it is clear that alternate information formats to the hemoglobin A1c are needed to more effectively educate diabetic patients about disease control and severity in an effort to increase insight and, eventually, improve disease-related outcomes.

RELATIONSHIP AMONG PHYSICIAN VISIT NOTE DOCUMENTATION METHODS AND PHYSICIAN AND PRACTICE CHARACTERISTICS Stephanie Elizabeth Pollard 1, Pamela Neri 1, Allison Wilcox 1, Lynn Volk 1, Deborah Williams 2, David Bates 2, 1Partners HealthCare, Inc., Wellesley, Massachusetts; 2Brigham and Women’s Hospital, Boston, Massachusetts. (Tracking ID # 11448)

BACKGROUND: Clinical documentation represents an essential process within electronic health records (EHRs). It is vital for tracking patient progress, supporting clinicians’ diagnostic thinking and decision making, and enabling quality measurement. Under-
standing what types of methods physicians are utilizing to input their visit notes in the EHR represents an important first step in assessing how to align documentation to improve care, and may also offer insights into how to optimize system design with the correct balance between structured and free text entry. This study evaluated how physicians were documenting their visit notes in an EHR and whether documentation method was influenced by physician or practice characteristics.

**METHODS:** We reviewed documentation methods of 1.94 million visit notes authored in 2008 by 1,088 community-based and academic primary care physicians (PCPs) and specialists and assessed rates of documentation method use. We determined each physician's predominant documentation method (template, free form, dictation, or no one method), defined as using only one method to enter at least 75% of visit notes. Those who did not use any single method for more than 74% of visit note entries were classified as no one method users. Using data abstracted from the EHR and Provider Master Index, we performed a multinomial regression analysis to determine the relationship between documentation method and physician and practice characteristics.

**RESULTS:** Overall, 85% of physicians used a single method to document the majority of their visit notes. Of primary care providers, 60% documented visits predominantly using templates, while 34% of specialists predominantly used templates and another 38% predominantly dictated their notes. Physicians who predominantly used templates were more likely to work in community-based practices (p=0.004) outside of a hospital setting (p=0.032) and were more likely to be female (p<0.001) and younger (p=0.001) than those who dictate.

**CONCLUSION:** Clear trends exist in visit note documentation methods. Physicians predominantly use a single documentation method, although individual and practice demographics appear to influence the use of one method over another. Younger physicians at community-based practices are adopting templates to document the majority of their visit notes. Better understanding of what approaches result in the best notes and highest quality of care will be useful in development of meaningful use standards for electronic visit note documentation, as well as the next generation of clinical decision support.

**EFFECT OF ACID-SUPPRESSIVE MEDICATION ON RISK OF GASTROINTESTINAL BLEEDING IN HOSPITALIZED PATIENTS ON "HIGH RISK" MEDICATIONS**

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(Tracking ID # 11449)

**BACKGROUND:** Although routine use of acid-suppressive medication for "stress ulcer" prophylaxis in non-critically ill hospitalized patients is not currently recommended, it may be warranted in certain patients at high risk for nosocomial gastrointestinal bleeding (GIB). We sought to investigate the risk of nosocomial GIB in non-critically ill hospitalized patients on non-steroidal anti-inflammatory drugs (NSAIDs), steroids, antiplatelet agents, and anticoagulant agents, and whether or not this risk is modified by use of acid-suppressive medication.

**METHODS:** We conducted a pharmacoepidemiologic cohort study of patients admitted to a large academic medical center from 2004 through 2007, at least 18 years of age and hospitalized for 3 or more days. Admissions with a primary diagnosis of gastrointestinal bleeding were excluded. The main outcome measure was nosocomial GIB occurring outside of the intensive care unit (ICU), defined as any overt GIB (i.e. hematemesis, melena, or hematochezia) occurring > 24 hours after hospital admission, in a patient outside of the ICU. We grouped exposures into broad classes of drugs felt to increase risk of GIB, including NSAIDs, steroids, antiplatelet agents, and anticoagulant agents. For each medication class, we evaluated its association with nosocomial GIB using propensity score models to control for confounding by indication and exposure to the other medication classes. We then assessed and quantified effect modification by acid-suppressive medication exposure.

**RESULTS:** The final cohort included 78,394 admissions (median age=56 years; 41% men). Acid suppressive medication was used in 59% of the cohort and nosocomial gastrointestinal bleeding occurred in 224 admissions (0.29%). Neither NSAIDs nor steroids were significantly associated with nosocomial GIB, adjusted OR 0.88 (95% CI 0.56-1.39) and 1.05 (0.75-1.46), respectively; furthermore, there was no significant effect modification of GIB by acid-suppressive medication exposure.

**Table 1: Association among Demographic Characteristics and Methods Used**

| Characteristic | Method vs. Template Likelihood Estimate | Pr > Change |
|---------------|----------------------------------------|-------------|
| Age           | Diction 0.0292 0.0014*                 |             |
|               | Free Form 0.0315 0.0011*               |             |
|               | No One Method -0.0014 0.8901           |             |
| Community     | Diction -0.6792 0.0045*                |             |
|               | Free Form -2.0389 <0.0001*             |             |
|               | No One Method -1.4048 <0.0001*         |             |
| Female        | Diction -0.7356 0.0002*                |             |
|               | Free Form -0.1829 0.0402               |             |
|               | No One Method -0.0951 0.6238           |             |
| Specialist    | Diction 1.2185 <0.0001*                |             |
|               | Free Form -0.4585 0.0082               |             |
|               | No One Method 0.3012 0.1717            |             |
| Notes Auth    | Diction -0.00193 0.0508                |             |
|               | Free Form -0.0011 0.3647               |             |
|               | No One Method -0.00017 0.3766          |             |
| At Hospital   | Diction 0.4493 0.0321*                 |             |
|               | Free Form 1.1414 <0.0001*              |             |
|               | No One Method 0.4544 0.0441*           |             |

† Associations are based on a multinomial logistic regression performed at a 0.05 level of significance

*Indicates statistically significant association.
risk by acid suppressive medication. Significant effect modification by acid-suppressive medication exposure status was found for the relationship between nosocomial GIB and the remaining drug classes, as presented in the Table. For each drug class, the number-needed to treat (NNT) with acid-suppressive medication to prevent 1 nosocomial GIB is also presented.

**CONCLUSION:** In this large pharmacoepidemiological cohort of non-critically ill hospitalized patients, antiplatelet agents and therapeutic anticoagulants were associated with significantly increased odds for nosocomial GIB. In patients being treated with these agents, acid-suppressive medication use was associated with reduced odds of GIB but the NNTs were all relatively high. Patients on dual antiplatelet therapy stood to benefit the most from acid-suppressive medication. Our results provide clinicians with useful data to balance the potential benefits of acid-suppressive medications with their increasingly identified risks.

### Table. Rates of nosocomial gastrointestinal bleeding (GIB) according to medication exposure status.

| Medication Class          | Exposure Frequency | Adjusted OR for GIB without Acid-Suppression | Adjusted OR for GIB with Acid-Suppression NNT |
|---------------------------|--------------------|---------------------------------------------|---------------------------------------------|
| Prophylactic anticoagulants | 38831 (49.5)       | 1.50 (0.88 - 2.55)                          | 0.67 (0.51 - 0.88) 1053                     |
| Therapeutic anticoagulants | 13955 (17.8)       | 2.83 (1.69 - 4.75)                          | 0.82 (0.59 - 1.14) 417                      |
| Antiplatelet agents       | 24608 (31.4)       | 3.15 (1.80 - 5.50)                          | 0.82 (0.61 - 1.11) 596                      |
| Aspirin + clopidogrel     | 6435 (8.2)         | 3.92 (1.89 - 8.13)                          | 0.65 (0.49 - 0.87) 318                      |

**TEN-YEAR TRENDS IN THE QUALITY OF CARE AND RACIAL DISPARITIES AFTER THE VETERANS AFFAIRS ORGANIZATIONAL TRANSFORMATION**

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**BACKGROUND:** The quality of care in the VA improved following an organizational transformation in the 1990’s, but it is not known whether this improved clinical performance was accompanied by narrowed or widened racial disparities. We assessed trends in overall quality and racial disparities in quality for white and black enrollees in the VA healthcare system from 2000–2009 and examined the role of geography, site of care, and socioeconomic status as contributors to racial disparity over time in the VA.

**METHODS:** We linked individual-level data from the VA’s External Peer Review Program (EPRP) data on quality of care with Medical SAS datasets, which provided sociodemographic characteristics. We supplemented race data from Medical SAS with Medicare enrollment data, which reduced missing race data to <1%. For each quality indicator, we used generalized linear regression to assess the independent effect of race, year, and a race-year interaction on achievement of that indicator, adjusting for demographic characteristics, Census region, and a VAMC-level fixed effect. The sample included 918,327 white and 152,700 black VA enrollees.

**RESULTS:** Black enrollees were younger, more likely to be residing in the South, and had lower area-level income and education than white enrollees. With the exception of breast cancer screening, aggregate performance improved over time for all indicators. Absolute differences in performance rates between white and black enrollees were less than 2 percentage points for 5 of 6 process-of-care measures during each study year. However, disparities for the four intermediate outcomes indicators ranged from 5.5 percentage points for HbA1c control in diabetes to 8.0 percentage points for cholesterol control among persons with coronary artery disease (p<0.01 for race-black comparisons). There were modest declines in racial disparity for blood pressure control (7.7 to 4.9 percentage points; p<0.01 for race-year interaction) and cholesterol control among persons with coronary artery disease (9.5 to 7.4 percentage points; p<0.01 for race-year interaction). Racial disparities were statistically unchanged for HbA1c control and cholesterol control in diabetes. Adjustments for VAMC, Census region and area-level socioeconomic status produced minimal change in these disparities.

**CONCLUSION:** The quality of care improved and racial disparities were minimal for most measures of the process of care from 2000–2009. However, these improvements were not accompanied by meaningful reductions in racial disparity for important clinical outcomes. Disparities in outcomes measures were driven by different outcomes for white and black enrollees receiving care in the same VA medical center rather than concentration of black Veterans in lower performing VA facilities.

**AGENDA-SETTING IN ROUTINE PRIMARY HIV CARE ENCOUNTERS**

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**BACKGROUND:** Effective and efficient medical interviewers “invest in the beginning” of each patient encounter by eliciting the full spectrum of patient concerns and setting an agenda for the visit. Agenda setting is particularly important for patients with multiple needs and complex illnesses, such as HIV/AIDS. Although studies have demonstrated that physicians often fail to elicit the full spectrum of patient concerns, few studies have described the ways in which physicians perform the tasks of eliciting concerns and the extent to which they set an explicit agenda.
METHODS: We performed a qualitative analysis of audio recorded and transcribed routine encounters between 33 HIV providers and their patients from the Enhancing Communication and HIV Outcomes (ECHO) Study. Informed by previous work in this area, we developed themes related to how the visit is opened, whether and how providers elicit patient concerns and set an agenda for the visit. We then developed a coding scheme that we applied to a random selection of 2 encounters per provider (66 encounters total). Two authors discussed and agreed on all final categorizations.

RESULTS: Patients were 66% male, 54% African American, with a mean age of 45 (range 20–77). Providers were 64% female, 73% white, with a mean age of 43 (range 30–57). In 41 of 66 encounters (62%), providers opened the visit with a general opening question (“How are you doing?”). Seven visits opened with a leading question (“Everything’s okay?”); we found only one encounter in which the provider opened by explicitly asking which topics the patient wanted to discuss. Patients more often responded to these opening questions with brief positive statements (“Fine”, n=30) than with actual concerns (n=14). In only 12 encounters (18%), the provider continued to elicit patients’ concerns until the patient stated that s/he had no further concerns (probe to exhaustion). In nearly half of encounters (n=30), there was no agenda statement. Agenda statements, when they occurred, often (n=20, 30%) centered on physicians’, rather than patients’, priorities (e.g. D: “You’re here because we wanted to jump on your blood pressure”). Rarely (n=3), there was an agenda statement made by the patient (P: “So you want to do the blood work for my CD4 count and viral load. Can you check me for, um, is there blood work for diabetises?”). Collaboratively-negotiated agendas were observed in only 3 encounters (e.g. D: “Okay. Anything else goin’ on?”/P: “Uh, not really. I think I’m so centered on the pain thing that I, that’s my focal point now”/D: “Well let’s make a priority”). In 53% of encounters (n=35), patients brought up new concerns later in their visit.

CONCLUSION: Providers frequently use generic opening questions that may not be effective in eliciting patients’ concerns, and then do not typically continue to elicit the full spectrum of patient concerns. Agendas are not often explicitly stated, and when an agenda is stated, it tends to center on physicians’ priorities. Negotiation of the visit agenda between patient and provider is rare. Perhaps as a result, new patient concerns continue to arise later in most encounters. Making clinical encounters more patient-centered may require training providers to more effectively invest in the beginning of each encounter and develop patient-centered agendas.

DIFFERENT PERSPECTIVES OF MEDICAL HOME CAPABILITY AND PROVIDER/STAFF MORALE, SATISFACTION, AND BURNOUT IN HEALTH CENTERS Sarah E Lewis 1; Robert S. Nocon 1; Hui Tang 1; Seo Young Park 1; Anusha M. Vable 1; Lawrence P. Casalino 2; Elbert S. Huang 1; Michael T. Quinn 1; Jonathan M. Birnberg 1; Deborah L. Burnet 1; Wm Thomas Summerfelt 3; Marshall H. Chin 1; 1University of Chicago, Chicago, Illinois; 2Access Community Health Networks, Chicago, Illinois; 3Advocate Health Care, Chicago, Illinois. (Tracking ID # 11465)

BACKGROUND: One of the potential benefits of the patient-centered medical home (PCMH) may be improved provider/staff satisfaction by creating a more efficient and patient-friendly work environment. Perceptions of a health center’s medical home capability may differ depending on whether they are provided by frontline providers and staff or by health center leadership. Therefore, we aimed to determine the association among PCMH capability and provider/staff morale, satisfaction, and burnout at safety net health centers, and whether these associations differed depending upon whether PCMH capability was assessed by provider/staff or health center leadership.

METHODS: The study focused on 65 clinics participating in a Safety Net Medical Home Initiative in five states (CD, ID, MA, OR, PA). CEO assessment of PCMH capability was done using the 52-item Safety Net Medical Home Scale, while Provider/Staff assessment of PCMH capability was done using a new 43-item scale. While the questions were different, both surveys assessed total PCMH score and PCMH domains of Access and Communication, Patient Tracking and Registry, Care Management, and Quality Improvement on 0–100 (worst to best) scales. The Provider and Staff survey also asked about provider/staff morale, satisfaction, and burnout using single-question 5-point Likert scales for each outcome.

RESULTS: We had a 100% response rate for the CEO survey (65 total responses), and a 78% response rate for the Provider and Staff survey (604 total responses). The average Total PCMH Score for the CEO survey was 61±SD=11 and for the Provider and Staff Survey was 61±13. The correlation across clinics between the two scores, however, was low (r=.23, p<.001). 68% of providers and staff rated their morale as “good” or better, 78% “agreed” or “strongly agreed” that they were satisfied with their job, and 61% reported no symptoms of burnout. In unadjusted logistic regression, a 10% increase in total PCMH score measured by providers and staff was correlated with “good” or better provider/staff morale (Odds Ratio (OR) 2.78, 95% Confidence Interval (CI) 2.19–3.54), positive satisfaction (OR 2.10, CI 1.69–2.60), and freedom from burnout (OR 1.84, CI 1.52–2.23). However, total PCMH Score measured by CEOs was not significantly associated with provider/staff morale and satisfaction. Total PCMH Score measured by CEOs was significantly associated with provider/staff burnout (OR .84, CI 0.73–0.98), but in this case a 10% increase in the CEO’s PCMH score was associated with worse provider/staff burnout.

CONCLUSION: Using 2 different survey instruments, providers and staff had different perceptions of their clinic’s PCMH capability compared with CEOs. PCMH capacity assessed by providers and staff was associated with better provider/staff morale, increased satisfaction, and less burnout. However, PCMH capacity measured by CEOs was not significantly correlated or else was inversely correlated with provider/staff morale, satisfaction, and burnout. The most appropriate perspectives and data sources for PCMH assessment may depend upon the purpose of the analysis.

FEASIBILITY OF A WEB-BASED TREATMENT DECISION TOOL FOR OLDER PATIENTS WITH DIABETES Priya John 1; Aviva Nathan 1; Marla Solomon 1; Milton Edor 2; Nananda Col 3; William Dale 1; David Melitzer 1; Marshall Chin 1; Elbert Huang 1; 1University of Chicago, Chicago, Illinois; 2Access Community Health Networks, Chicago, Illinois; 3Maine Medical Center, Portland, Maine. (Tracking ID # 11465)

BACKGROUND: Patients >65 years represent over 40% of patients living with diabetes (DM). However, it is unclear if glycemic control targets developed for the general population of DM patients are appropriate for all older patients. Therefore, we developed a web-based Geriatric Diabetes Decision Aid (GDDA) which combines a decision analytic model of DM complications with a geriatric life expectancy prediction tool. The GDDA encourages glycemic control discussions by educating patients on hemoglobin A1c (A1c), eliciting patient treatment preferences, delivering prognostic information to providers, and providing personalized data on the risks and benefits of glycemic control targets. However, to date, little is known about the best ways to display this information to older patients with DM and their providers. We present the patients and provider acceptability testing of the GDDA.

METHODS: Currently, 6 patients and 6 providers from local federally qualified health centers were interviewed utilizing qualitative methods regarding the patients and provider acceptability testing of the GDDA.
asked questions about the website’s overall usability and design. Interviews were audio recorded and transcribed for accuracy and theme saturation. Patients and providers used the website throughout the interview.

**RESULTS:** Mean patient age was 68 and 50% were female. 5 providers were male. All the providers were either in family medicine or internal medicine. One patient regularly used a computer at home and at work, and two occasionally used but did not own computers. When tested on their knowledge about A1c, only two out of six patients recognized the definition. All physicians agreed that most patients do not comprehend the definition of an A1c. Risk display results were different between patients and providers. Five patients preferred simple tables which showed the incidence of amputation per thousand patients. All providers thought patients would prefer separate pictograms for displaying the incidence of amputation with different A1c targets. Patients and providers agreed that the use of color and pictures, large print, simple wording and easy to operate navigation and scroll buttons were a necessary part of the website design. All patients agreed that the GDDA is a tool that could assist in learning about A1c and discussing treatment goals with their doctor. All providers thought the GDDA could be a useful tool to stimulate conversation regarding A1c targets with their patients.

**CONCLUSION:** The GDDA is an instrument that may be able to assist patients and providers in determining individualized glycemic control targets. Pictures, simple wording, and easy navigation buttons can increase usability. A1c literacy continues to be an issue for patients which may be a barrier to glycemic control discussions. Provider opinions should not be used as a proxy for patient opinions in determining the acceptability of website design.

**BUILDING A COMMUNITY-BASED ACADEMIC PRIMARY CARE AND CHRONIC DISEASE MANAGEMENT PROGRAM IN WESTERN KENYA: APPROACH AND INITIAL RESULTS**

**BACKGROUND:** Through the Presidential Emergency Plan for AIDS Relief (PEPFAR), the U.S. has committed $60 billion for HIV/AIDS care in developing countries. Indiana University in partnership with Moi University in Kenya and a consortium of more than a dozen North American universities launched the Academic Model Providing Access to Healthcare (AMPATH). AMPATH has established HIV/AIDS clinics in 50 rural and urban health centers and hospitals that serve a catchment population of 2 million. To date, with more than $885 million in PEPFAR funding, AMPATH has enrolled more than 130,000 HIV-infected patients who have made more than 2.5 million visits to AMPATH clinics. In 2007, AMPATH decided to expand its mission to include community- and facility-based primary care and chronic disease management (CDM), focusing initially on heart and lung disease, cancer, diabetes, and mental health. AMPATH is training a core of community health workers who will implement future community-based public health programs. Maturation of EHRs and collecting a core set of data are necessary for managing care systems of this size and for providing data for monitoring and improving care. The research component serves the care system by providing the knowledge base for care improvement.

**METHODS:** AMPATH’s approach is termed FLTR: find, link, treat, retain. One large, established academic HIV/AIDS partnership in western Kenya is expanding to include primary care and CDM. HCT has been successfully performed on almost half a million persons to identify those needing HIV/AIDS care, primary care, and CDM. However, referring patients to clinic-based care has proved challenging, yet success among pregnant women is encouraging. HCT is adding community-based screening for hypertension and diabetes to screening for HIV and TB. AMPATH clinics are expanding to care for heart and lung disease, cancer, diabetes, and mental health. AMPATH is training a core of community health workers who will implement future community-based public health programs. Maturation of EHRs and collecting a core set of data are necessary for managing care systems of this size and for providing data for monitoring and improving care. The research component serves the care system by providing the knowledge base for care improvement.

**RESULTS:** To date, HCT counselors have approached 454,598 persons: 98% agreed to be interviewed and 98% of these were screened for HIV (2.5% or more than 5000 were HIV+) and TB (45 new cases found). Of those referred to AMPATH clinics, only 17% have visited to date, but >90% of pregnant women have kept visits. The primary care Hertz has been initially installed in 3 rural primary care clinics which have enrolled and have visit data for more than 50,000 patients. In 2007, AMPATH, which had been affiliated with the national Moi Teaching and Referral Hospital (MTRH), more than 130,000 patients have been enrolled, and visit data are being collected at TB, Antenatal, and Pediatric Clinics. Existing cardiology, pulmonary, oncology, diabetes, and mental health primary care and referral clinics at MTRH are being enhanced by training health care providers, expanding the available tests and treatments, and providing clinic-specific encounter forms. To improve care and outcomes, the AMPATH Research Network supports >70 active research projects funded by grants totaling >$30 million.

**CONCLUSION:** A large, established academic HIV/AIDS partnership in western Kenya is expanding to include primary care and CDM. HCT has been successfully performed on almost half a million persons to identify those needing HIV/AIDS care, primary care, and CDM. However, referring patients to clinic-based care has proved challenging, yet success among pregnant women is encouraging. HCT is adding community-based screening for hypertension and diabetes to screening for HIV and TB. AMPATH clinics are expanding to care for heart and lung disease, cancer, diabetes, and mental health. AMPATH is training a core of community health workers who will implement future community-based public health programs. Maturation of EHRs and collecting a core set of data are necessary for managing care systems of this size and for providing data for monitoring and improving care. The research component serves the care system by providing the knowledge base for care improvement.

**ACCIDENTAL BOWEL AND BLADDER LEAKAGE: COMMON YET UNDER-DIAGNOSED CONDITIONS**

**BACKGROUND:** Urinary and fecal incontinence are common conditions which negatively impact quality of life. There has been an increase in awareness of urinary incontinence (UI), fecal incontinence (FI) remains under-reported, likely due to associated humiliation and embarrassment. Prevalence rates for UI range from 12% - 38%, and 30% - 55% reportedly seek care [1-6]. Despite prevalence rates for FI that range from 5% - 24% among community-dwelling US women, only 8-40% discuss it with their doctors [1, 2, 6-16]. This study aimed to further define the prevalence of and compare care-seeking behaviors for FI and UI among community-dwelling US women.

**METHODS:** An internet-based survey of women ≥ 45 years was conducted by Nielsen via the BASES e-panel. Participants were asked about accidental leakage of urine, liquid and solid stool using questions derived from validated questionnaires. Accidental bowel leakage (ABL) was defined as any loss of solid or liquid stool in the past 12 months; UI was defined as any...
episode of urinary leakage or incontinence in the past 12 months. Women with ABL were asked how they would prefer this leakage be described. Information was collected regarding demographics, medical history, coping and care-seeking for UI and ABL. Chi square and Mann Whitney U testing were used to compare care-seeking for ABL and UI.

**RESULTS:** The response rate was 81% (5,817/7,201); 80% were White, 9% African-American, and 6% Hispanic, with median age 55-59 (range 45 to >85); 88% had health insurance, and 90% had a primary care provider. The prevalence of ABL and UI in the past 12 months were 19% (n=1,096; 95% CI 17.8 - 19.9%) and 46% (n=2,664, 95% CI 44.5 - 47.1%), respectively. While 75% of the survey population had heard of UI, only 23% and 33% had heard of fecal or bowel incontinence, respectively. Among 1,096 respondents with ABL, only 31% (339) had heard the term “fecal incontinence” and 40% (442) had heard the term “bowel incontinence.” When asked which term they would prefer, 71% (667) preferred the term “accidental bowel leakage;” 23% (211) preferred “bowel incontinence” and 6% (60) preferred “fecal incontinence.” Only 8% (76) of women with ABL had been diagnosed by a health professional, as compared with 25% (644) of women with UI (p<0.001). Care-seeking data were available for 86% (938) of women with ABL and 97% (2,588) of women with UI. Of women with ABL, 28% (271) were not at all comfortable or somewhat uncomfortable discussing this condition with their doctor, as compared to only 15% of women with UI (p<0.001). Similarly, 29% (268) of women with ABL, vs. 47% (1,212) of women with UI, had ever discussed their condition with a provider (p<0.001). More than half of women with ABL or UI who discussed their condition did so with their family physician (figure 1). Women with UI were more likely to consult their ob/gyn or urologist than their internist while women with ABL were more likely to consult their gastroenterologist.

**CONCLUSION:** ABL and UI are common conditions, but most women do not address them with their doctors. Women with UI are more likely than women with ABL to discuss their condition with a doctor. The overwhelming majority of women with fecal incontinence would prefer to use the term “accidental bowel leakage” to describe it. Thus, primary care providers should ask patients about both UI and ABL - using this preferred term - on routine review of systems to provide women appropriate care.

**Provider Types with whom Women Discussed their Condition**

- **GP/Family Physician**
- **Internist**
- **Ob/Gyn**
- **Gastroenterologist**
- **Colorectal Surgeon**
- **Urologist**
- Other

**PHYSICIAN-PATIENT COMMUNICATION AND COLORECTAL CANCER SCREENING AMONG LATINO PATIENTS**

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**BACKGROUND:** Latinos are less likely than Whites to obtain any type of colorectal cancer (CRC) screening with 2009 CDC rates of 50% compared to 65%. Furthermore, even though incidence of CRC is lower for Latinos, they are more likely to be diagnosed with advanced disease of Stage 3 or 4, and experience poorer 5-year survival once diagnosed. Some of the barriers to CRC screening among Latinos can be addressed with good physician-patient communication such as fear, worry, and fewer perceived benefits. Our objective was to assess associations between components of physician-patient communication and CRC screening rates among Latinos in a community clinic setting.

**METHODS:** We conducted a cross-sectional telephone survey of Latino patients aged 50 and older with no history of CRC from three community clinics in a large multispecialty practice in Northern and Southern California. Predictors were survey measures that assessed patients' perceptions about physician communication about CRC screening. These included whether not yes vs. no physicians explained CRC risks and tests; elicited patients' CRC screening barriers; were responsive to patients' CRC screening concerns; discussed ways to reduce the risk of CRC; and the amount of physician encouragement of CRC screening (none or a little vs. quite a bit or a lot). Outcomes were fecal occult blood test (FOBT) in the previous year vs. no screening, and sigmoidoscopy in the previous 10 years vs. no screening. Demographic variables, limited English language proficiency (LEP) status, concordance with physician language skills, and insurance type were ascertained.

**RESULTS:** Using lists of patients seen in the clinical settings, we sent 1,314 initial contact letters, 910 patients were reached on the telephone, and 504 patients completed the survey (38% of original sampling frame). Mean age was 61 years (SD=8.4), 69% were women, 53% had less than high school education, 77% were born in Latin America, and 62% spoke English less than very well (LEP). Almost half (46%) reported obtaining endoscopy (with or without FOBT), 13% had FOBT only, and 41% reported no screening of any type. For FOBT, after adjusting for social and demographic factors, CRC risk, site of care, language concordance, and the other communication variables, receiving more physician encouragement of CRC screening (OR=6.97, 95% CI 2.91, 16.70) was the only communication factor associated with being screened. For endoscopy, discussing ways to reduce CRC risk (OR=2.73, 95% CI 1.13, 6.63) and receiving more physician encouragement for CRC screening (OR=6.31, 95% CI 3.28, 12.14) were associated with screening in the adjusted model.

**CONCLUSION:** Among Latinos, the degree to which patients perceived that their physicians encouraged CRC screening was much more strongly associated with being screened than other components of communication. These data would support a communication model where physician recommendation is central and there is less attention to eliciting barriers or concerns.

**LYMPHOPENIA AS A PROGNOSTIC FACTOR FOR OVERALL SURVIVAL IN COLON, LUNG, AND PANCREATIC CARCINOMAS**

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**BACKGROUND:** Lymphopenia in cancer patients has been found to be an independent negative prognostic factor for overall survival and disease-free survival in various hematological cancers, soft tissue sarcoma, and metastatic breast cancer. Its association with overall survival in colon, lung, and pancreatic cancers is uncertain.

**METHODS:** This is a preliminary retrospective analysis of data from the Great Lakes Cancer Center and the McLaren Regional Medical Center cancer registry, Flint, MI. Overall survival rate is defined as the time from the date of diagnosis to the date of death or the date when the patient was last known to be alive. Cox proportional hazards modelling was used to calculate hazard ratios for death from each of the three cancer types by lymphopenia status prior to treatment.
RESULTS: Data from 141 patients were analyzed (80 colon, 31 lung, and 30 pancreatic cancer). The prevalence of lymphopenia of <1,000 cells/mL before treatment among colon, lung, and pancreatic cancers was 39%, 35%, 20%, respectively. Lymphopenia tended to be more prevalent among older patients with colon cancer (43% versus 31%), lung cancer (39% versus 25%) and in pancreatic cancer (22.7% versus 12.5%). Similarly there was an increased prevalence among patients with well- or moderately-differentiated versus poorly differentiated colon cancer (44.1% vs 22.2%) and pancreatic cancer (40% vs 25%). In addition lymphopenia was more prevalent among non-small compared to small cell type lung cancer (37% vs 29%). The differences were not statistically significant in this small sample.

Median survival time in months was lower in patients with lymphopenia in all the three cancer groups: colon (49 vs 93; P=0.290), lung (27 vs 54; P=0.120) and the difference was statistically significant for pancreatic cancer (1 vs 8; P=0.001). The hazard ratio for death from pancreatic cancer in patients with lymphopenia compared to those without lymphopenia was 4.1 (95% CI: 1.09-15.85; P=0.037) after adjustment for age and tumor grade.

CONCLUSION: Our findings suggest that lymphopenia prior to treatment is a prognostic factor in overall survival for pancreatic cancer and potentially also for colon, and lung cancers.

ASSOCIATION OF MEDIA LITERACY WITH CIGARETTE SMOKING AMONG INDIGENOUS YOUTH IN ARGENTINA Eliseo J Perez-Stable 1; Maria Victoria Salgado 2; Brian Primack 3; Celia Kaplan 4; Raul Mejia 5; Steven Gregorich 3; Ethel Alderete 3. 1UCSF, San Francisco, California ; 2University of Buenos Aires, Buenos Aires, N/A ; 3University of California San Francisco, San Francisco, California ; 4University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania ; 5Hospital de Clinicas, Buenos Aires, N/A . (Tracking ID # 11481)

BACKGROUND: Latin America has the highest prevalence of tobacco use by youth. Media literacy, defined as the ability to analyze and evaluate media messages, has been associated with lower smoking among youth in the US. We sought to determine whether media literacy related to smoking is independently associated with current smoking and susceptibility to future smoking in a sample of mostly indigenous youth in Jujuy, Argentina.

METHODS: In 2006, a survey was conducted among eighth-grade students in class and from a random sample of 27 urban and rural schools stratified by region in Jujuy. Standard items adapted from the CDC global youth tobacco surveys were used, including those assessing previously identified risk factors for smoking such as peer smoking, adult smoking at home, use of alcohol, depression, school performance, and thrill-seeking attitudes. Survey items measured smoking behavior (ever, never, and current) and susceptibility to future smoking among never smokers (“definitely not” likely to smoke or in the future); five items assessing assessing smoking media literacy (SML) were adapted and translated from an existing 18-item measure. The SML scale included items such as “There are often hidden messages in cigarette ads,” with 4 ordered response options ranging from 1 (strongly disagree) to 4 (strongly agree). An average score of 3 was considered high media literacy.

RESULTS: Of the 3470 respondents, 53% were girls, and the majority of respondents were of indigenous (67%) or mixed indigenous/European (21%) ethnicity. About half had had at least one parent who smoked, and having 5 or more friends who smoke (57%), depressive symptoms in the previous year (38%), and consumed alcohol in the previous week (36%) were common. 1170 (34%) reported having smoked in the previous 30 days and were defined as current smokers. Of the 1430 students who had never smoked a cigarette, 912 (64%) were susceptible to future smoking. High media literacy was present in 38% of the sample. Unadjusted models showed a significant association of SML with current smoking (OR=0.83; 95% CI 0.73 - 0.95) and susceptibility to future smoking (OR=0.79; 95% CI 0.65 - 0.97). Fully adjusted models for age, gender, race, parent’s education level, parent’s employment status, two-parent household, parental smoking, friends smoking, depressive symptoms, thrill-seeking orientation, alcohol use in the past week, work during class period, and repetition of a grade level showed that high SML was significantly associated with lower odds of being current smoker (OR=0.81; 95% CI 0.67 - 0.97) and of being susceptible to future smoking (OR=0.73; 95% CI 0.58 - 0.92) among those who had never smoked.

CONCLUSION: Among youth in Jujuy, higher SML was significantly associated with both lower current smoking and among never smokers, less susceptibility to future smoking. There is sufficient evidence now to evaluate the incorporation of a media literacy curriculum as a standard component of school-based education and to investigate the efficacy of smoking media literacy interventions among diverse populations.

THE USE OF SPANISH LANGUAGE SKILLS BY PHYSICIANS AND NURSES: POLICY IMPLICATIONS FOR TEACHING AND TESTING Lisa C. Diamond 1; Delphine S. Tuot 2; Leah Karliner 2. 1Palo Alto Medical Foundation Research Institute, Palo Alto, California ; 2University of California, San Francisco, San Francisco, California . (Tracking ID # 11488)

BACKGROUND: Language barriers can prevent clinicians from obtaining an adequate history and may lead to longer hospital stays and higher readmission rates. Clinicians bridge this barrier in various ways, including using interpreters and using their own non-English language skills with patients. Although full language concordance between limited English proficient patients and clinicians is beneficial, the effects of partial language concordance are unknown. We sought to describe how clinicians with various levels of Spanish language proficiency use interpreters or their own Spanish skills in common clinical scenarios in the hospital setting.

METHODS: Primary data were collected from 8/2007-12/2008. The study focused on the 66-bed General Medicine Floor of a 400-bed urban academic medical center with an ethnically and linguistically diverse patient population. We surveyed physicians and nurses who reported ever speaking Spanish with patients to rate their own Spanish proficiency on a 5-point scale, and then asked about use of specific strategies (own Spanish skills, professional or ad-hoc interpreters) to overcome the language barrier during common clinical interactions with Spanish-speaking patients.

RESULTS: Sixty-eight physicians and 65 nurses participated. Physicians with low Spanish proficiency (n=34) reported frequent use of ad-hoc interpreters (46-50%) for all information-based scenarios, except for pre-rounding in the morning: 62% reported using their own limited Spanish skills. For difficult conversations and procedural consent, most used professional interpreters. Compared to low proficiency physicians, medium proficiency physicians reported higher rates of using their own Spanish skills (38-94%) for information-based scenarios (except for procedural consent: 88% professional interpreter use), lower rates of professional interpreter use (33-39%), and little use of ad-hoc interpreters, except for communicating discharge instructions (25%). They rarely used their own Spanish skills or ad-hoc interpreters for difficult conversations. High Spanish proficiency physicians almost uniformly reported using their own Spanish skills. The majority of nurses had low Spanish proficiency (n=53). Most of these used some kind of interpretation, although frequently ad-hoc interpreters, for: discharge instruc-
UNDIAGNOSED AND UNCONTROLLED HYPERTENSION AND HYPERLIPIDEMIA AMONG IMMIGRANTS IN THE UNITED STATES

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BACKGROUND: Cardiovascular disease is the major cause of mortality among both the native and foreign born. Hypertension and hyperlipidemia are major modifiable risk factors for cardiovascular disease. We are unaware of nationally representative studies examining differences between immigrants and the native born in rates of undiagnosed and uncontrolled hypertension or hyperlipidemia, or the impact of insurance status on these relationships.

METHODS: We conducted a cross sectional analysis of a nationally representative sample of adults from the National Health and Nutrition Examination Survey (NHANES), 1999–2008 to assess the risk of having undiagnosed and uncontrolled hypertension and hyperlipidemia among foreign born (FB) individuals relative to the native-born. Participants were considered diagnosed if they reported (1) being told by a physician or health professional that they had the condition or (2) taking medications for the condition. They were considered undiagnosed if they had physical exam or laboratory findings of the condition (hypertension: SBP > 140 mmHg or DBP > 90 mmHg; hyperlipidemia: not reaching Adult Treatment Panel II or III goals) but were not diagnosed. Participants were considered uncontrolled if they were either diagnosed or undiagnosed but did not meet accepted criteria for control (hypertension: SBP > 140 mmHg or DBP > 90 mmHg; cholesterol: not reaching Adult Treatment Panel II or III goals). We used logistic regression analysis to determine the odds of having undiagnosed and uncontrolled hypertension and hyperlipidemia, among FB compared with US-born participants. Our initial models adjusted for place of birth, age and gender. We then sequentially added health insurance, income and race/ethnicity to explore whether these factors explained differences in diagnosis and control rates between the FB and US-born.

RESULTS: Of 28,821 adults, the 6,601 FB were younger, more likely to be male; Hispanic or other ethnicity; have incomes < $20,000 or missing; be uninsured; and to speak primarily Spanish, Spanish and English equally, or other language at home, as compared to US-born. In age-and-gender adjusted analyses, FB were more likely to have undiagnosed hypertension (OR 1.35, 95%CI 1.12-1.62, p 0.0016), uncontrolled hypertension (OR 1.38, 95%CI 1.16-1.64, p=0.0004), undiagnosed hyperlipidemia (OR 1.32, 95%CI 0.98-1.78, p=0.0656), and uncontrolled hyperlipidemia (OR 1.32, 95%CI 0.98-1.77, p=0.0683), although these last two outcomes were of borderline significance. Adjusting for insurance status moderately attenuated the association between foreign birth and all outcomes, although hypertension control and diagnosis remained statistically significant. Adjustment for income had little effect on the findings. Additional adjustment for race/ethnicity further attenuated the association of foreign birth with hypertension diagnosis and control (no longer statistically significant).

CONCLUSION: Immigrants are at increased risk of undiagnosed and uncontrolled hypertension, and may be at risk of undiagnosed and uncontrolled hyperlipidemia. These disparities are substantially reduced by controlling for insurance. Improving immigrants’ rates of insurance coverage could decrease their risk of undiagnosed and uncontrolled cardiovascular risk factors and may therefore reduce future cardiovascular morbidity and mortality.

INCIDENCE AND PREDICTORS OF MEDICATION NON-ADHERENCE AFTER HOSPITALIZATION

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BACKGROUND: Medication adherence is a key factor in patient safety. Medication management during the transition from inpatient to outpatient medical care is particularly complex and confusing to patients. Optimizing post-discharge medication adherence is a crucial target for avoiding adverse events and rehospitalization. Nevertheless, few studies have focused on the incidence and predictors of post-discharge medication safety and adherence.

METHODS: The Pharmacist Intervention for Low Literacy in Cardiovascular Disease (PILL-CVD) study is a federally-funded, dual site randomized control trial using pharmacist-assisted counseling and follow-up to improve post-discharge medication safety among patients hospitalized for cardiovascular disease. In this secondary data analysis, we analyzed predictors of medication adherence in the 30 days after discharge based on patient self-report. An adherence score for each patient was calculated as the mean adherence in the previous week of all regularly scheduled medications. Multivariable linear regression with multiple imputation for missing covariates was used to determine the independent effects of a priori chosen patient characteristics on post-discharge adherence.

RESULTS: We analyzed data from 646 patients at both clinical sites. The population was predominantly white, male and insured; patients on average were in their 60s, had a high level of education, and took an average of 8 daily medications. The average post-discharge adherence score was 95%, and fewer than 10% of patients had an adherence score of less than 85%. Significant predictors of lower post-discharge adherence included younger age, Medicaid insurance (as opposed to private insurance), and baseline adherence (based on the 4-item Morisky scale). For every 10 year increase in age, there was a 1% absolute increase in post-discharge medication adherence (95% CI 0.4, 2.0). As compared to patients with private insurance, patients with Medicaid insurance were 4.5% less adherent at 30 days (95% CI -7.6, -1.4). For every 1-point increase in baseline medication adherence score, there was a 1.6% absolute increase in post-
understanding transitions in hospital care for the homeless patient: a mixed-methods, community-based participatory approach

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BACKGROUND: Coordinating transitions in hospital care for patients experiencing homelessness is challenging yet there are limited data from the perspective of homeless patients to guide hospital-based and shelter-based interventions to improve transitions in care.

METHODS: We partnered with Columbus House, a large homeless shelter in New Haven, CT to better understand the experience of homeless patients seeking acute care at area hospitals. We conducted two focus groups with homeless clients and twelve in-depth, individual and group interviews with staff at Columbus House to inform our design of a semi-structured interview targeting homeless clients who reported at least one visit to an area hospital in the last 12 months. The interview included questions about socio-demographic factors such as age, gender, race/ethnicity, and reported length of homelessness. We also inquired about total visits to area hospitals in the past year, setting of care for these visits (inpatient vs. ED only), and patient experiences in the hospital. We used mixed-methods to analyze our data: we performed qualitative analysis of responses to open-ended questions with independent coding by a multidisciplinary team using the constant comparative method, and we performed multivariable logistic regression of survey data to determine factors that might identify patients at greatest risk for difficult transitions.

RESULTS: Ninety-eight homeless individuals were enrolled in our study from 3/15-5/15/2010: 78 (80%) were male and reported race/ethnicity was 42% black, 41% white, 16% Hispanic. Average age was 44 years and average reported length of homelessness was 2.8 years. Fifty-two (56%) of respondents reported being admitted for inpatient care whereas 44 (46%) reported receiving care in the ED only. Fifty-nine (60%) respondents reported that they had delayed seeking care at a hospital after recognizing they needed help. Multivariable analysis showed a significant relationship between delay and increasing number of total hospital visits in the last year (OR 1.2; 95% CI 1.0-1.5). In both quantitative and qualitative analyses, participants expressed concerns about discharge timing, transportation, and coordination with the shelter. As one participant explained, “they should make sure people don’t leave late at night and that they have a safe ride to a safe place to stay.” Twenty-six (27%) participants reported being discharged after dark and 61% reported having no plan for safe post-discharge transportation. In multivariable analysis, participants seen in the ED were more likely than inpatients to be discharged after dark (OR 2.7; 95% CI 1.0-7.3) and less likely to have post-discharge transportation arranged (OR 0.16; 95% CI 0.1-0.6).

CONCLUSION: Homeless patients report many barriers to seeking acute care and may be more likely to delay care if they have frequently accessed acute care services in the past year. Furthermore, setting of care (emergency department vs. inpatient unit) and time of discharge may be important indicators of ability to access shelter on the first night after discharge. Healthcare providers encountering homeless patients in non-acute settings should be aware of reasons their patients may delay seeking acute care and providers in acute settings should pay particular attention to time of discharge and post-discharge transportation. Both hospital and shelter staff should strive for greater communication to coordinate a safe disposition for patients transitioning from acute care to community settings.

clinical decision making for three common inpatient medical conditions

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BACKGROUND: Despite well-described guidelines for several clinical conditions, physicians often make medical decisions not supported by evidence or guidelines. Using clinical vignettes, we examined clinical decisions, and the reasoning behind those decisions, for three common medical admissions: heart failure, syncope and pneumonia.

METHODS: We conducted a cross-sectional survey of attending physicians and post-graduate year two and three residents at one internal medicine program in New York City. Clinical vignettes for heart failure, syncope, and pneumonia included a brief clinical scenario and a varying number of further management decisions: diagnostic tests, consultations, and treatments. Likert scales were used to determine the likelihood of making the clinical decision. Responses were subsequently analyzed to determine the level of agreement among respondents.

RESULTS: Ninety-eight physicians were surveyed and 37 (38%) completed the survey. Forty-six (47%) were attending physicians and 52 (53%) were residents. In all three vignettes, the most common clinical decision among respondents was “All” of the time. In addition, most respondents agreed that they would select “All” of the time. Multiple choice was used for respondents to indicate one or more rationales for the decision: local practice, supporting data or guidelines, malpractice concerns, academics, rules out, or supervisor expectations. Each vignette included clinical decisions for which there was either strong evidence or guideline support (Level 1 decisions) or for which there was no evidence or guideline support (Level 3 decisions). The decision was made by most respondents in the Level 1 decision for heart failure and pneumonia, and in the Level 3 decision for syncope.

CONCLUSION: Given the lack of guidelines for heart failure, syncope, and pneumonia, we found that attending physicians and residents had a high level of agreement with each other and the evidence when selecting “All” of the time. However, there was significant variability in the level of agreement among respondents when selecting “Most” of the time in the Level 1 and Level 3 decisions. Further research is needed to determine the factors that influence these variations.
less common in young adult patients than in older patients (28% vs. 25%, p=0.70). Chronic pain affected most of the cohort (56%) and more than half of patients had depression (86%), anxiety (75%), or a history of sexual or physical abuse (54% vs. 43%, p=0.179). The proportion of patients with Genotype 2 or 3 infection was higher among young adults than older patients (34% vs. 17%, p=0.02). However, young adult patients were less likely to be referred for antiviral treatment (60% vs. 88%, p<0.001), attend at least one pre-treatment visit (43% vs. 72%, p<0.001), or begin treatment (6% vs. 37%, p<0.001). Young adult patients were more likely than older patients to be denied treatment due to active substance use (21% vs. 5%, p<0.001) or loss to follow up (40% vs. 23%, p<0.001).

CONCLUSION: Young adult patients with HCV infection represent an important segment of the HCV-positive population at the MGH Charlestown Healthcare Center. These patients have unique clinical characteristics, with implications for prevention and management of HCV. The HCV-positive population as a whole is a high-risk group, with high rates of unemployment, homelessness, psychiatric disease, trauma, and chronic pain. However, a six-fold lower antiviral treatment rate among young adult patients may be related to distinct risk factors and treatment barriers in this population, such as higher rates of active illicit substance use, higher rates of incarceration, and poorer clinic follow-up. Despite these obstacles, young adult patients have a higher proportion of more favorable virologic characteristics (such as Genotype 2 or 3 infection) and are more frequently involved with opioid maintenance treatment, possibly due to lower barriers to antiviral treatment. Future efforts to prevent and treat HCV infection should recognize the distinct characteristics of young adult and older adult patients with HCV and design specific strategies for these two groups.

HABLA ESPANOL, DOCTOR?: EXPLORING BILINGUAL RESIDENTS PERFORMANCE ON A SPANISH LANGUAGE OSCE STATION

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BACKGROUND: Significant evidence confirms that language concordant physicians are optimal for patient-centered care for ethnically and linguistically diverse patients. Many residents conduct medical encounters in a second language. But are they competent to provide care in another language? We piloted a Spanish language Objective Structured Clinical Exam (OSCE) station to assess resident's clinical competence in a Spanish language encounter when the resident had self-identified as able to work in Spanish.

METHODS: As part of an annual 10-station OSCE exam residents were either assigned to complete an asthma OSCE station in English or Spanish based on self-reported language ability. Core challenges in the case were assessing an asthma patient’s understanding of her condition and providing education including how to use an inhaler. A highly trained bilingual SP assessed communication skills (12 items, α=.87), patient satisfaction (4 items, α=.73), and patient activation (4 items, α=.76) using behaviorally-anchored checklist items with a 3-point response scale: not done, partly done, well done. Case-specific items, tailored to the clinical scenario, assessed behaviors across three broad categories: patient assessment (α=.42), education and counseling (α=.73), and treatment plan and management (α=.54). Scores calculated as % well done. Two-sample t-tests were used to examine differences in performance between the two groups of residents. The bilingual SP also rated the residents’ language skills in terms of how well she understood them (not well, somewhat well, or very well).
RESULTS: Twenty-one residents completed the asthma OSCE station: 11 completed it in English and 10 completed it in Spanish (language choice did not differ by PGY). Overall, there was no difference between the OSCE performance of residents who completed the bilingual station in English and residents who completed the station in Spanish on the other nine OSCE stations. In the bilingual case, the scores of residents who completed the station in English did not significantly differ from those who completed it in Spanish for overall communication scores (English 46%, SD 28% vs. Spanish 42%, SD 26%; mean difference=4%, 95% CI [−2% - 8%]), patient activation scores (English 7%, SD 12% vs. Spanish 16%, SD 18%; mean difference=−9%, 95% CI [−23% - 5%]), and patient satisfaction scores (English 27%, SD 34% vs. Spanish 35%, SD 41%; mean difference=−8%, 95% CI [−42%−27%]). The same was true for the three case-specific domains: patient assessment, education and counseling, and treatment plan and management. The SP reported that she understood all the residents at least somewhat, however she reported understanding “very well” only 20% of Spanish-speaking compared with 67% of English-speaking residents (χ²=4.23, p=.04). Residents who were understood “very well”, regardless of language, performed significantly better in this case on communication (80%, SD 28% vs. 33%, SD 20%; mean difference=27%, 95% CI [50% - 4%]), patient education and counseling (33%, SD 18% vs. 14%, SD 17%; mean difference=19%, 95% CI [36% - 3%]), and treatment plan and management (17%, SD 25% vs. 0%, SD 0%; mean difference=17%, 95% CI [32% - 1%]), than those who were understood only somewhat well.

CONCLUSION: Implementing a reliable bilingual OSCE station is feasible. Self-reported language ability resulted in equivalent OSCE performance across multiple domains. Language use on a clinical exam did not appear to affect performance. The comprehensibility of the language used, however, appears to have an impact. Further research is needed to see how resident’s language skills on an OSCE translate into clinical performance and impact actual patient outcomes, and whether use of a second language impacts subtler aspects of performance.

A MULTIDISCIPLINARY LOOK INTO THE PERCEIVED IMPORTANCE, AND COMPETENCY OF, PHYSICAL ACTIVITY ASSESSMENT AND PRESCRIPTION COUNSELING IN HEALTH SCIENCE STUDENTS

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BACKGROUND: Chronic diseases such as coronary artery disease, diabetes, stroke, and cancer cause the majority of deaths in the U.S and physical inactivity is an important determinant in the development of these and other chronic diseases. Healthy People 2010 objective 1-3a seeks to increase the amount of people counseled about physical activity (PA). Unfortunately, the proportion of physicians that counsel patients on PA remains low due to many barriers including lack of knowledge of exercise and counseling techniques beginning as early as medical school. The importance of increasing competency of disease prevention in health professional students is recognized in Healthy People 2010 objective 1-74. This research seeks to gain a deeper understanding of attitudes and health care provider roles in PA counseling by health science students at the University of Arizona (UA).

METHODS: The objective of this cross-sectional self-report survey is to compare multidisciplinary perspectives of PA assessment and prescription counseling from medical, nurse practitioner, pharmacy, and public health student perspectives (total n=800, 50-400 per sub-group). The Healthcare Students Physical Activity Outlook Questionnaire was designed using the methods of Aday and Cornelius, by a forth year medical student, a geriatrician and a chronic disease epidemiologist specifically for this study. Domains include family and personal exercise history, attitudes and knowledge regarding role appropriateness of PA assessment and prescription counseling, time spent in their curriculum in regards to PA prescription writing, and students experiences in witnessing PA counseling. The questionnaire also includes the two-question (2Q) PA assessment questionnaire to assess each student’s personal level of physical activity. In addition, socio-demographic information, current professional school, year in school, and intended career field will also be obtained. Participants will be recruited via school email list serves as well as by in-class presentation of the study by instructors. Data will be collected using an on-line Survey Monkey site, and responses will be anonymous. Data types comprise dichotomous (Y/N) and categorical (1-n) data. The analysis plan includes tabulation of sociodemographic and clinical descriptive statistics [chi-2 (proportional) and t-tests (continuous)], with tabulation and cross-tabulation by clinical type, sex, and PA category, and qualitative responses using content analysis.

RESULTS: The survey has been approved by the UA IRB. Data will be collected from Jan-April 2011 and results will be analyzed prior to the SGIM conference, for conference presentation.

CONCLUSION: Goals of Healthy people 2010 as well as the proposed goals for Healthy People 2020 include increasing the proportion of people receiving PA counseling. The attitudes, perceptions, and competency of health science students on patient-focused PA assessment and prescription counseling can help identify the targeted education and training interventions needed to increase the counseling skills needed to increase PA and prevent chronic diseases.

WHAT HAPPENS WHEN RESIDENTS CHOOSE BETWEEN SPEAKING SPANISH OR USING AN INTERPRETER?: THE PERSPECTIVE OF UNANNOUNCED STANDARDIZED PATIENTS

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BACKGROUND: Language skills can be crucial for providing patient-centered care for linguistically diverse patients. Yet not all English speaking physicians can provide care in another language. For those physicians who are not bilingual, ideally an interpreter is utilized. This study assessed residents’ competency in an Unannounced Standardized Patient (USP) Spanish language encounter in a clinic setting using either their own language skills or an interpreter.

METHODS: Nine medical residents completed a bilingual case with an USP and whether the resident chose to conduct the visit in Spanish, English using an interpreter, or just in English was recorded. A highly trained bilingual SP assessed communication skills (12 items, l=..35), patient satisfaction (4 items, l=..67), and patient activation (4 items, l=..92) using behaviorally-anchored checklist items with a 3-point response scale of not done, partly done, and well done. Case-specific items, tailored to the clinical scenario, assessed behaviors across three broad categories: patient assessment (l=..84), education and counseling (l=..60), and treatment plan and management (l=..72). Scores were calculated as % well done. Two-sample t-tests were used to examine differences in performance between the residents.

RESULTS: Four medical residents who self-reported as Spanish speakers spoke Spanish with the USP while 5 medical residents who self-reported as English speakers used an interpreter with the USP. Choice of communication strategy did not differ by PGY. Overall communication scores were significantly higher, on average, for residents who spoke Spanish with the USP than for residents who used
an interpreter with the USP (English 75%, SD 12% vs. Spanish 90%, SD 4%, p=.05, mean difference = 15%, %95% CI [-29% - 0%]). Patient activation scores (English 15%, SD 22% vs. Spanish 69%, SD 47%, p=.06, mean difference = -54%, 95% CI [-110% - 2%]) were marginally higher for residents who spoke Spanish with the USP while patient satisfaction scores (English 60%, SD 42% vs. Spanish 94%, SD 13%, mean difference = -34%, 95% CI [-85% - 17%]) did not differ between the residents. Among the three case-specific domains, education and counseling scores (English 18%, SD 9% vs. Spanish 55%, SD 13%, p=.005, mean difference = -36%, 95% CI [-53% - 19%]) were significantly higher for residents who spoke Spanish with the USP than for residents who used an interpreter with the USP whereas patient assessment scores (English 31%, SD 18% vs. Spanish 42%, SD 36%, mean difference = -11%, 95% CI [-64% - 43%]) and treatment plan and management scores (English 75%, SD 35% vs. Spanish 100%, SD 0%, mean difference = -25%, 95% CI [-69% - 19%]) did not differ between residents. Overall, there were no consistent differences in performance when comparing residents’ score on this USP case with 2 other USP cases, whether focusing on residents who spoke Spanish with the USP (and therefore were communicating in English for the other non-bilingual cases) or on residents who used a translator (and therefore were communicating in English for the other non-bilingual cases). And Spanish-speaking residents did not consistently perform better than English-speaking residents on an annual OSCE conducted prior to these USP visits.

**CONCLUSION:** Residents who spoke Spanish with the USP appeared to be more effective in communication, patient activation, and education and counseling than those who used an interpreter. This difference is not simply due to our Spanish speaking residents having superior clinical skills. What our results do suggest is that Spanish-speaking residents made the right choice in deciding to conduct the visit in Spanish rather than using an interpreter. Future research should investigate this in a larger sample and explore the impact of fluency on both the choice and impact of the communication strategy.

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**THE EFFECTS OF A STRUCTURED AMBULATORY ASSISTANT CHIEF RESIDENT ROTATION ON PROFESSIONAL SKILL DEVELOPMENT AND ACADEMIC CAREER CHOICE**

**ABSTRACTS**

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**BACKGROUND:** In 1997 the Primary Care Track of the Internal Medicine Residency Program at the New York Presbyterian Hospital/Weill Cornell Medical College initiated a structured, 8–12 week, ambulatory Assistant Chief Resident (ACR) rotation for all of its senior residents. During this time, residents take on responsibilities expected of a junior attending including leading morning report, precepting residents, and participating in faculty and other committee meetings. While this rotation is rated consistently as one of the best experiences of residency, little is known of its impact on professional skills development or on postgraduate career choices. The objectives of this study were: (1) to evaluate the development of professional skills during the ACR rotation (2) to assess the value and usefulness of these skills and (3) to determine the impact of the ACR experience on the decision to pursue a career in academic medicine.

**METHODS:** Of the 64 identified graduates of the Primary Care Track who completed residency training from 1992–2008, 50 (78% response rate) completed the 6 page, 28-item mailed survey. 4 graduates were excluded due to lack of contact information. Areas addressed in the survey included current practice type, the effect of ACR time on professional skill development, the value of certain professional skills, and the impact of ACR time on postgraduate and current career choice. The questionnaire utilized several different scales including a Likert scale, ranking and open-ended questions. Initial non-responders were sent a second questionnaire by mail. Fisher’s exact test was used for statistical analysis to compare dichotomous variables.

**RESULTS:** At the time of survey completion, 64% of our graduates were in primary care internal medicine, 10% hospitalists, 16% subspecialists (mostly geriatrics and HIV) and 10% in non-clinical settings.

Overall, 82% of graduates agreed that being ACR was one of the most formative experiences of their residency. Residents identified didactic teaching, leadership, and independent learning as the top three professional skills that they developed during their ACR rotation, with leadership and independent learning as two out of the top three skills most valuable in their current career.

72% of graduate’s first jobs were in academics; three quarters as clinician-educators. Of respondents, 83% of graduates completed an ACR rotation and 17% did not. Graduates who did ACR time were more likely to be in academics at the time of survey completion compared to graduates who did not do the ACR rotation (59% vs 36%, p<.03). They were also less likely to have left academics (21% vs 50%, p=.2).

91% of graduates in academic positions (compared with graduates in nonacademic positions) felt that the ACR rotation reinforced their desire to pursue an academic career (91% vs 31%, p<.0001). 86% of graduates in academics felt that the ACR rotation impacted their career choice compared to 43% of graduates in nonacademic’s (86% vs 43%, p=.006). 6% experienced a complete shift in career choice by pursuing clinician educator positions after serving as ACR.

**CONCLUSION:** A structured ambulatory Assistant Chief Resident rotation was found to develop skills in teaching, leadership and independent learning that proved valuable in the careers of our graduates. While only 6% attribute their time as ACR as resulting in a complete career change into academics, those who ended up in academics rated their ACR time as being highly influential in their career choice. More research is needed to determine additional factors that influence a resident’s decision to pursue a career in academic medicine.

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**EFFECT OF PROVIDING TAILORED PRIMARY CARE ON HEALTH CARE UTILIZATION AND RETURN TO JAIL AMONG RECENTLY RELEASED PRISONERS: A RANDOMIZED CONTROLLED TRIAL**

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**BACKGROUND:** 700,000 individuals are released from prison each year. The majority of these individuals have chronic medical, psychiatric, and substance abuse conditions and use acute health and criminal justice services at high rates. In January 2006, Transitions Clinic (TC) opened to serve the special needs of individuals released from prison with at least one chronic health condition. This model of transitional and primary care and the evaluation were designed with input from individuals with a history of incarceration and is informed by a community advisory board with 50% representation of formerly incarcerated individuals. The clinic is staffed by community health workers and primary care clinicians with experience working with this population. We examined the effectiveness of TC in reducing urgent medical visits and recidivism using a randomized controlled design. We hypothesized that individuals receiving primary care at TC would have fewer acute care visits compared to the control group.

**METHODS:** Following an initial post-release visit to TC between November 2007 and June 2009, we recruited and randomized 200
participants to receive continued care at TC [n=98] or expedited primary care in the community safety net system [n=102]. We followed participants for 12 months and compared the following outcomes: 1) primary care utilization, 2) emergency department (ED) utilization, 3) hospitalization and 4) jail bookings between TC participants and control participants. We obtained this data from an electronic record repository for the safety net health system and conducted analyses by intention-to-treat. We used chi-squared tests to make between-group comparisons of use of primary care, emergency services, and rate of hospitalization, and survival analysis to compare time to re-arrest.

RESULTS: Participants had a mean age of 43.6 years (SD 7.3), 64% were black, 58% were marginally housed or homeless, 94% were unemployed, and 40% of participants reported spending more than 15 years incarcerated. There were no statistically significant differences in participant characteristics between the study arms. After 12 months, TC participants had similar rates of primary care visits (60% vs. 67%, p = 0.32) but lower rates of ED utilization (25% vs. 40%, p = 0.04). There were no differences in hospitalization rates (10% vs. 15%, p = 0.31). TC participants returned to jail at similar rates compared to controls (58% vs. 53%, p = 0.46). Kaplan Meier curves showed no difference in days to first arrest. Limitations of this study are that we are unable to draw conclusions about the effectiveness of TC compared to standard of care, which is no follow up in the community, because the control group received expedited care in the safety net system.

CONCLUSION: In this population of chronically ill recently released prisoners with high service use and costs, primary care received in a community-based clinic that provided integrated primary care and social service coordination with culturally competent providers was associated with decreased ED utilization when compared to a control group that received expedited health care. Primary care clinics that deliver culturally competent care for these patients following prison release, through care coordination and integration of primary care and social services, may improve care and reduce acute care use for these vulnerable patients.

THE RELATIONSHIP BETWEEN RURALITY AND DIABETES CONTROL
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BACKGROUND: We sought to define the relationship between degree of rurality and glucose (A1c), blood pressure (BP), and lipid (LDL-C) control among patients with diabetes.

METHODS: Cross-sectional design. Diabetes patients attending the practices of 205 physicians from 11 Southeastern states (2006-2008). Degree of ‘rurality’ was defined using Rural-Urban Commuting Areas (RUCA) codes based on patient’s home ZIP-code. Outcomes were measures of ‘acceptable’ control (hemoglobin A1c<=9%, blood pressure [BP] <140/90 mmHg, low-density lipoprotein cholesterol [LDL-C] <130 mg/dL) and “optimal” control (A1c <7%, BP<130/80 mmHg, LDL<100 mg/dL). We use the Chi-square test and ANOVA to examine diabetes control and patient characteristics by degree of rurality.

RESULTS: ZIP code data was available for 1,990/2,127 patients (94%) and A1c was obtained in 77% (n=1,629). The proportion of African Americans increased by rurality (urban, large rural, and small/ isolated rural: 15%, 27%, 23%; respectively)[p=0.004]. The proportion of patients with acceptable A1c control (<9%) decreased as rurality increased [p = 0.05]; although not significant, the mean A1c value increased as rurality increased (p=0.08). Figure. The mean LDL-C value increased as rurality increased, 90 mg/DL (SD 37) for urban, 94 mg/dL (SD 34) for large rural, and 99 mg/dL (SD 49) for small/ isolated rural (p=0.04). The proportion of patients with optimal A1c control (<7%) was similar by rurality (55% for urban, 52% for large rural, 50% for small/ isolated rural, p=0.50). Acceptable and optimal BP [both p > 0.60] and LDL-C [both p > 0.10] control were similar by rurality.
CONCLUSION: As patients’ residence rurality increased, glucose control worsened among patients with diabetes in Southeastern U.S.; such differences may be explained by patient characteristics.

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PREVENTING VENOUS THROMBOEMBOLISM IN HOSPITALIZED MEDICAL PATIENTS; WILL KNOWING DRUG ADHERENCE DETERMINE HOW TO BEST PROTECT OUR PATIENTS? Jonathan Vellinga 1; Vinita Bahl 1; Hsou-mei Hu 1; Latoya Kuhn 1; Paul Grant 1.

Congratulations: Venous thromboembolism (VTE) is a common, yet preventable complication affecting hospitalized patients. Appropriate VTE prevention has emerged as an important hospital quality measure with emphasis on enforcing routine risk assessment and compliance with VTE prevention guidelines. Several pharmacologic options are available for VTE prevention; however, adherence to thromboprophylactic therapies is largely unknown even when these agents are prescribed correctly. In addition, adherence rates may vary between unfractionated heparin (UFH), which is administered multiple times daily, and low-molecular-weight heparins (such as enoxaparin), which are typically administered once daily. Given the lack of efficacy data comparing UFH and enoxaparin, and the substantial cost difference between these two medications, a determination of medication adherence may be an important variable for the clinician to consider in prescribing effective VTE prophylaxis. We compared the adherence rates of UFH and enoxaparin amongst hospitalized internal medicine patients.

METHODS: From July 2009 to June 2010, we used the electronic medication administration record (eMAR) at a large university hospital to analyze the physician orders and drug administration status of subcutaneous UFH three times daily (TID) and subcutaneous enoxaparin once daily (QD) for hospitalized internal medicine patients over the age of 18. The administration of VTE prophylaxis medications on the day of admission and the day of discharge were not included. Patients were excluded if their hospital length of stay was less than 24 hours, or if they were transferred off the internal medicine service (i.e. to a surgery service) at any time during their hospitalization. VTE prophylaxis adherence was defined as the percentage of doses administered compared to doses ordered. The Pearson chi-squared statistical analysis was used to determine if there was a significant difference in adherence between the two prophylaxis regimens.

RESULTS: 6,703 patients met the inclusion criteria and had VTE prophylaxis orders for either UFH TID or enoxaparin QD. VTE prophylaxis adherence in the UFH group (n=5,366) was 86.6% while adherence in the enoxaparin group (n=1,337) was 91.1% (p<0.001).

CONCLUSION: VTE prophylaxis with enoxaparin once daily had better adherence when compared to UFH three times daily. This difference was statistically significant; however it is unclear whether this small difference has clinical relevance. Given these findings, it remains unclear if a superior VTE prophylaxis strategy exists between UFH and enoxaparin.

U.S. TRENDS IN THE DIAGNOSIS AND TREATMENT OF ATTENTION DEFICIT HYPERACTIVITY DISORDER, 2000–2010 G. Caleb Alexander 1; Craig Garfield 2; Ray Dorsey 3; Shu Zhu 4; Ashley Higashi 4; Haiden Huskamp 5; René Conti 6; Stacie Dusetzina 6.

BACKGROUND: Attention Deficit Hyperactivity Disorder (ADHD) affects nearly 10% of children and adolescents in the United States. The Food and Drug Administration (FDA) issued safety advisories regarding stimulants in February 2005 and Atomoxetine (Strattera) in September 2005. Little is known regarding how these advisories have affected clinical practice.

METHODS: We used the IMS Health National Disease and Therapeutic Index, a nationally representative audit of office-based physicians, to examine changes in ADHD diagnosis and treatment among children and adolescents less than 18 years of age from 2000 through 2010. We used descriptive statistics to examine trends and interrupted time series analyses to describe the effect of the FDA advisories.

RESULTS: The number of visits where ADHD was diagnosed (diagnosis visits) increased by 61% from 6.2 million visits in 2000 to 10 million visits in 2010. The fraction of visits where a stimulant or Atomoxetine was prescribed declined from 90% of all diagnosis visits (5.6 million of 6.2 million visits) in 2000 to 59% of all diagnosis visits (6.1 million of 10.3 million) in 2010. Among those receiving drug treatment, the use of substitute medications (i.e. clonidine or quinacrine) increased from 7% (2000) to 10% (2010). There was no change in the fraction of visits by boys (75%-77%) or the severity of visits where treatment was dispensed. However there was a shift towards greater care by psychiatrists (from 24% to 37% of all visits over the time period examined). Ongoing analysis will estimate the effect of the 2005 FDA advisories on these changes in ADHD diagnosis and treatment.

CONCLUSION: From 2000 to 2010, the number of physician visits where ADHD was diagnosed increased substantially, while the proportion of visits resulting in treatment with a stimulant or Atomoxetine decreased by approximately one third. The role that the FDA advisories played in shaping these changes and the clinical impact of these changes on children, adolescents and their families has not been well described.
NATIONAL TRENDS IN OUTPATIENT ASTHMA TREATMENT, 1997–2009  
G. Caleb Alexander 1; Ashley Higashi 1; Shu Zhu 1; Randall Stafford2; 1University of Chicago, Chicago, Illinois ; 2Stanford University, Stanford, California . (Tracking ID # 11557)

BACKGROUND: Despite reductions in asthma morbidity and mortality and changes in guidelines regarding long-acting F2-agonists and other therapies, little is known regarding how asthma treatment patterns have changed. We sought to examine national prescribing trends in the office-based treatment of asthma.

METHODS: We used data from the National Ambulatory Medical Care Survey (NAMCS) and the National Disease and Therapeutic Index (NDTI), respectively. We focused on the use of six therapeutic classes (short-acting F2-agonists [SABA], long-acting F2-agonists [LABA], inhaled steroids, antileukotrienes, anticholinergics, and xanthines) among patients diagnosed with asthma less than 50 years of age.

RESULTS: Estimates from NAMCS indicated modest increases in the number of annual asthma visits from 9.9 million [M] in 1997 to 10.3 M during 2008; estimates from the NDTI suggested more gradual increases from 8.7 M in 1997 to 12.6 M during 2009. The fraction of annual visits where at least one asthma treatment was recommended (treatment visits) ranged between 85%-95% (NAMCS) and 96%-98% (NDTI). NAMCS estimates indicated declines in use of SABAs (from 80% of treatment visits in 1997 to 71% in 2008), increased inhaled steroid use (24% in 1997 to 33% in 2008), increased use of fixed dose LABA/steroid combinations (0% in 1997 to 19% in 2008), and increased leukotriene use (9% in 1997 to 24% in 2008). In 2008, anticholinergics, xanthines, and unopposed LABA use accounted for fewer than 4% of all treatment visits. Estimates from NDTI corroborated these trends.

CONCLUSION: Reductions in asthma morbidity and mortality have been associated with changes in its office-based treatment, including increased inhaled steroid use and increased combined steroid/LABA use. Xanthines, anticholinergics, and increasingly, LABA without concomitant steroid use, account for a very small fraction of all asthma treatments.

IMPACT OF AN OUTPATIENT CARE TRANSITIONS NURSE ON READMISSIONS AND MEDICATION DISCREPANCIES  
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BACKGROUND: Medical readmissions can be a marker of poor transitions of care; efforts to avoid unnecessary readmissions are critical. We sought to determine whether adding a care transitions nurse in an outpatient practice would reduce readmissions and medication discrepancies among adult general medicine patients discharged home from the hospital.

METHODS: This project has a pre-/post- design. All readmissions data are taken from billing information for patients admitted to the medical service of a single large (606 bed) hospital and discharged to home. Baseline data include 30-day readmission rate for 12 months prior to the intervention. The intervention is an embedded care transitions nurse with EMR access within a large practice (with 5 locations) comprised of internal medicine and family practice physicians. The care transitions nurse calls patients within 48 hours post discharge to identify and correct medication discrepancies, update the EMR, and arrange follow up visits with primary care (within 7 days) and with any specialists. For each discharged patient, the nurse completes a medication discrepancy check at the time of the post-discharge phone call to capture the number of medications that the patient (a) should be taking but is NOT, and (b) should not be taking but in fact IS taking. For each medication discrepancy counted, the nurse ascertained the causes and contributing factors behind the error. We report on 253 admissions for the first 6 months of our intervention.

RESULTS: The proportion of patients readmitted to the hospital within 30 days of discharge was 10.2% for the 12 months before the intervention period, compared with 8.4% for the 6 month period during the intervention (p=0.50). The care transitions nurse spent a mean of 7 minutes on the phone with patients (range 1–33) and 26 minutes total per case (range 3–56). Total time included researching the patient’s discharge information, contact time via telephone, and documentation, including updating the medication list. Medication discrepancies were identified and corrected prior to the patient’s first visit with the primary care provider in 42% (106/253) of patients. These included a mean of 1.7 new medications added (range 0–5), a mean of 0.6 medications discontinued (range 0–4). The most common reason for discrepancy according to the patient was conflicting information from multiple providers.

CONCLUSION: This intervention is resource-intensive and may not be feasible for smaller practices. We report that a care transitions nurse embedded in a large primary care practice modestly decreased readmission rates for adult medical inpatients, though this finding was not statistically significant after 6 months of the intervention. However, the nurse was able to identify and correct medication discrepancies before the first office visit, and arrange timely follow up care.

THE MORTALITY RISK FOR OLDER ADULTS RELEASED FROM PRISON  
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BACKGROUND: Individuals released from prison have a high mortality risk compared to community norms. Older adults (aged 55 or older) comprise a rapidly increasing proportion of US prisoners and have more chronic medical conditions than both younger prisoners and non-incarcerated older adults. Interventions to promote a safe and healthy reentry from prison for older adults are hampered by a dearth of knowledge about their health and experience. Therefore, our aims were to compare mortality rates and causes of death between older and younger adults released from prison.

METHODS: This was a longitudinal study of all 30,237 individuals released from the Washington State Department of Corrections from July 1999 through December 2003. Individuals aged 55 or older were classified as “older adults” to be consistent with prior literature that accounts for the “accelerated aging” of prisoners. We compared baseline characteristics between younger and older prisoners using chi-square tests and t-tests. All post-release deaths and causes of death were determined using the National Death Index. Post-release mortality rates accounted for amount of time in the community.

RESULTS: Overall, 30,237 individuals were released over the study period, of whom 2.2% (856 individuals) were age 55 years or older. The average ages of the 2 groups were 61 years (older adults) and 33 years (younger adults). Older adults were significantly more likely to be men (93% vs. 87%) and white (70% vs. 62%), and to have had a longer mean length of incarceration (45 vs. 18 months) and fewer releases during the study period (1.1 vs. 1.3; all p<0.001). Over a mean follow-up of
views were conducted to assess participants' solutions, and assess project engagement. Periodic surveys and inter-mapping and plan-do-study-act (PDSA) cycles. Monthly conference calls peer learning, and improve patient outcomes (weight loss).

RESULTS:

Data was collected toward the conclusion of the project. Effectiveness of their revised weight management programs. Clinical

CONCLUSION: We found that the post-release mortality rate for older adults was 7-times higher than for younger adults. In context, this means that the mortality rate for older persons with an average age of 61 years following release from prison (4772 deaths/100,000 person-years) was similar to the mortality rate for 75-79 year old US adults (4,034 deaths/100,000 person-years) and was approximately double the reported mortality rate for all US prisoners aged 55 or older (2,123 deaths/100,000 person-years). These findings suggest that the period of release confers added mortality risk for older persons. In addition, while post-release mortality rates for self-harm events including overdose, suicide and motor vehicle accidents were similar between older and younger adults, older adults had substantially higher mortality rates for chronic medical conditions. This final finding suggests that the geriatric model of transitional care focused on both social and medical needs is of paramount importance for older adults transitioning from prison to the community.

COMBATING OBESITY AT COMMUNITY HEALTH CENTERS (COACH): FACTORS WHICH INFLUENCE SUCCESS IN A WEIGHT MANAGEMENT QUALITY IMPROVEMENT COLLABORATIVE

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BACKGROUND: Five Midwestern community health centers participated in a two-year quality improvement (QI) collaborative targeted at improving patient recruitment and retention rates for existing weight management programs. The goal of the collaborative was to provide academic guidance for quality improvement methodology, facilitate critical self-study, foster peer learning, and improve patient outcomes (weight loss).

METHODS: Participating health center staff attended three two-day workshops where quality improvement experts led exercises in process mapping and plan-do-study-act (PDSA) cycles. Monthly conference calls prompted timely PDSA tracking and participation in peer group problem solving. Individual coaching was used to clarify concepts, brainstorm solutions, and assess project engagement. Periodic surveys and interviews were conducted to assess participants' perceptions regarding effectiveness of their revised weight management programs. Clinical data was collected toward the conclusion of the project.

RESULTS: Health center staff identified expectations for the collaborative ranging from improving data tracking and implementing evidence-based approaches to improving existing program structure and providing continuing education for staff. Quality improvement goals focused primarily on patient recruitment and retention, but were tailored to the interest and experience of each center. A specific weight loss curriculum was not provided, however sites readily shared materials and best practices, often adapting successful program components from other centers as a QI strategy. Though all sites successfully applied the concept of QI cycles of change with increasing sophistication over time, some prompting was necessary to maintain focus and motivation. Success, defined as repeated cycles of change resulting in improved patient recruitment and retention rates, was associated with strong leadership engagement, protected time for the team or project champion, and effective community engagement. Obstacles to success included a high rate of staff turnover, lack of administrative support, and vague or non-specific program goals. All sites demonstrated decreased patient BMI over time, for participants in their weight management programs. During exit interviews, four out of five health centers reported that the collaborative met or exceeded their original goals. Aspects of the collaborative that centers found most valuable were resource/idea sharing, face-to-face workshop sessions, and monthly conference calls. Driving factors for success were reported as teamwork/staff engagement, communication, commitment, leadership, and clear plan/execution.

CONCLUSION: Overall, this weight management quality improvement collaborative demonstrated feasible health center participation and successful translation of QI basic methodology. Participants identified continued leadership and administrative support, staff engagement, and health center capacity for change as factors related to the success of new QI projects. Future collaborative weight management QI efforts may benefit from sharing a standardized curriculum, initiating data collection early utilizing a common format, and from standardizing some structural program elements to facilitate data comparison across sites.

PROJECT A.R.T.-E.D.: ALCOHOL REDUCTION AND HIV TESTING IN THE EMERGENCY DEPARTMENT

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BACKGROUND: Unhealthy alcohol use is associated with sexual risk behaviors and subsequent HIV risk. Preventive care, including alcohol brief interventions and HIV testing, are becoming more normative in the Emergency Department (ED) setting to reach young unhealthy drinkers as this is often their primary source of medical care. Notably, interventions targeting this population in the ED to promote HIV prevention are lacking. Our goal in this pilot study was to determine the feasibility and impact of providing a brief alcohol and sexual risk reduction counseling session with rapid HIV testing in the ED.

METHODS: We recruited patients, ages 18 to 40 years, from a large urban ED; meeting NIAAA criteria for at-risk drinking; with at least 1 sexual risk behavior; with negative or unknown HIV status and willing to undergo testing. Our intervention combined a brief alcohol and sexual risk reduction counseling session with rapid HIV testing. We conducted a 2-week booster call. The counseling intervention was manual-guided, modeled after Brief Negotiation Interview and Project RESPECT-2 and designed to be delivered in less than 15 minutes. Assessments included the Timeline Follow-Back to quantify alcohol consumption and modified HIV Risk Behavior Scale to characterize sexual risk behaviors at baseline and 8 weeks. Statistical analyses
METHODS: We conducted a cross-sectional analysis of all Veterans with medication use for the treatment of diabetes. We conducted a 2-week booster call. The counseling intervention was manual-guided, modeled after Brief Negotiation Interview and Project RESPECT-2 and designed to be delivered in less than 15 minutes. Assessments included the Timeline Follow-Back to quantify alcohol consumption and modified HIV Risk Behavior Scale to characterize sexual risk behaviors at baseline and 8 weeks. Statistical analyses included Wilcoxon Signed Rank test, McNemar test, and two-way ANOVA.

RESULTS: Of the 65 enrolled, 66% are male, mean age is 24 years, 61% white, 82% unmarried, 55% college-educated, 42% without primary care, and 80% with AUDIT score > 8. All tested HIV negative. Among the 49 with follow-up to date, alcohol consumption decreased with fewer average weekly drinks (23.7 vs. 8.8, p < 0.001). Post-intervention, participants endorsed increased condom use (median change = 3 points on a 5-point scale, W = 105, p < 0.001). This change was significantly associated with gender (p < 0.001). Post-intervention, participants endorsed increased condom use (median change = 3 points on a 5-point scale, W = 105, p < 0.001).

CONCLUSION: In this pilot study, a brief intervention combining alcohol and sexual risk reduction counseling with rapid HIV testing is feasible and effective in the ED for reducing alcohol use and HIV risk behaviors among young unhealthy drinkers. By focusing on this population in this setting, we are providing a tailored intervention that impacts both alcohol consumption and sexual risk behaviors for a group of vulnerable patients that may not otherwise be reached for routine preventive medical care. In this pilot study, a brief intervention combining alcohol and sexual risk reduction counseling with rapid HIV testing is feasible and effective in the ED for reducing alcohol use and HIV risk behaviors among young unhealthy drinkers. By focusing on this population in this setting, we are providing a tailored intervention that impacts both alcohol consumption and sexual risk behaviors for a group of vulnerable patients that may not otherwise be reached for routine preventive medical care.

VARIATION IN PRESCRIPTION USE AMONG PATIENTS WITH DIABETES IN THE VA HEALTHCARE SYSTEM Walid F Gellad 1; Maria K Mor 1; Xinhua Zhao 2; Julie M Donohue 3; Chester B Good 2; Michael J Fine 2. 1VA Pittsburgh Healthcare System/University of Pittsburgh, Pittsburgh, Pennsylvania; 2VA Pittsburgh, Pittsburgh, Pennsylvania; 3University of Pittsburgh Graduate School of Public Health, Pittsburgh, Pennsylvania. (Tracking ID # 11597)

BACKGROUND: Regional variation in healthcare use has become a primary indicator of inefficiency in the healthcare system, yet little is known about variation in medication use. The Veterans Health Administration (VA) offers a unique setting to assess regional variation in prescription use, because of its unified national formulary and pharmacy benefit. We sought to examine regional variation in outpatient medication use for the treatment of diabetes.

METHODS: We conducted a cross-sectional analysis of all Veterans with type 2 diabetes managed in the VA in 2009 (n = 1,160,895). The cohort was identified based on inpatient or outpatient ICD-9 codes for diabetes or receipt of a hypoglycemic medication. We used VA Pharmacy Benefit Management data to identify all diabetes medications dispensed for the cohort in 2009, aggregated at the VA facility-level. We examined two outcomes: 1) the percentage of patients on oral hypoglycemic drugs at each VA who filled a prescription for a thiazolidinedione (TZD, i.e., rosiglitazone, pioglitazone), which are a brand-name- only expensive class of medication, and 2) the percentage of patients on insulin at each VA who filled a prescription for a long-acting analogue insulin (i.e., detemir, glargine), which are expensive long-acting insulins. We report descriptive statistics and quantify variation using the coefficient of variation (standard deviation/mean x 100). We used Pearson correlation coefficients to assess whether VA facilities with a high proportion of patients on TZDs also have a high proportion of patients on long-acting insulin analogues. We developed multi-variable logistic regression models, with fixed effects for each facility, to model the odds of each outcome adjusting for patient age, gender, race/ethnicity, number of providers, and being prescribed medications by a physician (vs. non-physician).

RESULTS: Overall, 908,721 (78.3%) of diabetics received a hypoglycemic medication, totaling 6,194,339 prescriptions in 2009. Across 129 VA facilities, the percentage of patients at each facility on TZDs ranged from 1.5% to 26.3%, with a mean of 8.3% (coefficient of variation, 54.2%). The percentage of patients on insulin who used long-acting insulin analogues ranged from 3.7% to 71.4%, with a mean of 38.4% (coefficient of variation, 40.6%). There was a weak correlation between use of TZDs and long-acting insulin analogues (r = 0.28, p < 0.001). VA facilities with a high proportion of patients on TZDs tend to be facilities with a high proportion of patients on long-acting insulin analogues. After controlling for patient factors, the odds of receipt of TZDs at each facility ranged from 0.11 to 1.93, and the odds of receipt of an insulin analogue ranged from 0.02 to 1.27 (p < 0.001).

CONCLUSION: Significant practice-pattern variation exists across VA medical centers in the use of higher-cost hypoglycemic medications, despite a uniform national formulary and extensive utilization management. This substantial variation is unlikely to be explained by patient factors alone. The provider, facility, and larger regional factors that lead to this variability should be examined, because of the significant cost and efficiency implications of this variation in prescribing.
security was measured using a 6-item scale developed by the USDA. Other household characteristics were measured via binary variables based on single questionnaire items. The neighborhood food environment was measured by perceptions of fruit and vegetable and fast food availability. All measures had been previously validated in Spanish-speaking populations.

RESULTS: One in four patients lived in a food insecure household and a larger proportion (51%) reported thinking about the cost of their diets on a daily basis. Contrary to expectations, neighborhood fruit and vegetable availability was relatively high, with most patients (59%) in agreement or strong agreement that they lived in neighborhoods with a good selection of fresh fruits and vegetables. However, most (56%) also agreed/strongly agreed that their neighborhoods had a lot of fast food restaurants. Patients had some support for dietary self-care in the household: All had access to a kitchen, stove, and refrigerator and most (68%) ate meals at the same time as the family member with whom they spent the most time. However, nearly half reported that this person often (many times per week or daily) ate foods that were not part of their diabetic diets and only 40% received praise for following their diets on a regular basis from this family member.

CONCLUSION: Low-income Latinos with suboptimal glycemic control at a community health clinic face significant barriers to dietary self-care, including widespread concerns over food cost and significant levels of food insecurity, high neighborhood access to fast foods, and consumption of unhealthy foods by family members. However, patients also have supports for dietary self-care, including good neighborhood fruit and vegetable availability and social contact at mealtimes. Interventions attempting to improve diet quality in similar patient populations should take into account key contextual barriers to dietary improvement, such as the cost of changing diets and fast food access, and take advantage of key supports such as shared mealtimes and good environmental access to healthier foods.

THE EFFECTS OF ARMODAFINIL ON CLINICAL CONDITION LATE (0400–0800) IN SHIFT INCLUDING THE COMMUTE HOME AND ON FUNCTIONING IN PATIENTS WITH EXCESSIVE SLEEPINESS ASSOCIATED WITH SHIFT WORK DISORDER Milton Erman 1; David J. Seiden 2; Ronghua Yang 3; Ryan Dannerman 3; 1Pacific Sleep Medicine Services, San Diego, California; 2Broward Research Group, Pembroke Pines, Florida; 3Cephalon, Inc., Frazer, Pennsylvania. (Tracking ID # 11609)

BACKGROUND: A previous phase 3 study demonstrated that armodafinil improves the wakefulness and overall clinical condition of patients with excessive sleepiness associated with shift work disorder (SWD). This current, multi-center phase 4 study examined whether armodafinil improved overall clinical condition late (defined as 0400–0800) in the shift, including the commute home. This study also examined whether armodafinil improved functional and patient-reported outcomes of patients with excessive sleepiness associated with SWD. To our knowledge, this was the largest interventional study ever conducted in patients with SWD.

METHODS: In this randomized, double-blind, placebo-controlled multicenter study, patients were administered 150 mg armodafinil or placebo for 6 weeks. Patients were included if they were diagnosed with SWD, worked at least 5 night shifts a month (ideal shift time was midnight to 0800), had excessive sleepiness as evidenced by a score of >6 on the Karolinska Sleepiness Scale (average of 3 scores at 0400, 0600, 0800) and were functionally impaired as evidenced by a Global Assessment Functioning (GAF) score <70. Patients with mild or more-than-mild obstructive sleep apnea (apnea/hypopnea index >5) and those who might have had other causes for their excessive sleepiness or functional impairment were excluded. The primary efficacy endpoint was improved clinical condition, as measured by the score on the Clinical Global Impressions-Change scale (CGI-C), late in the shift, including the commute home (0400–0800), at final visit (Week 6 or last postbaseline observation). The key secondary efficacy measure was improved patient functioning, as measured by mean change from baseline in GAF score, at final visit. Patients were evaluated immediately after an actual night shift rather than a simulated, laboratory night shift. Safety and tolerability were also assessed.

RESULTS: A total of 383 patients were enrolled in this study and a similar proportion of patients in both groups completed the study (82% armodafinil; 88% placebo). At the final visit, more patients treated with armodafinil demonstrated improved CGI-C scores between 0400 and 0800 versus placebo (77% vs. 57%; p<0.0001). Armodafinil-treated patients also had a greater mean change in GAF score from baseline compared to placebo (+9.5 vs +5.2; p<0.0001). The most common adverse events were headache (armodafinil 15%, placebo 4%), nausea (11%, 7%), and insomnia (7%, 2%). While no serious adverse events were observed in armodafinil-treated patients, one serious adverse event was observed in the placebo group (nephrolithiasis).

CONCLUSION: Armodafinil improved overall clinical condition late in shift during the critical circadian nadir period of 0400–0800 in patients with SWD. Additionally, armodafinil improved overall patient functioning as assessed by the GAF. Common adverse events seen with armodafinil in this study were similar in character and frequency to those observed in a previous phase 3 study in this population.

This research was sponsored by and conducted in collaboration with Cephalon, Inc., Frazer, PA.

HAS THE QUALITY OF HEALTHCARE IN THE US IMPROVED IN THE LAST DECADE? Minal Kale 1; Alex Federman 1; Salomeh Keyhani 1; 1Mount Sinai School of Medicine, New York, New York. (Tracking ID # 11611)

BACKGROUND: In the past decade there has been a major focus on improving the quality of care. While efforts to improve quality have largely been directed toward reducing underuse of needed care, increasing attention has been directed at reducing the inappropriate use of health care services. However most nationally reported quality measures to date are underuse measures. We examined changes in the quality of outpatient care in the US between 1998 and 2008 using measures of underuse, misuse and overuse of health care services.

METHODS: We performed a cross-sectional analysis of the National Ambulatory Medical Care Survey (NAMCS) and the outpatient department component of the National Hospital Ambulatory Medical Care Survey (NHAMCS), which are nationally representative annual surveys of visits to non-federally funded ambulatory care practices. We examined three quality measures: anti-platelet or anti-coagulation therapy among patients with coronary artery disease (CAD) (underuse measure); use of an antibiotic other than TMP-SMX, a narrow spectrum quinolone, or nitrofurantoin in women over the age of 18 for the treatment of urinary tract infection (misuse measure); and cervical cancer screening (pap smears) in women ages 65 and older (potential overuse). Our underuse measure is a widely used performance measure, the overuse and misuse measures are not currently performance measures. We estimated the rates of underuse, misuse and overuse and their 95% confidence intervals, accounting for the complex sampling design of the NAMCS and NHAMCS. We defined significant difference by the presence of non-overlapping confidence intervals in the difference in performance in the two years.

RESULTS: There were 2241 visits for patients with CAD, 63 visits for patients with urinary tract infection and 10185 visits for females older than 65 in 1998. There were 2223 visits for patients with CAD, 218...
visits for patients with urinary tract infection and 7208 visits for females older than 65 in 2008. There was a statistically significant increase in the overuse of pap smears in females older than 65, from .014% (CI: .0018-.12) in 1998 to 2.2% (CI: 1.7-3.0) in 2008. We also observed a statistically significant reduction in the underuse of antithrombotic therapy. The proportion of patients with CAD who were prescribed an anti-platelet or anti-coagulant agent increased from 22.6% (CI: 10.3-42.9) in 1998 to 52.1% (CI: 46.4-57.7) in 2008. The proportion of patients with urinary tract infection who were prescribed an inappropriate antibiotic decreased from 30.2% (CI: 19.9-43.1) in 1998 to 23.8% (CI: 15.3-35.2) in 2008; however this was a non-significant difference.

**CONCLUSION:** Our preliminary results using only 3 measures demonstrate a reduction in underuse, but no reduction in the inappropriate use of health care services in the past decade. Addressing waste and inefficiency in the US health care system will require more focus on developing measures and incentives that reduce inappropriate care. Efforts to bend the cost curve make developing such measures a high priority.

**DIAGNOSIS OF SHIFT WORK DISORDER AND THE IMPACT OF EXCESSIVE SLEEPINESS: AN INTERNET SURVEY OF SHIFT WORKERS, PATIENTS WITH SHIFT WORK DISORDER, AND HEALTHCARE PROFESSIONALS**

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**BACKGROUND:** Recent findings from the 2008 National Sleep Foundation’s “Sleep in America” poll indicated that (1) the effects of shift work are under-studied; (2) shift workers (SWs) who reported symptoms of shift work disorder (SWD) were more likely to experience negative outcomes; (3) sleepiness or falling asleep at work, mood-related work impairment, and occupational accidents were more common among SWs. Recommendations from the poll included a call for increasing resources for education about, and diagnosis and treatment of, sleep disorders. The objective of this market research study was to understand how shift work disorder (SWD) affected the lives of shift workers (SWs) and how SWD was diagnosed from the perspective of healthcare professionals (HCPs) and SWs.

**METHODS:** Two separate, structured, online surveys were developed and administered to one of two study groups: (1) SWs with and without a self-reported diagnosis of SWD and (2) HCPs. To participate in the shift work survey, respondents had to have spent at least 21 hours per week working shifts in the 2 weeks prior to completing the survey; reported a diagnosis of SWD or been excessively sleepy (i.e. had a score of ≥ 10 of the Epworth Sleepiness Scale [ESS], administered as part of the online survey); and scored ≥ 5 on any of the subscales (disruption of work/school work, social life/activities, or family life/home responsibilities) of the Sheehan Disability Scale (SDS). The surveys were conducted in March and April of 2009. HCPs who spent at least 75% of their time in patient care had to have been qualified for 3 or more years in one of the following specialties or occupations: Primary Care, Psychiatry, Neurology, Sleep Medicine, Pulmonology, Occupational Medicine, Gynecology, Registered Nurse, Physician’s Assistant, or Nurse Practitioner to participate in the HCP survey.

**RESULTS:** The shift work survey was completed by 260 respondents and the HCP survey was completed by 673 HCPs. For SWs, 28% worked a shift for <1=1 year, 16% for 1 to 2 years, and 20% for >10 years. Shift work negatively affected respondents’ energy level (72% of respondents), social life (64%), mood (63%), ability to get sufficient sleep (63%), irritability (60%), motivation (59%), alertness/ability to stay awake (55%), concentration (55%), and sex life (54%). As a result of their excessive sleepiness, 87% reported a loss of concentration/lapses of attention at work in the previous month; 69% made mistakes at work; 43% said their ability to care for dependents had been compromised; 37% dozed off while driving; 34% almost caused a work-related accident; 11% were injured at work; and 10% had >1 work-related accident. Respondents reported using a variety of over-the-counter remedies to treat the symptoms of SWD, including coffee/tea (35%) and caffeinated soda (33%). A similar percentage (38%) received prescription medication to treat symptoms such as excessive sleepiness and/or insomnia. Of SWs without a diagnosis (n = 157), 23% did not believe they suffered from excessive sleepiness despite scoring >10 on the ESS and being functionally impaired as measured by the SDS. 45% and 38% of SWs discussed excessive sleepiness and insomnia symptoms associated with their work schedule, respectively, with their doctor. SWs who discussed their excessive sleepiness with their HCPs initiated this conversation 82% of the time, while HCPs rarely initiated it (13%). Most HCPs (75%) had diagnosed patients in their practice with SWD. HCPs believed that 67% of total SWD is never detected by physicians. HCPs also believed that 50% of SWD is undiagnosed because it is often masked by other conditions, including depression and obstructive sleep apnea, and that it is misdiagnosed as depression 30% of the time, insomnia unrelated to SWD 27%, chronic fatigue syndrome 22%, and OSA 20%.

**CONCLUSION:** Respondents reported that both excessive sleepiness and insomnia associated with shift work seriously impacted their lives, both at home and at work. A significant number of respondents have used over-the-counter remedies and pharmaceutical interventions to treat SWD-related symptoms. SWs do not always recognize their own symptoms of SWD and are more likely to initiate a discussion of those symptoms due to their work schedule than HCPs. HCPs believe that SWD is missed 67% of the time and reported that SWD is masked by other comorbidities or misdiagnosed. This research was sponsored by and conducted in collaboration with Cephalon, Inc., Frazer, PA.

**QUALITY OF CARE AND ELECTRONIC MEDICAL RECORDS: WHAT CAN WE EXPECT FROM INCREASED ADOPTION AND MEANINGFUL USE?**

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**BACKGROUND:** Incentives for electronic medical record (EMR) adoption anticipate a quality-related return on investment, although few reports compare achievement on quality standards among practices with and without EMR. Our objective is to describe achievement and trends in achievement on quality standards for diabetes among EMR- and paper-based practices participating in a regional program to improve care among patients with chronic medical conditions.

**METHODS:** Retrospective cohort study of primary care practices of 7 diverse health systems in Greater Cleveland publicly reporting their achievement and improvement on care and outcome-related quality standards for adults with diabetes between 7/1/07 and 6/30/10. Results are published on the program web site www.betterhealthcleve-land.org. All sites have the opportunity to participate in twice yearly QI Summits and receive program-sponsored practice coaching. Cross-sectional analyses compare achievement of 37 practice sites in the most recent report; trend analyses include 36 sites reporting in every report since 1/08. Achievement on the care composite is reported as the percentage of patients meeting all four component standards. Achievement on the outcome composite is reported as the percentage of patients meeting at least four of five component standards. Sites provide common data elements pertaining to all eligible diabetic patients ages
18–75, at least two visits during each 12-month period, including quality-relevant elements and data for covariates used in multivariate regression models. Covariates include patient age, sex, insurance (Medicare, commercial, Medicaid, uninsured), race/ethnicity (white, black, Hispanic, other), educational attainment and household income.

RESULTS: In the most recent period (7/1/09-6/30/10), care and outcomes were reported for 27,236 adults with diabetes cared for by 569 PCPs in 37 sites of 7 systems (3 EMR, 4 paper). Paper-based sites generally cared for patients who were more disadvantaged - more likely to be non-white (p=0.03), poorer (p=0.02), uninsured or covered by Medicaid (p<0.0001), and of lower educational attainment (p=0.06). In bivariate analyses of 2009-10 data, use of EMR was the strongest correlate of higher achievement in care (51% vs. 7% achievement) and outcome (44% vs. 16%), with consistent findings across all component care standards and four of five component outcome standards. After adjustment, the “EMR effect” was +34.1 percentage points for care (95% CI, 22.2-46.0; p<0.00001) and +11.7 percentage points for outcomes (95% CI, 5.3-18.1; p=0.0001). While bivariate analyses of trends also favored EMR-based sites (differences in annualized change of 8.5 percentage points in care, p=0.01; and 4.2 percentage points in outcomes, p=0.02), these trends became non-significant (p=0.25 for both composites) after adjustment.

CONCLUSION: In a region-wide quality improvement collaborative featuring public reporting, the use of fully functional EMR was associated with dramatically higher achievement on nationally endorsed quality measures for diabetes, with greater differences associated with care than outcome standards. Perhaps because program-wide coaching disproportionately served paper practices, trends in achievement were nonsignificantly different by measurement source, although paper practices started from a lower baseline. These findings raise cause for optimism that federal policies encouraging meaningful EMR use can raise quality of care.

ADOPTION OF A CLINICAL DECISION SUPPORT SYSTEM TO PROMOTE JUDICIOUS USE OF ANTIBIOTICS IN PRIMARY CARE
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BACKGROUND: Antibiotics are overprescribed for the treatment of acute respiratory infections (ARI), leading to increasing antimicrobial resistance. The “Reducing Inappropriate Prescribing of Antibiotics by Primary Care Clinicians” study is assessing the impact of a clinical decision support system (CDSS) on antibiotic prescribing for ARIs. Previous CDSS have been piloted, but low rates of use by providers have limited assessment of their efficacy. To facilitate its use, the CDSS was developed as an electronic medical record (EMR) progress note template, used at the point of care for documentation. The CDSS includes guidelines from the Centers for Disease Control and Prevention “Get Smart” program and presents diagnosis and treatment recommendations based on a patient’s age and presenting symptoms. The purpose of this report is to describe use of the CDSS, as well as facilitators and barriers to its adoption during the first year of the 18 month study.

METHODS: Between January 1, 2010 and December 31, 2010, 39 providers in 9 practices in 9 states across the US participated in this study. All practices are members of a practice based research network, use a common EMR, and pool data quarterly for quality improvement and research projects. A multi-method intervention was used to facilitate CDSS implementation. Providers agreed to use the CDSS for patients seen with ARI. Each practice received two half-day site visits, sent representatives to 2 network meetings, and received quarterly reports on their use of the CDSS and use of antibiotics for ARIs. CDSS use for ARIs was calculated at the practice level as the number of encounters at which an ARI diagnosis using the CDSS was made divided by the number of all encounters at which an ARI diagnosis was made. Facilitators and barriers of adoption were explored through semi-structured interviews with providers and staff during site visits and network meetings; organized into 4 domains (organizational, provider, patient and technical factors) based on a previously published CDSS evaluation framework.

RESULTS: In the first year of the study, the CDSS was used 19,993 times. In adult patients, practice use of CDSS for encounters with diagnoses of ARIs ranged from 40% to 67%. Empowering medical assistants to open the CDSS based on patients’ presenting symptoms was a common organizational factor associated with CDSS use. Providers reported that CDSS use improved awareness about diagnosis and treatment guidelines. Practice-wide agreement with ARI guidelines also facilitated CDSS use. Several providers reported that the CDSS was used to prompt discussions about use of antibiotics with patients. Use of the CDSS was perceived to speed office visits and improve documentation. Barriers to adoption included variation among providers’ use of EMR templates at the point of care and difficulty with use of the CDSS for patients with multiple diagnoses.

CONCLUSION: Adoption of a custom designed CDSS in the first year of implementation is promising. Its impact on antibiotic prescribing for ARIs will be assessed at the end of the 18 month intervention.

NAVIGATING PUBLIC HOUSING RESIDENTS INTO PRIMARY CARE: A READINESS ASSESSMENT
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(Tracking ID # 11629)

BACKGROUND: Residents of public housing are at increased risk of living with uncontrolled chronic disease, including heart disease, stroke, and diabetes. The Boston University Partners in Health and Housing Prevention Research Center aims to improve the health of Boston Public Housing Residents through community-based participatory research conducted in collaboration with public housing residents and local community organizations. Despite close proximity to community health centers and comprehensive academic medical centers, previous work has shown that public housing residents face many barriers to engaging in primary care. This collaboration of residents, community organizations, and academic researchers identified cardiovascular disease prevention (heart health) as a health priority for programs targeting public housing residents. As formative work for an intervention study, we conducted this research to (1) compare the readiness of housing developments versus community health centers to address heart health through a community-based intervention, and (2) to provide a framework for an intervention to bridge residents of public housing developments and primary care services within the community health centers.

METHODS: Using the Community Readiness Model, key informant interviews were conducted across 15 community settings: 8 public housing developments and 7 nearby community health centers. Four to 6 interviews were conducted in each community setting. Key informants were identified by community leaders as knowledgeable about ongoing efforts in their respective community. Housing development key informants included residents, resident leaders, and management, while health center key informants included leadership, clinical staff, support staff, and outreach workers. Using a previously validated
SYMPTOMS ON ATRIPLA VS. OTHER CART REGIMENS

E. Jennifer Edelman 1; Kirsha Gordon 2; Maria Rodríguez-Barradas 3; Amy C. Justice4.

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BACKGROUND: Eighty to 90% of patients newly diagnosed with HIV are now started on Atripla, a one pill, once a day drug combination, including emtricitabine, tenofovir and efavirenz which is thought to have few side effects. However, existing studies of patient tolerability are limited as they occur in the context of randomized controlled trials, rely on relatively short follow-up and do not adjust for important covariates, including comorbid diseases. Our aims were to 1) describe the characteristics of patients prescribed Atripla in a large cohort; 2) identify any symptoms associated with Atripla; and 3) adjust the analyses for disease severity (as measured by the VACS Index), medication adherence and being cART-naive.

METHODS: We performed a cross-sectional analysis of the Veterans Aging Cohort Study, a longitudinal multi-site study of HIV-infected and HIV-infected Veterans. We relied on data collected from 2008 to 2009. The analytic sample was restricted to patients on CART for ≥ 3 months with available symptom, pharmacy and adherence data. To determine symptom experiences, we used the HIV Symptom Index, which gives self-reported measure of degree of bother of 20 symptoms over the past four weeks. The VACS Index, a prognostic index that has been previously validated, was used to adjust for disease severity; scores range from 0 to 100. Adherence was calculated using fill/refill pharmacy data, ranging from 0 to 100. We calculated descriptive statistics, using chi-square for categorical variables and t-tests of Kruskal-Wallis test for continuous variables. We then used logistic regression to assess the association between Atripla and symptoms, unadjusted and then adjusted for the VACS Index, adherence and cART-naive status.

RESULTS: Our sample included 1,756 Veterans. In comparison to patients on other regimens, patients on Atripla (N=1,756) were similar based on gender, race/ethnicity, and medication adherence. However, they were younger (53 vs. 54, p=0.01), less likely to be infected with Hepatitis C (33% vs. 46%, p<0.001) and less sick as assessed by the VACS Index (27 vs. 33, p<0.001) and other laboratory values. Patients on Atripla were also significantly less likely to report numbness/tingling in hands/feet (0.74, CI 0.56 - 0.97) and nausea/vomiting (0.60, CI 0.39 - 0.94) after adjusting for disease severity, medication adherence and being cART-naive. Symptoms among those on Atripla vs. other CART regimens were not significantly different for the remaining 18 assessed symptoms.

CONCLUSION: Atripla is associated with less peripheral neuropathy and less nausea and vomiting than other CART regimens.

THE ROLE OF DATA IN ADDRESSING HEALTH CARE DISPARITIES IN MEDICAID MANAGED CARE PLANS: PERSPECTIVES FROM THE EXECUTIVE SUITE

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BACKGROUND: The Patient Protection and Affordable Care Act includes provisions to standardize the collection of health care quality information by racial and ethnic subgroups that can be used to address disparities. In California, Medicaid managed care plans have routinely collected Healthcare Effectiveness Data and Information Set (HEDIS) data on quality by racial and ethnic groups for almost a decade. As measured by HEDIS, African-Americans and whites typically experience the lowest quality of care, Asian-Americans the best, and Latino groups somewhere in between. We asked Medicaid managed care plan leaders about the role of these data as well as other motivators to address health care disparities within their plans.

METHODS: We conducted semi-structured interviews with 21 health plan executives (chief executive officers, chief medical officers, directors of quality improvement and directors of cultural-linguistic services) at 8 of the 19 Medicaid managed care plans in California. We utilized purposive sampling to maximize heterogeneity in geography and plan type (e.g. non profit, commercial). All interviews were audio-recorded and transcribed. We utilized modified grounded theory for analysis. We used multiple interviews within a plan in order to triangulate themes. Two researchers independently reviewed transcripts and assigned codes with disagreements resolved by discussion.

RESULTS: Three themes emerged: 1) Many plans only examine differences in HEDIS measures by racial and ethnic groups when the plan’s overall performance on a measure was lower than the average
across all Medicaid managed care plans. 2) To the extent that plans have
devolved interventions to address disparities these tend to be targeted
toward recent immigrants 3) Plans cited state regulations with financial
consequences such as one requiring interpreter services as a more
powerful influence on their approach to disparities than data.

CONCLUSION: The experience in California’s Medicaid managed care
plans suggests that the availability of health care quality data by race
and ethnicity is not sufficient for ensuring that plans will use it to inform
their attempts to improve health care quality and disparities. Health
plan actions to address health care disparities are still driven by
preconceived notions of disparities and by regulations with financial
implications. If data are to become the basis for actions to address
disparities, plans will need help in interpreting the results and
regulations will need to be developed that encourage actions that
correspond to a plan’s actual performance.

HOW DO PHYSICIANS THINK ABOUT STEWARDSHIP IN HEALTH CARE? A QUALITATIVE NATIONAL STUDY Matthew K. Wynia 1; Timothy Dawson Hotze 2; Amy M. Allen 2; Joanna A. Wicher 1; Kenneth J. Tomaszewski 1. American Medical Association, Chicago, Illinois ; 2KJT Group, Honeoye Falls, New York. (Tracking ID # 11636)

BACKGROUND: Stewardship may be defined as the judicious
management of community resources entrusted to one’s care with the
aim of using the resources to the long-term benefit of the community. In health care, physicians are often entrusted with decision-making authority to spend pooled resources, whether through private insurance or government programs. We sought to understand how physicians think about the notion of stewardship and their role, if any, in serving as stewards to ensure the sustainability of the health care system.

METHODS: Using a literature review a theoretical framework was
developed for assessing physician views on stewardship. This frame-
work was initially tested using online bulletin boards (similar to focus
groups) with a nationwide convenience sample of 32 physicians to
explore and validate proposed item categories. Survey items were then
developed in several domains: cost awareness, decision-making empower-
ment, and attitudes and behaviors reflecting a stewardship orientation.
Items were tested using a card sort exercise in which physicians grouped
items together based on similar constructs and themes. This was
conducted through web-assisted telephone in-depth interviews (TIDIs)
with 35 physicians to assess psychometric properties and for item
reduction. A shorter version of the survey was then tested with 18
physicians, again using web-assisted TIDIs, to refine items and elicit
further views and experiences in relationship to the concept of stewardship.

RESULTS: Overall, 85 physicians participated in online bulletin
boards or completed a version of the survey during web assisted
TIDIs (56 PCPs and 29 specialists). All endorsed the notion of an
obligation to serve as an advocate for individual patients. At the same
time, community health and national policy issues are top of mind
for many physicians; but while cost to individual patients often
affects testing and treatment recommendations, costs to payors or
the larger community are rarely considered. Many physicians
understand the concept of the larger community paying for the use
of very expensive care through an “insurance pool,” but they do not
see this affecting the care they deliver to their own patients. Instead,
physicians found time management, use of drug samples, and the
spread of communicable diseases to be meaningful examples of how
care decisions for one individual might affect others. In addition,
most physicians feel some responsibility for controlling overall
spending, but few feel empowered to do so for a number of reasons,
including litigation risks, patient demands, limited options, and the
belief that patients should ultimately be responsible for making care
decisions. Specialists are generally less aware of costs than PCPs;
PCPs are also more likely to provide multiple testing and treatment
options, while specialists often report presenting only what they view
as the best option to the patient. A minority of physicians have heard
the term “medical stewardship,” though it generally raised positive
connotations in open ended questions.

CONCLUSION: Many physicians believe they are the party most
responsible for making spending decisions and healthcare resource
allocation. Moreover the concept, if not the term, “medical stewardship”
makes sense to most physicians; yet it rarely affects testing and
treatment recommendations. Physicians uniformly endorse an ethical
obligation to respect patient rights and provide optimal quality care.
Developing a shared understanding of how physician obligations toward
ensuring a sustainable health care system fit into this core professional
ethic is important. Specific examples of how individual care decisions
can affect the larger community might be helpful in this regard, as
would be efforts to help physicians serve as effective stewards of shared
health care resources while continuing to be advocates for individual
patients.

HYPERTENSIVE TREATMENT INTENSIFICATION CLINICIANS DO NOT ACCOUNT FOR OVERALL CARDIAC RISK IN Jeremy Sussman 1; Jerome Sussman 1; Donna Zulman 1; Rod Hayward 1; Timothy Hofer 1; Eve Kerr 1. University of Michigan and Ann Arbor Veterans Affairs Hospital, Ann Arbor, Michigan. (Tracking ID # 11642)

BACKGROUND: Measures of overall cardiovascular risk (OCR) such as
the UK Prospective Diabetes Study (UKPDS) Risk Engine can aie
prioritization in clinical decision-making, because a patient who is likely
to have a clinical event will likely benefit from its treatment. While OCR
predicts the benefit of treatment intensification (TI) for patients with
hypertension, it remains unclear if physicians use OCR in decision-
making or if they guide treatment using blood pressure alone. In this
study we examined the influence of OCR in the likelihood of treatment
intensification.

METHODS: Data were from the ABATe study (Addressing Barriers to
Treatment for Hypertension), a prospective cohort study of 856 diabetic
US Veterans with diabetes and twice-measured blood pressure >=140/90
at a single scheduled primary care visit between 2005 and 2006. We
defined TI (the dependent variable) as a change in medication or dosage
in the 3 months after the office visit. We divided OCR (the independent
variable) into three groups - history of heart attack or congestive heart
failure, high risk (UKPDS 10-year event risk > 20 %) or low-medium risk
(UKPDS 10-year event risk <20%). We then conducted logistic regression
models to assess the association between OCR and TI. All models were
adjusted for systolic blood pressure, previous year’s mean systolic blood
pressure, comorbidity count, and clustering by clinician. We also
assessed whether the association of OCR with TI was affected by
uncertainty about hypertensive status, as measured by patient-
reported home blood pressure values, or uncertainty of additional
benefit of TI, as measured by the patient being on four classes of
antihypertensive medications.

RESULTS: Of the 856 participants in the final model, 44% had a history
of MI or CHF, 38% had high CV risk, and 19% had low or medium CV
risk. Average BP was 154/79 +/- 14/12 (SD). Compared to veterans
with low-to-medium CV risk, high risk veterans had 1.10 times the odds of TI
(95% CI 0.75-1.6, p=0.61) and those with a history of MI/CHF had 1.28
times the odds of TI (0.78-1.8, p=0.43). Three individual components of
total risk were associated with TI: higher systolic blood pressure (OR=1.15, 1.02-1.30, p=0.02 per 10 mmHg), higher hemoglobin A1C (OR 1.11, 1.01-1.23, p=0.03 per 1% increase), and total: HDL cholesterol ratio (OR=1.09 0.999-1.19, p=0.06). Other individual risk factors including age, race, and smoking status were not associated with likelihood of TI. These findings were robust to multiple confounders, including clinical measures, measures of uncertainty of hypertension and measures of uncertainty of benefit of TI.

CONCLUSION: While certain cardiac risk factors such as hypertension severity play a major role in clinical decisions to intensify hypertension treatment, we found no evidence that clinicians account for overall cardiovascular risk in clinical decision-making. Emphasizing the role of overall risk on clinical treatment priorities will increase the efficiency and patient-centeredness of hypertension care.

IMPLICIT BIAS AND ITS RELATION TO HEALTH DISPARITIES: A SURVEY OF MEDICAL STUDENTS Cristina M Gonzalez 1; Paul Marantz2. 1Albert Einstein College of Medicine- Montefiore Medical Center, Bronx, New York 2Albert Einstein College of Medicine, Bronx, New York. (Tracking ID # 11649)

BACKGROUND: As the US population becomes more ethnically and racially diverse, health disparities affecting ethnic and racial minority populations becomes an ever more important issue in health care and in medical education. Although the etiology of health disparities is multifactorial, evidence suggests that individual physicians' actions contribute to disparities in health. Since such disparities can be found across the spectrum of human disease, all physicians need to be aware of them and work to eliminate disparities in their own clinical practice behaviors. Suble, often subconscious factors may lead individual physicians to make different clinical choices in patients depending on their sex, race, or ethnicity. Differences in physician care provided to patients of different racial backgrounds have been found in actual clinical settings, in hypothetical clinical scenarios, and when using standardized patients. It is thought that these differences are not the result of overt, explicit racism, but more the result of implicit bias. Having these implicit biases does not make a physician a bad person - they are extremely common - but they need to be recognized and overcome if the physician seeks to provide equitable care to all patients.

The importance of health disparities education in the undergraduate medical curriculum is recognized by the accrediting bodies. Given the relevance of physician implicit bias to health disparities, we developed a required session focusing on health disparities, after which we developed an educational session that emphasized implicit bias, and to evaluate the association between students' self-assessment and what they believed or observed about health disparities.

METHODS: Third year medical students were surveyed after participating in a required session focusing on health disparities. The learning objective relevant to the survey was: Examine personal attitudes toward subconscious bias and health disparities, and to evaluate the association between students' self-assessment and what they believed or observed about health disparities.

RESULTS: We received 218 completed surveys over the two years. A total of 316 were enrolled in the course; we do not have specific attendance figures for those days, so this represents a response rate of 69% or better. Comparing gender demographics, there was a nonsignificant difference in the percentage of women responders versus percentage of women in the class (58% vs 52% p=0.067). We first dichotomized our results into groups based on the answer to the question: "Unconscious bias might affect some of my clinical decisions or behaviors." Forty-Seven (22%) of the students answered "Disagree" or "Strongly Disagree," ("deniers") while 167 (77%) of students answered "Strongly Agree" or "Agree" ("accepters") to this question. Each group's responses are compared in Table 1. While most students' IAT results, not surprisingly, revealed an unconscious bias that favored people more like themselves (e.g., white students showing a preference for whites), this preference was more common among the deniers, who were also more likely to believe the IAT might be invalid. Although the overwhelming majority of students agreed with the statement "Health disparities exist in the United States" the deniers disagreed with this statement at a greater frequency than the accepters. The deniers were more likely to agree that "Doctors treat all patients the same, no matter what group" they belong to," and to agree that "The US health care system is fair and equitable, and provides "blinded" care." While the deniers were slightly less likely to report that they had observed doctors treating patients differently based on race or ethnicity this difference was not statistically significant. These students, however, were less likely to report that they had observed nurses displaying the same behavior less frequently than the accepters, a difference that was statistically significant. There was no significant difference between the groups the students belonged to and their ethnicity, race or gender.

CONCLUSION: To our knowledge, this is the first study surveying medical students on their attitudes regarding implicit bias after exploring their personal biases. The fact that 22% of the students disagreed with the possibility that their unconscious bias might affect some of their clinical decisions or behaviors has significant implications. First, the recognition of bias cannot be taught in a single session. Second, it may reflect that the methods used to teach bias in the session were not sufficiently effective for all students to be able to learn about their own unconscious biases and recognize the impact they can have in clinical care.

In our study, the deniers were also more likely to have IAT results that showed a preference for people like themselves. The existence of bias is consistent with the findings of implicit bias in preprofessional students and in self-reported MDs taking the IAT favoring Whites over Blacks. Since demographic data were no different between the two groups, and there is dissociation between explicit and implicit racial bias, raising awareness of this issue is paramount.

In conclusion, the majority of our students had implicit biases favoring people like themselves. The students who denied any potential impact of their implicit bias on their future clinical care had more bias, were less likely to believe that health disparities exist in the US, and were less
likely to report that they had observed bias in care during their clinical rotations. This suggests that there is a subgroup of students for whom it may be especially important, and challenging, to teach about the existence of and physicians’ contributions to health disparities. Our experience supports the value of teaching medical students to recognize their own implicit biases and develop skills to overcome them. Future research is needed to develop an effective way to teach students to recognize their implicit biases and to mitigate their impact on clinical decision making.

Table 2 comparison of responses between deniers and acceptors

| Survey Questions                                                                 | Total Responded | Deniers | Acceptors | p value | Odds Ratio |
|---------------------------------------------------------------------------------|----------------|--------|-----------|---------|------------|
| Unconscious bias might affect some of my clinical decisions or behaviors.*      | 214            | 47     | 167       | NA      | NA         |
| Preference for people like themselves on IAT                                    | 38/149         | 33 (87%) | 89 (66%)  | 0.00027 | NA         |
| IAT is invalid                                                                  | 40/153         | 14 (35%) | 25 (16%)  | 0.0089  | 2.8        |
| Health disparities exist in the United States†                                 | 47/167         | 4 (9%)  | 21 (13%)  | 0.02    | 3.7        |
| Doctors treat all patients the same, no matter what “group” they belong to      | 47/167         | 9 (19%) | 11 (7%)   | 0.01    | 3.4        |
| The US health care system is fair and equitable, and provides “blended” care    | 47/167         | 11 (23%) | 15 (9%)   | 0.0075  | 3.1        |
| I have personally observed physicians who treat patients differently based on race, ethnicity, or other similar factors | 46/162 | 22 (48%) | 95 (59%)  | 0.19    | NA         |
| I have personally observed nurses who treat patients differently based on race, ethnicity, or other similar factors | 46/159 | 27 (59%) | 60 (38%)  | 0.01    | 2.43       |
| Ethnicity: Hispanic/Latino                                                       | 46/151         | 2 (4%)  | 9 (6%)    | 0.37    | NA         |
| Race: Not White                                                                 | 46/155         | 18 (61%) | 92 (59%)  | 0.85    | NA         |
| Gender: Female                                                                  | 45/157         | 22 (49%) | 96 (63%)  | 0.14    | NA         |

Table 2 comparison of responses between deniers and acceptors

ENGAGING ACADEMIC PHYSICIANS IN GRATITUDE PATIENT FUNDRAISING Scott Wright 1; Steven Rum2. 1JHU, Baltimore, Maryland; 2John Hopkins, bmore, Maryland. (Tracking ID # 11677)

BACKGROUND: Nationally, $1 billion is given each year by grateful patients in support of their physicians at community hospitals and academic medical centers. Systematizing effective methodologies may translate into even greater generosity from patients to support programmatic and capital needs. Donations from grateful patients often arise from appreciation for care that has been rendered. Most physicians have limited experience with grateful patient fundraising. This study was conducted to explore the effectiveness of methods that may be used to encourage physician participation in grateful patient fundraising.

METHODS: Physicians from 5 Departments (Cardiology, Dermatology, Neurology, Oncology, and Orthopedics) who spent at least 40% of their time in patient care and whom had never made a referral to development or philanthropy processes and outcomes, (ii) the “lecture arm”, received a one-hour training session taught by physicians who had been extremely successful in grateful patients philanthropy, and (iii) the “coaching arm” wherein development professionals conducted one-on-one sessions with the physicians to educate and guide them in grateful patient fundraising. Groups 2 & 3 also received the weekly emails. The primary outcome was the number of quality individual referrals (defined as someone who has the capacity to make a minimum gift of $25,000) given to the development team by the physicians, and the secondary outcome was philanthropic dollars received (although the short follow-up to date limits the realization of this outcome as stewardship takes time). The intervention period continued for 3 months and data collection (counting of referrals and donations) continued for an additional 3 months.

RESULTS: There were not any quality referrals that came in from the email arm, 3 from the lecture arm, and 41 from the coaching arm. All 19 physicians randomized to the coaching arm generated at least one quality referral. Four gifts totaling $219,550 have been received from the referrals from physicians in the coaching arm and there is a $1 million pledge that has not yet come in. No gifts or pledges that have arisen from physicians randomized to the other arms.

CONCLUSION: With the mounting pressures of reduced research dollars and lower reimbursements for the delivery of patient care, philanthropy may play an increasing role in balancing budgets and allowing for innovation. This trial shows that individualized attention from development officers giving one-on-one coaching to physicians appears to be a most effective way to collaborate around grateful patient philanthropy.

PAWAN INFLUENZA VACCINATION AND MINNESOTA HEALTH CARE WORKERS: SELF-REPORTED BEHAVIORS AND PERCEPTIONS OF PROFESSIONAL OBLIGATION Joan Henriksen Hellyer 1; Jon Tillurt 1; Aaron DeVries 2; Gregory Poland 3; Katherine James 4. 1Mayo Clinic, Rochester, Minnesota; 2Minnesota Department of Health, St. Paul, Minnesota. (Tracking ID # 11689)

BACKGROUND: Health care workers are viewed as a priority group for vaccine against influenza, but many in this population choose to remain unvaccinated. The purpose of this study was to describe the attitudes and self-reported behaviors of Minnesota nurses and physicians regarding pandemic influenza vaccination including their perceived professional obligations.

METHODS: In Spring 2010 a random sample of 800 physicians and 800 nurses licensed and residing in the state of Minnesota were mailed an 8-page self-administered paper survey. Mailed responses from 3 waves were double-entered into an electronic database. Categorical data were compared between groups with chi-square tests. The likelihood of not being vaccinated was compared with professional group, perceived professional obligation, and perceived risk of side effects using logistic regression. P-values < 0.05 were considered statistically significant. All analyses were performed using SAS v 9.1 (Cary, NC).

RESULTS: 486 of 800 (61%) physicians and 587 of 800 (73%) nurses responded. Overall, a majority of both physicians (85%) and nurses (62%) reported being vaccinated for H1N1 influenza, but physicians were more likely to be vaccinated than nurses (p<0.001). Among those who were not vaccinated, nurses were much more likely to worry about vaccine side effects (17%) than physicians (4%) (p=0.01). Compared to nurses, physicians were slightly more likely to agree that “healthcare workers have a professional obligation to be vaccinated” (88% vs. 72%, p<0.001) and that “in an influenza pandemic, healthcare workers have the ethical obligation to follow public health authorities’ recommendations” (92% vs. 82%, p<0.001). In unadjusted analyses, misperceiving the risk of side effects [OR=2.3 (95% CI:1.7-3.1)], perceiving a professional obligation to be vaccinated [OR=0.10 (95% CI:0.07-0.14)], receiving information about pandemic influenza from non-public health authority sources [OR=2.3 (95% CI: 1.7-3.1)] and being a nurse [OR=3.59 (95% CI: 2.66-4.86)] were all significantly associated with not being vaccinated. In a multivariable model, perceived professional obligation to be vaccinated [OR=0.11 (95% CI:0.07-0.15)] and being a nurse [OR=2.23 (95% CI: 1.41-3.53)] were significantly associated with not being vaccinated.

CONCLUSION: Minnesota healthcare workers reported high rates of H1N1 pandemic influenza vaccination in 2009. However, remaining
non-conformity to vaccination recommendations may be related to perceived professional norms as well as sources of information and perception of side effect risks. Public health messaging regarding health care worker pandemic influenza vaccination and its side effects should focus more attention on reaching nurses as well as physicians.

POSTRAMATIC STRESS DISORDER (PTSD) FOLLOWING ACUTE CORONARY SYNDROMES (ACS) PREDICTS POOR ADHERENCE TO ASPIRIN IN POST-ACS PATIENTS

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BACKGROUND: Approximately 15% of ACS patients develop PTSD after the trauma of the coronary event. ACS-induced PTSD in turn is related to subsequent poor medical prognosis, including cardiac rehospitalization, ACS recurrence, and mortality. We hypothesized that elevated PTSD symptoms 1 month after ACS would be related to subsequent poor adherence to aspirin, independent of important confounders including depression.

METHODS: 163 patients were enrolled from 3 university hospitals within 1-week of ACS. PTSD symptoms were assessed 1-month later using the Impact of Events Scale-Revised (IES-R; score ≥ 32 corresponds to PTSD diagnosis). Adherence to aspirin was measured using MEMS caps, which record the date and time on each occasion the bottle cap is opened. Patients were categorized as non-adherent if they took aspirin correctly <80% of days during months 2 and 3 after discharge. Logistic regression was used to test whether PTSD (IES ≥32) at 1 month after ACS predicted subsequent lower adherence to aspirin during months 2 and 3. Covariates for multiple logistic regression analyses included age, gender, race, Global Registry of Acute Coronary Events (GRACE) risk score (a measure of acute myocardial infarction (AMI) or congestive heart failure (CHF)).

RESULTS: 11% (n=18) of patients were classified with PTSD (IES-R > 32) at 1 month after ACS. 20% (n=33) of patients were non-adherent (< 80%) to aspirin during months 2 and 3. 44% (n=8) of PTSD cases were classified as non-adherent, and 17% (n=25) of non-PTSD cases were classified as non-adherent. Without adjustment for covariates, PTSD classification was related to a greater than 3-fold increase in odds of nonadherence (OR=3.84; 95% CI=1.38-10.70). In the fully adjusted model, PTSD classification remained an independent predictor of nonadherence (OR=3.22; 95% CI=1.01-10.36).

CONCLUSION: Post-ACS patients who report ACS-induced PTSD 1 month after hospitalization are at increased risk for subsequent nonadherence, independent of other important sociodemographic and medical covariates, including depression. Future studies should examine whether this relationship helps to explain previously demonstrated relationships between PTSD symptoms and ACS recurrence and mortality.

THE IMPORTANCE OF CLINICAL SEVERITY IN THE MEASUREMENT OF READMISSION RATES: A COMPARISON OF MEDICARE BENEFICIARIES IN 1997 AND 2007

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BACKGROUND: Preventable hospital readmissions occur frequently, account for substantial costs, and are thought to reflect poor quality of care transitions. Spurred in part by mandatory public reporting and impending financial incentives from the Patient Protection and Affordable Care Act, hospitals and quality improvement organizations have made reducing readmissions a top priority. In order to evaluate their efforts to reduce readmissions, these groups must accurately measure readmission rates and make longitudinal comparisons. But readmission rates are often not adjusted for clinical severity of patients, potentially leading to misinterpretation of longitudinal trends. Since the relationship between clinical severity and readmissions is not fully understood, our objective was to determine the degree to which differences in severity affect readmission rates and whether this changes over time. To do so, we examined differential trends across clinical severity levels in readmission rates of two common conditions over a 10-year period.

METHODS: We analyzed inpatient claims data from fiscal years 1997 and 2007 for all unique Medicare patients (N=1,705,654) admitted to short-term acute-care nonfederal hospitals with principal diagnoses of acute myocardial infarction (AMI) or congestive heart failure (CHF). We examined the changes in the odds of 30-day all-cause readmission for patients with higher versus lower clinical severity in 2007 compared to 1997 using a difference-in-differences approach. Each patient was assigned to one of four severity groups: group 1 represented the lowest severity, group 4 the highest. Severity was determined based on claims-level models in which 30-day mortality was regressed on age, gender, and Elixhauser comorbidities. Differences in trends in readmission among severity groups were produced by interacting severity group dummy and year dummy variables.

RESULTS: For AMI, the 30-day readmission rate for group 1 (lowest severity) was 17.1% in 1997 and 14.0% in 2007. The readmission rate for group 4 (highest severity) was 22.8% in 1997 and 23.3% in 2007. Compared to patients in group 1, the change in the odds of readmission over time was significantly higher for AMI patients in group 4 (OR=1.31 [95% CI 1.24, 1.37], P<.01). The results for CHF patients followed a similar pattern. The readmission rate for group 1 was 21.6% in 1997 and 20.5% in 2007. For group 4, the readmission rate was 22.6% in 1997 and 24.7% in 2007. Compared to patients in group 1, the change in the odds of readmission over time was significantly higher for CHF patients in group 4 (OR=1.20 [95% CI 1.16, 1.24], P<.01).

CONCLUSION: Relative to Medicare patients with low clinical severity, high severity patients experienced increasing odds of readmission in 2007, compared to 1997, following hospitalization for AMI and CHF. As this analysis shows, readmission rates change over time at different rates for patients in differing severity groups. In tracking readmission rates and evaluating efforts to reduce them, policymakers and organizational leaders should take into account the underlying distribution of clinical severity in patient populations and monitor whether it changes over time.

“I FEEL LIKE I’M NOT A PHYSICIAN”: PHYSICIANS’ PERCEPTIONS OF OPIOID MANAGEMENT

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BACKGROUND: Recent decades have seen a dramatic increase in prescribing of long-term opioids for management of chronic pain. At the same time, research has demonstrated substantial variation between primary care physicians in their perceptions about appropriate opioid

I FEEL LIKE I'M NOT A DOCTOR": PHYSICIANS’ PERCEPTIONS OF OPIOID MANAGEMENT

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BACKGROUND: Recent decades have seen a dramatic increase in prescribing of long-term opioids for management of chronic pain. At the same time, research has demonstrated substantial variation between primary care physicians in their perceptions about appropriate opioid
use and in their opioid prescribing practices. Current guidelines recommend structured monitoring of opioid therapy, using tools such as urine drug screening and structured pain reassessment, but adherence to these guidelines is generally low. The purpose of this study is to understand physician perspectives on opioid prescribing and monitoring practices and to identify potential barriers to opioid monitoring in primary care.

**METHODS:** We are conducting in-depth semi-structured qualitative interviews with primary care physicians at a VA medical center, using maximum variation snowball sampling to capture a broad range of perspectives. Interview questions were designed and refined after pilot testing to elicit experiences with opioid monitoring, perceptions about interpersonal consequences of monitoring, and barriers or facilitators to monitoring. Interviews are recorded, transcribed and checked for accuracy. Concurrent with ongoing data collection, we are using emergent thematic analysis to understand and interpret the data. Investigators separately review transcripts, then meet as a group to review data together, reach consensus on coding categories, and identify emerging themes. Interviews will continue until theoretical saturation is reached.

**RESULTS:** The first six primary care physicians interviewed include 4 women and 2 men with years in VA practice ranging from 4 to >20. All physicians identified tensions between opioid management and other aspects of doctoring. Physicians wanted to treat their patients with empathy, giving them “the benefit of the doubt,” but described this as sometimes conflicting with the need to maintain limitations on opioid prescribing. As one physician put it, “it’s a struggle for me sometimes—not wanting people to take advantage of me—because I am likely to be fairly empathetic.” Another stated, “You feel insulted if someone’s going behind your back and you can confirm the lie, but you take a step back and try to get some therapeutic distance.” Participants also described tensions between their traditional role as physicians and opioid adherence monitoring tasks, which several described as more consistent with a policing role. “You’re there to help them and they can tell you their deepest, darkest secrets, but yet you’re policing them.” Physicians described discomfort with the effect opiate monitoring could have on their relationships with patients. As one physician said, “the worst thing about [urine drug testing] is you do not see the patient as a patient.” Another asserted, “I feel like I’m not a doctor.”

**CONCLUSION:** Opioid management in chronic pain involves many challenges for physicians. According to our preliminary findings, physicians feel opioid monitoring can detract from their fundamental roles and responsibilities, such as developing a working relationship characterized by empathy and understanding.
HIGH-RISK HOSPITALIZED PATIENTS WITH ASTHMA OR COPD WHO MISSPEA Respiratory Inhalers: MORE THAN MEETS THE EYE Valerie G Press 1; Vineet M Arora 1; Lisa M Shah 2; Stephanie L Lewis 1; Jeffrey Charboneau 1; Judith Starkey 1; Edward Naureckas 1; Jerry A Krishnan 1. 1University of Chicago Medical Center, Chicago, Illinois; 2Valere Health, LLC, Washington, District of Columbia. (Tracking ID # 11711)

BACKGROUND: Clinical guidelines recommend evaluating and teaching effective respiratory inhaler technique in all settings, including hospitals. However, many high-risk patients hospitalized with asthma or chronic obstructive pulmonary disease (COPD) misuse their inhalers. While providers may not provide adequate education, patients who receive education may still fail to understand for many reasons. In addition to the well documented barrier of poor health literacy, it is also possible that patients are not able to understand education due to poor vision. Because much education regarding pharmacotherapies, including inhalers, is based on written materials, it is important to understand whether poor vision is an unrecognized barrier for inhaler teaching in hospitalized patients. In our hospital-based studies evaluating the role of health literacy in patients’ ability to learn inhaler technique, we have collected data on patients’ screening vision levels. The aim of this abstract is to explore rates of poor vision in high-risk hospitalized patients.

METHODS: Hospitalized patients with asthma or COPD were enrolled in hospital-based studies evaluating use of respiratory inhalers. Metered dose inhaler (MDI) and Diskus use was assessed with detailed checklists. Misuse of each device was defined as <75% of steps correct. The Short Test of Functional Health Literacy (STOFHLA; score >22-36, adequate; 0-22, less-than-adequate) was used to evaluate level of health literacy. However, prior to administration of the S-TOFHLA, vision was assessed (Snellen screening chart) and was defined as insufficient if vision was worse than 20/50 in both eyes. Chi-square and Fisher’s exact tests were used.

RESULTS: From September 2007 - April of 2010, 150 participants with asthma or COPD were enrolled in hospital-based studies from two urban academic institutions. Among the 146 unique participants, the average age was 52, and the majority were female (72%) and African American (82%). The vast majority had been admitted in the past year (75%) and over a third (37%) had been hospitalized > 2 times for their asthma or COPD in the past year. Further, over half (58%) had had a near-fatal event (ICU admission and/or intubation) in their lifetime. Unfortunately, the majority of patients misused their inhalers (83% MDI, 89% Diskus). Of those tested for health literacy (n=95), the majority had adequate health literacy (71%), however, a significant proportion of this cohort (35%) had insufficient vision, and therefore health literacy could not be assessed in these participants. Not surprisingly, older individuals (age/>=65) were more likely to have insufficient vision (p > 0.001); vision did not differ by race (p=0.74) or gender (p=0.90). Forty-nine (34%) participants that had used MDI (n=144) had insufficient vision; while not statistically significant, all but five individuals (10%) with insufficient vision misused their MDI (p=0.16). Similarly, of the 34% (n=29) who used Diskus (n=85) and had insufficient vision, all but one misused their Diskus (p=0.16).

CONCLUSION: The majority of these high-risk patients with asthma or COPD misuse their inhalers. Moreover, insufficient vision is a common problem in this population, affecting more than 1 of every 3 patients, and is more prevalent among older individuals. While underpowered, the association between insufficient vision and misuse of inhalers highlights the need for larger studies that address the role of vision in patients’ ability to self-manage their chronic diseases.

PARTNERING TO UNDERSTAND ENVIRONMENTAL CONTRIBUTION TO DIABETES DISPARITIES IN EAST HARLEM, NY Lawrence C. Kleinman 1; David Lutz 2; Ellen J. Plumb 3; Pearl Barkley 2; Hector R. Nazario 2; Michelle A. Ramos 6; Carol R. Horowitz 1. 1Mount Sinai School of Medicine, New York, New York; 2Neighborhood Open Space Coalition, New York, New York; 3Thomas Jefferson University Hospital, Philadelphia, Pennsylvania; 4Thomas Jefferson Tenants Association, Inc., New York, New York; 5Community Education Council District 4, New York, New York; 6Union Settlement Association, New York, New York. (Tracking ID # 11717)

BACKGROUND: The Communities Impact Diabetes Center uses partnered methods to address diabetes-related conditions among African Americans and Latinos in East Harlem (EH), New York. EH has some of the highest rates of diabetes-related illness in New York City. We describe a novel, partnered approach to collect baseline data regarding the built and food environments in a 2 census tract area of EH and present select findings.

METHODS: Our environmental assessment explored characteristics related to walking and eating. We paired community and academic partners to assess each block independently, resolve all differences, and report results. We surveyed the data collectors and analyzed responses using standard qualitative methods.

RESULTS: Key themes included connection to their own community, community characteristics; interactions with partners, surprises and learning, and data collection. All but the first were common to academic and community partners. Relationships between partners were amiable. Both community, “It was very helpful, we made sure neither of us made mistakes, and helped each other when we could,” and academic, “I really enjoyed it... I learned a lot about the areas I surveyed” partners were complimentary. Community partners’ strengths included local knowledge of the community, while academic partners’ focus on adherence to the specifications was critical. In this neighborhood, we found limited food choices, many sidewalks in disrepair, few benches, and highly variable times allocated for pedestrians to cross at crosswalks.

CONCLUSION: Partnered data collection was both successful and formative, building additional relationships and further capacity for ongoing partnership. Community partners newly saw, “little things that are important but people don’t pay attention to.” Structured observations added to our understanding of how an environment may contribute to diabetes and identified environmental targets for current intervention.

MINDFULNESS TO REDUCE PSYCHOSOCIAL STRESS Natalia Morone 1; Cheryl Lynch 5; Vincent Losasso 3; Karl Liebe 4; Carol Greco 6. 1University of Pittsburgh/Pittsburgh VAMC, Pittsburgh, Pennsylvania; 3Medical University of South Carolina, Charleston, South Carolina; 4University of Pittsburgh, Pittsburgh, Pennsylvania; 6Choice Care Physicians, Pittsburgh, Pennsylvania. (Tracking ID # 11719)

BACKGROUND: Stress reduction programs are widely available and effective but largely underused in clinical settings. For an area with little published information, this study identifies key elements of learned behaviors and skills reported by participants in a stress reduction program based on mindfulness.
METHODS: The objective was to identify themes that describe the experience of learning a Mindfulness-Based Stress Reduction (MBSR) program for the first time and how participants applied the methods learned to their daily life and psychosocial stressors. We performed a qualitative investigation using participant feedback from 11 MBSR 8-week programs. Grounded theory was used to inductively generate thematic categories. Two coders independently examined the data using content analysis to identify recurring words, phrases or concepts that were initially assigned as codes, which served as anchor points across the transcripts. These codes were iteratively applied to the transcribed data, discussed between the two coders and refined to define key themes, or concepts that emerged from the data. A third investigator reviewed the refined set of codes and resolved any differences in the interpretation of the data and associated codes. The final coding scheme was devised and provides the framework for the results.

RESULTS: The sample was made up of 274 adults who had participated in one of 11 MBSR classes offered to residents of the greater Pittsburgh area between April 2005 and November 2008. Class sizes ranged from 16–29 people. Women made up 74% (202/274) of the sample and the mean age of participants was 49 years (range 20–80). Classes met once weekly for 8 weeks and lasted two hours. After the fourth class a separate “retreat class” was offered that involved a four hour period of meditation practice. The majority of the sample (80%, 220/274) attended at least 6 classes. Nineteen people dropped out of the program, 7% (19/274). Of the 274 participants, 176 completed course evaluations and 74 of these contained written comments. Four themes were identified that described the process and results of learning mindfulness to adapt to psychosocial stressors. We categorized participants’ feedback into interrelated themes of Awareness (subdivided into Insight - “step back from my thoughts in order to view them more clearly”, and Being In the Moment), Coping - “pause, take a breath”, Serenity - “increased feeling of calm, centeredness”, and Change in Perspective - “different understanding interpersonally and intrapersonally”. In addition, participants described specific health benefits such as suspension of blood pressure medication and reduction in anxiety.

CONCLUSION: Participants found the mindfulness-based approach effective for stress reduction. The learning process allowed them to routinely apply mindfulness strategies that provided multiple benefits. Mindfulness programs are a widely available resource for busy clinicians to refer patients for stress reduction when it is an essential part of the therapeutic plan.

PATIENT PERCEPTIONS OF PRIMARY CARE PHYSICIAN COMMUNICATION IN FOUR COUNTRIES Gregory Makoul1; Ralph O. Mueller2.
1Saint Francis Hospital and Medical Center, Hartford, Connecticut ; 2University of Hartford, West Hartford, Connecticut . (Tracking ID # 117277)

BACKGROUND: The Communication Assessment Tool (CAT) is an established instrument for eliciting patient perspectives on the interpersonal and communication skills of healthcare professionals. It has been used across a variety of contexts in the US. This study was conducted to examine: (1) how patients view their primary care physicians’ (PCPs’) communication in 4 primarily English-speaking countries; (2) the extent to which patient perceptions of PCP communication are associated with likelihood to recommend the PCP.

METHODS: The 14 CAT items address essential communication tasks via a 5-point scale (1=poor, 5=excellent); they were embedded in a survey that focused on physician-patient communication, administered in 23 countries between May and August of 2010. This report focuses on analysis of data collected online, in English, within the following countries: Australia, Canada, UK, and US. To be included in this analysis, respondents must have been at least 18 years old at the time of the survey and fluent in English. In addition, they must have reported that their most recent doctor visit took place within 3 months of the survey date with a PCP they had seen at least twice. New patients, those who might have left their PCP after one visit, had last seen a specialist, or had seen the PCP more than 3 months before survey administration were excluded from the analysis. In addition to CAT scores, this analysis includes data from an item that asked participants to rate their likelihood of recommending the PCP on a scale of 0–10 (0=never recommend, 10=definitely recommend).

RESULTS: While more than 1000 completed surveys were collected in each country, applying the exclusion criteria resulted in the following sample sizes: Australia (n=550), Canada (n=453), UK (n=611), US (n=397). The CAT item “The doctor encouraged me to ask questions” received the lowest % excellent score, by far, in all countries: UK (39.7%), Canada (43.0%), Australia (47.7%), US (49.9%). Controlling for sex, age, education, and number of months between participants’ last PCP visit and survey date, there were statistically significant differences in composite CAT scores among countries (% of the 14 items rated excellent), with UK at 50.9%, Canada at 52.6%, Australia at 57.4%, and US at 58.8%. There were also significant differences in the correlation (r) between composite CAT scores and patient likelihood to recommend their PCPs: Australia (r=.45), Canada (r=.55), US (r=.60), UK (r=.62).

CONCLUSION: The CAT is usually administered to patients at the point of care. While this is the first time it has been used with people not in the role of ‘patient’ when completing the items, the pattern of scores is consistent with data collected from inpatients and outpatients. Indeed, the ‘encouraged me to ask questions’ item has tended to receive the lowest score in every context to date. Results from this study indicate that perceived PCP communication varies significantly across countries, despite the fact that medical education and certification in each examined country places a priority on communication skills. Communication and patient recommendation of PCPs are clearly linked in all countries, but the strength of this association varies: The finding that perceived communication accounts for 20% of the variance in Australia vs. nearly 40% in the UK and US warrants further investigation. While this analysis focuses on data collected in English only, it sets the stage for future research within and between countries.

WHAT FACTORS SHOULD BILINGUAL PHYSICIANS CONSIDER IN THEIR DECISION TO RELY ON SECOND-LANGUAGE SKILLS OR AN INTERPRETER? A PATIENT SAFETY APPROACH Matthew K. Wynia1; Marsha J. Regenstein2; Helen B. Andres3.
1American Medical Association, Chicago, Illinois ; 2George Washington University, Washington, District of Columbia . (Tracking ID # 117411)

BACKGROUND: Language barriers frequently affect patient care, presenting safety and quality concerns related to communication. Partially bilingual physicians must weigh a number of risks in their decision whether to use their own (limited) second language skills or rely on an interpreter when caring for an LEP patient. Little is known about how physicians make this determination, and there is no formal guidance for how and when it is appropriate to use one’s own language skills. We sought to 1) understand the factors that influence this decision and 2) use a patient safety approach to develop practical guidance for physicians facing this decision.

METHODS: We used a modified Healthcare Failure Modes and Effects Analysis (HFMEA) process to examine factors partially bilingual physicians consider in deciding whether to call an interpreter. HFMEA is used to identify and rank specific high priority risk factors (failure
modes) that should be addressed within a system. We defined “failure” as a physician electing to use his or her second language skills rather than an interpreter when this choice poses significant risk to the patient. We developed a preliminary set of 8 factors based on in-depth interviews with 28 bilingual or partially bilingual physicians nationwide. We then convened a panel of 8 physicians with nationally recognized expertise in issues related to the care of LEP patients to conduct the HFMEA process, facilitated by a national expert in quality management. The experts discussed and ranked each risk factor according to four scales scored from 1–10: Frequency, Importance, Amanability to Intervention, and Detectability. Risk Priority Numbers were then calculated by multiplying the scores for each scale.

RESULTS: The experts confirmed the importance of all eight factors as well as an additional factor “Physician Knowledge and Skills: Lack of knowledge of value of using a trained interpreter and how to work with one effectively.” This factor produced the highest Risk Priority Number (2.418), followed by “Clinical Risk or Complexity of the Encounter: The physician miscalculates the complexity or risk for miscommunication of the clinical situation under discussion” (2.323), “Wait Time to Access Interpreter Services: Accessing interpreter services is challenging (logistics, wait time, etc.)” (2.046), “Patient’s English Proficiency: The patient’s English proficiency is overestimated” (1.812), “Efficiency of the Clinical Encounter: The clinical encounter takes more time and effort when communicating through an interpreter” (1.771), “Physician’s Language Skills: The physician miscalculates his/her own second language proficiency” (1.736), “Quality of interpreter services: There is lack of confidence in the consistent quality of available interpreter services” (1.564), “The Interpersonal Aspects of Care: The physician believes the use of a trained interpreter compromises his/her rapport with the patient” (1.349), and “Cost of Interpreter Services: Reimbursement for interpreter services is unavailable or inadequate” (1.293).

CONCLUSION: We analyzed physicians’ decisions to use their own skills or an interpreter from a patient safety perspective and identified a set of actionable factors that might lead to high-risk situations. The number and variety of important factors reflects the complex nature of risks that can arise from language barriers and suggests organizational approaches to risk reduction. Organizations that aim to provide high-quality care to patients with limited English proficiency should consider these factors when developing quality improvement and patient safety activities.

RATES OF CO-PRESCRIBING OF DRUGS WITH POTENTIAL FOR DRUG-DRUG INTERACTIONS AMONG PERSONS INITIATING THERAPY WITH SELECTIVE SEROTONIN REUPTAKE INHIBITORS Robert J Valuck 1; Anne M Libby 1; Heather O Anderson 1; M Haim Erder 2; Clement Francois 3; Japla A Doshi 4; Carol Collins 5; Sheldon H Presskorn 6; 1University of Colorado School of Pharmacy, Aurora, Colorado; 2Shire Pharmaceuticals, Wayne, Pennsylvania; 3Lundbeck SAS, Issy-les-Moulineaux, N/A; 4University of Pennsylvania, Philadelphia, Pennsylvania; 5University of Washington, Seattle, Washington; 6Clinical Research Institute, University of Kansas School of Medicine-Wichita, Wichita, Kansas. [Tracking ID # 11750]

BACKGROUND: Selective Serotonin Reuptake Inhibitors (SSRIs) are widely used antidepressants, with approved indications for the treatment of major depressive disorder and in some instances, other disorders. Pharmacokinetic and pharmacodynamic differences among the SSRIs can give rise to potential differences in drug-drug interactions (DDI). Our objective was to determine the rate of co-prescribing of potentially interacting drugs among subjects initiating therapy with SSRIs in United States managed health care plans, in order to better understand the magnitude and distribution of this potential problem.

METHODS: First, we identified lists of potential SSRI drug-drug interactions (SSRI-DDI) of interest using medical compendia and expert panel approaches. Then, using a large health insurance claims database (the IMS LifeLink Database), we examined retrospective cohorts of new SSRI users between 2002–2008. For each new user, we used medical and pharmacy claims records to identify instances and rates of coprescribing of potentially interacting drugs according to the compendia and expert panel based lists, and characterized the potential SSRI-DDI by drug group, individual drug, and timing of the potential interaction.

RESULTS: 913,619 subjects met study inclusion criteria; 67% were female and mean age was 45.1 years at time of initiation of SSRI therapy. The most common mental health diagnoses among new SSRI users were depression (49-50% by SSRI), anxiety (30-46%), and substance use disorder (16-18%). Using the compendia based list of potential SSRI-DDI, 48.5-62.0% of subjects had at least one instance of coprescribing of potentially interacting drug(s) that overlapped with their SSRI exposure. The most commonly occurring potential SSRI-DDI were SSRIs coprescribed with anticoagulants (10.6-23.9% of SSRI prescriptions), other antidepressants (9.1-18.1%), benzodiazepines (12.1-19.5%), beta-blockers (9.3-14.2%), and NSAIDs (7.4-11.2%), when taken as drug classes. The most common individual drug based potential SSRI-DDI included SSRIs coprescribed with digoxin (1.0-1.1% of SSRI prescriptions), diltiazem (1.1-1.8%), temazepam (1.4-2.3%), tramadol (1.1-2.3%), and warfarin (1.7-2.5%). Similar results were observed for the panel list, where benzodiazepines as a class (12.1-19.5%) of SSRI prescriptions), and cyclobenzaprine (2.6-3.0%), metoprolol (3.8-6.7%), tramadol (1.1-2.3%), trazodone (4.3-7.5%), and warfarin (1.0-2.5%) were commonly coprescribed. In terms of timing, coprescribing of two potentially interacting drugs on the same day was less common than instances where one drug was added on to existing therapy with another; still, same day coprescribing accounted for 12.2-36.5% of the potential SSRI-DDI that were identified.

CONCLUSION: SSRIs are widely prescribed, and co-prescribing of drugs that might elicit SSRI-DDI is common. Clinicians should be aware of the potential for such interactions, and evaluate both the benefits and potential clinical risks (which may range from minimal to substantial) when co-prescribing SSRIs to patients taking other drugs, or vice versa. Further study is needed to identify subsequent patient outcomes associated with specific SSRI-DDI.

ATTENDING ROUNDS: WHAT IS NOT HAPPENING? Chad Stickrath 1; Melver Anderson 1; Allan Prochazka 1; Megan Griffeth 2; Melissa Deloughry 1; Eva Aagaard 1; Denver VA Medical Center, Denver, Colorado; 2University of Colorado Denver, Aurora, Colorado. [Tracking ID # 11762]

BACKGROUND: Traditionally, inpatient academic internal medicine teams have employed “attending rounds” to fulfill their patient care and teaching duties. Detailed observational studies of the characteristics of attending rounds in the current academic healthcare setting are lacking and there is no consensus as to the optimal way to provide patient care and teaching during these rounds.

METHODS: A cross-sectional descriptive study of attending ward rounds was conducted on the general inpatient medicine services at four teaching hospitals affiliated with the University of Colorado Denver School of Medicine Internal Medicine Residency over a six-month period in 2010. Trained, independent observer accompanied general internal medicine teams on attending rounds to observe, time, and record the activities of these rounds, including the location and participants. A single observer followed each team, observing one busy day in the call
cycle where there were the maximum expected new patient presentations (the post-call day) and one day where the team was primarily focused on presenting patients already known to the team (non-post-call day). A portion of the encounters were followed simultaneously by two observers to ensure observer variability was not a confounding factor.

RESULTS: A total of 263 patient encounters from 34 distinct rounding sessions were observed. The median duration of rounds was 118 minutes (SD 49). Among direct patient care activities during these encounters, the patient care plan was discussed 94% of the time, pertinent diagnostic studies 91% of the time, drug list 64% of the time, staff notes 54% of the time, while prophylaxis was discussed only 29% of the time, and level of invasion only 12% of the time. Among communication activities, direct communication with the patient occurred during 68% of the encounters, while communication with an RN occurred only 12.9% of the time and communication with the family only 12.2% of the time. Among teaching activities, medical topic review occurred 51% of the time, while feedback was provided only 28% of the time, physical exam teaching occurred only 13% of the time, evidence-based medicine topic review occurred only 12.2% of the time, learner-identified teaching topic review only 6% of the time, oral presentation skills only 6.1% of the time, future learning plan only 3% of the time, and history-taking skills only 2% of the time.

CONCLUSION: On attending rounds, the discussion of patient care plans and pertinent diagnostic studies occurred most frequently, while little time was devoted to a number of key activities including discussing prophylaxis, level of invasion, nursing communication, and non-medical topic teaching. Limitations of the study include the relatively small number of teams observed and the inability to directly relate the observations to patient care and/or educational outcomes. Future studies should link observed activities to outcomes and develop interventions that increase the frequency with which key activities occur.

INCOMING TRAINEE PERCEPTIONS OF THE IMPACTS OF HEALTH CARE REFORM Ruric Anderson 1; Celine Goetz 2; Creagh Milford 3; Meryl Prochaska 2; Vinny Arora 2; NorthShore University HealthSystem, Northbrook, Illinois; 2University of Chicago Pritzker School of Medicine, Chicago, Illinois; 3University of Chicago (NorthShore) Medicine Residency, Chicago, Illinois. (Tracking ID # 11769)

BACKGROUND: Health care reform legislation brings a complex series of changes that will occur over the next decade. Trainee understanding of these issues is critical for career planning and is an important component of the systems-based practice competency required by the ACGME. This study aims to assess incoming trainee 1) perceptions of the impacts of health care reform; 2) understanding of concepts and terminology related to health care reform; and 3) awareness of how health care reform might influence their specialty or primary care career choice.

METHODS: An anonymous survey was created to assess incoming trainee understanding of health care reform and its perceived impacts. Incoming interns and fellows at two Chicago GME training sites rated their agreement with statements (such as the effect of health care reform on reimbursement on primary care physicians and subspecialists) using a 5 item scale, with the response options being Agree, Somewhat Agree, Neutral, Somewhat Disagree and Disagree. Incoming trainees also were asked to rate their level understanding of a list of health care policy terms on a 4 point Likert scale, from very unfamiliar to very familiar.

Trainees also were asked whether they had received training in these areas during medical school (for interns) or during medical school or residency (for fellows). Surveys were distributed to incoming interns and fellows during GME orientation (late June and early July 2010) using a paper survey. Data were merged into a Microsoft Excel with a code denoting site. Site adjusted ANOVA and logistic regression was performed to assess differences in perspectives.

RESULTS: 77% of interns (140/181) and 96% of fellows (90/94) responded. Only 2% agreed and 18% somewhat agreed that they felt confident in answering patient questions about the recent health reform legislation. 92% of respondents either agreed or somewhat agreed they are seeking information on health care reform, preferably through formal education. 33% of the respondents agreed or somewhat agreed that they were able to keep up to date about health reform in the past year and less than 20% reported adequate training in the program they had just completed. Most respondents felt unfamiliar with the majority of health policy terminology. Only half of incoming trainees thought primary care reimbursement would improve after the implementation of reform, and only 23% agreed or somewhat agreed that health care reform would influence their choice of specialty. Differences when adjusting for site and level of training were minimal.

CONCLUSION: Incoming interns and new fellows are not confident or prepared in their ability to understand the complex changes in health care reform. Unfamiliarity with health policy terms and a perceived inability to stay current with reform issues may impact respondents’ ability to successfully enter practice. Despite its importance, few interns and fellows report having formal education on health reform topics. Curricula on health care policy should be developed and implemented for physicians-in-training.

THE DARK SIDE OF THE DIAPHRAGM: INCIDENTAL CT FINDINGS IN ANATOMIC AREAS IMAGED UNINTENTIONALLY Elizabeth Richey 1; Brenda Sirovich 2; Dartmouth Medical School, Hanover, New Hampshire; 2Department of Veterans Affairs Medical Center, White River Junction, Vermont. (Tracking ID # 11778)

BACKGROUND: The increasing ability of advanced imaging to visualize small or subtle abnormalities has undoubtedly enhanced the diagnostic capabilities of physicians. It has also, however, had a major side effect: the increased detection of “incidentalomas” - unexpected abnormalities that are unrelated to the reason for which imaging was performed. Incidentalomas pose a serious dilemma for physicians and patients, for whom the balance of benefits and harms of detection and subsequent intervention is unclear. We sought to determine the prevalence and downstream consequences of incidentalomas whose detection could be avoided simply by restricting the radiologist’s view to the side of the diaphragm for which the test was ordered.

METHODS: We reviewed the reports of all outpatient CT scans of either the chest or abdomen (but not both) performed between January 1, 2007 and December 31, 2007 at a single VA medical center. Of the 873 CT scans reviewed, 397 (45%) were performed in follow-up and within 2 years of a previous CT abnormality; these were excluded from our primary analysis. Of the remaining 476 CT scans, 168 (35%) were of the chest and 308 (65%) were of the abdomen. We used the CT report and electronic medical record to abstract information on the CT scan, indication, radiologist, principal finding, incidental findings on the opposite side of the diaphragm, and recommendations and downstream procedures (within 2 years of the scan) related to the incidental findings.

RESULTS: Ninety-six chest CT scans (57%) identified a total of 144 abnormalities in the abdomen. The most common incidental abdominal...
CLINICIANS’ PERCEPTIONS ABOUT HOW THEY ARE VALUED WITHIN THE ACADEMIC MEDICAL CENTER

Aysegul Gouzi 1; Kathleen Burkhart 2; Harjit Bhogal 2; Glenn Hirsch 2; Scott Wright 1.
1Jh, Clarksville, Maryland; 2Jh, Bmore, Maryland; 3Jh, Baltimore, Maryland. (Tracking ID # 11780)

BACKGROUND: Academic medicine has a tripartite mission centered on research, education, and clinical care. Academic rank is a major determinant of respect within academic health centers (AHC) and because promotion decisions are heavily influenced by research, and not clinical accomplishments, distinction in the clinical care of patients may be poorly documented, inadequately rewarded, or even taken for granted. This study set out to explore the characteristics of and the factors associated with feeling valued as a clinician within an AHC.

METHODS: In 2009, all 374 physicians who spend more than 50% of their effort clinically across all departments at Johns Hopkins Medicine were surveyed about their clinical experiences and their perceptions about whether clinical work is valued by the institution. The instrument was developed building on our prior research and informed by the published literature, as well as consultation with experts. Factor analysis and reliability testing were used to identify specific questions that came together to form the ‘clinical valuation scale’. Logistic-regression was then used to identify associations between individual variables and ‘high’ versus ‘low’ clinical valuation scores.

RESULTS: 268 highly clinically active physicians responded (72%). The ‘clinical valuation scale’, composed of 5 questions, had a Cronbach Alpha of 0.72. The scale’s range of potential scores is 5–25, and the respondent’s median score was 14. Male gender (OR 2.12; 95% CI 1.20–3.89), age older than 45 years (OR 1.99; 95% CI 1.18–3.35), holding the academic rank of Professor (OR 1.44; 95% CI 1.12–1.85), spending >10% time in research (OR 2.34; 95% CI 1.29–4.26), being at Hopkins longer than 10 years (OR 2.34; 95% CI 1.19–3.47) were each statistically significantly associated with high CVS scores. Select variables that were not associated with a higher or lower clinical valuation scores included race, fellowship training, or clinical department.

CONCLUSION: Disparate degrees of perceived valuation in clinical work exist among the faculty doing the lion’s share of patient care within an AHC. Academic health centers interested in retaining clinical faculty may wish to assess the degree to which their highly clinically active faculty members feel valued in their clinical roles and focus attention, if not resources, on modifiable factors or conditions that are associated with clinicians feeling appreciated for their efforts.

RACIAL/ETHNIC DIFFERENCES IN EXPLANATORY MODELS, DAILY LIVED EXPERIENCE AND HTN MANAGEMENT BEHAVIORS

Barbara Bokhour 1; Gemmae Fix 2; Jeffrey Solomon 2; Ellen S. Cohn 3; Dharma E. Cortes 4; Nora Mueller 2; Lois Katz 5; Ann Borzekowski 2; Paul Haidet 6; Alexander Green 7; Nancy Kressin 8; Center for Health Quality, Outcomes & Economic Research, ENRM VA Medical Center, Bedford, Massachusetts; 2Center for Health Quality, Outcomes & Economic Research, ENRM Veterans Affairs Medical Center, Bedford, Massachusetts; 3Sargent College of Health & Rehabilitation Sciences, Boston University, Boston, Massachusetts; 4Harvard Medical School & Cambridge Health Alliance, Boston, Massachusetts; 5New York Harbor VA Healthcare System, Larchmont, New York; 6Penn State University College of Medicine, Hershey, Pennsylvania; 7Massachusetts General Hospital, Cambridge, Massachusetts; 8Boston University School of Medicine, West Roxbury, Massachusetts. (Tracking ID # 11781)

BACKGROUND: Despite improvements in hypertension control, significant disparities persist with lower rates of control among African-American and Latino patients. Prior work has shown that patients’ explanatory models (beliefs regarding the cause, mechanisms & course of illness, and effects of treatment) and daily lived experiences (patients’ social context, routines and habits, and competing health problems) affect their abilities to control hypertension. We sought to understand patient-based disparities in these and in patients’ hypertension management behaviors among African-American, White and Latino patients.

METHODS: We conducted 1–1 ½ hour semi-structured qualitative interviews with 45 White, Latino and African-American patients with uncontrolled hypertension at two large Veterans Affairs Medical Centers. Patients were asked about the context of their daily lives, their understanding of HTN causes and treatment and about how they managed HTN in their daily lives, including adherence to medications, diet, and exercise recommendations. Fully transcribed interviews were analyzed using grounded theory analytic methodology, including open and axial coding, theorizing, and constant comparison analysis across cases. All coded transcripts were then reviewed by two investigators to identify EMs and DLE that drove patients’ HTN-management behaviors. Identified elements were reviewed and confirmed by two additional investigators. We compared barriers to BP control between the three groups.

RESULTS: We identified five areas that impeded patients’ ability to control their hypertension: 1) explanatory models (EMs) that differed from biomedical models of HTN, 2) perceptions of symptoms of hypertension, 3) competing health conditions, 4) perceptions that stress causes hypertension, and 5) daily lived experiences (including social context & routines). We found that African-American patients had higher incidence of having an EM that differed from a biomedical explanatory model than the Latino or White patients (65%, 33%, and 12%, respectively). Latino patients were more likely than White or African-American patients to describe symptoms of HTN (44%, 21%, 25%), and less likely to say that they experienced no symptoms (0%, 21%, 15%) Latino patients were also less likely to have problems related to daily lived experiences (44%, 74%, 70%).

CONCLUSION: The findings from this qualitative study suggest that aspects of patients’ EMs and daily lived experiences of managing HTN may differ among different ethnic/racial groups. Such differences may explain disparities in HTN control in minority veterans. Further focus on EMs and daily lived experiences in clinical care may help reduce disparities.
PROFESSIONALISM AND FACTORS ASSOCIATED WITH BURNOUT, EMPATHY, AND RESILIENCE AMONG EARLY CAREER PHYSICIANS: RESULTS OF THE HEART ALUMNI SURVEY Michelle L. Dossett 1; Wendy Kohatsu 2; William Nunley 3; Darshan Mehta 3; Roger B Davis 1; Russell S Phillips 1; Gloria Yeh 1; Beth Israel Deaconess Medical Center, Boston, Massachusetts; Santa Rosa Family Medicine Residency Program, Santa Rosa, California; Yamhill County Mental Health, McMinnville, Oregon; Massachusetts General Hospital, Boston, Massachusetts. (Tracking ID # 11782)

BACKGROUND: Burnout is associated with decreased physician well-being, loss of empathy, reduced quality of patient care, and decreased career satisfaction. Despite high rates of burnout among medical students, residents, and physicians in practice, few studies have examined strategies to address this problem. A fourth year medical student elective (HEART) on humanism, physician self-care, complementary and alternative medicine (CAM) modalities, and communication skills may promote physician resilience and prevent burnout by teaching medical students skills to better cope with the stresses of residency training and medical practice. To date, little is known about the physicians who have completed this elective.

METHODS: Cross-sectional online survey of HEART alumni from the 2002–2009 cohorts. In addition to demographic questions about medical school and residency training, we asked about practice patterns, personal habits, attitudes toward CAM, qualitative and quantitative questions about the HEART elective, and we included validated surveys assessing burnout, empathy, resilience, mindfulness, and quality of life.

RESULTS: Of 168 eligible HEART alumni, 129 (77%), responded to our survey. 51% of respondents reported no training in self-care techniques during medical school and 40% reported no such training during residency. An overwhelming majority of respondents felt that the elective helped them better cope with stress during residency training (93%), taught them self-care skills (93%), and also improved their ability to empathize and connect with patients (93%). 89% felt that the elective taught professionalism well or very well, and 92% felt the elective taught interpersonal and communication skills well or very well. 76% of respondents reported engaging in reflective or contemplative activities at least weekly while 64% reported a regular mind body practice such as meditation, yoga, or tai chi. Decreased burnout (both on the personal accomplishment and depersonalization subscales) was correlated with increased empathy and increased resilience (p<0.002) and decreased emotional exhaustion was correlated with increased resilience (p<0.003) in this population. In multivariable regression analyses assessing demographic (e.g., age, specialty, stage of training) and lifestyle factors (e.g., exercise, healthy eating, spirituality, mind body practices), we found that engagement in a reflective or contemplative practice at least weekly was associated with reduced burnout (p=0.0089), increased empathy (p=0.0357), and increased resilience (p=0.0001). Similarly, support from friends or loved ones was associated with reduced burnout (p=0.0044), increased empathy (p=0.0056), and increased resilience (p=0.0009).

CONCLUSION: The HEART curriculum promotes the ACGME core competencies of professionalism and communication while teaching skills, such as mindfulness and mind body techniques, that may contribute to improved coping with stresses related to medical training and practice. Whether the HEART elective itself contributed to this improved coping is uncertain. Nonetheless, these findings warrant further studies of both the HEART elective and mind body interventions targeted toward medical students and residents to determine if elements of these interventions decrease burnout, promote professionalism, and enhance resilience and empathy in physicians in training.

EXAM-ROOM BASED EDUCATION TO INFLUENCE VACCINATION BEHAVIOR AMONG VETERAN PATIENTS IN A PRIMARY CARE SETTING Rachel Caskey 1; Saul Weiner 1; Ben Gerber 1; University of Illinois at Chicago, Chicago, Illinois. (Tracking ID # 11784)

BACKGROUND: The childhood immunization program in the United States has been very successful, however, the same success has not been achieved for adult immunizations. In 2007 approximately 2% of 18-64-year-olds had received the recommended pertussis vaccination. Although posters have been used to promote public health initiatives, there is little empirical knowledge about their capacity to directly or indirectly change provider or patient behavior leading to improved vaccination of adults.

METHODS: Educational Posters surrounding combined tetanus, diphtheria, and acellular pertussis (Tdap) vaccine were designed through patient focus groups to target patients at a Veterans Affairs medical center who are age-eligible for the Tdap vaccine. A randomized controlled trial was conducted in a general internal medicine clinic between December, 2009 through May, 2010 to measure the influence of exam-room education posters on measured Tdap vaccination rates. Six primary care practitioners were randomly selected to a control arm and six to an intervention (poster) arm. Tdap vaccination rates were measured from the electronic medical record (EMR). To improve overall provider exposure a clinical reminder in the EMR for Tdap vaccination was initiated at the beginning of our intervention period for all providers. We used student t-test to evaluate differences in vaccination rates.

RESULTS: Prior to the intervention, 11/372 (3.0%) of control patients and 21/346 (6.1%) of intervention patients had received a Tdap vaccine. After the poster intervention, Tdap vaccination rates increased significantly to 76/715 (10.6%) of control patients and 89/687 (13.0%) of intervention patients (p<0.01). The intervention did not produce a significant increase in vaccination rates compared to the control group (p=0.59).

CONCLUSION: Patient-focused posters promoting vaccination did not produce an incremental effect on vaccination rates in our study sample. The overall increased Tdap vaccination rates in both arms may be due to the clinical reminders or potentially secular trends encouraging Tdap vaccination. Posters are a common public health promotion strategy and warrant continued investigation to appreciate their impact on health outcomes.

IMPACT OF RACE ON COLORECTAL CANCER Saman Sabounchi 1; bhupinder anand2; BCM, Houston, Texas; BCM, HOUSTON, Texas. (Tracking ID # 11786)

BACKGROUND: Several studies have shown that colorectal cancer runs a more severe course in Blacks compared to Whites. Black patients tend to have a more advanced disease at diagnosis and are more likely to die from cancer than Whites. The present study was carried out to compare the characteristics and outcome of colon cancer in Blacks and Whites in a Veteran Affairs Medical Center, where patients are expected to receive similar treatment, irrespective of the race.

METHODS: The database of the Michael E. DeBakey Veterans Affairs Medical Center, Houston, Texas was searched for all patients with a histological diagnosis of colorectal cancer, diagnosed from 1996 to the present time (2010). Since the majority of patients seen in the Veterans Affairs Medical Centers are men, women patients were excluded as their numbers were too small for a meaningful analysis. Patients with racial background other than White and Black including mixed races were excluded. The data collected included demographic details such as family history, presenting symptoms, presence of metabolic feature like obesity
Ashiq Masood

Neutrophilic dermatosis (ND) encompasses a collection of disorders that include Sweet Syndrome (SS), Pyoderma Gangrenosum (PG). Histologically it is characterized by neutrophilic infiltrate of skin. Despite the fact that it has been associated with a variety of hematological disorders, its association with multiple myeloma has been restricted to case reports. In order to better understand its association with multiple myeloma, we performed a systematic review of literature to explore its association with multiple myeloma.

METHODS: A literature search was carried out using PubMed/Medline between January 1990 & December 2010 using search terms “acute neutrophilic dermatosis and Multiple myeloma”, “Pyoderma Gangrenosum and Multiple Myeloma” and “Neutrophilic dermatosis and multiple myeloma”. All English (12/17) case reports were reviewed. Few non English abstracts (5/17) translated in English were added to data as they contained all necessary information needed for our study. Our search yielded 17 cases of neutrophilic dermatosis associated with MM.

Table 1:

| Characteristic                  | White (205) | Black (95) | p value |
|---------------------------------|-------------|------------|---------|
| Age                             | 67.2±10.67  | 66.08±10.92| NS      |
| Clinical Features               |             |            |         |
| Rectal bleeding                 | 100 (49%)   | 25 (26%)   | <0.001  |
| Heme-positive stools            | 74 (36%)    | 41 (45%)   | NS      |
| Rectal bleeding & heme +ve stools| 174 (85%)  | 66 (69%)   | 0.003   |
| Constipation                    | 31 (15%)    | 14 (15%)   | NS      |
| Diarrhea                        | 23 (11%)    | 9 (9%)     | NS      |
| Weight Loss                     | 40 (19.5%)  | 27 (28%)   | NS      |
| Anemia (hemoglobin <12g %)     | 86 (42%)    | 57 (60%)   | 0.005   |

Table 2:

| Characteristic                  | White (205) | Black (95) | p value |
|---------------------------------|-------------|------------|---------|
| Location - Left Colon           | 134 (65%)   | 45 (47%)   | 0.005   |
| Rectum                          | 56 (27%)    | 19 (20%)   |         |
| Recto-sigmoid                   | 64 (31%)    | 26 (27%)   |         |
| Descending                      | 14 (7%)     | 10 (10.5%) |         |
| Location - Right colon          | 71 (35%)    | 31 (33%)   | NS      |
| Transverse                      | 23 (11%)    | 4 (4%)     |         |
| Ascending                       | 48 (23%)    | 27 (28%)   |         |
| Mass Pathology                  |             |            |         |
| Low grade histology             |             |            |         |
| In situ                         | 3 (1.4%)    | 2 (2.1%)   |         |
| Well differentiated             | 10 (5%)     | 4 (4.2%)   |         |
| Mod differentiated              | 93 (45%)    | 44 (46%)   |         |
| High grade histology            |             |            |         |
| Intermediate                    | 26 (13%)    | 10 (10.5%) |         |
| Poorly differentiated            | 18 (8.7%)   | 5 (5.2%)   |         |
| Signet ring                     | 5 (2.4%)    | 2 (2.1%)   |         |
| Mucinous                        | 5 (2.4%)    | 3 (3.1%)   |         |
| Duke Classification             | NS          |            |         |
| A & B                           | 110 (54%)   | 51 (54%)   |         |
| C & D                           | 95 (46%)    | 44 (46%)   |         |
| Metastasis                      |             |            |         |
| Lymph nodes                     | 44 (21%)    | 20 (22%)   | NS      |
| Liver Metastasis                | 36 (17.5%)  | 16 (17%)   | NS      |
| Distant Metastasis              | 16 (8%)     | 12 (10%)   | NS      |

NEUTROPHILIC DERMATOsis AND MULTIPLE MYELOMA: REVIEW OF LITERATURE

Ashiq Masood 1; Praveen Ranganath 1; Kaman H Hudhud 2; Muneer H Abidi3; Wayne State University/Detroit Medical Center, Detroit, Michigan ; 3Cancer Care Center of Frederick, Frederick, Maryland ; 3Karmanos Cancer Center/Wayne State University, Detroit, Michigan . (Tracking ID # 11787)

BACKGROUND: Neutrophilic dermatosis (ND) encompasses a collection of disorders that include Sweet Syndrome (SS), Pyoderma Gangrenosum (PG). Histologically it is characterized by neutrophilic infiltrate of skin. Despite the fact that it has been associated with a variety of hematological disorders, its association with multiple myeloma has been restricted to case reports. In order to better understand its association with multiple myeloma, we performed a systematic review of literature to explore its association with multiple myeloma.

METHODS: A literature search was carried out using PubMed/Medline between January 1990 & December 2010 using search terms “acute neutrophilic dermatosis and Multiple myeloma”, “Pyoderma Gangrenosum and Multiple Myeloma” and “Neutrophilic dermatosis and multiple myeloma”. All English (12/17) case reports were reviewed. Few non English abstracts (5/17) translated in English were added to data as they contained all necessary information needed for our study. Our search yielded 17 cases of neutrophilic dermatosis associated with MM.
RESULTS: Median age was 60 (range 46–89) years and 59% were male. Immunoglobulin isotypes were 8/17 (47%) IgG; 6/17 (35%) IgA; others unknown. 7/14 (50%) were kappa restricted. Among the 17 cases, 11 were diagnosed with SS, 4 with PG and 2 with ND. 53% of the lesions were associated with chemotherapy, mainly in association with Bortezomb. 16/17 patients were treated with oral or topical steroids and there was 100% response. In patients 3/5 (66%) with chemotherapy induced lesions, it was observed that addition of steroids to chemotherapy prevented recurrence of lesions, while patients with PG responded better to addition of dapson or colchicine with steroid therapy.

CONCLUSION: Neutrophilic dermatosis represent a continuum of noninfectious, nonmetastatic inflammatory dermatosis. In patients with multiple myeloma it should be considered a differential diagnosis of prolonged fever with cutaneous involvement. Corticosteroids treatment in these patients can improve systemic and cutaneous symptoms.

DOES HEALTH INFORMATION EXCHANGE USE DECREASE DUPLICATE IMAGING IN THE EMERGENCY EVALUATION OF BACK PAIN? Elizabeth Elliott 1, James E Bailey 2, Jim Y Wan 3, Rebecca A Pope 1, Teresa M Watters 3, Mark E Frisse 3 1 Medicine, University of Tennessee Health Science Center, Memphis, Tennessee; 2 Medicine and Preventive Medicine, University of Tennessee Health Science Center, Memphis, Tennessee; 3 Preventive Medicine, University of Tennessee Health Science Center, Memphis, Tennessee; 4 Biomedical Informatics, Vanderbilt University, Nashville, Tennessee . (Tracking ID # 117888)

BACKGROUND: Diagnostic imaging is routinely obtained in the emergency department (ED) evaluation of back pain despite evidence-based guidelines recommending selected use. Health information exchanges (HIEs) have been proposed as a way to reduce unnecessary testing. This study sought to determine whether HIE use was associated with decreased duplicate diagnostic imaging in the evaluation of benign back pain.

METHODS: Cross-sectional analysis of data from the MidSouth e-Health Alliance (MSeHA) HIE for the 24,150 ED patient-visits for back pain by 19,136 patients seen in major general hospital EDs in the four counties of the Memphis Metropolitan Area between 8/1/07 and 7/31/09. Patient-visits were included with: 1) a prior visit with back pain principal diagnosis where any lumbarosacral (LS) diagnostic imaging was obtained, and 2) a second ED visit for back pain in the study period. Patient-visits with age <18, trauma, and cancer were excluded.

RESULTS: Of the 14,927 unique patients with ED visits for back pain 28.7% (n=3980) had an index visit with LS x-ray, CT, or MRI. 476 of these 3980 patients had 800 repeat patient-visits to the ED for back pain that qualified for duplicate analysis. 179 (22.4%) of the 800 repeat back visits resulted in duplicate diagnostic imaging (X-ray 84.9%, CT 6.1%, and MRI 9.5%). HIE use in the study population was low at 12.5% and billing providers accounted for 80% of the total HIE use. Table 1 shows duplicate diagnostic imaging by HIE use. Bivariate analysis revealed a decrease in duplicate diagnostic imaging with any HIE use (odds ratio [OR] of 0.37, 95% confidence interval [CI] 0.18-0.69), and also a decrease in duplicate diagnostic imaging with use of HIE by the billing provider (OR 0.47, CI 0.23-0.92). Multivariate results, controlling for demographic factors, comorbidity, hospital system, and previous visits, revealed similar results for decreased duplicated imaging with any HIE use (OR 0.36, CI 0.18-0.71). Interaction term HIE use previous visits was assessed but results were not statistically significant (OR 0.86, CI 0.53-1.41).

CONCLUSION: This study demonstrates that HIE use is effective in reducing duplicate diagnostic imaging for back pain. HIE use was associated with 64% lower odds of any duplicate imaging even after controlling for other factors. However, HIE benefits are limited because of low HIE usage rates. Further studies are needed to assess ways to improve HIE usage, evaluate other conditions where HIE may be efficacious, and to assess the effect of HIE use on costs of care.

Table 1:

| Duplicate Diagnostic Imaging | HIE Not Used | HIE Used | Total |
|-----------------------------|-------------|----------|-------|
| No                          | 531         | 90       | 621   |
| Yes                         | 169         | 10       | 179   |
| Total                       | 700         | 100      | 800   |

POSTTRAUMATIC STRESS DISORDER (PTSD) AFTER STROKE IS ASSOCIATED WITH LOWER ADHERENCE TO MEDICATIONS Ian M Kronish 1, Judith Z Goldfinger 1, Revathi Balakrishnan 1, Kezhen Fei 1, Carol R Horowitz 1 1 Mount Sinai School of Medicine, New York, New York . (Tracking ID # 11790)

BACKGROUND: There is growing recognition that post-traumatic stress disorder (PTSD) can be triggered by acute medical events such as strokes. Little is known regarding how PTSD might affect stroke survivors’ adherence to health behaviors that are important to secondary prevention. We hypothesized that the presence of PTSD after stroke or transient ischemic attack (TIA) would be associated with poor adherence to medications even after accounting for depression and other confounders.

METHODS: We surveyed 267 participants who were being recruited to take part in a stroke prevention intervention targeted at stroke survivors in underserved communities in New York City. Participants were eligible if they were at least 40 years old and had at least one stroke or TIA in the past 5 years. PTSD was assessed at enrollment using the 17-item PTSD Checklist-Specific for stroke (PCL-S). PCL-S score > 50 is highly specific for PTSD diagnosis. Depressive symptoms were measured using the Patient Health Questionnaire (PHQ-8). Medication adherence was measured using the 8-item Morisky scale. Patients were considered non-adherent if Morisky score was 0–5 and adherent if Morisky score was 6–8. Logistic regression was used to test whether stroke/TIA-related PTSD was associated with increased risk of poor medication adherence. Covariates for adjusted analyses included age, gender, income, stroke disability (modified Rankin score), Charlson comorbidity index, emotional and practical social support, and depression (PHQ8 > 9).

RESULTS: The mean age of participants was 63 years, 64% were women, 78% were Black or Latino, and more than half earned less than $15,000 per year. Seventeen percent (n=46) of participants were classified with PTSD (PCL-S >50). Thirty-nine percent (n=105) were classified as non-adherent based on Morisky score. Participants with PTSD were more likely to be non-adherent than participants without PTSD (67% vs 33%, p<.001). In the adjusted model, PTSD was associated with 2.57 (95% CI 1.20–5.51) increased odds of non-adherence to medications. Consistent with prior research, younger age (OR 0.97 95% CI 0.95–0.99), depression (OR 1.90 95% CI 1.03–3.52), and low emotional support (OR 0.18 95% CI 0.06–0.54) were also significantly associated with decreased medication adherence in this model.

CONCLUSION: PTSD represents a novel psychosocial risk factor for non-adherence to medications in post-stroke/TIA patients. Clinicians should consider screening post-stroke patients for PTSD and should carefully assess for adherence problems among those with elevated symptoms of PTSD.

UNEXPLAINED GENDER DIFFERENCES IN DYSLIPIDEMIA IN PATIENTS WITH TYPE 2 DIABETES John Billimek 1, Priel Schmalbach 1, Shaista Malik 1, Dara H. Sorkin 1, Quyen Ngo-Metzger 1, Sheldon Greenfield 1, Sherrie H. Kaplan 1 1 University of California, Irvine, Irvine, California; 2 University of California, Irvine, Irvine, California . (Tracking ID # 11791)

BACKGROUND: Gender differences in dyslipidemia are well documented. Less well-studied are the contributors to those differences such as disparities in overall quality of care, lipid-specific management (including regimen intensification) and patient preferences and behaviors. The
OBJECTIVE of this study was to examine the relationship between dyslipidemia, quality of care, patient adherence and physician habits among adult patients with Type-2 diabetes.

METHODS: The patient sample (n=1361) was drawn from participants in the Reducing Racial Disparities in Diabetes Coached Care (R2D2C2) study. Survey-based measures included the 63-item Total Illness Burden Index, a 13-item measure of passivity, an 13-item measure of medication adherence, and a 9-item measure of diet, exercise, smoking history. Medical records were abstracted for lipid, blood pressure and HbA1c values, medication history, and diabetes quality of care indicators. Student's t was used to compare adjusted gender differences in patient characteristics, preferences, and behaviors. Logistic regression equations were used to investigate gender differences in lipid management and lipid values, adjusted for patient age, education, minority status, duration of diabetes, quality of care, adherence, health habits, history of coronary heart disease and other co-morbidities.

RESULTS: Compared to men, women in the sample had less total comorbid disease burden, more were Hispanic, and fewer had a history of prior coronary heart disease (all p<.05). Women reported poorer adherence to treatment compared to men (p<.05). There were no significant differences between men and women in age, mean systolic blood pressure or HbA1c values, health habits (diet, exercise, smoking) or any of the diabetes quality process indicators. However, fewer women (44.4%) than men (52.1%) attained the recommended target for lipid control (LDL < 100 mg/dl) and were adjusted for demographic characteristics, health habits, passivity, and adherence (adjusted OR=1.56, p<.001). Women were significantly less likely to be treated intensively with 2 or more classes of cholesterol lowering medications (12.7% women versus 17.1% men; adjusted OR=0.68, p<.05).

CONCLUSION: Data from this study suggests that gender differences in dyslipidemia may be due to less intensive lipid management, despite otherwise comparable quality of diabetes care, taking into account patient health habits, total disease burden, passive approach to healthcare management and adherence to treatment.

USING A REPORT CARD TO IMPROVE THE QUALITY OF CARE FOR PATIENTS WITH DIABETES  

Daniel J. Elliott 1; Brian Rahmer 1; Matthew Dunn 1; Christopher Prater 1; Barret Michalec 1; Robie Zent 1; Edward Ewen 1; Heather Fagan 1; Christiana Care Health System, Newark, Delaware. (Tracking ID # 11792)

BACKGROUND: Despite the fact that improving performance on accepted quality metrics in diabetes care is associated with reductions in disease-related morbidity and mortality, disease control for the majority of patients with diabetes is suboptimal. Point-of-care decision support to providers may improve the likelihood that quality metrics are met, but focusing on providers misses an opportunity to improve shared decision-making between providers and patients. Therefore, we provided a diabetes report card with standard quality measures derived from the electronic health record (EHR) to both providers and patients at routine office visits. The objective of this study is to evaluate the effectiveness of the intervention on physician action related to diabetes quality metrics.

METHODS: We conducted a prospective pre-post study to evaluate the effectiveness of the diabetes report card for patients with diabetes at an urban teaching practice. The report card is populated with EHR data on HEDIS metrics including control of blood sugar, blood pressure, lipids, eye examinations and foot examinations. The report card was directed to the patient and indicated in simple language whether the patient had met the goal for each measure according to HEDIS guidelines. An electronic copy was sent to the provider at the time of the visit. We determined physician action through review of the EHR and defined appropriate action as intensifying medication therapy or ordering a repeat lab assessment. Our primary outcome was the likelihood that providers addressed unmet quality metrics. Secondary outcomes included the proportion for whom each unmet individual metric was addressed. We used the chi-square test to assess the difference of proportions in the pre-intervention period compared to the post-intervention period.

RESULTS: There were 116 patient visits in the pre-intervention period and 165 in the post-intervention period. There were no differences in baseline quality metrics between the groups. Overall, providers were more likely to address deficient measures in the post-intervention period (p=0.01). For individual quality measures, providers were more likely to address glycemic control in the post-intervention period for patients with poor glycemic control (67% vs 59%), but this was not statistically significant (p=0.43). There were no differences in response to poor control in lipid or blood pressure management. Among patients overdue for eye examinations, physicians referred 40% of patients for eye examinations in the post-intervention period compared to 13.1% in the pre-intervention period (p<0.001). Providers performed a foot exam on 39.1% of patients in the post-intervention period compared to 10.9% in the pre-intervention period (p<0.001). Of 105 provider surveys, 70% reported that the report card helped them identify a deficiency in care, 46% said it caused them to discuss a problem they would not have otherwise addressed, and 76% reported that it enhanced the overall visit. Of 102 patient surveys collected, 95% reported that the report card helped them talk to their doctor about diabetes and 86% reported that the report card made their visit better.

CONCLUSION: A diabetes report card generated from the EHR and given to patients and providers as part of usual care was associated with an increase in the number of deficient quality measures for diabetes that were addressed at routine office visits. The effect was most pronounced in response to overdue eye and foot examinations. The report card was well-accepted by patients and providers and may represent an inexpensive mechanism to improve the quality of care in diabetes.

TAMOXIFEN AND THROMBOEMBOLIC COMPLICATIONS  

Papia Kar 1; Adedayo Ounilto 1; Jessica Engel 1; Richard Berg 1. Marshfield Clinic, Marshfield, Wisconsin. (Tracking ID # 11795)

BACKGROUND: Tamoxifen is a selective estrogen receptor modulator (SERM) which has not only been effective in the treatment of hormone receptor positive breast cancer but also has shown to prevent recurrence. Recently studies have shown that tamoxifen is effective in reducing the incidence of new breast cancer up to 38% in susceptible individuals. Tamoxifen is a cornerstone in the treatment of breast cancer in premenopausal women. Due to its estrogen agonistic activity, tamoxifen has been associated with several adverse effects like increased risk of endometrial cancer, deep vein thrombosis (DVT), pulmonary embolism (PE), cerebrovascular accident (CVA), myocardial infarction (MI) and vasomotor symptoms. Assessment of the association of these adverse events with the use of tamoxifen has a significant implication the risk-benefit assessment of this potentially lifesaving medication. The goal of this research project is to define the epidemiology of tamoxifen-related thromboembolic complications in order to inform improved recommendations of use in the broad spectrum of patients ranging from those who should not use tamoxifen to those who will gain the maximum benefit.

METHODS: We used the Marshfield Epidemiologic Study Area (MESA) database to identify patients who had taken tamoxifen during the time period from 1/1/1992 until 6/31/2008. Tamoxifen use was identified by Medical manager application and by FreePharma, and dose documentation was required to reduce false positives. Events (DVT, PE, CVA, MI) were identified electronically by ICD-9 code and corresponding dates were recorded. Additional data including patient characteristics, stage of cancer and chemotherapy, identifiable risk factors, use of concurrent medications, comorbidities, coagulopathy laboratories were extracted. Electronically abstracted data was validated manually. Estimates of event rates and hazard ratios were summarized together with confidence limits for the estimates. Kaplan-Meier curve was used to estimate event free survival pre and post tamoxifen. Analysis was restricted to women with breast cancer without prior events.
RESULTS: There were 4223 patients identified as having taken tamoxifen, and of those, 261 had a venous event at some point. Forty-two patients had a venous event prior to tamoxifen. 565 were identified as having an arterial event alone. The incidence of study events were reported as rate per 1000 person year. Incidence rate for MI was 0.36 in age group 30–49 years, 2.20 in age group 50–59, 2.76 in ages 60–69, 2.74 in age group 70–79 and 9.73 in ages 80 and older. Incidence of stroke was 0.73 in age group 30–49, 3.48 in ages 50–59, 6.21 in age group, 10.82 in ages 70–79 and 21.69 in ages 80+ and older. The incidence rates for MI and stroke were compared to the MESA database population and in Framingham Heart Study (FHS) population. Incidence rate of venous events were 266.1 in age group 30–49 years, 298.2 in ages 50–59, 353.1 in age group 60–69 years, 557.9 in ages 70–79 and 371.7 in ages 80 and above. Venous events were furthermore divided into DVT and PE. Age adjusted risk factors for both arterial and venous events were also reported.

CONCLUSION: MI rate of our cohort of women on tamoxifen appeared to be less than comparison population of Caucasian women from the Framingham Heart Study not on tamoxifen. This may indicate cardioprotective effect of tamoxifen which is similar to the reported literature. Our study was unique in that the various risk factors including use of statins were also reported. Incidence of stroke also showed some benefit with the use of tamoxifen when compared with age -matched individuals in the MESA population or the FHS population however this effect was not consistent across younger age groups. Overall incidence of DVT/PE was 10% which is comparable to reported observational studies but more, when compared to 1-3% in adjuvant clinical trials. In our trial the incidence of venous events continued over time unlike some studies which reported clustering of events in the first year of use of tamoxifen. Understanding the risks and benefit of prescribing tamoxifen is critical in the treatment of patients with breast cancer. Our study helps us to better define association of thromboembolic events and patient characteristics which make them more susceptible to such events. Manual validation of the data makes it very accurate and our data suggests increased risk of venous thrombotic events but there was no increased risk of arterial thrombosis, rather there is a possible protective effect of tamoxifen.
ATTEMPTED VALIDATION OF TWO PROGNOSTIC MORTALITY INDICES AT A PROGRAM FOR ALL-INCLUSIVE CARE OF THE ELDERLY (PACE) SITE Cody Dashiel-Earp 1; Bruce Kinosian 2; Donna Raziano 3; 1University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania; 2University of Pennsylvania/Department of Veterans Affairs, Philadelphia, Pennsylvania; 3MercyLIFE, Philadelphia, Pennsylvania. (Tracking ID # 11800)

BACKGROUND: Prognostic mortality indices are frequently used to identify individuals at high risk of near-term mortality, as an aid in discussions around goals of care. Equally important in PACE programs, where all individuals are nursing facility clinically eligible, with most individuals having survival less than 5 years, is to identify lower-risk individuals who may be helped by types of preventive care that have longer benefit streams. Several indices are in use by PACE programs, although they were developed in either a different population (post-acute hospital) or at a different time (PACE members 1992–1998). We evaluated the ability of two commonly used indices (with published ROC areas of .7–.75) to identify those at high risk of near-term mortality, as well as identify a group at low-risk of mortality despite their level of disease complexity and functional dependencies.

METHODS: A retrospective inception cohort from a single PACE site was defined by program enrollment during 2004. There were 108 patients enrolled during the period, for which 91 patients had available data for index scoring, with the cohort followed from 2005–2009. Members were scored based on their medical assessment during 2004, using both the Walter Index and the PACE Prognostic Index (PPI). The Walter index assigns a score based on gender, select diseases, functional impairments, and laboratory data, and predicts 1-year mortality in a post-acute care population. The PPI was developed among PACE members, and assigns a score based on gender, select diseases, select functional impairments, and age. The accuracy of prediction was analyzed with Kaplan-Meier methods and ROC analysis, using each index’s original risk categories.

RESULTS: The cohort was 75% female, mean age 78 years. Overall, 1-year mortality was 11%, 3-year mortality was 39%, and 5-year mortality was 49%. The Walter Index showed no discrimination of the four risk groups at 1 year (the highest risk group had the lowest mortality), and minimal discrimination at 3 years (32%–45% mortality). The area under the ROC curve was 0.55 at 1 year, .52 at 3 years. The PPI did not discriminate between low and high-risk groups at either 1, 3, or 5 years. At 3 years, both the lowest and highest risk groups had similar mortality risk (40–45%). Median survival in the low-risk group was 5 years, while median survival in the high-risk group was 3.7 years. The area under the ROC curve was 0.62 at 1 year and 0.6 at 3 years, with multiple local maxima.

CONCLUSION: For this typical PACE site, the two indices evaluated neither provided useful prognostic information to identify low-risk individuals who might benefit from more extensive care than usual, nor identified individuals at high risk of near-term mortality. Though the PPI was developed from the same program’s national population, some of the diagnostic criteria for index conditions have changed (e.g., CKD), while enrollees may have differed from the prior decade. Temporal and geographic variation in PACE may reduce the validity of the PPI index, and require recalibration with an adequately sized sample from the current PACE population.

NON-AFFORDABILITY BARRIERS AND ACCESS TO CARE FOR US ADULTS Jeffrey TKullgren 1; Catherine G McLaughlin 2; Nandita Mitra 3; Katrina Armstrong 4; Robert Wood Johnson Foundation Clinical Scholars, Philadelphia VA Medical Center and University of Pennsylvania; Leonard Davis Institute of Health Economics, University of Pennsylvania, Philadelphia, Pennsylvania; 2Mathematica Policy Research, Inc.; Department of Health Management and Policy, University of Michigan School of Public Health, Ann Arbor, Michigan; 3Department of Biostatistics and Epidemiology, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania; 4Abramson Cancer Center and Division of General Internal Medicine, University of Pennsylvania School of Medicine; Leonard Davis Institute of Health Economics, University of Pennsylvania, Philadelphia, Pennsylvania. (Tracking ID # 11809)

BACKGROUND: The Patient Protection and Affordable Care Act (PPACA) seeks to increase access to care for US adults by improving the affordability of health services. While the affordability of health care is a critical element of access, many patients face barriers to care that extend beyond their ability to pay for services. Failure to address these non-affordability barriers may limit the impact of efforts to improve the affordability of care. The objectives of this study were to estimate the prevalence of non-affordability barriers among US adults, assess how frequently those with affordability barriers also experience non-affordability barriers, and identify characteristics associated with higher prevalences of non-affordability barriers.

METHODS: We conducted a cross-sectional analysis of data from the nationally-representative 2007 Health Tracking Household Survey. Reasons for unmet need or delayed care in the previous 12 months were assigned to one dimension in the Penchansky and Thomas model of access to care. Unadjusted prevalences of barriers in each access dimension and any non-affordability dimension were estimated for all adults (n=15,197) and for adults with affordability barriers (n=2,169). We used multivariable logistic regression to estimate associations between individual, household, and insurance characteristics and barriers in each access dimension as well as any non-affordability access dimension for all adults and for adults with affordability barriers. Estimated parameters are reported as adjusted prevalences. Sample weights were applied to obtain nationally-representative estimates.

RESULTS: Among all adults, 18.5% reported affordability barriers and 21.0% reported non-affordability barriers that led to unmet need or delayed care in the previous 12 months. Two-thirds (66.8%) of adults with affordability barriers also experienced non-affordability barriers. In multivariable logistic regression, adults younger than 26 years of age (23.5%) and 40 to 54 years of age (20.8%) had more non-affordability barriers than those 55 years of age or older (14.5%, p<0.001 for both comparisons). Individuals with household incomes less than $50,000 had more non-affordability barriers than those with incomes of at least $810,000 (21.2% vs. 16.5%, p=0.001). Persons with at least one chronic illness had more non-affordability barriers than those without a chronic illness (24.3% vs. 14.7%, p<0.001). Among adults with affordability barriers, individuals younger than 26 years of age (78.9%, p<0.001) and 40 to 54 years of age (67.9%, p=0.04) had more non-affordability barriers than those 55 years of age or older (59.7%). Persons with at least one chronic illness had more non-affordability barriers than those without a chronic illness (71.3% vs. 65.1%, p=0.04).

CONCLUSION: Non-affordability barriers are more common reasons for unmet need or delayed care among US adults than affordability barriers. Further, most adults who experience affordability barriers
that lead to unmet need or delayed care also experience non-affordability barriers. Groups who might benefit most from more affordable care under PPACA have relatively higher rates of non-affordability barriers. These results suggest ways policymakers could address non-affordability barriers to ensure that steps to improve the affordability of care translate into true gains in access.

UNDERSTANDING BEHAVIORAL RISK FACTORS IN HIGH-DEDUCTIBLE HEALTH PLANS

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BACKGROUND: Higher rates of engagement in healthy lifestyle behaviors have been observed among enrollees of high-deductible health plans (HDHPs). These associations have been used to argue that HDHP enrollment causes higher rates of healthy lifestyle behaviors. Reported associations between HDHP enrollment and healthy behaviors, however, may lead to false attributions of causality if individuals who chose HDHPs were more likely ex ante to engage in healthy lifestyle behaviors. The objective of this study was to determine whether observed associations between HDHP enrollment and rates of smoking and obesity differ by the degree to which individuals can self-select into a health plan.

METHODS: We used cross-sectional data from the nationally-representative 2007 Health Tracking Household Survey to identify 8,096 non-elderly adults enrolled in a single private health insurance plan. Individuals in a plan with an annual deductible of at least $1,100 per person or $2,200 per family were classified as HDHP enrollees. All individuals not in an HDHP were classified as traditional plan enrollees. Individuals were classified into 3 coverage source groups ranging from the least to the greatest potential for plan self-selection: (1) employer-sponsored insurance (ESI) with no household plan choice; (2) ESI with household plan choice; or (3) non-group coverage. We compared rates of smoking and obesity by plan type using chi-square tests. We fit multivariate logistic regression models to measure associations between health plan type and both smoking and obesity within each coverage source group while controlling for individual, household and geographic characteristics. Sample weights were applied to obtain nationally-representative estimates.

RESULTS: HDHP enrollees (n=1,282) were less likely than traditional plan enrollees (n=6,814) to be smokers (9.1% vs. 12.2%, p=0.02) or obese (25.1% vs. 29.1%, p=0.03). In multivariate logistic regression models there was no association between HDHP enrollment and being a smoker (adjusted odds ratio [AOR] 1.04, 95% confidence interval [95% CI] 0.69-1.56) or being obese (AOR 1.10, 95% CI 0.81-1.50) among individuals with ESI and no household plan choice. There were two cases where HDHP enrollment was negatively associated with indicators of unhealthy behaviors; both were within groups with potential for plan self-selection. HDHP enrollment was negatively associated with being a smoker (AOR 0.56, 95% CI 0.34-0.92) among individuals with ESI and household plan choice and with being obese (AOR 0.60, 95% CI 0.36-0.98) among individuals with non-group coverage.

CONCLUSION: We found no association between HDHP enrollment and smoking or obesity among individuals who could not self-select into a plan, and a negative association between HDHP enrollment and both smoking and obesity only among individuals who chose their health plan. Therefore, observed overall associations between HDHP enrollment and favorable behavioral risk factors may largely be a reflection of the type of individuals who choose HDHPs, as opposed to an actual health-promoting effect of these plans. More research is needed to identify ways in which health insurance benefit design can effectively encourage behavioral risk factor modification.

VISION IMPAIRMENT AMONG OLDER ADULTS IN AN URBAN, LOW-INCOME NEIGHBORHOOD: IMPLICATIONS FOR DIABETES PREVENTION AND MANAGEMENT

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BACKGROUND: Racial and ethnic disparities exist in diabetes prevalence and complications, including visual impairment and loss. Recent emphasis on the impact of health literacy on health and health behaviors may overlook the fact that patients may simply not be able to see well enough to read food and medication labels, monitor glucose, take medications and insulin correctly and be safely physically active. The Communities IMPACT Diabetes Center uses a collaborative approach to explore and address diabetes-related health disparities. As part of this work, community and academic partners assessed the prevalence of visual impairment and the vision-related physical environment in East Harlem, the neighborhood with the highest diabetes morbidity and mortality in New York City.

METHODS: We designed an environmental assessment to explore characteristics of the built environment in a 16 square block subsection of East Harlem, including the presence of health and eye care facilities and the condition of sidewalks. Using a structured data collection form, community-academic pairs assessed each block. In addition, we partnered with a vision rehabilitation agency, to survey older adults attending East Harlem senior and community centers. Domains included the Functional Vision Screening Questionnaire, receipt of eye care within the past year, demographics and comorbidities.

RESULTS: The environmental assessment revealed less than optimal walkability. Only 53% of sidewalks assessed were characterized as being in good condition and 30% had some type of obstruction. No eye care facilities were identified. With respect to the vision health survey, 555 adults (36% age 75 and older, 44% age 65 to 74, 17% age 55 to 64, and 3% younger than 55) participated, of which 75% were Hispanic and 20% African American. Half had not had their eyes examined within the past year, 26% met criteria for having low vision and 30% self-reported diabetes. Over half (52%) stated that their vision makes it difficult to do things that they would like to do, 58% reported difficulty recognizing faces of family and friends, 44% reported difficulty reading regular size print and 49% reported difficulty reading medicine labels, small print and prices when shopping. Of the total sample, 41% had regular eye care and did not need follow-up, 12% chose to see a local provider and 15% declined care or were lost to follow-up. The remaining 175 adults
(32%) received free eye care services, and all but one (99%) needed and received new glasses. Their most common visual comorbidities included cataracts (22%), age-related macular degeneration (17%), glaucoma (13%) and diabetic retinopathy (9%).

CONCLUSION: Effective approaches to prevent and control diabetes, including self-management, physical activity and healthy eating, require adequate vision or vision support. The majority of older adults we surveyed had visual difficulties that could be simply addressed through provision and use of glasses. Poor environmental conditions, such as obstructed sidewalks, could make it even more difficult for seniors to adhere to the most commonly prescribed form of exercise - walking. In addition to addressing well-known barriers to diabetes prevention and control, including behavioral and access issues, people with or at risk for diabetes could benefit from providers and policymakers recognizing, understanding and addressing visual challenges. Clinicians should consider routinely asking patients if they experience any difficulties seeing during discussions about medication adherence and self-management, and referring their patients for eye care.

IMPACT OF SOCIAL SUPPORT ON PHYSICAL AND MENTAL FUNCTIONING IN BLACKS AND WHITES WITH DIABETES, PRE-DIABETES, AND NO DIABETES

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BACKGROUND: Individuals with diabetes (DM) often have lower physical and mental functioning than those without DM; optimal self-care may preserve functioning. Blacks may have less access to the healthcare system and may rely more on social support to succeed at self-care. We hypothesized that social support would be a more important predictor of physical and mental functioning in Blacks than in Whites across the spectrum of DM, pre-DM and no DM.

METHODS: We studied 29,052 individuals enrolled in the REasons for Geographic And Racial Differences in Stroke (REGARDS) prospective cohort study, which includes community-dwelling adults age ≥ 45 years (41% Black and 55% women), recruited between 2003 and 2007. A telephone survey was followed by an in-home visit to collect biometric data. DM was defined by self-reported diagnosis, receipt of DM medications, fasting glucose >126 mg/dL, or non-fasting glucose >200 mg/dL. Pre-DM was defined as fasting glucose 100–126 mg/dL or non-fasting glucose 140–199 mg/dL among those with no DM. Social support was assessed through reported number of close friends. Physical and mental functioning were assessed using the Short Form 12 physical component score (PCS) and mental component score (MCS). Linear regression models (stratified on race and DM status) were used to examine the associations between social support with PCS and MCS, adjusted for sociodemographics, medical conditions, and health behaviors.

RESULTS: The mean age was 64 years; 6,398 had DM, 4,461 had pre-DM, and 18,193 had no DM. More individuals with DM were Black (57% for DM, 41% for pre-DM and 36% for neither, p<0.01), had annual household income < $20,000 (26%, 17%, 15%, respectively, p<0.01), and had lower PCS (42.0±11.3 for DM, 46.7±10.3 for pre-DM and 47.8±9.9 for no DM, respectively, p<0.01) and MCS (53.2±9.4 for DM, 54.2±8.3 for pre-DM and 54.3±8.1 for no DM, respectively, p<0.01). More individuals with DM reported having no close friends (8% vs. 7% vs. 5%, respectively, p<0.01). In unadjusted analyses, having a greater number of close friends was associated with better physical and mental functioning for all participants. These effects were not seen for physical functioning in adjusted analyses. However, after adjustment, having more close friends remained associated with higher MCS regardless of DM status, although the effect for Whites with DM was only significant among those with 7 or more friends (see Table).

CONCLUSION: Sociodemographics, medical conditions and health behaviors accounted for the apparent protective effect of social support on physical functioning among both Whites and Blacks. For those with DM, social support may have more of an effect on mental functioning for Blacks than for Whites, suggesting that peer support interventions for Blacks with DM may hold promise.

*P<0.05. **Adjusted for age, sex, income, insurance status, education, urban/rural residence, obesity, hypertension, history of cardiovascular disease, depressive symptoms as measured by the Centers for Epidemiology Studies-Depression screen, alcohol use, cigarette smoking, exercise, and medication adherence.

MCS=Mental Component Summary Score. REGARDS=RFourth for Geographic and Racial Differences in Stroke. DM=Diabetes. SE=Standard Error. Interpretation: After Adjustment, Blacks with DM 7+ close friends had 3.07 point higher MCS scores than those with no close friends.

Table. Difference in MCS associated with having close friends in REGARDS participants with DM, pre-DM and no DM.

HOSPITAL-ACQUIRED SEPSIS IS ASSOCIATED WITH MODIFIABLE RISK FACTORS

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BACKGROUND: The Medicare requirement for recording whether diagnoses on hospital discharge abstracts were present on admission (POA) has made it possible to screen for in-hospital complications that may have been preventable. There is little evidence so far to support an association of hospital-acquired complications with modifiable factors such as problems with the quality of in-hospital care, however. Our purpose in this study was to see if chart review could identify a higher occurrence of modifiable risk factors among patients with hospital-acquired sepsis compared to matched controls.

METHODS: Case-control study. Nurse reviewers from a peer-review organization (PRO) reviewed hospital charts from 30 New York state hospitals, each of which contributed from 6 to 10 charts of patients with hospital-acquired sepsis and equal numbers of matched controls. There were 205 cases with one of several secondary diagnoses of sepsis that were coded not POA, and an equal number of controls without sepsis matched for hospital, gender, age within 5 years. All Patient Reimbursement Diagnosis-Related Group (APR DRG) and severity of illness level. There were 89 cases belonging to surgical APR DRGs and 116 cases from medical APR DRGs. PRO nurses recorded the occurrence of modifiable
risk factors and possible lapses in the quality of care that are thought to increase the risk of hospital-acquired infection and sepsis. Specific factors examined included the use and duration of foley catheters, improperly administered blood transfusion, intravenous catheters inserted under emergent conditions, and improper administration of prophylactic antibiotics for surgical patients. We compared the frequency of each factor among cases and controls, calculated the odds ratio (OR) of the numbers of patients with each factor among cases and among controls, and used the McNemar chi-square test to determine statistical significance.

RESULTS: Three factors occurred with statistically significant greater frequency among cases than among controls: transfusion lasting more than 4 hours (OR 3.37, P<0.0001), foley catheter placed at least two days before sepsis (or the matching date, for controls) (OR 3.118, P<0.0001), and an intravenous line inserted under emergency conditions (OR=5.00, P=0.0005). Violations of several guidelines for care of surgical patients occurred fairly often but without statistically significant differences among cases and controls. These included failure to deliver prophylactic pre-operative antibiotics within 2 hours of surgery (52%) or to stop them within 24 hours after surgery (40%), failure to remove a foley catheter within 24 hours post-op (8.4%), and failure to provide prophylactic antibiotics at all (16.3%).

CONCLUSION: Prolonged transfusion time, the presence of foley catheters, and emergently inserted intravenous catheters were all associated with the development of sepsis after admission to hospital. All three are potentially modifiable with improved technique and more judicious usage. This study provides validation for the use of a screening mechanism for a single potentially preventable complication. Screening for other in-hospital complications using diagnoses coded not POA, when tested, are likely to be associated with modifiable risk factors also.

READMISSIONS: A MISSED LEARNING OPPORTUNITY FOR HOSPITALISTS Jennifer E. Bracey 1; Romansi Tony Boonyasai 1; Scott M Wright 1. 1Johns Hopkins University School of Medicine, Baltimore, Maryland. [Tracking ID # 11829]

BACKGROUND: Hospitalists are often not aware when a patient whom they have cared for is readmitted to the hospital. However, there may be much to learn from readmissions, both in terms of clinical care and systems improvement. To this end, we asked hospitalists how they learn when a patient has been readmitted, what they do when they hear of these cases, and to what extent they view readmissions as opportunities for professional growth.

METHODS: As part of an ongoing IRB approved intervention focused on medical professionalism, we conducted a cross-sectional survey of 27 hospitalists. Respondents were contacted by email and responded via an electronic survey. Respondents were queried about their attitudes regarding learning and professionalism opportunities from readmissions. Attitude responses were assessed with a five point Likert-type scale that ranged from "strongly disagree" to "strongly agree." In addition, respondents were queried about how they learn of a patient’s readmission and about behaviors they demonstrate once this knowledge is obtained. Behavior responses were assessed using a five point Likert-type scale that ranged from "always" to "never." Data were analyzed using descriptive statistics. Results are reported as the percentage of respondents who chose "agree" or "strongly agree" for attitude responses vs. "usually" or "always" for behavior responses.

RESULTS: Twenty-seven hospitalists completed the questionnaire (100% response rate). Forty-eight percent were male and 74% had worked within the hospitalist group for ≥ 1 year. Ninety percent of respondents agreed that learning of readmissions could help them become “more skilled and effective physicians.” Ninety percent of respondents agreed that learning why patients are readmitted “is an act of professionalism for hospitalists.” Respondents learned of readmissions via multiple ways: 89% learned of the event accidentally (e.g., noticing the patient’s name on a door), 48% from the readmitting provider, 7% from the patient/patient’s family, and 30% through “other” channels (e.g., “the case manager informs me”). Once a provider learns of a patient readmission, 41% communicate with the patient’s current provider and 41% visit the readmitted patient.

CONCLUSION: Hospitalists recognize that committing the time and effort to learn why a patient has been readmitted is both an act of professionalism and an opportunity for clinical learning through deliberate practice. When they do learn that their patient has been readmitted, a sizable minority communicate directly with the current providers or with the patient-steps which enhance individual learning and improve patient care. Unfortunately, this is often a missed opportunity as hospitalists are frequently un-aware that their patient has been readmitted. Establishing formal processes to inform hospitalists of patient readmissions may contribute to improved clinical skill and inpatient care.

SYNCOPE: DO WE NEED TELEMETRY? Manav Shah 1; Susmita Ayagari 1; Robert E Graham 1. 1Lenox Hill Hospital, New York, New York. [Tracking ID # 11830]

BACKGROUND: Inpatient telemetry monitoring for the evaluation of syncope is helpful only 5% of the time. In the US, estimated total annual costs for syncope-related admissions derived from the Medicare database were 82.4 billion, with a mean cost of $5400 per hospitalization. Our primary objective was to evaluate if patients admitted with syncope met guidelines of the 2009 European Society of Cardiology (ESC) and/or 2006 ACC/AHA guidelines for admission to cardiac telemetry with syncope. Our secondary objectives were to assess how many of these patients had a prior cardiac history or workup which revealed a cardiac cause of syncope. Our tertiary objective was to estimate the cost of care for workup.

METHODS: We compiled a list of patients with a primary or secondary discharge diagnosis of Syncope (ICD-9: 780.2). Charts which were included for review were those that were admitted between January and October 2010 to telemetry units for less or equal to 24 hours and a primary admission diagnosis of syncope or pre-syncope. Exclusions were made if subsequent review showed the patient was on the unit for >24 hours, a patient admitted for elective procedure, or charts which were unavailable for review. The final number of charts which were reviewed numbered at 35. According to CMS data, the cost of telemetry monitoring may be up to $1400 per night for admission only.

RESULTS: The mean age of our patient population was 68, 60% were male. 48% of the study group had a prior cardiac history (cardiac arrhythmia, ischemic heart disease, conduction block, MI, CAD, CHF, and structural heart disease). Of the 35 cases, 21% were due to an arrhythmia, 33% were due to neurogenic causes, and 34% were due to vasovagal syncope. 45% of the arrhythmic causes of syncope were from conduction blocks and atrial fibrillation. 14 (40%) of the cases reviewed met ESC guidelines for inpatient syncope monitoring. Four (11%) cases met Class I recommendations by ACC/AHA guidelines for inpatient telemetry monitoring. Of the 35 patients studied, 70% were discharged with the diagnosis of “syncope,” and 12% were diagnosed with “arrhythmia.” It is estimated that about $43,000 would have been saved from the 31 patients whom did not meet both guidelines.

CONCLUSION: Unfortunately a majority of one day admissions for cardiac telemetry did not meet guidelines set forth by both the ACC and ESC. The majority of these patients had a non-cardiac cause of syncope, thus potentially not warranting costly telemetry admission. We are currently using the findings of our study in order to implement a hospital-wide protocol for telemetry monitoring anticipated for less than 24 hours.
MEDICAL-PHARMACY INTERPROFESSIONAL EDUCATION IN A MEDICAL CENTER TEACHING CLINIC C. Huynh 1; R. Willett 1; B. Sicat 1; S. Mayer 1; S. Polich 1; V. Shuford1. 1Virginia Commonwealth University, Richmond, Virginia. (Tracking ID # 11834)

BACKGROUND: The Institute of Medicine’s report “Crossing the Quality Chasm” calls for drastic change in the health care system to enhance its quality and patient-centeredness. A subsequent summit of health care professional educators recommended that in order to achieve this vision, all health care professionals should be trained to function in interprofessional teams. Redesigning the education process would provide health care professionals with the knowledge, skills, and attitudes to work effectively in an interdisciplinary environment. The purpose of this study was to develop and evaluate an interprofessional education (IPE) experience for medical and pharmacy students rotating through the VCU Internal Medicine Primary Care Clinic and assess learner attitudes, perceptions, and acquisition of interdisciplinary knowledge.

METHODS: All students participated in IPE during their 4 to 5 week Internal Medicine Primary Care Clinic rotation, but only those participating in the study completed assessments pre- and post-IPE. 1. The Interdisciplinary Education Perception Scale (IEPS) measured reciprocal attitudes toward each other and interprofessional teamwork. 2. The Attitudes Toward Health Care Teams Scale (ATHCTS) compared attitudes of different members of the health care team. 3. The Student Assessment of Learning Gains (SALG) evaluated students’ perceptions of IPE’s impact on their skills and attitudes and the perceived impact of specific IPE activities. 4. Concept maps measured the students’ interdisciplinary understanding of medication non-adherence. Students then collaborated in caring for patients in pharmacist-led Pharmacy clinic and physician-led Medicine clinic. A pocket card suggested clinical roles for pharmacy and medical students during patient care visits to ensure sharing of decision-making and joint responsibility for patient care. Students completed on-line modules outlining the knowledge and skills each profession brings to the team. All students engaged in a group discussion exploring stereotypes of each profession and the challenges and benefits of interprofessional care. Focus groups were conducted at the end of the IPE experience and a minimum of three months after IPE.

RESULTS: Responses to the IEPS, ATHCTS, SALG, and concept maps will be analyzed by descriptive statistics to see if a difference exists in pre- and post-experience scores. Focus groups will be analyzed using traditional qualitative techniques.

CONCLUSION: This IPE experience can be adapted for use in an outpatient clinic to provide medical and pharmacy students, as well as residents, the knowledge, skills, and attitudes to work effectively in an interdisciplinary environment.

ARE RESIDENTS APPROPRIATELY REFERRING PATIENTS FOR CARDIAC REHABILITATION AFTER MYOCARDIAL INFARCTION? A RESIDENT QUALITY IMPROVEMENT PROJECT Jason Coker 1; James Hadstate 1; Robert Yoe IV 1; Nicolas Wallace 1; Daniel Steinberg 1; Kit Simpson 1; Marian Taylor 1; Eric Powers 1; Deborah DeWaay 1. 1Medical University of South Carolina, Charleston, South Carolina. (Tracking ID # 11837)

BACKGROUND: In academic medical centers resident physicians are in charge of the vast majority of patient discharge arrangements. They are therefore crucial to making sure that patients with Acute Myocardial Infarction (AMI) receive referrals to an important facet of their cardiac care, cardiac rehabilitation. The term Cardiac Rehabilitation (CR) refers to coordinated, multifaceted interventions designed to optimize a cardiac patient’s physical, psychological, and social functioning in order to stabilize, slow, or even reverse the progression of the underlying atherosclerotic processes, thereby reducing recurrent MI, morbidity and mortality. There is great need to evaluate the process for how patients receive cardiac rehabilitation as only 10% to 20% of the greater than 2 million eligible patients per year who experience an acute myocardial infarction or undergo coronary revascularization receive Cardiac Rehabilitation. Multiple factors contribute to this vast under use including: low patient referral rate, particularly of women, older adults, and ethnic minority patients, poor patient motivation, inadequate third-party reimbursements for services and geographic limitations to accessibility of program sites. We hypothesized that residents in academic medical centers who continuously rotate services and have to be trained on an ongoing basis would contribute to CR underuse at the Medical University of South Carolina.

METHODS: Four residents, with faculty supervision, as a part of their Quality Improvement project, examined the process of referral to CR for a patient diagnosed with Acute Myocardial Infarction (AMI) from diagnosis through enrollment in CR. 50 patients discharged from MUSC in the calendar year 2009 with the primary diagnosis of AMI (410.xx) were randomly selected. The residents reviewed the charts to ensure the patients selected were appropriate cardiac rehabilitation candidates per Medicare guidelines. Patient charts were then analyzed for completion of each step of the process using inpatient and outpatient EMR systems. The data was then analyzed with regards to age, sex, location, race and insurance status using Chi-Squared analysis. A P Value of <0.05 was considered significant.

RESULTS: Of the 50 patient courses examined, 28(56%) were referred to CR, 7(14%) had consultations received by the CR office, and 3(6%) enrolled in CR. We found a statistical trend towards men being more likely than women to be referred for CR (65% vs. 39%, p=0.0675). No statistical difference was seen with regards to the other variables.

CONCLUSION: CR was underutilized in patients discharged following AMI. From initial referral to receipt by the CR office and eventual enrollment in CR, there is a stepwise decrease in the proportion of eligible patients completing each step. The largest numerical dropout is seen as a lack of resident referral at discharge with the largest percentage drop owing to failure of the current system relaying consults to CR once the referral has been ordered. We believe targeted interventions at one or two steps in the process may dramatically improve effective CR referral in our patient population. Possible interventions include: increased resident education about the importance of arranging CR at the time of discharge and revision of discharge order entry and implementation. A larger population size is needed to determine if variables such as age, sex, location, race and insurance status influence the drop out seen at each step.

PROVIDING SUPPORT TO PATIENTS IN EMOTIONAL ENCOUNTERS: A NEW PERSPECTIVE ON MISSED EMPATHIC OPPORTUNITIES Ian Hsu 1; Somnath Saha 2; Philip Korthuis 2; Victoria Sharp 2; Jonathan Cohn 3; Richard Moore 1; Mary Catherine Beach 1. 1Johns Hopkins University, Baltimore, Maryland; 2Oregon Health Science University, Portland, Oregon; 3St. Lukes-Roosevelt, New York, New York; 4Wayne State University, Detroit, Michigan. (Tracking ID # 11852)

BACKGROUND: Responding empathically to patients who express emotions can strengthen the patient-physician relationship and is considered an important feature of patient-centered communication. Yet studies have repeatedly found that physicians miss 70-90% of opportunities to express empathy. Our study sought to describe how physicians respond to the expression of strong patient emotion, and to explore the reasons for lack of empathic responses.

METHODS: We conducted a qualitative analysis of 47 audio recorded encounters between HIV-infected patients and their providers. Informed by previous work in the area, we first defined empathic opportunities as
instances where patients expressed a strong negative emotion. We then examined physician responses, generated a coding scheme through iterative team discussion, and applied it to all empathetic opportunities identified in visit transcripts. Two authors (IH and MCB) discussed and agreed on all final categorizations.

**RESULTS:** Twenty-one of 47 encounters (45%) contained at least one empathetic opportunity. In these 21 encounters, there were 29 distinct opportunities: 20 involved psychosocial issues (logistical life problems, family strain, or death/illness of a loved one), and 9 involved biomedical concerns. Physicians typically offered more than one type of response to each empathetic opportunity. These response types included dismiss/ minimize, ignore/change topic, elicit information, problem-solve (“Have you thought about a support group?”), or empathize (“Sorry it’s been such a tough month”). Empathic statements occurred at some point in the response sequence in 13 of 29 opportunities (45%). When problem-solving was the initial response, empathetic statements rarely occurred in subsequent dialogue. Among the 16 instances with no empathetic statements, physicians engaged in problem-solving about the issue in half (8/16, 50%). Logistical life problems (e.g. unemployment) and biomedical problems elicited more problem-solving and less empathy, whereas family strain or death/illness tended to elicit more empathy. Both problem-solving and empathy appeared to be explicit attempts to provide support to the patient - problem-solving focused on circumstances surrounding emotion whereas empathy acknowledged emotion itself.

**CONCLUSION:** Similar to other studies, we found providers missed most opportunities to respond empathically to patient emotion. Yet contrary to common understanding, physicians often missed these opportunities when attempting to address the problem underlying the emotion, especially when the problem involved logistical or biomedical issues, as opposed to grief or stress. With enhanced awareness of this phenomenon, clinicians may better recognize situations where they can offer empathy in addition to problem-solving. Future research should assess patients’ desires for problem-solving, empathy, or both in different emotional situations.

**GENERATING GENERALISTS: FACTORS OF RESIDENT CONTINUITY CLINIC ASSOCIATED WITH PERCEIVED IMPACT ON CHOOSING A GENERALIST CAREER**

Ryan Laponis 1; Patricia O’Sullivan 1; Harry Hollander 1; Patrick Cornett 2; Katherine Julian 1; University of California San Francisco, San Francisco, California; 2San Francisco Veteran’s Administration Medical Center, San Francisco, California. *(Tracking ID # 11862)*

**BACKGROUND:** Fewer residents are choosing general internal medicine (GIM) careers. The continuity clinic experience during residency may influence this choice. We sought to understand the relationship between resident satisfaction with the continuity clinic experience and perceived change in interest in pursuing a GIM career based on the experience.

**METHODS:** We surveyed internal medicine residents using the Veterans Health Administration Office of Academic Affiliations Learners’ Perceptions Survey - a 76-item reliable and validated instrument that measures overall satisfaction with faculty interactions, learning, working, clinical, and physical environments and personal experience. We identified 15 reliable subscales within the survey: faculty teaching, availability and feedback, learning processes, clinic/ward balance, patient diversity, resident autonomy, clinical support services, coordination of care, computer services, work flow, interdisciplinary team work, facility upkeep, professional/personal satisfaction and work/life balance. To assess impact, we asked: “As a result of this clinical training experience, how likely would you be to consider a future employment opportunity in GIM?” We examined the association between satisfaction measures and future GIM interest with one-way ANOVAs followed by Student-Newman-Keuls post hoc tests.

**RESULTS:** Of 217 residents, 90 completed the survey (41%). Residents felt continuity clinic impacted career choice with 22.2% more likely to choose a GIM career and 43.3% less likely. Those more likely had higher satisfaction with the learning (p=0.001) and clinical (p=0.002) environments and personal experience (p<0.001). They also had higher satisfaction with learning processes (p=0.002), patient diversity (p<0.001), coordination of care (p=0.009), work flow (p=0.001), professional/personal satisfaction (p<0.001) and work/life balance (p<0.001).

**CONCLUSION:** Residents perceive the continuity clinic experience as impacting career choice. Those who indicate they are more likely to pursue GIM based on that experience have higher levels of satisfaction. Therefore, programs interested in increasing interest in GIM should focus efforts on clinic factors related to resident satisfaction and amenable to change.

**HOSPITALISTS’ COMMUNICATION BEHAVIORS AROUND THE TIME OF HOSPITAL DISCHARGE**

Jennifer E. Bracey 1; Scott M Wright 1; Romsal Tony Boonyasa 1; Johns Hopkins University School of Medicine, Baltimore, Maryland. *(Tracking ID # 11883)*

**BACKGROUND:** The quality of provider-provider and patient-provider communication at discharge is associated with patient satisfaction, adherence to treatment plans, and clinical outcomes. However, the ways in which providers communicate with each other and with patients at discharge is unknown. Therefore, we queried hospitalists about their interactions with patients and other providers at the time of hospital discharge.

**METHODS:** As part of an ongoing IRB approved intervention focused on medical professionalism, we conducted a cross-sectional survey of 27 hospitalists at a 350 bed University-affiliated community teaching hospital. Respondents were contacted by email and responded via an electronic survey. Respondents were queried about the frequency of various behaviors. Responses were assessed with a 5 point Likert-type scale that ranged from “never” to “always.” Data were analyzed using descriptive statistics.

**RESULTS:** Twenty-seven hospitalists completed the questionnaire (100% response rate). Fifty-two percent of respondents were female and 74% had been working within this hospitalist group for ≥ 1 year. Thirty percent had at least some experience working in ambulatory settings after residency. Hospitalists infrequently employ teach-back methods with their patients at the time of discharge (55.6% responded “never” or “rarely”), contact the patient’s primary care provider after discharge (41% responded “never” or “rarely”), or call their patient after discharge (69% responded “never” or “rarely”). In contrast, respondents report more concern with timeliness of discharge summaries (74% reported “usually” or “always” completing discharge summaries within 24 hours of discharge) and personally ensuring that patients have a scheduled follow-up appointment (56% responded “usually” or “always”). Respondents also personally spoke with patients or their caregivers about significant test results (96% responded “always”), red flags (78% responded “usually” or “always”) and discharge medications (89% responded “usually” or “always”). Relatively fewer respondents (52%) reported that they “usually” or “always” speak with the patients’ nurse about the post-discharge care plan and only 7.4% “usually” or “always” contact primary care providers after a patient is discharged.

**CONCLUSION:** In general, hospitalists most reliably convey important information to the patients themselves prior to discharge. However, only a minority employ the “teach-back” method when doing so. Many hospitalists also do not communicate with other providers who play key roles during hospital discharge and in the post-acute care setting.
Standardizing discharge processes among providers may positively influence hospitalist behaviors around the time of discharge. Further work is needed to understand the effects of these communication patterns.

**ASSESSING THE READINESS OF COMMUNITY HEALTH CENTERS FOR MEDICAL HOME CERTIFICATION** Robin Clarke¹; Chi-hong Tseng²; Arleen F. Brown³. ¹University of California, Los Angeles, Santa Monica, California; ²University of California at Los Angeles, Los Angeles, California. (Tracking ID # 11892)

**BACKGROUND:** The patient-centered medical home (PCMH) model holds great promise for reforming primary care delivery systems. The model has its roots in the Chronic Care Model, which was developed and validated in private practices among insured patients. The mostly broadly accepted definition of a PCMH is the certification tool designed by the National Committee for Quality Assurance (NCQA). While over a thousand private practices are certified as PCMHs through the NCQA, very few safety net Community Health Centers (CHCs) have applied for recognition. A recently enacted initiative by the Bureau of Primary Health Care (BPHC) seeks to extend NCQA PCMH certification to CHCs. The objective of these analyses was to assess the readiness of urban safety net CHCs for PCMH certification.

**METHODS:** We recruited urban safety net CHC participants from the Community Clinic Association of Los Angeles County (CCALAC). The CCALAC has 40 member clinic agencies that were eligible for inclusion in the project based on providing adult chronic-disease management services. The investigators sought volunteers to participate in the study by contacting clinic chief medical officers at their monthly meeting at the CCALAC. Medical directors and executives from each participating clinic completed a paper-based version of the NCQA medical home certification tool, the Physician Practice Connection-Patient-Centered Medical Home (PPC-PCMH). This survey evaluates a practice’s delivery system on nine elements testing the processes by which a clinic identifies, tracks, and treats its patients. Using a score out of 100, NCQA does not recognize a score less than 25 as a medical home while the quartiles from 25 to 49, 50–74, and 75–100 gain a practice higher recognition (from level 1–3). We performed descriptive analyses on the range of total scores and distribution of scores on the nine individual elements of the PPC-PCMH. These findings represent initial results from the first 18 clinics participating in the study.

**RESULTS:** The chart displays the distribution of scores for the 18 clinic agencies, which represent 81 individual clinic sites that provided 460,000 patient visits in 2009. The mean score from the participating clinics was 66.3 (standard deviation 15.2; range 33.3–90). All clinics would gain recognition from the NCQA at some level as medical homes - three at level one, seven at level two, and eight at level three. The safety net CHCs attained the highest mean scores in the following NCQA PCMH elements: care management (13.4 of possible 21), patient tracking/registry function (15.6 of possible 21), and performance reporting and improvement (12.0 of possible 15). The lowest mean scores were on electronic prescribing (2.6 of possible 8) and advanced electronic communication (0.3 of possible 4). The five clinics (numbers 1, 3, 16, 17, 18) with an electronic medical record all attained level three recognition; NCQA score and EMR presence were correlated with a Pearson coefficient of r=0.68.

**CONCLUSION:** These data indicate that the participating urban safety net clinics are well positioned for PCMH certification: Indeed, the majority of them would obtain the two highest levels of recognition. The findings of strong performances in coordinating care and performance reporting reflect the effective processes of the community health center model. The results are more striking because the majority of these clinics plan to implement an EMR system in 2011, which should bolster their low-scoring performances on the electronic elements. Our findings raise several reasons that the NCQA tool may not be the best mechanism for evaluating CHCs as medical homes. Because of their initial strong performance, these CHCs may have little incentive or room for improvement on the NCQA tool. The grouping of scores in the upper range with the mean greater than one standard deviation above 50 weakens the precision of the tool to distinguish variation in quality amongst CHCs. The high correlation of 0.68 indicates the importance of an EMR to the current scoring format and reinforces previous criticism that the PPC-PCMH focuses too heavily on technological processes. The findings from this initial phase of the study demonstrate the need to investigate how the NCQA’s PPC-PCMH tool applies to CHCs. This is especially important in light of the BPHC’s certification initiative and the health reform act’s expectation that CHC capacity will increase significantly to care for millions of newly insured patients. After extending participation to all eligible clinics within the CCALAC, the next phase of the study is to investigate whether the NCQA total score is associated with patient care outcomes and whether particular PPC-PCMH elements differentially influence quality of care. Future studies should investigate whether there are other services or processes that more accurately predict the quality of care provided by CHCs.
BACKGROUND: The early recognition of acute myocardial infarction (AMI) is paramount in improving morbidity and mortality. However, despite major advances in diagnoses; as many as half of the patients arriving to the emergency department (ED) are diagnosed with a delay because they are assigned a low acuity triage. Early recognition of these patients with AMI remains challenging. The data is scarce about the various predictors of delayed recognition as well as the outcomes of these patients. The aim of this study was to recognize the characteristics of patients with AMI that may lead to low acuity triage and whether there is a difference in outcome of these patients in terms of interventions, hospital stay and mortality.

METHODS: We performed a retrospective cohort study of consecutive patients with AMI presenting to a busy hospital ED from July 2005 to June 2010. ED notes were reviewed to establish the initial triage category assigned to the patient. Medical records were reviewed for potential patient-related predictors of low acuity triage. Data collection included chief complaint, initial vital signs, demographics, comorbid conditions and a number of process and outcome variables.

RESULTS: Of the 1,935 patients studied, mean age was 66.4 years and 51% were women. The majority were African American (76%) while whites constituted 15%. Chest pain was the chief complaint in 1079 (56%). A total of 651 (34%) patients were initially assigned to low acuity triage. Median time to first electrocardiogram from ED registration was 23 minutes for high acuity and 98 minutes for low acuity patients (p < 0.0001). Fifty-nine percent of high acuity cases were labeled with an AMI diagnosis prior to leaving the ED as compared with 62% of low acuity cases. Peak troponin level reached an average of 18.5 ng/ml for high acuity and 10.6 ng/ml for low acuity patients (p < 0.0001). Rates of cardiac catheterization, percutaneous intervention, coronary bypass surgery and death were 53%, 27%, 5% and 6% for high acuity cases respectively and 36%, 14%, 3% and 5% for low acuity cases respectively. The proportion of patients undergoing catheterization and percutaneous intervention were significantly different (p < 0.0001), but rates of bypass surgery and death were not significantly different. Average length of stay was 5.8 days for both groups. Multivariate logistic regression analysis revealed that low acuity triage was independently associated with a chief complaint other than chest pain (OR 1.8), age below 50 or greater than 70 (OR 1.3), diastolic blood pressure between 60 and 80 mmHg (OR 1.4), pulse between 50 and 100 b/min (OR 1.3), not arriving via ambulance (OR 1.4) and no history of prior MI (OR 1.3). No predictive relation was found for sex, race, insured status, presence of diabetes, hyperlipidemia, smoking, systolic blood pressure, heart failure or overall comorbidity (using the Charlson comorbidity index).

CONCLUSION: Low acuity triage of AMI is a common occurrence as shown in this study of a large urban ED. Some patient-related features make this more likely. Although statistically significant, these factors are weak predictors as evidenced by their relatively low odds ratios. The strongest risk factor seems to be a chief complaint of ‘other than chest pain’ and hence AMI should be part of the differential diagnosis of other chief complaints while managing the patient. Otherwise, it is not clear what ED personnel might do differently to improve triage accuracy. Non patient-related variables such as time of presentation, day of week and ED volume may also influence the likelihood of low acuity triage of AMI, but we did not examine those factors here. The ability to consistently identify all AMI patients upon presentation to the ED remains elusive.
among African-Americans while simultaneously empowering them to play more active roles in the clinical encounter has the potential to improve diabetes outcomes in this population, and is an important area of future research.

PRIORITIES DURING WARD ATTENDING ROUNDS DIFFER BY TRAINING LEVEL OF TEAM MEMBERS Beau Daniel Hagler 1; Priya Chandan 2; Carlos Estrada 2; Brita Roy 2; Nidhi Gupta Huff 2; Analia Castiglioni 2; Robert Center 2. 1University of Alabama at Birmingham SOM, Birmingham, Alabama; 2University of Alabama at Birmingham, Birmingham, Alabama. (Tracking ID # 11898)

BACKGROUND: Within a single ward team, there are individuals of different training levels. In order to meet the needs of all team members, it is essential for attendings to understand how training level affects priorities during rounds. Therefore, we sought to determine differences in priorities during ward attending rounds based on training level of team members.

METHODS: Using a prospective observational study design, trainees from 49 inpatient ward teams at three hospitals independently completed daily evaluation cards regarding ward attending rounds from September to November 2010. Participants selected their training level along with the teaching domain most important to them each day. Domains were established in a previous study and included teaching process (i.e.: shares decision-making process, demonstrates physical exam), learning environment (i.e.: approachable, respectful), role modeling (i.e.: teaches by example, bedside manner), and team management (i.e.: efficiency, provides autonomy). We used Chi square analyses to evaluate associations between training level and domain importance.

RESULTS: Trainees completed 831 cards evaluating 41 attendings (279 cards from medical students; 354 from PGY-1/2; 177 from PGY-3/4). As training level increased, teaching process decreased in importance (p-trend < 0.005) and team management increased in importance (p-trend < 0.001, see Figure 1). Role modeling was most important to PGY1/2 residents (p=0.005). No differences were seen across training levels regarding importance of learning environment (p=0.31).

CONCLUSION: As trainees progress, efficiency and autonomy (Team Management) are the most important aspect of ward rounds, while discussing the decision-making process and demonstrating the physical exam (Teaching Process) become less important. Understanding residents’ and students’ expectations may help enhance learning during ward attending rounds.

HOSPITALISTS AND HOUSESTAFF SUPERVISION: A MARRIAGE OF CONVENIENCE? Jeanne M. Farnan 1; Luci Leykum 2; Alfred Burger 3; Rebecca Harrison 4; Julie Maehlsey 5; Vikas Parekh 6; Annelise Schleyer 7; Bradley Sharpe 8; Romsai Boonyasai 9; Vinny Arora 1. 1University of Chicago, Chicago, Illinois; 2UT Health Sciences Center, San Antonio, Texas; 3Beth Israel Medical Center, New York, New York; 4OHU, Portland, Oregon; 5SGIM, Washington DC, District of Columbia; 6University of Michigan, Ann Arbor, Michigan; 7University of Washington Harborview Medical Center, Seattle, Washington; 8UCSF, San Francisco, California; 9Johns Hopkins, Baltimore, Maryland. (Tracking ID # 11901)

BACKGROUND: In 2003, Accreditation Council for Graduate Medical Education (ACGME) announced the first in a series of guidelines related to the residency training. The most recent recommendations focus on enhancing on-site housestaff supervision. To meet these standards, many internal medicine residency programs look to hospitalist programs to fill that need. We aimed to describe how academic hospitalists currently supervise housestaff overnight and their perceptions of how ACGME policies would impact trainee-hospitalist interactions.

METHODS: The Housestaff Oversight Committee, a working group of the Society of General Internal Medicine Academic Hospitalist Taskforce and members of The Society of Hospital Medicine, created a web-based survey to assess the current status of trainee supervision performed by hospitalists. Hospitalist programs were chosen based upon location in one of five geographically distinct areas and in a hospital participating in the National Resident Matching Program for Internal Medicine. Program leaders were identified by members of the Taskforce using program websites and querying departmental leadership. Respondents were contacted by email for participation. The 19-item SurveyMonkey instrument included questions about hospitalists’ role in trainees’ education and evaluation. A Likert-type scale was used to assess perceptions regarding the impact of on-site hospitalists’ supervision on trainee autonomy and hospitalist workload. Descriptive statistics were performed.

RESULTS: Thirty-five of 41 (74%) of the identified hospitalist program leaders responded. Five who were not hospitalist programs were removed from the analysis resulting in 64% survey response rate. Respondents averaged 12 years in practice post-residency training and 73% were female. Respondents’ programs had an average of 18 faculty. All respondents reported that hospitalist faculty are expected to participate in housestaff teaching or other educational roles. Twenty-one programs (70%) described having an attending hospitalist physician present overnight to provide coverage or admit new patients, but only 8/21 (38%) described a formal supervisory role for hospitalists in which house staff are required to present newly admitted patients or contact them with questions regarding patient management. Although 63% of programs have a formal housestaff supervision policy in place, only 43% of program leaders stated that their hospitalists receive formal faculty development on how to supervise residents. 85% of respondents agreed that formal overnight supervision an attending hospitalist would improve patient safety and 62% agreed that formal overnight supervision would improve trainee-hospitalist relationships. However, 44% disagreed and felt that increased on-site hospitalist supervision would hamper resident decision-making autonomy and 82% agreed that a formal housestaff supervisory role would increase hospitalist workload.

CONCLUSION: Hospitalists frequently provide overnight coverage in academic centers. However, formal supervision of trainees is not
uniform, and few hospitalists receive formal training on how to provide effective supervision. Program leaders express concern that creating additional overnight supervisory responsibilities may add to an already burdened overnight hospitalist. Specifically, staffing for and formalizing this supervisory role, including explicit role definitions and faculty training for trainee supervision, are needed.

**INTERVENTION TO REDUCE INAPPROPRIATE PAPANICOLAOU TESTING IN A RESIDENT CLINIC** Kyle Horton; Samantha Hudson; Denise Borden; Arpita Aggarwal; Virginia Commonwealth University, Richmond, Virginia; Virginia Commonwealth University, Glen Allen, Virginia. (Tracking ID # 11907)

**BACKGROUND:** Cancer screening guidelines may be misapplied or misunderstood by physicians. We identified non-adherence to US Preventive Services Task Force (USPSTF) guidelines for cervical cancer screening in our resident clinic, including often use in patients without a cervix. We therefore undertook a quality improvement (QI) project to reduce the number of guideline inconsistent Papanicolaou (Pap) tests.

**METHODS:** Three Internal Medicine residents performed a retrospectively review of 229 charts (December 2004 to February 2009) to assess the appropriateness of Pap tests based on US Preventive Task Force guidelines. Our QI project intervention was instituting a weekly “Pap Clinic” which included an attending, two interns, and a women’s health resident. Interns presented the patient history to an attending before examination or Pap testing using a pre-defined template. Women’s health residents precepted the actual Pap test. Post-intervention, 119 charts were reviewed (March 2009 to July 2010). Data analysis used SAS 9.2 software and a p-value of <0.05 for statistical significance. Pre and post-intervention data was analyzed using a multivariate logistic regression to calculate the odds of inappropriate testing adjusted for age, race, and type of insurance.

**RESULTS:** Pre-intervention, 17.0% of the 229 patients received inappropriate Pap tests with the majority (79.5%) done post-hysterectomy for a non-malignant cause. The pre and post-intervention groups had similar baseline demographic characteristics. Post-intervention, there was an impressive, statistically significant decrease in the percentage of inappropriate Pap tests with only 1.7% (n=2) of 119 patients inappropriately screened (Fisher Exact Test p<0.0001). Twenty patients (16.8%) were deemed inappropriate referrals and did not undergo Pap testing.

**CONCLUSION:** Inappropriate Pap testing due to non-adherence to USPSTF guidelines for cervical cancer screening was prevalent in our resident clinic, especially post-hysterectomy for benign reasons. Creation of a “Pap Clinic” with focused women’s health visits was a highly effective way to reduce unnecessary Pap tests, improve quality of care and provide guideline-based care in our resident clinic. Our educational intervention at the intern level will likely have long-term benefits by enhancing compliance with USPSTF guidelines throughout the trainee’s future career.

**POST-TRAUMATIC STRESS DISORDER IN STROKE SURVIVORS:**

**PREVALENCE AND CORRELATES** Judith Z. Goldfinger; Revathi Balakrishnan; Rezhen Fei; Ivan Kronish; Carol R. Horowitz; Mount Sinai School of Medicine, New York, New York. (Tracking ID # 11909)

**BACKGROUND:** Stroke survivors are at increased risk for post-traumatic stress disorder (PTSD), although data on prevalence and associated factors are lacking. Harlem residents and local researchers, alarmed by high rates of stroke in their community and frustrated by the difficulty of engaging stroke survivors in prevention programs, aimed to determine the prevalence and correlates of PTSD in a cohort of survivors of stroke and transient ischemic attack (TIA).

**METHODS:** Using the principles and methods of community-based participatory research, the partnership of Harlem residents and researchers together developed a recurrent stroke prevention trial and baseline assessments for the trial. Adults over 40 were eligible for inclusion if they reported having a stroke or TIA within the past five years and if they were English or Spanish speaking. Baseline assessments included standard self-report scales for demographics, stroke impact (modified Rankin scale), medical co-morbidities (Charlson co-morbidity index), and the 17-item PTSD Checklist Specific for stroke (PCL-S), the most frequently used scale to assess PTSD symptoms. A PCL-S score of 25 connotes a positive screening test, while a score greater than 50 is highly specific for PTSD. Biological data including body mass index (BMI), blood pressure, and LDL cholesterol level were also measured. We used logistic regression to create a model of correlates for PTSD (PCL-S score > 50). We also used chi-square to compare stroke risk factors in the PTSD group (PCL-S score > 50) vs. non-PTSD groups.

**RESULTS:** Of the 267 enrollees, mean age was 63 years, 64% were women, 78% were Black or Latino, 29% never completed high school, and more than half earned less than $15,000 yearly. Two hundred one respondents (75%) had PCL-S scores greater than 25, including 46 (17%) who scored above 50. Using logistic regression (c-statistic of 0.798, p<0.0001), PTSD was associated with younger age (odds ratio 0.92, 95% CI 0.89-0.96), increased disability post-stroke (OR 1.69, 95% CI 1.27-2.25), greater burden of medical co-morbidities (OR 1.20, 95% CI 1.01-1.41), and history of a greater number of strokes or TIAs (OR 1.29, 95% 1.01-1.65). Factors that were not significant correlates of PTSD included gender, race, education, and income. Participants who had PTSD were more likely to smoke (33% vs. 14%, p=0.002), have elevated LDL cholesterol > 100 mg/dl (61% vs. 40%, p=0.01), and be overweight or obese with a BMI > 25 kg/m2 (84% vs. 66%, p=0.01), all major risk factors for recurrent stroke. There was no significant difference in blood pressure control between the patients with and without PTSD.

**CONCLUSION:** PTSD is common after stroke, especially in younger people with more disability and more medical problems. This study should motivate clinicians to screen patients for PTSD after stroke. PTSD is also associated with major risk factors for stroke recurrence, specifically smoking, overweight or obesity, and elevated LDL cholesterol. Further research is needed to identify whether PTSD itself may serve as a risk factor for recurrent stroke.

**RESIDENT PHYSICIANS’ PATIENT ACTIVATING SKILLS ARE ASSOCIATED WITH OBESE PATIENTS’ WEIGHT LOSS:**

**Collleen C. Gillespie; Melanie Jay; Sheira Schlair; Sondra Zabar; Adina Kalet; NYU School of Medicine, Brooklyn, New York; NYU School of Medicine, NY, New York; Montefiore, New York, New York; NYU School of Medicine, New York. (Tracking ID # 11919)

**BACKGROUND:** Patient activation, the degree to which patients are knowledgeable, active, and collaborative partners in managing their health, has been linked to positive health outcomes in a number of chronic diseases, but it is less clear how physicians can help activate patients. We explore associations between obese primary care patients’ stage of activation, resident physicians’ skills in activating patients, and subsequent (6-month) weight loss.

**METHODS:** 158 obese patients of 23 primary care resident physicians were interviewed immediately after their visits. The interview included Hibbard’s 13-item Patient Activation Measure (PAM) that categorizes patients into 4 stages: Stage 1 - starting to take a role in managing health, Stage 2 - building knowledge and confidence, Stage 3 - taking action, and Stage 4 - maintaining behaviors. Residents’ skills in activating patients were assessed as part of a 10-station OSCE conducted prior to the patient interviews. In the OSCE, standardized patients
rated residents on 2–5 specific patient activation skills per case (e.g. whether
the encounter helped the patient understand the health problem as well as
feel confident they could change behaviors) using a 3-point (not done, partly
done, well done) scale. Scores were calculated as % of patient activating skills
well done across all cases. Residents were then dichotomized into 2 groups:
those with below average scores and those with above average scores.
Patients' weight status up to 6 months subsequent to the patient exit
interview was assessed through follow-up chart review. Weight change
was calculated by subtracting the patients' weight (kg) measured at the latest time
point within the 6 month period after the index visit from index visit weight.

RESULTS: Average weight loss/gain= −.32 (loss; SD=2.3, range −8.2–
5.8) for the 88 patients who had at least one follow-up visit within the
6 months subsequent to the initial visit. Most patients (66%; 58/88)
were in Stage 4 internists of activation, maintaining healthy weight
behaviors. Patients who were in Stage 3 of activation(taking action) lost
significantly more weight (−1.7 kg, SD=2.1, n=14) than patients
whose Patient Activation scores placed them in the three other stages
(Stage 1=−.9 kg, SD=1.9, n=6; Stage 2=+1.8 kg, SD=1.5, n=10; Stage
3=+1.9 kg, SD=1.8, n=6) (F=2.42, p=.02). Residents' patient activating
scores (% well done) averaged 40%(SD=14%). The patients of
residents who demonstrated above average patient activating skills in
the prior OSCE lost more weight (mean=−1.2 kg, SD=2.1) than patients
with below average patient activating skills (mean=+0.0 kg, SD=2.5) (p=.04). While not significant, the magni-
tude of the effect of residents’ patient activating skills was greatest
for those in the 3rd level of activation, taking action (mean
−.8 kg, SD=2.9, n=5) (F=1.82, p=.18).

CONCLUSION: Patients’ stage of activation is associated with weight
loss such that patients’ who report taking action to manage health
lost the most weight. Resident physicians appear to vary in their
ability to activate patients (as assessed by SPs in an OSCE) and such
variation is associated with patient outcomes (weight status) in our
study. Both effects in this pilot study are small and should be
replicated in larger, more well-controlled studies - however, results
do suggest important future directions for addressing obesity. In
addition, further research should explore the complex interplay
between patients’ level of activation and the activating skills of
physicians in shaping patient health behavior and outcomes.

READ AROUND YOUR CASES: DOES CLINICAL EXPOSURE ACTI-
VATE MEDICAL STUDENTS TO LEARN MORE FROM COMPUTER
MODULES? Adina Kalet 1; Hyuk-Soon Song 2; Michael Nick 2; Martin
Pusic 2. 1NYU School of Medicine, Brooklyn, New York; 2NYU School
of Medicine, New York, New York. (Tracking ID # 11926)

BACKGROUND: Authentic clinical experiences as learning activities have
been a foundation of medical education since the Flexner report. More
recently, medical students on clinical rotations have had available to them
computer modules on relevant clinical topics. Modules such as the CLIPP
cases (Pediatrics) and WISE-MD modules (Surgery) are used to ensure
complete curriculum coverage in over 50 medical schools. The modules are
generally designed as a self-contained activity meant to be completed at a
time separate from clinical activities. In this study, we postulate that
students who have had any prior exposure to a clinical condition learn
more from a given computer module than do those who are encountering
the module without this experience. Evidence of greater learning would
argue for a system of post-clinical encounter knowledge support.

METHODS: We performed a prospective cohort study of clinical year
medical students on surgery rotation. We made available two web modules,
on “Appendicitis” and “Carotid Stenosis”, covering History, Physical,
Imaging, Operative Process and Postoperative Care. Instructional strategies
included video narration, graphic visualizations and self-questioning. The
modules were to be done at the student’s convenience during an eight week
surgical clerkship. Within the module, each student reported their experience
with the clinical condition and completed multiple-choice pre-tests (8 items)
and post-tests (12 items) of declarative knowledge. We contrasted final score
by clinical exposure, controlling for pre-test score (ANCOVA).

RESULTS: 166 students completed a module: Appendicitis 38/86 (44%)
who had any prior clinical exposure; for Carotid Stenosis 26/80 (33%). For both
the topics, prior exposure was associated with higher post-test scores
(Appendicitis effect size 0.40; 95% CI −0.03, +0.83; Carotid Stenosis effect
size 0.31; 95% CI −0.16, +0.78). Adjusted for pre-test knowledge, the
Appendicitis module still showed a significant effect of clinical exposure
(ANCOVA F2,78=4.45, p=0.04); for the Carotid Stenosis module, while the
effect was in the same direction, it did not reach statistical significance
(ANCOVA F2,78=0.31, p=NS).

CONCLUSION: Students had measurably higher learning from a
module when they had had at least some prior clinical exposure. There
are several reasons why this might be. With an already partially
developed mental model, students may encode new material more
easily. Authentic cases engage the students emotionally, possibly
resulting in higher motivation while considering the module. However,
in terms of limitations for this observational study, we cannot exclude
confounding due to systematic differences in motivation or other
student characteristics. Our results should be viewed as pilot data for
further study with a view to more systematically organizing students’
study after key clinical encounters.
A SCALE FOR MEASURING SOCIAL STRESS AMONG DIABETIC PATIENTS

Michael Rothberg 1; Tara Michelle DuVal 1; Jennifer Friderici 1; Garry Welch 1; Baystate Medical Center, Springfield, Massachusetts. (Tracking ID # 11938)

BACKGROUND: In urban clinic settings, many clinicians believe that social stress interferes with patients’ ability to comply with complex medical regimens and that social support is protective. However, little empirical data is available and there is a paucity of assessment tools to foster research in this area. Competing obligations from family, as well as poverty, substance abuse, illiteracy, mental illness and domestic violence are all common and potentially disruptive factors, while social support includes family members and community connections. The objective of this study was to measure social stress levels and social supports in an urban, predominantly Hispanic sample of patients with diabetes.

METHODS: Using focus groups of physicians, nurses and diabetes educators who work with patients at one academic urban health center, we created a 20-item measure of social stress and a 10-item measure of social support in English and Spanish. After pilot testing with target subjects, the scale was modified for clarity. We administered the scale by telephone to 250 patients with diabetes to assess levels of social stress and support among our clinic population. For each stress question respondents were asked whether it was a cause of stress in the past week. Some questions included the possibility that a problem for a family member might be the source of the patient’s stress, e.g., “problems with alcohol or drug abuse in my family or myself.” We also assessed depression using the Patient Health Questionnaire (PHQ-9) and self-reported disability. Proportions and 95% confidence intervals were calculated for binary response items. Bivariate examinations of continuous stress and support scores with demographic and behavioral predictors were conducted using unpaired t-tests, chi-squared tests, and Pearson’s rank correlation.

RESULTS: We invited 305 patients to participate, of which 246 (81%) responded. Mean age was 53±11 years. 63% were female, and 53% were Hispanic, 25% white and 19% black. All patients had type 2 diabetes, 73% were obese, and 61% were disabled. Depression measured by PHQ-9 was prevalent, with 31% scoring ≥10, indicating moderate to severe depression. Nearly all patients (99%) had some form of health insurance. The average respondent endorsed 6 (SD 4) of 20 stress items (range 0 to 20) and 6 (SD 2) of 10 support items. Most (93%) endorsed at least one stress item. The top-ranked stress items were “Depression/anxiety in self or family” (63%; 95% CI 57%, 69%), “Family sickness/disability” (61%; 95% CI 55%, 67%), “Not enough money for food, rent” (60%; 95% CI 54%, 66%), “Caring for family’s needs” (58%; 95% CI 51%, 64%) and “Cost of travel back home to visit family” (45%: 95% CI 38%, 51%). The top-ranked support items were “Supportive doctor” (93%, 95% CI 90%, 97%), “Good advice from family” (79%, 95% CI 73%, 84%), and “Supportive friends” (76%, 95% 70%, 81%). Reliabilities for both scales were sound (alpha=0.8, stress; 0.6, support). There were no significant differences in stress by sex (men 61 vs. women 64, P=0.51); ethnicity (Hispanic 6.2 vs. black 6.7 vs. white 5.9, P=0.26), educational level (Pearson’s r=0.07, P=0.54) or disability (disabled 6.7 vs. not 5.8, P=0.13). Stress scores were positively correlated with PHQ-9 (Pearson’s r=0.60, p<0.0001), and support scores negatively so (Pearson’s r=-0.26, p=0.0001). Stress and support were inversely related (Pearson’s r=0.16, p=0.02).

CONCLUSION: Among diabetic patients in an urban health center, levels of social stress were high, but social supports were also common. Social stress was highly correlated with depression.

RURAL PRIMARY CARE PHYSICIAN PERSPECTIVES: BARRIERS TO REPRODUCTIVE HEALTH CARE IN CENTRAL PENNSYLVANIA

Cynthia H Chuang 1; Sandra W Hwang 1; Jennifer S McCall-Hosenfeld 1; Carol S Weisman 1; Lara A Rosenwasser 1; Marianne M Hillemeier 1; Penn State College of Medicine, Hershey, Pennsylvania. (Tracking ID # 11940)

BACKGROUND: Women residing in rural areas of Central Pennsylvania are less likely than urban women to receive guideline-concordant reproductive health services. Reasons for this disparity are largely unexplored, but understanding potential barriers to optimal care may lead to interventions aimed at improving reproductive health care delivery in rural areas. Using qualitative methods, we explored rural primary care physician (PCP) perspectives regarding two domains of reproductive health care-preconception care and contraceptive care.

METHODS: Using the AMA Masterfile, we identified family physicians, internists, and OB/GYNs without subspecialty designation in office-based, non-federally affiliated practices in rural Central Pennsylvania. Physicians were eligible if they considered themselves PCPs and provided care for adult women of reproductive age. We conducted in-person or telephone interviews with 18 PCPs (12 family physicians, 4 internists, and 2 OB/GYNs) regarding their perceptions of PCP role and barriers to preconception and contraceptive care. Using a modified grounded theory method, interview transcripts were analyzed for major themes using QSR NVivo8 software.

RESULTS: Themes focused on (1) PCP role, (2) access to care, and (3) patient ambivalence toward reproductive health. Although PCPs believed they had an important role in preconception care and that such discussions should be routinely initiated (11/12), most indicated that preconception counseling occurs infrequently (16/17). Regarding contraceptive management, the majority of PCPs felt it was their responsibility to provide contraceptive care (11/14), although that responsibility is sometimes shared with OB/GYNs and/or family planning clinics (6/12).

PCPs did not perceive access barriers for patients obtaining contraception (12/12). However, many PCPs (8/18) identified lack of OB/GYN specialists as a barrier in rural communities for pregnancy planning. Financial issues were sometimes identified as barriers to reproductive health access, particularly for patients receiving medical assistance or those who are uninsured (5/18 in preconception, 7/18 in contraception).

Finally, PCPs identified patient ambivalence toward both preconception care (13/18) and contraceptive care (6/18) as a barrier in rural communities. Social norms for larger families and unintended pregnancies, low community expectations for women to pursue advanced education and careers, and overall lack of life planning (not only reproductive planning) were identified as exacerbating factors. Some PCPs felt in conflict with these community attitudes, and even described this ambivalence toward reproductive health as negligent.

CONCLUSION: There is a gap between the role that rural PCPs believe they should play in providing preconception care and the actual execution of that role. Our findings suggest that perceived need for more specialists and frustration with patient ambivalence may contribute to this gap. In contraceptive care, the main barrier emphasized was patient ambivalence. Interventions designed to address these barriers could include both PCP training to increase comfort with providing routine preconception care in the primary care setting and community education programs to address ambivalence towards reproductive health planning.
MULTI-LEVEL INTERVENTION TO CONTROL HYPERTENSION IN AFRICAN AMERICANS: THE CAATCH TRIAL. Ghengha Ogedege 1; Jonathan Tobin 2; Joseph Schwartz3. 1NYU School of Medicine, New York, New York; 2Clinical Directors Network, New York, New York; 3SUNY Medical School, Stony Brook, New York. (Tracking ID # 11953)

BACKGROUND: Hypertension-related outcomes explain the most mortality gap between African Americans and whites. Despite effective blood pressure (BP) control interventions, these approaches have not been translated into clinical practice for African Americans. We evaluated the effectiveness of a multilevel evidence-based intervention targeted at physicians and patients in improving BP control in hypertensive African Americans in 30 community health centers (CHCs).

METHODS: Counseling African Americans to Control Hypertension (CAATCH), a cluster randomized clinical trial, compared an Intervention (IC, n=15) consisting of three patient-level components (interactive computerized hypertension education, home BP monitoring, monthly lifestyle modification counseling) and two clinician-level components (monthly Hypertension Guidelines (JNC-7) case rounds, chart audits/feedback) with Usual Care (UC, n=15). The primary outcome was the rate of BP control (BP<140/90 for all patients; or <130/80 for diabetic patients) at 12 months by automated BP monitor (BPTru BPM-300). Secondary outcome was Office BP (extracted from medical records) at 12 months. Of 1059 recruited, 71% completed the trial (mean age 56 yrs, 60% obese, 35% diabetes, baseline BP (±SD) 149/90 (±21/13 mmHg).

RESULTS: Using intent-to-treat analysis, BP control at 12 months by BPTru (adjusted for baseline BP, diabetes, Charlson comorbidity, resistant hypertension) was IC=59.9% vs. UC=55.1% [OR=1.22 (95% CI 0.95-1.57)]; and mean Office BP at 12 months was IC=135.4 mmHg vs. UC=141 mmHg (p<0.01). In pre-specified subgroup analyses, the intervention was associated with greater BP control for patients without diabetes [IC=61.6% vs. UC=53.6%, OR=1.39 (1.02-1.9)]; and patients who received care in small CHCs [IC=62.5% vs. UC=52.2%, OR=1.53 (1.08-2.15)].

CONCLUSION: In African Americans with poorly controlled hypertension, while a practice-based multilevel intervention did not significantly improve BP control by BPTru, it was associated with significant improvement in Office BP: thus suggesting that BP targets can be reached in this high-risk population. Our findings suggest that evidence-based multilevel interventions can be integrated into primary care practices with significant potential for improving BP control in hypertensive African Americans.

METHODS: We conducted a prospective, quasi-experimental evaluation of the effectiveness of the Synchronized Wilmington Admission Team (SWAT) from October 2010 to November 2011. The SWAT is a multi-disciplinary team comprised of a nurse, clinical pharmacist, social worker/case manager, resident physician, and faculty attending physician. The team members admit patients concurrently and develop a coordinated plan for admissions to a teaching service at an urban hospital. In addition to routine admission details, the primary tasks of the team are tracked using a checklist including prompts for evidence-based protocols, medication reconciliation, identification of post-acute care needs, and relevant CMS measures. At the time of admission, the plan of care is finalized with the patient and family. Primary outcomes are Length of Stay (LOS), Rapid Response Team (RRT) activation, Emergency Department (ED) boarding time, performance on CMS quality measures for pneumonia when applicable, and readmission rates. The SWAT is conducted on admissions to the internal medicine and family medicine teaching services on weekdays between 9 am and 5 pm, but is not always available. We compare outcomes of the SWAT admissions to all teaching patients in the year prior to implementation (historical comparison group) and to teaching patients admitted weekdays 9 am to 5 pm who did not have SWAT available (contemporary comparison group).

RESULTS: During the initial study period, 196 patients were admitted by SWAT and 468 without SWAT (Non-SWAT). LOS in both the SWAT and non-SWAT groups was improved from the historical comparison (4.0 [3.6 - 4.5] vs. 5.5 [5.0 - 6.0] days, p<0.01 for each). The average LOS was 2.83 (2.4 - 3.2) days for SWAT and 3.5 (3.1 - 3.9) days for Non-SWAT patients (p=0.085). SWAT patients had 0 calls for the RRT in the first 24 hours of admission and 2 overall compared to 4 in the first 24 hours and 14 overall for the non-SWAT group (p > 0.05). Only 4 patients in the SWAT group and 7 in the non-SWAT group were candidates for pneumonia core measures. The SWAT patients were 100% compliant on all measures compared to 71% for the non-SWAT group. There were no differences in ED boarding time or rate of readmissions at 30 days.

CONCLUSION: The SWAT admission process, which utilizes a multidisciplinary team for care coordination and a checklist for quality and safety measures, may be associated with improvement in LOS without adding to boarding time in the Emergency Department or increasing the rate of readmissions at 30 days. Initial results indicate that this model may provide a mechanism for hospitals to increase the quality, efficiency, and safety of inpatient care.

LIFETIME EXPOSURE TO TRAUMATIC PSYCHOLOGICAL STRESS IS ASSOCIATED WITH GREATER INCREASES IN INFLAMMATORY ACTIVITY OVER TIME IN PATIENTS WITH CARDIOVASCULAR DISEASE: PROSPECTIVE FINDINGS FROM THE HEART AND SOUL STUDY. Beth Cohen1; Aoife O’Donovan 1; Thomas Neylan 1; Thomas Metzler 2; Mary Wholey 1. 1University of California San Francisco/San Francisco VA Medical Center, San Francisco, California; 2San Francisco VA, San Francisco, California. (Tracking ID # 11976)

BACKGROUND: A history of exposure to traumatic psychological stress increases risk for adverse events and early mortality in patients with cardiovascular disease (CVD). While the biological mechanisms of these effects are not known, inflammatory activity may play a key role as it is both elevated by psychological stress and involved in the progression of CVD. However, no studies have examined if lifetime exposure to traumatic psychological stress is associated with inflammatory activity in patients with CVD. In the present study, we assessed if CVD patients with high levels of trauma exposure differed from comparison patients in baseline levels and rate of change of inflammatory markers over time.

METHODS: We conducted a prospective, quasi-experimental evaluation of the effectiveness of the Synchronized Wilmington Admission Team (SWAT) from October 2010 to November 2011. The SWAT is a multi-disciplinary team comprised of a nurse, clinical pharmacist, social worker/case manager, resident physician, and faculty attending physician. The team members admit patients concurrently and develop a coordinated plan for admissions to a teaching service at an urban hospital. In addition to routine admission details, the primary tasks of the team are tracked using a checklist including prompts for evidence-based protocols, medication reconciliation, identification of post-acute care needs, and relevant CMS measures. At the time of admission, the plan of care is finalized with the patient and family. Primary outcomes are Length of Stay (LOS), Rapid Response Team (RRT) activation, Emergency Department (ED) boarding time, performance on CMS quality measures for pneumonia when applicable, and readmission rates. The SWAT is conducted on admissions to the internal medicine and family medicine teaching services on weekdays between 9 am and 5 pm, but is not always available. We compare outcomes of the SWAT admissions to all teaching patients in the year prior to implementation (historical comparison group) and to teaching patients admitted weekdays 9 am to 5 pm who did not have SWAT available (contemporary comparison group).

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LIFETIME EXPOSURE TO TRAUMATIC PSYCHOLOGICAL STRESS IS ASSOCIATED WITH GREATER INCREASES IN INFLAMMATORY ACTIVITY OVER TIME IN PATIENTS WITH CARDIOVASCULAR DISEASE: PROSPECTIVE FINDINGS FROM THE HEART AND SOUL STUDY. Beth Cohen1; Aoife O’Donovan 1; Thomas Neylan 1; Thomas Metzler 2; Mary Wholey 1. 1University of California San Francisco/San Francisco VA Medical Center, San Francisco, California; 2San Francisco VA, San Francisco, California. (Tracking ID # 11976)

BACKGROUND: A history of exposure to traumatic psychological stress increases risk for adverse events and early mortality in patients with cardiovascular disease (CVD). While the biological mechanisms of these effects are not known, inflammatory activity may play a key role as it is both elevated by psychological stress and involved in the progression of CVD. However, no studies have examined if lifetime exposure to traumatic psychological stress is associated with inflammatory activity in patients with CVD. In the present study, we assessed if CVD patients with high levels of trauma exposure differed from comparison patients in baseline levels and rate of change of inflammatory markers over time.
METHODS: Patients with stable CVD who participated in the Heart and Soul Study (n=1,019) reported history of exposure to 18 traumatic events from the Computerized Diagnostic Interview Schedule for DSM-IV. Patients in the highest quartile for traumatic events were classified as having high levels of trauma exposure (n=256 who reported 8 or more events). Body mass index (BMI) was measured, and demographics and health behaviors were assessed by self-report. Markers of inflammatory activity including interleukin-6 (IL-6), tumor necrosis factor-alpha (TNF-alpha), C-reactive protein (CRP) and resistin were measured in fasting blood samples at baseline and at five-year follow up (n=665). We constructed linear regression models with baseline, year 5, or change in inflammatory biomarker levels adjusted for factors that differed at p<.20 between groups, including age, gender and statin use. We then adjusted for potential mediating variables, including sleep quality and the health behaviors smoking, physical activity and illicit drug use, as well as PTSD and depression.

RESULTS: Patients reporting high levels of trauma exposure were not significantly different from comparison patients on markers of inflammatory activity at baseline. However, this high trauma exposure group exhibited significantly greater increases in IL-6 (β=.08, p=.047), TNF-1x (β=.11, p=.006) and resistin (β=.09, p=.03) from baseline to 5-year follow up, adjusting for age, sex and statin use. In addition to demonstrating greater increases in these markers over time, patients with high levels of trauma exposure also had greater absolute levels of TNF-1x and resistin (p<.05) and a trend towards greater absolute levels of IL-6 (p=.11) at 5-year follow up. There were no group differences in CRP. Conclusions were similar after additional adjustments for smoking, physical activity, illicit drug use, sleep quality, PTSD and depression.

CONCLUSION: This first large-scale demonstration of an association between traumatic psychological stress and inflammatory activity links a history of traumatic psychological stress with a mechanism of accelerated CVD progression. The psychological, behavioral and biological sequelae of traumatic psychological stress may persist across the lifespan, influencing inflammatory activity and potentially CVD morbidity and mortality late in life.

FALLING OFF THE WAGON: THE NEED FOR A PARADIGM SHIFT IN TACKLING THE OBESITY EPIDEMIC

Erica Phillips 1; Erida Vazquez 2; Janey Peterson 1; Laura Winter Falk 3; Carla Boutin-Foster 1; Carol Devine 4; Elaine Wethington 4; Brian Wansink 5; Mary Charlson 1; Well Cornell Medical College, New York, New York ; 2Lincoln Medical Center, Bronx, New York ; 3Cornell University, Ithaca, New York. (Tracking ID # 110899)

BACKGROUND: Minority populations are disproportionately affected by the obesity epidemic. In recent years experts in the field have recommended that social and behavioral interventions should be focused on promoting small lifestyle changes that will eliminate or reduce the gradual excess weight gain that occurs in people of all ages over the life span. This "small change" approach is based on analyses that demonstrate that people gradually gain weight over time because of a small average daily difference between energy intake and energy expenditure known as the "energy gap." Based on theory and experimental research on small change strategies we developed a novel behavioral intervention aimed at achieving weight loss among Black and Hispanic adults in two New York City communities through small changes in eating behavior and physical activity. Prior to the implementation of the trial we sought to develop a better understanding of how different experimentally-based small change strategies would translate across different cultural groups. Qualitative group interviews were used to culturally tailor the future intervention.

METHODS: Black or Hispanic adults ≥ 21 years of age with a BMI ≥ 25 and a previous weight loss attempt were recruited at two clinical and two church sites in Harlem and the South Bronx, New York. Six focus groups, three in Spanish and three in English were conducted by two moderators using a standardized interview guide following informed consent. Participants were asked to describe previous attempts at changing their eating behaviors to lose weight. Participants were then presented with thirteen experimentally-validated small change eating strategies known to reduce the "energy gap" (i.e. using a 10 inch plate for main meal, not eating when the TV is on, eating breakfast everyday, eating dinner at home at least 6 days a week). Participants voted for the top six strategies they felt could be easily adopted by themselves and their family or social network. Group discussion explored potential advantages and challenges of adopting each of the six strategies. Sessions were tape-recorded and transcribed verbatim. Responses were entered into Ethnograph® qualitative software and systematically analyzed using grounded theory methods. Through an iterative process, concepts were grouped into categories based on similar properties and dimensions. Overarching themes were then developed by three trained qualitative experts. Three additional trained corroborators independently reviewed the transcripts, and consensus was reached with the final themes reported here.

RESULTS: 67 participants mean age 54 years±13, 72% women and 60% Hispanic were enrolled. More than half of participants had some college education (58%), 30% were employed, 42% were married and had one or more children. 74% described themselves as weighing too much and being advised by a medical provider to lose weight. The mean BMI was 34±7.2. 52% of participants described their general health as fair or poor. Only 36% of participants met the daily recommendations of eating five or more servings of fruit and vegetables. We identified three primary themes: 1) The Wake Up Call- an interaction with a health care provider or their own personal decision-making (based on psychologic or physiologic reasons) would prompt a self-awareness that obesity was negatively impacting their health and that it was time to initiate a behavior change; 2) Taking Control - preferences for a particular weight loss strategy were chosen based on which aspect of the built and/or social environment participants believe they could gain control over ; and 3) Falling Off the Wagon - all participants described the experience of not being able to maintain newly adopted behavior/s long term as a result of either unrealistic weight loss planning and goals or negative environmental influences such as stress. Participants selected the following six small change strategies: 1) Using a smaller plate for the main meal; 2) Making half of the main meal vegetables; 3) Putting snacks out of sight; 4) Eating breakfast everyday; 5) Drinking water instead of sweetened beverages; and 6) Eating dinner at home at least 6 days a week. Common reported advantages of the strategies were: 1) Do not require a sacrifice - "you don’t feel like you are giving something up;” 2) Cost-effective - “it’s cheaper than eating out all the time”; and 3) Health benefits - “there are lots of health benefits from drinking water".
CONCLUSION: Our study demonstrates that among community dwelling African-American and Hispanic adults the need to lose weight is often triggered by outside influences such as a health care provider or change in health status (i.e. new onset diabetes). While individuals are able to select strategies that results in short term weight loss they reported that they are unable to maintain these efforts long term. Some strategies may conflict with family and cultural meal practices and values, others with daily schedules or household food environments. Participants voted for six out of thirteen small change eating strategies that they believe could be easily adopted and maintained long term by themselves or other members of their family and social network. Our results may also have important implications for translating basic experimental research on small change strategies for diverse cultural groups. The development of obesity interventions utilizing small environmental and behavioral changes may be more sustainable over time in comparison to more robust dieting efforts that yield positive results but cannot be maintained long term. The translation of the small change strategies into more culturally and environmentally relevant forms may also increase the success of interventions. The results of this study will be used to refine and tailor a large scale randomized behavioral intervention targeted at achieving a ≥ 7% within-patient reduction in weight through small sustained changes in eating behavior coupled with sustained increases in lifestyle physical activity.

ODDS OF MAJOR ADVERSE CARDIOVASCULAR EVENTS ASSOCIATED WITH VARENICLINE: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS Sonal Singh 1; Yoon Kong Loke 2; John Spangler 3; Curt D Furberg 3. 1Johns Hopkins University, Baltimore, Maryland ; 2University of East Anglia, Norwich, N/A ; 3Wake Forest University School of Medicine, Winston-Salem, North Carolina . (Tracking ID # 11999)

BACKGROUND: Varenicline is a partial agonist at the Ï-4 Ï-2 nicotinic acetylcholine receptors and a full agonist at Ï-7 nicotinic acetylcholine receptors. Varenicline is associated with myocardial infarction and cardiac arrest in spontaneous reports. Its effect on cardiovascular outcomes is unknown. Our objective was to ascertain the risk of major adverse cardiovascular effects of varenicline compared to placebo controls among tobacco users.

METHODS: Systematic searches were conducted in August 2010 of relevant articles in MEDLINE, EMBASE, regulatory authority Web-sites in the United States and Europe and manufacturers’ trial registries with no date restrictions. Randomized controlled trials of varenicline for treatment of nicotine addiction among smokers or smokeless tobacco users, had at least 7 days of treatment, and reported on any major adverse cardiovascular event (including zero events) of myocardial infarction, unstable angina, coronary revascularization, coronary artery disease, arrhythmias, transient ischemic attacks, strokes and sudden death or cardiovascular death and congestive heart failure were included.

RESULTS: The initial search yielded 347 citations. After a detailed screening of 45 full text studies for cardiovascular events, 14 double blind placebo controlled randomized controlled trials enrolling 8216 tobacco users were included. Follow-up duration ranged from 7 weeks to 1 year. Major adverse cardiovascular events occurred among 52 of 4908 participants receiving varenicline and 27 of 3308 patients receiving placebo therapy (Peto Odds Ratio (OR), 1.72 [95% confidence interval (CI), 1.09-2.71]; P=.02 I²=0%). Sensitivity analyses using treatment arm continuity correction to account for imbalance in zero events among the included trials yielded similar results. These estimates were also robust to the choice of comparators (placebo vs active controls). There was no evidence of publication bias via funnel plot asymmetry.

CONCLUSION: Among tobacco users varenicline use is associated with significantly increased odds of major adverse cardiovascular events.
FROM SKEPTICS TO USERS: EDUCATING PHYSICIANS IN SHARED DECISION MAKING AND INCREASING USE OF DECISION AIDS Leigh Simmons 1; Karen Sepucha 1; Lauren Leavitt 1; Christine Greipp 1.

1Massachusetts General Hospital, Boston, Massachusetts . [Tracking ID # 12000]  

BACKGROUND: Since 2005, primary care providers at Massachusetts General Hospital in Boston, MA, have been able to “prescribe” decision aids to their patients through the hospital's electronic medical record. These decision aids are produced by the Foundation for Informed Medical Decision Making, a leading developer of decision aids. Twenty-seven video and paper-based decision aids covering a range of medical conditions are available for prescription. The use of the decision aids has been varied, with some providers using them often and others never using them. The purpose of this project was to evaluate the impact of provider training sessions on utilization of decision aids in primary care.  

METHODS: All primary care practices at MGH were offered a one-hour course in shared decision making and use of decision aids to be held at the time of their regularly scheduled practice meetings. The key components of the provider training session are 1) an overview of shared decision making concepts, 2) a review of prescribing data at the group and clinician level, and 3) a viewing of a video decision aid. In advance of the session, practice leaders chose from one of three decision aid topics: screening options for colorectal cancer, treatment options for knee osteoarthritis, and advance directives planning. Physician providers received one unit of continuing medical education credit for participation in the session. We examined two metrics: overall group rates of decision aid use and the number of providers who had prescribed at least one decision aid in the four weeks before and four weeks after the session.  

RESULTS: We conducted training sessions with 15 primary care practices comprising over 200 physicians. We have baseline data for all practices and complete follow-up data for seven practices. For these seven practices, overall utilization increased significantly, from 57 prescriptions prior to and 113 prescriptions after the session (p<0.001). Six out of seven practices demonstrated an increase in their overall prescription rates after our intervention. The number of providers who prescribed at least one program also increased from 26/130 (20%) to 45/130 (35%) (p<0.001). Thirty-six providers increased their prescription rates, with the most significant increases noted for providers who had joined the practice within the prior year, and for providers previously known to be high prescribers. The increase in prescription was spread across several decision aids, not only the program used in the session.  

CONCLUSION: A CME course that is designed to enhance provider understanding of shared decision making and to give personal feedback on usage of decision aids was successful in increasing overall prescribing rates, and in attracting more users. Whether the observed short term increase will be sustained needs to be evaluated.

THE MEANING OF INTERPROFESSIONAL EDUCATION: AN EXPLORATION OF STUDENTS’ PERSPECTIVES Paul Haide1; Beth Bates 2; Cori Breslau 1; Susan Glod 1; James O. Ballard1. 1Penn State University College of Medicine, Hershey, Pennsylvania ; 2Penn State University School of Nursing, Hershey, Pennsylvania . [Tracking ID # 12000]  

BACKGROUND: Interprofessional education may foster better collaboration and teamwork in medical care. While the theoretical and empirical literature points toward the value of interprofessional education, there is little published data exploring students’ actual experiences during interprofessional learning sessions. We performed this study to explore nursing and medical students’ perspectives and experiences during two interprofessional sessions on end-of-life (EOL) care.  

METHODS: At the Hershey campus of Penn State University, educators recently introduced two interprofessional sessions as part of elective courses on end-of-life care in the nursing and medical schools. During the sessions, eleven 4th-year medical and sixteen junior or senior bachelors’ nursing students worked in four groups of 6-7 students each. Group assignments were random and stratified so that each group had nursing and medical representation. The sessions employed Team-Based Learning, a pedagogical method that incorporates both small- and large-group discussions, and fosters high degrees of student engagement and cooperation. We developed an interview guide to probe: a) impressions about each others’ profession, b) interprofessional interactions during the EOL sessions, and c) interprofessional perspectives regarding EOL care. We randomly selected 12 students (6 nursing and 6 medical), ensuring that at least one medical and one nursing student was sampled from each of the four course groups. We invited the students to participate in a 60-minute, one-on-one, semi-structured interview. We added additional probes to the interview guide after the first three interviews, based on early themes that emerged during those interviews. We audio-recorded all interviews, and are in the process of transcribing them. We are analyzing the audio and transcripts using a narrative framework, which directs attention to elements such as character, agency, and plot, to derive recurrent themes and relationships among thematic elements.  

RESULTS: All approached students agreed to be interviewed. Eleven students completed interviews; one nursing student’s availability prevented completion. Interviews lasted between 45 and 80 minutes. All five nursing and three medical students were female. Four initial themes emerged in our analysis thus far; these include: 1) both nursing and medical students described fundamental differences between nursing and doctor roles in end-of-life care, positioning nurses in much greater relationship with the patient than the doctor; 2) there are large barriers to clinical interprofessional interactions, mainly driven by both nurse and doctor perceptions of the others’ heavy workload; 3) when they occur, informal interactions (including those during the EOL sessions) have a strong ‘humanizing’ effect by reducing fear of the other; and 4) for medical students, informal discussions about nursing students’ course work created biomedical
Among patients with COPD, long-term exposure to background training, potentially enhancing.

Sixteen RCTs (14 fluticasone, 2 budesonide) with 17,513 participants, and 7 observational studies (n=69,000 participants) were included after screening 853 citations. ICSs were associated with a significantly increased odds of fractures (Peto OR 1.26; 95% CI 1.23 to 1.30). Compared to having <100 beds, psychiatric hospitals had a significantly increased odds of fractures (Peto OR 1.57; 95% CI 1.43 to 1.73), as did acute long-term care hospitals (OR 1.99; 95% CI 1.68 to 2.34). Compared to government-owned hospitals, non-government-owned non-profit hospitals exhibited lower readmission rates (OR 0.94; 95% CI 0.92 to 0.97), compared to government-owned hospitals (OR 0.97; 95% CI 0.95 to 0.99). There was no relationship between high readmission rates and location (rural vs. urban).

CONCLUSION: This study characterizes US hospitals with high readmission rates of Medicare beneficiaries. Hospitals that were mid-sized, non-medical/surgical, or non-teaching had increased readmission rates. Rural vs. urban location were not related to readmission rates. Further studies are needed to evaluate whether other hospital organizational characteristics may be related. Current efforts to reduce hospital readmission are primarily focused on targeting high-risk patient populations. It may be important to broaden efforts to include targeting of high-risk hospital systems in order to enhance the effectiveness of health system interventions.

HOSPITAL CHARACTERISTICS ASSOCIATED WITH HIGH READMISSION RATES AMONG MEDICARE BENEFICIARIES

Alicia Ines Arbaje 1; Qiliu Yu 1; Jiangxia Wang 1; Bruce Leff 1; Johns Hopkins University, Baltimore, Maryland. (Tracking ID # 12004)

BACKGROUND: Health system improvement efforts to reduce hospital readmission rates have focused primarily on identifying and targeting high-risk patients. There is less understanding of how hospital organizational characteristics may be related to suboptimal transitional care and subsequent readmission. The objective of this study was to describe US hospitals with high readmission rates among their Medicare beneficiaries.

METHODS: Retrospective cohort study. Main outcome: readmission to hospital within 180 days of discharge. We studied US hospitals (n=5,585) participating in the 2006 round of the American Hospital Association (AHA) Annual Survey of Hospitals and who discharged Medicare beneficiaries hospitalized in the first 6 months of 2006, identified using a 5% sample of Medicare inpatient claims (MedPAR files, n=222,800) linked to AHA data.

RESULTS: 51.4% of hospitals were classified as non-profit, 22.4% as government, and 21.7% as for-profit. 48.0% were under 100 beds in size, 36.3% were in rural areas, and 17.4% were classified as teaching hospitals. Many were classified as being part of a decentralized health system (21.7%), 12.0% as moderately decentralized, and 4.4% as centralized. In bivariate analyses using logistic regression, there were significant associations (p<0.05) between high readmission rates and having 100–199 beds (OR 1.06), compared to having <100 beds. Compared to general medical/surgical hospitals, psychiatric hospitals had higher readmission rates (OR 1.65), as did acute long-term care hospitals (OR 1.99). Compared to government-owned hospitals, non-government-owned non-profit hospitals exhibited lower readmission rates (OR 0.97), as did teaching hospitals (OR 0.97). These relationships persisted in a multi-variate model, accounting for bed size, ownership status, region, teaching status, rural location, and degree of centralization. There were statistically significant relationships between higher readmission rates and having 100–199 beds (OR 1.04, 95% CI 1.00 to 1.07), compared to having <100 beds. Compared to general medical/surgical hospitals, psychiatric hospitals had higher readmission rates (OR 1.57, 95% CI 1.43 to 1.73), as did acute long-term care hospitals (OR 1.99, 95% CI 1.68 to 2.34). Compared to government-owned hospitals, non-government-owned non-profit hospitals exhibited lower readmission rates (OR 0.94, 95% CI 0.92 to 0.97), as did teaching hospitals (OR 0.97, 95% CI 0.95 to 0.99). There was no relationship between high readmission rates and location (rural vs. urban).

CONCLUSION: This study characterizes US hospitals with high readmission rates of Medicare beneficiaries. Hospitals that were mid-sized, non-medical/surgical, or non-teaching had increased readmission rates. Rural vs. urban location were not related to readmission rates. Further studies are needed to evaluate whether other hospital organizational characteristics may be related. Current efforts to reduce hospital readmission are primarily focused on targeting high-risk patient populations. It may be important to broaden efforts to include targeting of high-risk hospital systems in order to enhance the effectiveness of health system interventions.

RISK OF FRACTURES WITH INHALED CORTICOSTEROIDS IN COPD: SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS AND OBSERVATIONAL STUDIES

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BACKGROUND: The effect of inhaled corticosteroids (ICS) on fracture risk in patients with chronic obstructive pulmonary disease (COPD) remains uncertain. We aimed to evaluate the association between ICS and fractures in COPD

METHODS: We searched MEDLINE, EMBASE, regulatory documents and company registries up to September 2010. Randomized controlled trials (RCTs) of budesonide or fluticasone vs control treatment for COPD (>24 weeks duration and controlled observational studies reporting on fracture risk with ICS exposure vs no exposure in COPD were included. Peto Odds Ratio meta-analysis was used for fracture risk from RCTs. odds ratios (OR) from observational studies were pooled using the fixed effect inverse variance method. We conducted dose-response analysis using variance weighted least squares regression in the observational studies.

RESULTS: Sixteen RCTs (14 fluticasone, 2 budesonide) with 17,513 participants, and 7 observational studies (n=69,000 participants) were included after screening 853 citations. ICSs were associated with a significantly increased odds of fractures (Peto OR 1.26; 95% CI 1.23 to 1.30). Compared to having <100 beds, psychiatric hospitals had a significantly increased odds of fractures (Peto OR 1.57; 95% CI 1.43 to 1.73), as did acute long-term care hospitals (OR 1.99, 95% CI 1.68 to 2.34). Compared to government-owned hospitals, non-government-owned non-profit hospitals exhibited lower readmission rates (OR 0.97), as did teaching hospitals (OR 0.97). These relationships persisted in a multi-variate model, accounting for bed size, ownership status, region, teaching status, rural location, and degree of centralization. There were statistically significant relationships between higher readmission rates and having 100–199 beds (OR 1.04, 95% CI 1.00 to 1.07), compared to having <100 beds. Compared to general medical/surgical hospitals, psychiatric hospitals had higher readmission rates (OR 1.57, 95% CI 1.43 to 1.73), as did acute long-term care hospitals (OR 1.99, 95% CI 1.68 to 2.34). Compared to government-owned hospitals, non-government-owned non-profit hospitals exhibited lower readmission rates (OR 0.94, 95% CI 0.92 to 0.97), as did teaching hospitals (OR 0.97, 95% CI 0.95 to 0.99). There was no relationship between high readmission rates and location (rural vs. urban).

CONCLUSION: Among patients with COPD, long-term exposure to fluticasone and budesonide is consistently associated with a small but statistically significant dose-dependant increased odds of fracture.
DO CULTURAL VALUES IMPACT HEALTHY LIFESTYLE BEHAVIORS?

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BACKGROUND: Obesity is now a national epidemic that is due in part to unhealthy eating behaviors and inadequate physical activity. Interventions have been developed to increase intake of fruits and vegetables and increase physical activity; these approaches have
been tailored to different racial groups using culturally-based interventions. Physicians are encouraged to use these types of patient-centered approaches to provide advice about healthy lifestyle strategies. But, culturally-tailored strategies have had mixed results. To increase physicians’ abilities to provide patient-centered advice about lifestyle behaviors, empirical data are needed on the effects of cultural values and health beliefs on lifestyle behaviors. The purpose of this study was to evaluate the effects of these factors on adherence to recommendations for fruit and vegetable intake and physical activity in a racially diverse national sample of adults.

METHODS: We conducted a nationally representative, random digit dialing survey of African American, white, and Hispanic adults in the US. Data on study measures were collected by self-report as part of a prospective longitudinal study on health beliefs and behaviors. Our three outcome variables were adherence to national recommendations for fruit and vegetable intake (e.g., at least 2 cups of each) and physical activity (e.g., moderate intensity exercise at least 5 days per week). Predictor variables included socioeconomic, health care variables, and cultural values. Cultural values were assessed using the Multi-Dimensional Cultural Values Assessment Tool (MCCVAT), which evaluates religious (e.g., my spiritual faith is important to preventing cancer), collectivist (e.g., I should talk to my family members about whether or not I should have cancer screening tests), and individualistic (e.g., it is important for me to learn on my own about which cancer screening tests are needed) values for cancer prevention and control. Descriptive statistics were generated to characterize respondents in terms of socioeconomic, health care variables, and adherence to health behavior recommendations. We performed bivariate analyses and used logistic regression analysis to identify factors having significant independent associations with each behavioral outcome. Separate models were generated for each outcome; variables that had a p<0.10 association with each health behavior were included in the model for that variable.

RESULTS: Overall, 17% of respondents met guidelines for physical activity and 41% met guidelines for fruits and vegetables. Although respondents with higher religious (t=2.81, p=0.01) and collectivist values (t=2.17, p=0.03) were most likely to be non-adherent to recommendations for vegetable intake, these values did not have a significant effect on adherence in the regression model. Women, respondents who were at least high school graduates, and those who perceived that they were in excellent/good health were most likely to be adherent to recommendations for vegetable intake. Compared to whites, African Americans and Hispanics were significantly less likely to be adherent to these recommendations. Similarly, although respondents with higher levels of individualistic values were more likely to be adherent to recommendations for fruit intake compared to those with lower levels of these values (t=-1.94, p=0.05) in the bivariate analysis, only female gender, greater income, and greater perceptions of health had significant effects on being adherent to recommendations for fruit intake. Respondents who were employed had a lower likelihood of being adherent to recommendations for fruit intake. None of the cultural factors or other variables had significant effects on meeting guidelines for physical activity.

CONCLUSION: Our findings raise questions about the need to address cultural values when advising patients on how to meet recommended guidelines for healthy lifestyle behaviors. Rather than using a culturally-based tailored intervention, it may be more important to reinforce overall perceptions of health and develop strategies that address barriers to adherence among those who believe that they are not in good health.

RESIDENT PROVISION OF ADEQUATE DISCHARGE COUNSELING: RESULTS FROM 22 TRAINEE PROGRAMS
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BACKGROUND: Discussions with patients at the time of hospital discharge require substantial skill and training. High quality and thorough execution of these discussions can improve satisfaction and quality of care. Using standardized patient (SPs), we assessed the quality of a discharge discussion provided by residents from a range of training programs and hospitals sites.

METHODS: Trainees completed a 15 minute SP encounter in which they were instructed to counsel a soon-to-be discharged patient hospitalized for a congestive heart failure exacerbation. A behavioral checklist was created to evaluate resident performance. SPs were trained to evaluate the quality of the resident performance in a uniform fashion. For analysis, behaviors were grouped into seven domains: “verbal professional demeanor,” “non-verbal professional demeanor,” “facilitating patient understanding,” “medication reconciliation,” “disease education,” “follow-up arrangements review,” and “assessing barriers to discharge plan”. For each domain, we defined high performers as those residents who adequately performed all of the individual behaviors within that domain. For all trainees, bivariate analyses investigated relationships between high performance and gender and medical school training location (Foreign Medical Grads (FMG) versus USMDs). Sub-group analysis of USMDs investigated relationships between high performance and work in a field with a primary care component (internal medicine, family practice, pediatrics and obstetrics/gynecology). Likert scales were used for the residents to anonymously rate the quality, relevance, and authenticity of the encounter.

RESULTS: Our sample included 226 residents from 22 programs representing 10 hospitals. The majority were female (53%) and FMGs (65%). The median age group was 25-30. The residents were from internal medicine (58.8%), pediatrics (10.2%), obstetrics/gynecology (4.0%), family practice (2.7%), surgery (7.5%) and preclinical/transition (16.8%) programs. The proportion of high performers varied by domain: 92.9% for “verbal professional demeanor,” 87.2% for “non-verbal professional demeanor,” 31.0% for “facilitating patient understanding,” 37.2% for “medication reconciliation,” 35.8% for “disease education,” 34.1% for “follow-up arrangements review,” and 14.1% for “assessing barriers to discharge plan”. Female gender was associated with high performance for “assessing barriers to discharge plan” (20.2% of women vs. 7.5% of men, p=0.006). USMDs outperformed FMGs on verbal and non-verbal professional demeanor domains as well as “facilitating understanding” (98.7% vs. 89.8%, p=0.012; 93.7% vs. 83.7%, p=0.32; and 40.5% vs. 25.9%, p=0.023 respectively). Among USMDs, compared to other specialties, residents from programs with a primary care component had significantly more high performers in the domains of “facilitating understanding,” “medication reconciliation” and “follow-up arrangements review” (54.1% vs. 30.0%, p=0.032; 48.6% vs. 25%, p=0.031; 43.2% vs. 22.5%, p=0.05 respectively). Most residents (79%) rated the encounter as realistic. Residents reported increased confidence (61%) as a result of the experience and found the topic useful (74%).

CONCLUSION: Participation in a discharge SP encounter can identify high and low performing residents on a number of domains. We found that while a substantial minority of residents always performed well, many did not. Furthermore, FMGs and non-primary care residents were significantly less likely to execute all behaviors adequately. SP encounters may be a helpful tool for identifying physician trainees poorly prepared to engage patients about their discharge plan.
DURATION OF RESIDENCE IN UNITED STATES AS A VALID MEASURE OF ACCULTURATION FOR ASIAN INDIANS Nazleen Bharmal 1; William McCarthy 1; Ron Hays 2; 1University of California, Los Angeles, Los Angeles, California ; 2University of California, Los Angeles, Los Angeles, California . (Tracking ID # 12023)

BACKGROUND: Duration of residence is often used as a proxy measure for acculturation in surveys. Our objective was to examine the validity of duration of residence in the United States as a measure for acculturation using the 2004 California Asian Indian Tobacco Survey.

METHODS: The 2004 California Asian Indian Tobacco Use Survey (CAITS) was a multilingual telephone health survey of 3,228 randomly selected adult residents of California of Asian Indian background. The response rate was 54%. We used bivariate regression to examine the linear relationship between mean duration of residence in the United States and different domains of acculturation. The domains of acculturation included language use, media behavior, ties to people in country of origin, social customs, and ethnic identity. A 2-tailed P value of less than 0.05 was considered statistically significant and sample weight were applied.

RESULTS: The mean duration of residence in the United States was greater for Asian Indians who reported English as their primary language (14y vs. 10y no), rarely speaking their native language at home (18y vs. 11y for very often), rarely reading Indian cultural media (15y vs. 10y for very often), rarely staying in contact with family or friends in India (18y vs. 10y for very often), being very open to their son/daughter marrying outside of the cultural group (14y vs. 11y for strongly against), rarely observing cultural holidays (14y vs. 12y almost always), and being of American ethnic identity (18y vs. 8y for Indian ethnic identity). A meaningful cut-off for being more likely to adopt American cultural values and social customs for Asian Indians appears to be between 14–17 years of duration of residence in the United States.

CONCLUSION: Duration of residence in the United States is a valid measure of acculturation for Asian Indians.

THE EFFECT OF ACCULTURATION ON C-REACTION PROTEIN LEVELS AMONG HISPANIC ADULTS IN THE US Lenny Lopez 1; Fatima Rodriguez 2; Carmen Peralta 3; Alexander Green 4; 1Massachusetts General Hospital, Boston, Massachusetts ; 2Harvard Medical School, Boston, Massachusetts ; 3University of San Francisco, San Francisco, California ; 4Massachusetts General Hospital, Cambridge, Massachusetts . (Tracking ID # 12026)

BACKGROUND: Greater acculturation has been linked to increased risk of cardiovascular disease among Hispanics, and mechanisms to explain these observations are unclear. C-reactive protein (CRP) is known to be associated with an increased risk of cardiovascular disease morbidity and mortality. Whether acculturation is associated with CRP levels among Hispanics has not been well studied.

METHODS: We conducted a cross-sectional analysis of 85,956 US adults in the National Health and Nutrition Examination Survey (NHANES) from 1999-2008 to determine the association of the degree of acculturation with CRP levels. Among Hispanics (n=23,505), acculturation was measured by years of residence in the US and the validated Short Acculturation Scale (SAS), which is based on language (range 0–20, with lower scores representing a lower level of acculturation). We weighted all analyses to reflect population estimates and used SAS-callable SUDAAN 10 to account for the complex sampling design. Chi-squared analyses were used for bivariate comparisons among predictors and CRP levels. We then created multivariate linear regression models to examine the independent association of acculturation with CRP (log transformed), adjusting for gender, age, education, insurance status, usual place of care, hypertension, diabetes, Body Mass Index (BMI), smoking status, and statin use. Betas were “back transformed” and are presented as a relative difference (RD). Finally, the above model was stratified by age and gender in separate analyses.

RESULTS: In our national sample, 51.8% of Hispanics had CRP levels below 1 mg/L, 24.89% had CRP levels between 1-3 mg/L, and 23.24% had CRP levels greater than 3 mg/L. In bivariable analyses, older age, female gender, lower education level, more years of residence in the US, smoking, a higher BMI and having hypertension or diabetes were associated with higher CRP levels. In the multivariate model, higher acculturation scores on the SAS scale were independently associated with higher CRP levels among Hispanics. Those who speak primarily English at home had 16% higher CRP levels, (p=0.017). Other significant predictors of CRP among Hispanics include a higher BMI (RD 148% increase per 5 kg/m², p<0.001), gender (RD 54% higher levels for women, p<0.001), education level (RD 23% higher levels for greater than high school education, p<0.001), being insured (RD 31% higher CRP level, p=0.006), having hypertension (RD 35% higher CRP levels, p<0.001), and statin utilization (RD 25% decrease in CRP levels, p=0.001). Years of residence in the United States was not associated with increased CRP levels among Hispanics, after adjusting for clinical and demographic variables. There were no significant differences in these findings for stratified multivariate linear analyses by age and gender.

CONCLUSION: A cross-sectional analysis of a nationally representative population survey, the largest to date of Hispanics, has demonstrated that a higher degree of acculturation, defined as Hispanics who speak mostly English at home, was associated with increased CRP levels. Inflammation may play an important role in explaining the association between acculturation and increased cardiovascular risk.

CHARACTERISTICS OF MEDICARE BENEFICIARIES READMITTED TO HOSPITAL WITHIN 180 DAYS Alicia Ines Arbage 1; Qi Yu 1; Jiangxia Wang 1; Bruce Leff 1; 1Johns Hopkins University, Baltimore, Maryland . (Tracking ID # 12033)

BACKGROUND: Hospital readmission rates among Medicare beneficiaries are high and contribute to rising health care costs and adverse patient outcomes. Typically, short time frame readmission rates (30 days) are reported. Understanding of readmission rates over a longer time frame may frame opportunities for health service delivery improvement. The objective of this study was to characterize Medicare beneficiaries readmitted to hospital within 180 days.

METHODS: Retrospective cohort study. The primary outcome measure was readmission to hospital within 180 days of discharge. We studied Medicare beneficiaries hospitalized in the first 6 months of 2006 and discharged to the community using a 5% sample of Medicare inpatient claims (MedPAR files), n=222,800.

RESULTS: 77,364 beneficiaries (34.7%) were readmitted within 180 days. Readmitted persons were primarily women (55.9%) and white (81.1%). Mean age of readmitted persons was 73.5 years vs. 73.8 years in the non-readmitted group (p<0.000). Compared to non-readmitted persons, those with readmissions had longer mean initial admission LOS (6.6 vs. 5.0 days, p<0.000), more ICU days (1.1 vs. 0.8 days, p<0.000), higher Charlson index scores (2.1 vs. 1.5, p<0.000), have an ambulatory-care-sensitive condition (ACSC, 26.5% vs. 21.9%, p<
0.000), and were more likely to have been hospitalized in the prior 3 months (15% vs. 6.7%, p<0.000). In bivariate analysis using logistic regression, there were multiple statistically significant relationships between readmission and age, sex, or race, however the effect sizes were very small, reflecting the large dataset, and of limited clinical significance. There were significant associations between readmission and increased index admission LOS (OR 1.03, 95% CI 1.02-1.03), higher Charlson index (OR 1.34, 95% CI 1.33-1.35), more index admission ICU days (OR 1.05, 95% CI 1.04-1.05), having an ACSC (OR 1.29, 95% CI 1.26-1.31), and having been hospitalized in the prior 3 months (OR 2.47, 95% CI 2.40-2.54). A multi-variate model, accounting for age, sex, race, LOS, Charlson index, ICU days, ACSC, and prior hospitalization, demonstrated statistically and clinically significant relationships between readmission and index admission ICU days (OR 1.03, 95% CI 1.03-1.03), higher Charlson index (OR 1.15, 95% CI 0.97-1.37), having an ACSC (OR 1.27, 95% CI 1.24-1.29), and having been hospitalized in the prior 3 months (OR 2.29, 95% CI 2.23-2.36).

**CONCLUSION:** This study characterizes Medicare beneficiaries readmitted within 180 days. Multivariate analysis suggests that older adults with complex chronic illness were at highest risk. Future studies are needed to further characterize older adults with long-time frame vs. short-time frame readmissions. Short-time frame readmission rates (e.g., 30 days) have been the focus of current healthcare reform and need to further characterize older adults with long-time frame vs. short-time frame readmissions. Short-time frame readmission rates (e.g., 30 days) have been the focus of current healthcare reform and practice improvement efforts, but older adults represent a significant portion of the readmitted population and are heterogeneous in terms of their co-morbidity and healthcare utilization patterns. Understanding readmission rates over a longer time frame may guide healthcare organizations in the development of more targeted interventions for populations with complex chronic illness.

### INTERNAL MEDICINE AND SURGERY RESIDENTS' VIEWS OF DUTY HOUR RESTRICTIONS AND CAUSES OF MEDICAL ERRORS

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**BACKGROUND:** Duty hour regulations, initially introduced in 2003 with further restrictions scheduled for release in 2011, were intended to improve patient safety and resident well-being. Surveys that have examined residents' perceptions of and experiences with the 2003 duty hours standards have generally reported that a more regulated work-life balance, but also reflect widespread concerns regarding sufficient time for educational opportunities and continuity of care. Many of the early reports were limited to a single or a small number of programs and had low response rates. We assessed the potential impact of regulations debated as part of the proposed 2011 ACGME duty hours by investigating internal medicine and surgery residents' perceptions of key elements of the proposed duty hour standards on quality of care as well as causes of medical errors.

**METHODS:** A voluntary resident questionnaire was administered following the October 2009 Internal Medicine In-Training® (IM-ITE) and Winter 2010 Surgery in-training examinations (ABSITE).

**RESULTS:** Responses were obtained from 18,272 (82%) internal medicine trainees, 3,710 (99.3%) senior-level surgery trainees and 3,878 (99.1%) junior-level surgery trainees. In general, surgical trainees thought that the 2011 ACGME changes would have little impact on the quality of patient care. The majority of senior and junior surgery trainees selected “not at all” or “to a small extent” the impact on quality of care on the following measures: reducing the cap from 80 hours per week (85% seniors, 79% juniors), limiting shift length to 16 hours (75% seniors, 63% juniors), requiring naps during 30 hour shifts (77% seniors, 64% juniors), enforcing the 80 hour rule each week instead of averaging over 4 weeks (74% seniors, 65% juniors), and increasing hours off after nights and extended shifts (69% seniors, 51% juniors). In contrast, the majority of the medicine trainees thought that most of these measures would “usually” or “always” impact patient care, for example increase hours off after nights and extended shifts (57%), limit shift length to 16 hours (53%), and require naps during 30 hour shifts (51%). More than half of the internal medicine trainees thought errors were “occasionally” or more often caused by: excessive workload (69%), resident fatigue (67%), inexperience or lack of knowledge (62%), incomplete handoffs (60%), and insufficient ancillary staff (54%). The majority of surgery trainees pointed to inexperience/lack of knowledge and incomplete handoffs as the cause of adverse events. Inadequate supervision was “never” or “rarely” the cause of medical errors involving residents (72% surgery juniors, 74% surgery seniors, 56% internal medicine), nor was fatigue among surgical trainees (73% for surgery seniors, 60% for surgery juniors).

**CONCLUSION:** A survey among a national sample of surgical and internal medicine trainees with an extremely high response rate revealed that most surgical residents do not expect further restrictions on duty hours would have beneficial effects on quality of care while internal medicine residents were generally more favorable to these changes. These perceptions among trainees of surgical and medical specialties and their impact on training and quality of care should be taken into consideration when adjusting work hour regulations. Among surgical residents, the lack of a perceived relationship between fatigue and medical errors may help explain why they think duty hour restrictions are unlikely to improve quality of care.

### UPDATED SYSTEMATIC REVIEW OF THE LITERATURE ON WOMEN VETERAN'S HEALTH

**Beveranne Bean-Mayberry** 1; Caroline Goldszweig 1; Donna L Washington 1; Elizabeth Yano 1; Fatma Batuman 1; Christine Huang 1; Isomi Miske-Lye 1; Paul Shekelle 1. 1VA Greater Los Angeles, Los Angeles, California.

**BACKGROUND:** Women veterans are a rapidly growing segment of new VA users. We assessed the state of women veterans’ health research, stratifying the literature into domains relevant for VA research and policy, by conducting an updated systematic review of the scientific literature on women veterans’ health and health care published 5 years after the original review in 2004.

**METHODS:** Articles were identified by searching multiple scientific databases and contacting Department of Defense and VA experts in the field. We screened titles of all articles. Relevant articles were independently evaluated by two physician reviewers using a standardized screener. Articles were considered for inclusion if the study related U.S. veterans or military personnel and met one of three criteria: (a) included women veterans, compared men and women, or analyzed women separately; (b) involved active duty military women and a health condition or functional status that requires medical attention; or (c) were relevant to VA women’s healthcare or how VA care is delivered to women. Articles were categorized and narratively summarized into structured abstracts and evidence tables.
RESULTS: We retrieved 675 articles, of which 380 were unique and passed title screen for relevance. Of these, 185 articles were rejected because inclusion criteria were not met. The remaining 195 articles were categorized by study design, funding source, period of military service of subjects, research topic area, and health conditions addressed. Nearly 60 percent of studies were VA funded. Subject categories were mental health issues (85), quality of care (54), access and utilization (48), post-deployment health issues, especially related to OEF/OIF veterans (33), and organizational research (7).

CONCLUSION: Literature on women veterans increased substantially, from 182 articles published 1978–2004 reported in the initial review, to 195 articles in this updated review. Comparing the two reviews, most VA women’s health research remains observational, but methods evolved from a descriptive to an analytical focus. New work includes post-deployment health, organizational research, and specific mental health outcomes. Greater emphasis on access/utilization and quality for women occurred, filling gaps in VA literature and research priorities. Finally, more women veterans’ research was published in the recent 5 years than the 25 years beforehand. Gaps now exist for women veteran research on post-deployment readjustment for veterans and families, and quality of care interventions/outcomes for physical and mental conditions.

COMPARATIVE EFFECTIVENESS TRIAL OF FAMILY-SUPPORTED SMOKING CESSATION INTERVENTION VERSUS STANDARD TELEPHONE COUNSELING FOR CHRONICALLY ILL VETERANS Lori A. Bastian 1; Laura J. Fish 1; Jennifer M. Gierisch 1; Lesley Rohrer 2; Karen M Stechuchak 3; Steven Grambow 4; Duke University, Durham, North Carolina; 2Durham VA, Durham, North Carolina. (Tracking ID # 12048)

BACKGROUND: A chronic illness diagnosis may motivate some veterans to quit smoking, however, it may not be sufficient. Smoking initiation, maintenance, and cessation are strongly influenced by family members and close contacts. Thus, for chronically ill veteran smokers, a family-supported smoking cessation intervention may be more effective than a standard telephone counseling intervention.

METHODS: Smokers willing to make a quit attempt in the next 30 days who had cancer, cardiovascular disease, or other chronic diseases (i.e., diabetes, COPD, hypertension) were proactively recruited from the Durham VA and randomly allocated into two groups: standard telephone counseling (n=235) versus family-supported telephone intervention (n=236) or family-supported smoking cessation intervention may be more effective than standard telephone counseling intervention.

RESULTS: The mean age was 59, 51% has a high school education or less, 42% were African American, 8% were female, and 55% were married or living as married. Forty three percent had heart disease, 34% had cancer, and 23% had other chronic diseases. Participants were moderately dependent on cigarettes and expressed high perceived positive social support. Participation in counseling was high (~80%) smokers completed 4 or more of a total possible 5 counseling sessions in both arms of the study. Seventy-four percent of the 379 participants who responded to the survey item reported NRT use, with similar rates in both groups. Preliminary analyses found no differences in smoking cessation by arm at 5 months: 19.6% in the family-supported intervention and 21.6% in the standard telephone counseling arm.

CONCLUSION: Proactive telephone counseling for chronically ill veterans is feasible and produces clinically important smoking cessation rates. However, telephone counseling augmented with a family-supported intervention was no more effective than standard telephone counseling. Long-term follow-up (12-months post-baseline) is pending and will assess relapse rates.

USING ELECTRONIC HEALTH RECORD REGISTRIES TO INCREASE USE OF TELEPHONE QUITLINE SERVICES AMONG VULNERABLE PRIORITY POPULATIONS Stephen Fu 1; Diana Burgess 2; Michelle Van Ryn 3; Scott Sherman 4; Siamak Noorbalaouchi 2; Barbara Clothier 2; Alicia Sandberg 2; Sean Nugent 3; Christina Robert 3; Anne Joseph 3.

BACKGROUND: Currently the reach of evidence-based telephone quitline services is 1%-2% of smokers and particularly low among vulnerable priority populations including racial/ethnic minorities and Veterans. The Veterans Victory over Tobacco study is currently in progress to evaluate the effects of a theory-driven intervention combining proactive outreach with offer of choice of telephone care or face-to-face care for treatment of tobacco dependence (proactive care, PRO) compared to reactive/usual care (UC). The purpose of this analysis was to examine the effects of the proactive care intervention on increasing utilization of evidence-based tobacco cessation treatments among smokers assigned to the intervention.

METHODS: In this prospective randomized controlled study, we identified a population-based registry of current smokers using the Veterans Health Administration computerized patient record system (CPHRS) tobacco use clinical reminder system. A total of 6400 smokers from four VA medical centers were randomly assigned to PRO or UC. The proactive care intervention combines: (1) proactive outreach and (2) offer of choice of smoking cessation services (telephone or face-to-face). Proactive outreach included a mailed invitation packet followed by a telephone outreach call (with up to 6 call attempts) to motivate smokers to seek treatment with choice of services. A baseline survey was administered after randomization using a multiple-wave mailed questionnaire protocol. The process outcomes for this analysis were 1) enrollment in the Veterans Victory program, and 2) initiation of medication treatment.

RESULTS: Across the four sites, nearly all patients in primary care had their tobacco use status documented using the electronic clinical reminder. Within site, 3200 current smokers as identified by the electronic reminder were randomly assigned to the proactive care intervention and mailed a baseline survey. The sample was diverse: 27% African American, 60% Caucasian, 3% other race, and 10% unknown race. Six percent were of Hispanic ethnicity. At the time of the baseline survey, 7% refused to participate in the study, 12% were no longer smoking or using other tobacco products (e.g., cigar, pipe or smokeless tobacco) and 7% could not be reached due to bad contact information. Only 1% had used telephone smoking cessation counseling in the past year. Subsequently, 2500 Veteran smokers were mailed outreach invitation packets. During telephone outreach, 1744 (70%) were successfully contacted. Of the participants mailed an outreach invitation packet, 404 (16%) enrolled in telephone coaching and 78 (3%) enrolled in in-person smoking services at their VA medical center. Among smokers who participated in telephone coaching, 234 (58%) initiated guideline recommended tobacco cessation medications during the telephone coaching.

CONCLUSION: These findings indicate that proactive outreach with offer of choice of services dramatically increases the reach of telephone
ABSTRACTS

**RELATIONSHIP OF ELECTRONIC MEDICAL KNOWLEDGE RESOURCE USE AND PRACTICE CHARACTERISTICS WITH INTERNAL MEDICINE MAINTENANCE OF CERTIFICATION EXAMINATION SCORES**

**Darcy A. Reed 1; Colin P. West 1; Eric S Holmboe 2; Andrew J Halvorsen 1; Rebecca S Lipner 3; Carola Jacobs 3; Furman S McDonald 1.**

**BACKGROUND:** Maintenance of certification examination performance is associated with quality of care. We examined relationships between electronic medical knowledge resource use, practice characteristics and certification examination scores among physicians recertifying in internal medicine.

**METHODS:** We conducted a cross-sectional study of 3,958 United States physicians who took the Internal Medicine Maintenance of Certification Examination (IM-MOCE) between January 1, 2006 and December 31, 2008 and who held individual licenses to one or both of two prominent electronic knowledge resource programs: UpToDate and the American College of Physicians Physicians’ Information and Education Resource (PIER). We examined associations between physicians’ IM-MOCE scores and their days of electronic resource use, practice type (private practice, residency teaching clinic, inpatient, nursing home), practice model (single or multi-specialty), sex, age, and medical school location.

**RESULTS:** In the 365 days prior to the IM-MOCE, physicians used electronic resources on a mean (SD, range) of 20.3 (36.5, 0–265) days. In multivariate analyses, the number of days of resource use was independently associated with increased IM-MOCE scores (0.07-point increase per day of use, p=0.02). Increased age was associated with decreased IM-MOCE scores (1.8-point decrease per year of age, p<0.001). Physicians working in residency teaching clinics had higher IM-MOCE scores by 15.0 points (p<0.001), while physicians working in private practice settings or nursing homes had lower scores by 14.1 and 14.5 points, respectively (p<0.001 and p=0.010, respectively).

**CONCLUSION:** Frequent use of electronic knowledge resources was associated with modestly enhanced IM-MOCE performance. Physicians involved in residency education clinics had higher IM-MOCE scores, while physicians working in private practice settings or nursing homes had lower recertification scores.

**INTERVENTIONS TO IMPROVE ATTENDING ROUNDS IN MEDICINE: A SYSTEMATIC REVIEW**

**Chad Stickroth 1; Danielle Shimek 2; Allan Prochazka 1.**

**BACKGROUND:** Observations of current inpatient medicine rounding practices demonstrate a wide variety of rounding methods and no comprehensive model of attending rounds exists that has demonstrated clear advantages in terms of satisfaction, educational outcomes, and delivery of health care services. Interventions to improve attending rounds in medicine have the potential to improve medical student and house staff education, professional practice, patient satisfaction and healthcare outcomes.

**METHODS:** A systematic review of Medline and Embase for articles published between 1950 and November 2010 that specifically implemented an intervention to improve some aspect of inpatient attending rounds was performed. The reference lists of search-strategy-identified articles and a hand search of Medline for related articles were also performed. Then, all articles were reviewed by title and abstract by two authors independently. Articles in which an intervention was instituted to effect a change in inpatient attending rounds, which could be applied to internal medicine, were abstracted and included for review.

**RESULTS:** The initial Medline and Embase search resulted in 683 articles. One additional article was identified by independent Medline search and three articles were identified from the reference lists of search-strategy-identified articles. Thus, Six hundred and eighty seven articles were reviewed for inclusion. Ultimately, nine articles that were identified through the initial search strategy met the inclusion criteria and were included in the review. All studies implemented an intervention to effect a change in the manner in which attending rounds in the inpatient setting were performed. All studies were performed at a single institution; a majority used a pre and post intervention design, two used a during-after approach, and one was a randomized trial. The studies varied widely in the type of intervention (educational, structural, and technological) and in the outcomes measured (satisfaction, education, patient outcomes).

**CONCLUSION:** Many of the rounding interventions reported positive results that have the potential to improve medical student and house staff education, professional practice, satisfaction and healthcare outcomes. Next steps should include implementation of the most promising interventions at other centers with associated evaluation of patient care and education outcomes.

**COMPREHENSION OF CURRENTLY USED, FDA-MANDATED MEDICATION GUIDES ACROSS PATIENTS OF VARYING LEVELS OF LITERACY**

**Elizabeth A H Wilson 1; Jennifer P King 1; Allison L Russell 1; Amanda L Daly 1; Ashley R Bergeron 2; James Duhig 3; Bruce L Lambert 2; Michael S Wolf 1.**

**BACKGROUND:** Inadvertent medication errors are linked to serious adverse outcomes including patient injury, hospitalization, and even mortality. In an effort to minimize errors surrounding especially risky medications, the Food and Drug Administration (FDA) recently began requiring the issue of mandated Medication Guides for certain drugs that pose significant threats to patients’ safety. The current study examined patients’ comprehension of information contained in actual Medication Guides in an effort to provide recommendations for the improvement of these educational documents.

**METHODS:** Three-hundred-eighty-seven primary care patients ages 18–85 completed in-person interviews wherein they were shown three Medication Guides, one for a tablet form of medication, one for an oral solution, and one for an injectable medication. These guides were chosen as they were representative of typical guides in terms of readability and word count and that were among the 50% most often prescribed medications in general. Patients were given two minutes to look over each guide and then completed a series of functional knowledge questions assessing their understanding of its content while being able to refer back to the guide as necessary. Participants also completed the Rapid Estimate of Adult Literacy in Medicine (REALM) as well as demographic measures. To assess general understanding of the Medication Guides, we calculated the proportion of correct responses that participants gave out of all possible correct responses for each guide. Additionally, we ran regression models to determine the impact of literacy on comprehension.

**RESULTS:** Prior to their participation, only 35.1% of participants reported having heard of a medication guide. As measured via the
REALM, 62.8% of participants had adequate literacy, and 37.2% had limited literacy. Overall, participants’ performance on the knowledge assessments was 51.5%, 59.3%, and 47.1% out of a possible 100% total correct responses for the tablet, oral solution, and injectable medication guides, respectively. After controlling for age, gender, race, work status, education, and income, literacy significantly predicted performance for all three outcomes, with patients with limited literacy performing significantly poorer than those with adequate literacy (p < 0.001, β = −5.93 for tablet, p < 0.001, β = −5.52 for oral solution, p < 0.001, β = −6.04 for injectable).

CONCLUSION: Despite their intended purpose to promote the comprehension of information surrounding potentially dangerous medications, Medication Guides, in their current form, are still poorly understood by patients, especially those with limited literacy. Designers of Medication Guides should take into account the literacy level of their intended audience as well as consider best practice strategies to improve the clarity and ease-of-use of such documents during their development to promote better comprehension among patients that will be receiving them.

RACE/ETHNIC DIFFERENCES IN PERCEPTION OF BODY IMAGE AMONG OVERWEIGHT/OBESE PERSONS IN THE SMALL CHANGES LASTING EFFECTS (SCALE) BEHAVIORAL INTERVENTION WEIGHT LOSS STUDY  Ginger Winston 1; Erica Phillips-Caesar 1; Jessica Hippolyte 1; Mary Charlson 1. 1Weill Medical College of Cornell University, New York Presbyterian Hospital, New York, New York. (Tracking ID # 12059)

BACKGROUND: Obesity is a major health problem in the United States disproportionately affecting African American and Hispanic adults. Body image discrepancy is the difference between ideal and current body image and denotes body image dissatisfaction. The role of body image discrepancy in motivating weight loss behavior is unclear. Published data is limited on the differences in body image discrepancy among overweight/obese African Americans and Hispanics living in urban communities.

METHODS: The SCALE pilot study is a 12-week behavioral weight loss intervention of eligible African American and Hispanic adults with a BMI greater than or equal to 25 kg/m² recruited at two clinical and two church sites in Harlem and the South Bronx, New York. Currently, study enrollment is complete and the 12 week follow up period is still in progress. The intervention incorporates selection of 1 of 6 small changes in eating behavior and physical activity, with or without a positive affect component. Participants are followed once weekly by trained community health workers. Body image discrepancy was measured at baseline as the difference between ideal and current body image using the 13 figure Gardner scale. Each figure of the Gardner scale corresponds to a BMI value. T-tests were used to analyze the difference in mean values of linear variables.

RESULTS: The sample included 84 persons (39% African American, 56% Hispanic, 5% other). Mean BMI at baseline was 33.7 kg/m², corresponding to a Gardner figure of 13 (African Americans 32.42 kg/m² and Hispanics 34.0 kg/m², p=0.21). African Americans selected a smaller figure as their current body size compared to Hispanics (9.52 vs. 10.74, p=0.02). African Americans selected a larger figure as their ideal body size compared to Hispanics (6.97 vs. 5.78, p=0.02). When asked to select a figure that was overweight, African Americans selected a larger body size figure compared to Hispanics (12.79 vs. 11.50, p=0.0004). Calculated body image discrepancy was less among African Americans compared to Hispanics (2.55 vs. 4.96, p<0.0001).

CONCLUSION: In SCALE, there was no significant difference in mean BMI between African American and Hispanic participants, however African Americans underestimated their current body size to a greater degree than Hispanics and viewed their ideal body size as larger compared to Hispanics. Body image discrepancy, and therefore body image dissatisfaction, was less among African Americans compared to Hispanics. This difference in body image discrepancy may play a role in differential weight loss patterns among African Americans and Hispanics.

| African Americans (n=53) | Hispanics (n=68) | P-value |
|-------------------------|-----------------|---------|
| BMI, kg/m²               |                  |         |
| 32.4                    | 33.9            | 0.17    |
| Gardner figure           |                  |         |
| Figure                  |                  |         |
| Underweight             |                  |         |
| Normal size             |                  |         |
| Overweight              |                  |         |
| Body image discrepancy   |                  |         |

Table 1

Table: 1

| Gardner figure | BMI men, kg/m² | BMI women, kg/m² |
|----------------|---------------|-----------------|
| 1              | 17.8          | 17.5            |
| 2              | 19.1          | 18.8            |
| 3              | 20.3          | 20.0            |
| 4              | 21.6          | 21.3            |
| 5              | 22.9          | 22.5            |
| 6              | 24.1          | 23.8            |
| 7              | 25.4          | 25.0            |
| 8              | 26.7          | 26.5            |
| 9              | 27.9          | 27.5            |
| 10             | 29.2          | 28.8            |
| 11             | 30.5          | 30.0            |
| 12             | 31.8          | 31.3            |

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REAL-TIME RATINGS OF HANDOFF QUALITY BY HOSPITALIST CLINICIANS Jeanne M. Farnan 1; Paul Staatsunas 1; Stacy Banerjee 1; Elizabeth Greenstein 2; Leora Horwitz 3; Jeanne Farnan 1. 1University of Chicago, Chicago, Illinois; 2University of Chicago Pritzker School of Medicine, Chicago, Illinois; 3Yale University, Greenwich, Connecticut. (Tracking ID # 12071)

BACKGROUND: Handoffs are a core competency of hospitalists. While the Society of Hospital Medicine and others recommend improving handoffs, monitoring and improving handoff quality is limited by lack of reliable tools to measure handoff quality. This study aims to assess the feasibility and reliability of using a paper-based tool “Handoff CEX (Clinical Evaluation Exercise)” to evaluate real patient handoffs between hospitalist clinicians.

METHODS: The Handoff CEX, developed based on literature review and expert consensus, includes ratings of overall performance and its components (organization, communication skills, clinical judgment, setting, patient-focused) on a 0 to 9 scale. For three handoffs a week (Mon/Tues/Fri), clinician senders and receivers were evaluated by a trained 3rd party nonmedical observer using the Handoff CEX. Senders and receivers also evaluated each other using the instrument. Inter-rater reliability between clinician and observer was calculated using Spearman’s rho. Descriptive and comparative statistics were used to
examine mean performance and ‘superior’ performance, defined as top quartile.

RESULTS: From March to December 2010, all 38 (100%) hospitalist clinicians (NPs, hospitalists) consented to participate. Senders, receivers, and a trained observer rated 78 handoffs resulting in 156 participant and 153 observer evaluations. Domain means were between 6 to 7, with full use of the 0 to 9 scale noted. Internal consistency was high (Cronbach’s alpha=0.90). Spearman’s rho between participating clinicians and trained observer was calculated as 0.52 (p<0.001) indicating moderate inter-rater reliability. Although tardiness was noted in only 9% of handoffs, nearly all ratings were lower if a clinician arrived late (overall 7.26 not tardy vs. 5.85 tardy, p<0.001). Setting was rated significantly higher on Monday than on other days (7.50 Mon vs. 6.75 Tues/Fri, p<0.001). Clinician senders (starting shift) were significantly less likely to provide superior (top quartile) ratings in 3 areas (overall, organization, setting) than receivers (ending shift). Observer ratings did not show this disparity. Evaluator satisfaction with the tool was high (mean 6.80 [IQR 6-8]), and was also associated with overall handoff quality (r²=.60, p<0.001).

CONCLUSION: Real-time assessment of handoff quality by clinicians using the Handoff-CEX is feasible and reliable. Arriving late to handoffs can dramatically affect ratings of handoff quality. Other characteristics, such as day of week and sender/receiver roles, are also related to handoff ratings. It may be easier to critically evaluate senders, who bear the burden of communication, than receivers. Alternatively, receivers may be more critical due to the stress of receiving work, or senders may overestimate receiver performance due to the excitement of ending their shift. Further work to explore the mechanism of these findings is underway.

COMPARATIVE EFFECTIVENESS OF NEWER DIABETES MEDICATIONS Daniel E Jonas 1; Erin Elizabeth Vanscoyoc 1; Kate Gerrald 2

BACKGROUND: An increasing number of therapeutic options are available for type 2 diabetes. We conducted a systematic review to compare the effectiveness and adverse event profiles of newer diabetes medications: amylin agonists, DPP-4 inhibitors, and GLP-1 agonists for adults with type 2 diabetes.

METHODS: To identify published studies, we searched MEDLINE, the Cochrane Library, Embase, International Pharmaceutical Abstracts, and reference lists of included studies through July 2010. We also requested dossiers of information from pharmaceutical manufacturers. Study selection, data abstraction, validity assessment, grading the strength of the evidence, and data synthesis were all carried out according to standard Drug Effectiveness Review Project methods. Two reviewers independently selected studies that met eligibility criteria. Information on study design, setting, intervention, outcomes, and quality were extracted by one reviewer and double-checked by another. Meta-analyses were conducted of outcomes reported by a sufficient number of studies that were homogeneous enough to justify combining their results.

RESULTS: Most of the included studies evaluated intermediate outcomes, such as HbA1c or weight. Very few studies reported health outcomes and few studies were longer than 6 months. For HbA1c, all of the included medications were efficacious for reducing HbA1c compared to placebo. For reduction in HbA1c, pramlintide was similar to glargine; sitagliptin was less efficacious than metformin or glipizide; there was no comparative evidence for saxagliptin; exenatide was similar to insulin; and liraglutide was similar to or better than glimepiride and insulin. For weight, pramlintide, exenatide, and liraglutide appear to cause weight loss compared with placebo. Sitagliptin and saxagliptin are likely weight neutral. Most studies evaluating weight change were 6 months or less and it is uncertain whether weight loss is sustained long-term. Rates of hypoglycemia were lower with pramlintide and sitagliptin than with insulin or glipizide, similar to placebo for sitagliptin and saxagliptin, similar between exenatide and insulin, and lower with liraglutide than with glimepiride. Rates of gastrointestinal side effects were higher with exenatide and liraglutide than with comparators.

CONCLUSION: All of the included medications were efficacious for reducing HbA1c and none of them appear to cause weight gain. Little data was available to evaluate the long-term comparative effectiveness of the newer medications versus more established treatments, limiting our ability to determine how to best incorporate newer medications into clinical practice.

FOOD INSECURITY, BMI AND DIETARY DIVERSITY IN RWANDAN HIV+ WOMEN Nicole Siroli 1; Donald Hoover 2; CJ Segal-Isaacson 3; Qiu Hu Shu 4; Eugene Mutimura 5; Marge Cohen 6; Kathryn Anastos 7

1Albert Einstein College of Medicine/Montefiore Medical Center, Bronx, New York; 2Rutgers University, New Brunswick, New Jersey ; 3Albert Einstein College of Medicine, Bronx, New York; 4New York Medical College, Valhalla, New York; 5Women’s Equity in Access to Care and Treatment, Kigali, N/A; 6John Stroger (formerly Cook County) Hospital and Rush University, Chicago, Illinois . (Tracking ID # 12085)

BACKGROUND: Structural determinants, including poverty, low literacy levels and lack of access to electricity, are increasingly identified as important for health outcomes. Also important are nutrition-related determinants of health, including food insecurity, low BMI and low dietary diversity, which are common in areas with high HIV prevalence. Food insecurity, defined as “the limited availability of nutritionally adequate foods or inability to acquire acceptable foods in socially acceptable ways,” was found to be associated with low CD4 counts, virologic failure and mortality in HIV+ patients. Low BMI (<18.5 kg/m²) is a strong predictor for mortality in HIV+ patients starting ART, with higher mortality in patients who are both food insecure and underweight versus overweight but food secure. In addition, consuming fewer distinct food groups (low dietary diversity) has been found to contribute to poor health outcomes in African women. In order to elucidate potential interventions to prevent food insecurity and malnutrition in persons with HIV infection, we examined the prevalence and sociodemographic associations of food insecurity, BMI, and household dietary diversity in HIV+ women in Kigali, Rwanda. We also examined the correlation between food insecurity, low BMI and low dietary diversity in these women.

METHODS: The Rwanda Women’s Interassociation Study and Assessment (RWISA, initiated in 2005) is a prospective observational cohort study designed to assess the effectiveness and toxicity of antiretroviral therapy (ART) in HIV-infected Rwandan women. From July to December 2007, sociodemographic data and BMI were obtained for 622 HIV+ women enrolled in RWISA. The Household Dietary Diversity Score (HDDS), a validated survey, measures household food consumption over the previous 24 hours, giving one point for each food class (total 12 possible), with <3 classes defined as low dietary diversity. Food insecurity was assessed using a single question, “Do you have enough food?” Logistic regression identified factors associated with food insecurity, low dietary diversity and low BMI. Spearman correlation assessed relationships between food insecurity, BMI and dietary diversity.
RESULTS: Prevalence of poverty was high [35% reporting monthly income <$10K Rwandan Francs (FRW) (SUS 17)], as was illiteracy (23%), and 22% of women reported no formal education. 53% had CD4 counts <350 cells/μl and 70% were taking antiretroviral therapy. Food insecurity was reported by 44% and low dietary diversity by 43%. The mean BMI was 22.4 kg/m2 and 12% of women had BMI < 18.5 kg/m2. Food insecurity (answering “usually not or never” to “Do you have enough food?”) was inversely associated with high monthly income (>35K FRW, SUS 58 vs. <10K FRW ) (Odds ratio (OR)=0.43; 95% CI 0.23-0.80), employment (OR=0.51; CI 0.29-0.91) and higher literacy (answer “can read some or all” to “How well are you able to read?” measured at study entry) (OR=0.59; CI 0.36-0.96). Alcohol use was positively associated with being food insecure (OR=4.79; CI 2.52-9.09). Factors inversely associated with low dietary diversity included high monthly income (OR=0.11; CI 0.06-0.24) and higher literacy level (OR=0.49; CI 0.30-0.80). BMI was associated with income (β=1.39 kg/m2, p=0.008), and electricity (β=1.70 kg/m2, p<0.001). Correlations were not significant between self-reported food insecurity and BMI (r=-0.05, p=0.29), or dietary diversity and BMI (r=0.10, p=0.03). Weak correlations were found between food insecurity and dietary diversity (r=-0.14, p=0.001).

CONCLUSION: These HIV + Rwandan women experienced high rates of food insecurity, low BMI and low dietary diversity, which may have adverse effects on their health. Socioeconomic factors, including low income, illiteracy and lack of electricity, which is often used as a proxy for disposable income, and behavioral factors such as alcohol use, were associated with food insecurity, low BMI and low dietary diversity. HIV + treatment programs in developing countries should consider these factors as indications to screen for and address food insecurity and malnutrition in vulnerable populations. Lack of correlation between self-reported food insecurity/dietary diversity and BMI in this population likely reflects HIV-related medical conditions that lower BMI. The weak association between self-reported food insecurity and dietary diversity may reflect an inexpensive, abundant single food group that provides a secure yet minimally diverse diet. Further research is needed to understand how the combination of food insecurity and low dietary diversity, and their relationship with BMI, affect the health of HIV + women.

THE ASSOCIATION OF STATIN USE AND MUSCULOSKELETAL PAIN IN ADULTS WITH OSTEOARTHRITIS AND RHEUMATOID ARTHRITIS Catherine Buettner 1; Matthew Rippberger 2; Matthew H Liang 3.

1Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, Massachusetts; 2Beth Israel Deaconess Medical Center and Boston University, Boston, Massachusetts; 3Brigham and Women’s Hospital: Boston VA Healthcare System; Harvard School of Public Health; Harvard Medical School, Boston, Massachusetts. (Tracking ID # 12087)

BACKGROUND: Statin use is associated with musculoskeletal pain (MSP) among individuals without arthritis in the general population. It remains unclear whether statins affect MSP among those with arthritis. Statins are weak anti-inflammatory and immunomodulatory and studies suggest a decreased risk of developing rheumatoid arthritis (RA) among statin users and that statins may decrease signs and symptoms of RA. Our objective was to determine the prevalence and determinants of MSP in a representative sample of individuals with and without RA and osteoarthritis (OA).

METHODS: Using the National Health and Nutrition Examination Survey 1999-2004 (NHANES), we determined the prevalence of self-reported MSP in neck, upper extremities, lower back, and/or lower extremities among adults ≥40 years without arthritis, with OA, and with RA. We created logistic regression models to examine the association between statin use and MSP and to assess for interactions between statin use and arthritis, adjusting for the effects of age, sex, race, coronary artery disease, hypertension, cholesterol level, diabetes, anklebrachial index, smoking, BMI, physical activity, and health status. We also analyzed the association of statin use and arthritis among those with a physician-diagnosed OA or RA.

RESULTS: Among 8643 participants of NHANES (including those with and without arthritis), 30% (95% CI 27%, 34%) of statin users reported having MSP during the last 30 days, compared with 26% (95% CI 24%, 27%) of non-statin users. An interaction between statin use and arthritis revealed that arthritis modifies the effect of statin use on reported MSP (p for interaction=0.003). Stratified analysis showed that statin use is an independent predictor of MSP among individuals without arthritis (n=5435, adjusted OR 1.5; 95% CI 1.1, 2.1, p-value 0.003). Use of statins does not increase pain among those with OA (n=1287, OR 1.1; 95% CI 0.7, 1.6, p-value 0.75) and showed a trend toward decreased MSP among any area among those with RA (n=730, OR 0.6; 95% CI 0.3, 1.0 p-value 0.06). Significant associations with decreased MSP among those with RA were particularly evident in the areas of the neck (OR 0.2; 95% CI 0.1, 0.4, p-value<.001), upper extremities (OR 0.5; 95% CI 0.3, 0.9 p-value 0.02), and lesser for lower extremities (OR 0.5; 95% CI 0.2, 1.0, p-value 0.05). No association was observed between statin use and lower back pain among those with RA (OR 0.8; 95% CI 0.4, 1.8, p-value 0.58).

CONCLUSION: Statin use is significantly associated with MSP among those without arthritis, but does not increase pain among those with OA, and may be associated with decreased MSP among those with RA. The last finding is consistent with the anti-inflammatory effects of statins.

IS LEADERSHIP INCLUSIVENESS IN SMALL PRIMARY CARE CLINICS ASSOCIATED WITH DELIVERING CARE CONSISTENT WITH THE CHRONIC CARE MODEL/ PATIENT-CENTERED MEDICAL HOME? Krista Bowers 1; Raquel Lozano-Romero 1; Michaela Robertson 1; Michael L Parchman 1. 1UTHSCSA, San Antonio, Texas. (Tracking ID # 12103)

BACKGROUND: Implementing the Chronic Care Model (CCM) is one approach to improve chronic illness care in primary care settings. The current standards of the Patient-Centered Medical Home (PCMH) were based on the CCM. Physicians and staff can rate the delivery of these elements through the Assessment of Chronic Illness Care (ACIC) survey. The concept of leadership inclusiveness encourages all members of the group to speak up, especially those in the group that would not usually have their voices heard. We examined the relationship between leadership in small autonomous primary care clinics and how chronic care is delivered in these settings.

METHODS: The ABC Intervention Study is currently collecting data from 40 primary care clinics in San Antonio and South Texas. Physicians and office staff from each clinic complete a survey including the ACIC and leadership questions. Physicians and office staff rated delivery of elements of the CCM in the clinic using the ACIC survey. Higher values reflect care more consistent with the CCM. Several of the measured components of the CCM are aspects of the NCQA scoring for the PCMH. Leadership inclusiveness was measured by the physician and office staff on a previously validated survey about learning in primary care settings and was comprised of the following questions: 1) The practice leadership makes sure we have the time and space necessary to discuss changes to improve care; 2) Leadership in this practice is available to discuss work related problems; 3) The practice leadership supports having different opinions expressed in solving problems; 4) The
leadership in this practice is good at helping us make sense of problems or difficult situations; and 5) The practice leadership promotes an environment that is an enjoyable place to work.

RESULTS: 288 physicians and office staff in 40 offices completed the surveys. The 5 questions about leadership when combined into a leadership score had a Cronbach’s Alpha of 0.98. The leadership score was associated with total CCM score (r=0.28, P<.01) as well as all measured components of the CCM (p<.01). Strongest correlations were with decision support (r=0.34, p<.01) and delivery system design (r =.34, p<.01). Weakest associations were with self-care support (r=0.19, p<.01) and linkages to community resources (r=0.19, p<.01). People who worked in practices with high leadership scores were more likely to agree with the statement: “I am comfortable telling people in my practice what I really think.” [r=0.52, p<.01]

CONCLUSION: Clinics with a leadership style that promotes inclusiveness among the staff in making decisions may be more successful at implementing the concepts of the PCMH in their office because the staff have psychological safety to speak up. Leadership inclusiveness promotes an environment of psychological safety which gives staff members a place to be heard and time to listen in a busy primary care clinic. These concepts may be an important aspect of the implementation of the PCMH which are not covered in current NCQA scoring criteria.

CHARACTERISTICS OF PRIMARY CARE SAFETY-NET PROVIDERS AND THEIR QUALITY IMPROVEMENT ATTITUDES AND ACTIVITIES: RESULTS OF A NATIONAL SURVEY OF PHYSICIAN PROFESSIONALISM

Lenny Lopez 1; Catherine DesRoches 1; Christine Vogeli 1; Carla C Keirns 2; Peter Dashkoff 1; Lynn Hallarman 1; 1Stony Brook University, Stony Brook, New York ; 2Rutgers University-New Jersey Institute of Technology, Newark, New Jersey. (Tracking ID # 12105)

BACKGROUND: Research suggests that physicians who disproportionately care for vulnerable populations (“Safety Net” providers) provide lower quality care. The passage of the Patient Protection and Affordable Care Act (ACA) will substantially increase the numbers of Medicaid recipients and these individuals, like current Medicaid recipients, may also gravitate toward safety net providers for their care. To date no national data exist to characterize these providers.

METHODS: We conducted a national random sample survey of primary care physicians (Internal, Family Medicine, Pediatrics) in 2009. We defined “safety-net” physicians as those who reported having a patient panel with greater than 20% uninsured and/or Medicaid patients. Twelve questions explored physician attitudes about what physicians should do and the usefulness of certain quality improvement activities. Seven questions assessed the preparedness and participation of physicians in quality improvement activities. We developed a series of weighted multivariable logistic regression models to examine the relationship between “safety net” status and physician attitudes and participation in quality improvement activities controlling for physician personal (gender, under-represented minority status), professional (number of years in practice, graduation from a medical school outside the U.S. or Canada, specialty, income), and practice characteristics (practice organization and primary payment mechanism).

RESULTS: Of the 1,891 physicians who completed the survey (overall response rate of 64.4%), 840 practiced in primary care specialties, and 45% were safety-net providers. A greater proportion of safety-net providers were younger, female, under-represented minorities, foreign medical graduates, and medical school faculty. In addition, most safety-net PCPs were salaried and practiced in hospital and medical school affiliated practices. There was no significant difference in the number of safety-net and non safety-net PCPs accepting new patients. However, safety net providers were more likely to accept new Medicaid (68.5% vs. 31.5%, p<0.001) and uninsured (63.4% vs. 36.6%, p<0.001) patients compared to non-safety net providers. After multivariable adjustment for physician and practice characteristics, there were no significant differences in provider attitudes about or participation in quality improvement activities between safety- and non-safety-net physicians. However, safety-net providers were almost twice as likely to look for disparities in their practices (OR 1.77 [CI: 1.10–3.16]), twice as likely to publicly advocate for universal health coverage (OR 2.16 [CI: 1.22–3.82]) and three times as likely to add one more Medicaid or uninsured patient to their panel (OR 2.79 [CI: 1.84–4.22]) compared to non-safety-net providers.

CONCLUSION: We found that non-safety-net physicians were less likely to accept new Medicaid patients. We also found that the safety-net primary care providers, whose practices include significant proportions of Medicaid patients, are as likely to be involved in quality improvement activities as non safety-net providers and that their attitudes are consistent with providing equitable and universal care. Increasing access by expanding Medicaid eligibility will require continued investment in safety-net PCPs to ensure high quality health care for all.

HEROISM AND REALITY: PORTRAYAL OF CPR AND DNRS ON ER, HOUSE & GRAY’S ANATOMY, 2004–2010

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BACKGROUND: Television medical dramas reach millions of Americans each week, entertaining them with a fictionalized view of medicine that has become increasingly sophisticated as television shows have brought in medical consultants. Prior studies have found that survival rates from CPR on television are unrealistically high, and may lead patients or families to have unrealistic expectations.

METHODS: We undertook a systematic study of CPR and DNR events on three popular television dramas. In order to minimize the role of secular trends or technological change, all show seasons were contemporaneous, including ER seasons 11–15 (2004–2009), House seasons 1–6 (2004–2010), and Gray’s Anatomy seasons 1–6 (2005–2010). The focus of the study was the clinical circumstances of cardiac arrest, survival after CPR, survival to hospital discharge or the end of the episode, disability after CPR, use of DNR orders, and the debriefing process after CPR. Because each television show had different frequencies of CPR and different patterns of age and cause of arrest, the unit of analysis was the CPR episode, with 26 variables collected for each arrest. Coding was done by two physicians and one graduate research assistant, with the first 5 episodes of each series independently coded by all three investigators based on preliminary codes, then codes finalized, then all episodes coded by one coder with 20% of episodes coded by a second coder. All disagreements between the two coders were reviewed by all three investigators, with reviewing of the relevant video. All discrepancies were resolved easily. Of 8914 coding decisions, double coding was performed for 1762, and coders concurred initially on 1735 of these decisions (98.47%). Cohen’s Kappa for agreement is 0.965 with a 95% CI of 0.952 to 0.978.

RESULTS: The study had a total of 115 arrests on ER, 141 arrests on Gray’s Anatomy and 83 arrests on House. The survival rates were: ER 47/115 (40.8%) of whom 16/115 (13.9%) survived the episode, Gray’s Anatomy 42/141 (29.8%) of whom 20/141 (14.2%) survived the episode, and House 55/83 (66.3%), 51 of whom survived the episode.
(61.4%). Of 339 arrests across all 3 shows, in only 7 cases was disability after CPR discussed, with 2 patients meeting criteria for brain death, one severe cardiac damage, one severe pulmonary damage “he’s gonna need a lung transplant”, and 3 with a general discussion of the likelihood of a poor outcome after prolonged CPR. DNR orders were rare across all shows, with 4 out of the 141 arrests on ER, all in the setting of known end-stage disease, and all honored on the show. There were 4 DNR orders out of the 141 arrests on Gray’s Anatomy, one of which was followed, in a patient who had both cancer and a “massive stroke”, the other 4 were knowingly ignored. After the one DNR that was followed on Gray’s Anatomy the patient’s husband returns 3 episodes later on a shooting rampage (season 6 climax).

CONCLUSION: Survival rates from CPR on television vary by television show, but ER and Gray’s Anatomy’s statistics are consistent with US in-hospital arrest results. House shows unrealistically high survival. DNR orders are systematically ignored on Gray’s Anatomy and House.

EXAMINING THE RELATIONSHIP BETWEEN DISEASE BURDEN AND FALLS AMONG NURSING HOME RESIDENTS Cathryn Caton 1; Joni Strom 1; William P Moran 1; Cheryl Lynch 1. 1Medical University of South Carolina, Charleston, South Carolina. (Tracking ID # 12124)

BACKGROUND: Fall rates among nursing home (NH) residents have been recorded at 1.5 falls per bed per year resulting in an incidence of about 50%. Falls in NH adversely impacts residents’ quality of life while increasing the institutional economic burden. Little has been published recently about fall risk factors among NH residents. Therefore, we sought to determine if a relationship between disease burden and falls among nursing home patients existed.

METHODS: We analyzed data on 13,404 NH residents using the 2004 National Nursing Home Survey. The sampling was a stratified two-stage probability design. The analysis was limited to residents 65 years and older. The main outcome was fall (documented in the past 6 months). The variables of interest were sociodemographic factors (age, gender, race/ethnicity, marital status), number of prescribed medications and disease burden as indicated by the Charlson Comorbidity Index (CCI). The Charlson Index provided a cumulative way of describing the severity of disease burden in categories of minimum, mild, moderate and heavy burden. Multiple logistic regression analyses were performed to examine the relationship between the CCI and falls adjusting for potential confounders. STATA version 11 was used to account for the complex probability design. The analysis was limited to residents 65 years and older. The main outcome was fall (documented in the past 6 months). The variables of interest were sociodemographic factors (age, gender, race/ethnicity, marital status), number of prescribed medications and disease burden as indicated by the Charlson Comorbidity Index (CCI). The Charlson Index provided a cumulative way of describing the severity of disease burden in categories of minimum, mild, moderate and heavy burden. Multiple logistic regression analyses were performed to examine the relationship between the CCI and falls adjusting for potential confounders. STATA version 11 was used to account for the complex sampling design and to yield sample estimates.

RESULTS: The mean age of this sample of NH residents was 80.4 years and comprised 71% females, 84% non-Hispanic white (NHW). The prevalence of falls was 35.7%. Nearly all senior residents needed assistance with activities of daily living (ADLs) and only 15% were independent in walking. Higher proportions of falls occurred among older seniors, NHW race, married, veterans, those needing assistance with walking, and those with a higher number of prescribed medications. The only comorbid conditions significantly associated with falls was stroke, which was 13% among those who had a history of falls and 16% among those with no history of falls (p=0.003). Based on CCI score, a significantly higher proportion of those with a fall history had minimum disease burden compared to those with no fall history, otherwise those with no fall history were more likely to have mild, moderate and heavy disease burdens. In multivariate analyses the CCI score maintained a significant association with risk of falls so is only reported in adjusted models. The final model showed the highest odds for risk of falls were among those seniors needing assistance with ADLs (OR 2.94, 95%CI 1.88-4.59). The CCI was associated with a lower risk of falls (OR 0.95, 95%CI 0.91-0.99). Other factors associated with higher...
risk of falls was being a veteran, older age, and number of prescribed medications, while racial/ethnic minority, female gender, and lung disease were significantly associated with a lower risk of falls.

**CONCLUSION:** There is a significant association between disease burden as indicated by the Charlson Index and the risk of falls. However, the highest risk of falls among senior NH residents needing ADL assistance highlights the need for environmental adaptations that facilitate personal care for the older adult and maximizes patient safety. Furthermore, assessment of the severity of disease burden among senior residents should be used for stratifying residents and providing more focused safety measures for those at highest risk for falls.

**FACTORS ASSOCIATED WITH HEPATITIS B KNOWLEDGE IN A KOREAN AMERICAN POPULATION**

Joon-Ho Yu 1; John H Choe 1. 1University of Washington, Seattle, and demographic factors of a priori interest. This composite HBV knowledge score was also used as the main t-test or chi-squared statistics; this included tests for association upon the number of correct responses to 24 questions related to HBV and health care access, sources of health information, and knowledge included questions regarding participant demographics, health status.

Conducted surveys in Korean or English at participants 2000; 19:283 – (Lauderdale & Kestenbaum. Population Research and Policy Review telephone/address database with a validated list of Korean surnames State. Eligible participants were identified by matching an electronic 18 to 64 years of age living in a 3-county urban area of Washington conducted surveys in Korean or English at participants. The goals of our study were to measure levels of knowledge relevant to hepatitis B; determine whether HBV knowledge was associated with having had HBV serologic testing; and identify factors associated with higher levels of HBV specific knowledge in a population-based survey of Korean American adults.

**METHODS:** We conducted a population-based survey of Korean adults 18 to 64 years of age living in a 3-county urban area of Washington State. Eligible participants were identified by matching an electronic telephone/address database with a validated list of Korean surnames (Lauderdale & Kestenbaum. Population Research and Policy Review 2000; 19:283–300). Bilingual and bicultural field interviewers conducted surveys in Korean or English at participants’ homes. Surveys included questions regarding participant demographics, health status and health care access, sources of health information, and knowledge and behaviors related to hepatitis B. Our primary variable of interest was a composite knowledge score based upon the number of correct responses to 24 questions related to HBV infection, prevention, and transmission. Bivariate comparisons between HBV knowledge and participant factors were analyzed using appropriate t-test or chi-squared statistics; this included tests for association between knowledge and reporting having had prior HBV serum testing. This composite HBV knowledge score was also used as the main dependent outcome in multiple regression models adjusted for social and demographic factors of a priori interest.

**RESULTS:** Surveys were completed by 466 Korean adults. Among participants, most (58%) were female and nearly all (96%) were foreign-born. Despite high levels of education, almost half (46%) reported difficulty with spoken English and 91% completed surveys in Korean. 222 (49%) reported having had prior serologic testing, and 27 (6%) reported also having HBV infection. Overall awareness was high with 94% reporting having heard of HBV infection. Despite a high overall awareness of HBV in this population, knowledge about the transmission, treatment, and natural history of HBV infection varied substantially among participants; the percentage of correct responses among questions about hepatitis B ranged from a low of 8% to a high of 88% answered correctly. On questions about the natural history of HBV infection, most participants correctly identified cirrhosis, liver cancer, and death as possible sequelae of chronic infection; however, only half (53%) correctly answered that HBV infection can be lifelong. Most correctly identified sexual intercourse, childbirth, and sharing razors as potential routes of HBV transmission. However, a majority also erroneously believed eating unclean food (83%), sharing eating utensils (81%) and smoking cigarette (62%) to be routes for HBV infection. The mean composite knowledge score was 12.7 out of a possible 24 points (standard deviation 3.1). Higher knowledge scores were significantly associated with younger age, years of formal education, English language proficiency, and greater proportion of life spent in the U.S. Higher knowledge scores were also strongly associated with having been screened for hepatitis B infection in the past (p=0.005). In logistic regression models, high HBV knowledge (defined a score of 12 or more points out of 24) was independently associated with younger age and English language proficiency after controlling for gender, birth country, formal education and proportion of life spent in the U.S.

**CONCLUSION:** In this population-based survey of Korean American adults, we found overall relatively high levels of awareness of hepatitis B. Despite this awareness, important areas of knowledge deficit exist regarding transmission of HBV infection, such as the frequent belief that sharing food (a common cultural practice) spreads this disease. Although a cross-sectional study and limited in ability to test causal inference, the association between HBV knowledge and having been tested for HBV infection suggests possible potential benefit for HBV educational programs. In particular, those Korean Americans with lowest HBV knowledge are the older, less educated, and more recent immigrants with limited English proficiency. Targeted educational programs in this community should focus on these vulnerable groups within the larger Korean American population.

**IMPLEMENTING A BIOPSYCHOSOCIAL CURRICULUM IN AN AMBULATORY LONGITUDINAL CLERKSHIP: QUANTITATING LEARNING**

Maura Joyce McGuire 1; Rosalyn Stewart 2; Gail Geller 3; Patricia Thomas 4. 1Johns Hopkins Community Physicians, Lutherville, Maryland; 2Johns Hopkins University School of Medicine, Department of Medicine, Baltimore, Maryland; 3Johns Hopkins University School of Public Health, Baltimore, Maryland; 4Johns Hopkins University School of Medicine, Glen Arm, Maryland. (Tracking ID # 12136)

**BACKGROUND:** The Johns Hopkins School of Medicine developed an ambulatory longitudinal clerkship (LC) for first year students as part of a new four-year curriculum. In the second year of the LC we implemented a formal biopsychosocial curriculum framed around eleven ‘horizontal strands’ (HS) domains: clinical reasoning, cultural competence, communications, ethics/professionalism, epidemiology, life-cycle (pediatrics and aging), nutrition, health policy, pain and patient safety.

**RESULTS:** The Johns Hopkins School of Medicine developed an ambulatory longitudinal clerkship (LC) for first year students as part of a new four-year curriculum. In the second year of the LC we implemented a formal biopsychosocial curriculum framed around eleven ‘horizontal strands’ (HS) domains: clinical reasoning, cultural competence, communications, ethics/professionalism, epidemiology, life-cycle (pediatrics and aging), nutrition, health policy, pain and patient safety.
METHODS: Educational methods included practice learning sessions (12 per semester), standardized patient work, written assignments, lectures, and small group work. During each semester, students were required to document two patient encounters from each clinic session and submit at least 7 written reflections on HS to an online learning portfolio. To document exposure to biopsychosocial content, we built tags for HS learning events (HSLE) into our patient tracker and learning portfolio, and required that students identify at least one HSLE for each patient tracked (PT-HSLE) and for each reflection (R-HSLE). Curriculum evaluation methods included quantitation of HSLE and knowledge assessment using a written exam. Clerkship evaluation included questions on success in meeting clinical and HS learning objectives and satisfaction with educational methods.

RESULTS: One class completed the LC prior to implementation of the HS curriculum (LC1, one semester, 124 students), and one class completed the LC after implementation of the curriculum (LC2, two semesters, 119 students). Both classes used the same patient tracker, and both had similar instructions on how to use this tool. LC1 tracked an average of 1.02 PT-HSLE per student-session and LC2 tracked 1.67 PT-HSLE per student-session (P<0.01); there was a trend towards more attention to PT-HSLE between first and second semesters of LC2. In LC1, 22.7% of 6642 tracked events were related to biopsychosocial learning, compared to 35.3% of 12977 events in LC2. LC1 identified no HSLEs for 4 of 11 available domains: cultural competence, nutrition, life-cycle pediatrics, and life-cycle aging. LC2 identified the learning events in all domains, with combined PT-HSLE and R-HSLE distributed as follows: communication (13.53%), pain (11.74%), clinical reasoning (11.43%), safety (10.54%), aging (9.24%), pediatrics (8.03%), nutrition (7.75%), ethics (7.69%), cultural competence (6.38%), and other (1.84%). Our written exam showed lower percentage of HS items were answered correctly compared to other items, but this was not significant due to poor exam reliability (c=0.60). Student evaluations of LC2 showed similar levels of agreement that clinical and biopsychosocial learning objectives were met (84.3% vs. 80.4%), and favored practice based learning to written reflections and small group learning.

CONCLUSION: We implemented a biopsychosocial curriculum in an LC, and measured learning events for eleven HS curriculum domains. Post-implementation, students documented more HS learning events, tracked previously ignored areas like cultural competence, and agreed that learning objectives for the curriculum were met. While quantitative metrics support exposure to subject matter, more work to assess learning quality is needed.

HIGHER CARDIOLOGY CONSULTATION RATES FOR CARDIOVASCULAR DISEASE FOR HISPANICS SEEN IN HIGH PROPORTION HISPANIC VS. LOW PROPORTION HISPANIC CLINICS IN A LARGE INTEGRATED ACADEMIC HEALTHCARE SYSTEM Lenny Lopez 1; Nakela Cook 2; Richard Grant 1; Lina Pabon-Nau 1; Leroi Hicks 3.

1Massachusetts General Hospital, Boston, Massachusetts; 2National Heart, Lung, and Blood Institute, Bethesda, Maryland; 3Brigham and Women’s Hospital, Boston, Massachusetts. (Tracking ID # 12139)

BACKGROUND: Prior studies have shown that co-management between generalists and cardiologists is one possible mechanism for improving overall quality of care. Lower rates of cardiology consultation have been proposed as one mechanism contributing to disparities in cardiovascular care. The ease of obtaining cardiology consultation, in turn, may be mediated by the primary care practice environment in which a patient receives care. We hypothesized that primary care practices that concentrate linguistically and culturally appropriate services for Hispanics may result in higher cardiology consultation rates for patients with coronary artery disease (CAD) and congestive heart failure (CHF).

METHODS: We assessed cardiology consultation rates comparing patients attending practices with higher overall proportion of Hispanic patients (HP practices, n=7) vs. practices with lower overall Hispanic proportion (LP practices, n=35). We used electronic records to retrospectively identify a cohort of 9,761 adults with CAD or CHF receiving primary care between 2000–2005. These patients were seen at least twice in the same primary care practice within the 12 months prior to their first primary care visit during the study period to ensure enrollees were regular ambulatory patients. Kaplan-Meier curves and log rank tests were used to calculate 5-year cardiology consultation rates and to compare time-to-consultation across socio-demographic variables (race/ethnicity, gender, age, primary language, and insurance status) and site of care. We performed multivariate analyses using Cox proportional-hazards regression, adjusting for clustering at the level of the physician, to assess differences in referral at HP vs. LP practices after adjusting for sociodemographic characteristics, Charlson score, disease severity and site of care. We used the frequency of follow-up consultation as the outcome variable in a Poisson regression analysis controlling for the aforementioned variables.

RESULTS: Among the 9,761 patients, 9,168 (93.9%) had CAD, 4,444 (45.5%) had CHF, and 3,851 (39.5%) had both conditions. Hispanics comprised 11% (n=975) of the CAD cohort and 11% (n=474) of the CHF cohort. Unadjusted Kaplan-Meier estimates demonstrated that Hispanics had similar rates of cardiology consultation compared to non-Hispanics (CAD: 79.2% vs. 79.7%, p=0.54; CHF: 87.5% vs. 90.6%, p=0.110). However, Hispanics at HP practices had higher rates of cardiology consultation than those at LP practices (CAD: 82.2% vs. 70.7%, p<0.001; CHF: 91.2% vs. 89.7%, p<0.001). Multivariate analyses showed higher consultation rates for Hispanics at HP practices (CAD: hazard ratio [HR], 1.38; 95% confidence interval [CI], 1.16-1.64 and CHF: HR, 1.40; 95%CI, 1.10-1.81). In contrast, Blacks and Whites at HP practices had no significant differences in rates of consultation compared to those in LP practices. Hispanics at HP practices had 25% more consultations for CAD and 23% more consultations for CHF than Hispanics at LP practices adjusting for sociodemographic and clinical variables.

CONCLUSION: Among primary care patients with CAD or CHF within a single large academic care network, Hispanic patients at high HP practices have higher rates of cardiologist consultation compared to Hispanic patients at LP practices. Elucidating the essential components of individual practice environments that provide higher quality of care for Hispanics will allow for well designed systems to reduce health care disparities.

A METHOD TO ACHIEVE AN ACCEPTABLE POSITIVE RATE IN PULMONARY CT ANGIOGRAMS. Lana Gimber 1; Hyun-Chun Yoon 2; Lauren Todoki 1.

1sjhmc, phoenix, Arizona; 2sjhmc, phonix, Arizona. (Tracking ID # 12147)

BACKGROUND: Pulmonary CTA has become the preferred imaging test to diagnose PE. However, recent studies have shown that pulmonary CTA has become over-utilized, with no conclusive data to suggest a reduction in morbidity or mortality. In addition to radiation exposure, contrast-induced nephrotoxicity, and high financial cost, patients are misdiagnosed and treated unnecessarily with long term anticoagulation. For these reasons, an evidence-based algorithm for suspected pulmonary embolism is necessary to optimize both patient management and clinical outcomes. The objective of this study was to evaluate the combination of clinical criteria and d-dimer values for diagnosis of
pulmonary embolism (PE) in patients undergoing pulmonary CT angiography (CTA)

METHODS: Retrospective review of all patients presenting to the Emergency Department (Kaiser Permanente - Honolulu, Hawaii) with possible PE who underwent pulmonary CTA and had a d-dimer drawn. Wells scores were retrospectively assigned based on data gathered through medical records.

RESULTS: During a 29 month period, 1110 patients underwent pulmonary CTA, 773 of which had a d-dimer drawn. These subjects were grouped based on serum d-dimer levels into negative (<4 μg/ml), low (0.41–1.0 μg/ml), or positive (>1.0 μg/ml) d-dimer categories. The prevalence of positive CTA studies was >10% only in the positive d-dimer group. Subjects were also grouped based on Wells score into low (score<2), intermediate (2–4), or high (>4) clinical risk of PE. The prevalence of positive CTA was >10% only in the group with high clinical risk. When risk stratified using both d-dimer and Wells criteria, only those with high d-dimer (>1.0 μg/ml) and intermediate or high clinical risk (Wells criteria >2) had a prevalence of positive pulmonary CTA >10%.

CONCLUSION: The use of diagnostic algorithms using simple clinical decision rules, d-dimer testing, and pulmonary CT angiography can guide treatment decisions with low risk for subsequent PE. We have found that utilizing pulmonary CTA only in patients suspected of pulmonary embolism with a combination of intermediate or high clinical risk based on a threshold score using the Wells criteria >2 and a serum d-dimer cutoff of 1 μg/ml would increase the prevalence of positive pulmonary CTA studies above 10%.

BLOOD PRESSURE LOWERING AMONG ‘RESISTANT’ HYPERTENSIVE DIABETES PATIENTS IN TWO HIGH-PERFORMING HEALTH SYSTEMS: THE ADHERENCE AND INTENSIFICATION OF MEDICATION (AIM) CLUSTER RANDOMIZED CONTROLLED EFFECTIVENESS TRIAL

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BACKGROUND: Even in high-performing health systems where programs have been established to improve blood pressure (BP) levels and BP control levels are approaching or exceeding 80%, some hypertensive patients with diabetes continue to have poor BP control. Poor medication adherence or provider failure to intensify medications (clinical inertia) contribute to poor control in this ‘resistant’ population. Yet, current programs are rarely designed to reach out to and address the problems of this population. We designed and tested the Adherence and Intensification of Medication (AIM) program to improve BP control among resistant patients in 2 high performing healthcare systems.

METHODS: The AIM study was a prospective, cluster-randomized effectiveness trial in which 16 primary care teams consisting of 5–28 PCPs, their staff, and diabetes patients, within 3 Veterans Affairs (VA) and 2 Kaiser Permanente facilities, were randomized to either the AIM intervention or to usual care. We collected data during a 14-month intervention period. Among intervention teams, clinical pharmacists trained in motivational interviewing were supported by clinical information systems that enabled proactive identification of and outreach to eligible patients identified on the basis of persistent poor BP control and either medication refill gaps or lack of recent medication intensification. The pharmacists then provided adherence counseling, titration of medications, or both to participating patients. No maintenance support was provided after participants completed the intervention. The primary outcome was the relative change in systolic blood pressure (SBP) measurements between eligible intervention team compared with eligible control team patients. We examined longitudinal differences in differences between SBP among eligible participants immediately after receiving the intervention and up to six months after the end of the intervention period.

RESULTS: 2303 diabetes patients on the control teams and 1797 patients on the intervention teams were eligible because they had persistent poor BP control and either medication refill gaps or no recent intensification. We compared changes in SBP among all the potentially eligible patients on the control teams and intervention teams, although only 53% of the 1797 eligible intervention patients received the AIM intervention (24% declined, 12% could not be reached). Mean SBP of intervention team patients one month prior to the intervention was 151 mm Hg compared to 150 in control teams (p=.33) Changes in mean SBP after intervention team participants received the intervention were -4.4 mm Hg compared with -1.9 among eligible control team patients (P <.001). By six months after the intervention period, mean SBP was approximately 145 mm Hg among both intervention and control team patients.

CONCLUSION: The AIM program more rapidly lowered BPs among ‘resistant’ hypertensive patients - those with adherence problems or who lacked recent intensification-than usual care. However, this difference did not persist over time, partly because patients on control teams also attained better BP control, albeit more slowly. In high-performing healthcare systems that have successfully brought the majority of patients under control, the AIM program can further enhance BP control among resistant patients but will require greater penetration and maintenance to spread and sustain the improved BP effect.

ASSOCIATION BETWEEN RACE AND HEALTH-RELATED BELIEFS AMONG OLDER ADULTS WITH ASTHMA

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BACKGROUND: Specific beliefs among patients about the chronicity and curability of asthma have been linked to adherence with inhaled corticosteroids (ICS). Since outcomes of asthma self-management have been shown to differ across racial and ethnic groups, we examined the association of asthma-related beliefs with race and ethnicity. We focused specifically on older adults with asthma because this population has received relatively little attention in the research literature.

METHODS: We conducted English and Spanish language interviews with patients ages 60 years and older with moderate to severe asthma in the outpatient primary care practices of academic medical centers in New York City and Chicago. The primary outcome was whether the patient held the belief that the patient only has asthma when symptoms are present (no symptoms no asthma), which we previously found to be associated with ICS adherence. We also examined a related belief, that the physician can definitely or probably cure the patient’s asthma.

RESULTS: The sample included 210 patients with a mean age of 67.2 (6.4); 29.2% were black, 39.7% white, and 31.1% Latino. Twenty-four
percent had not graduated high school and 14.8% self-reported poor English speaking ability. ICS were used by 76.2% of the sample, and 65.5% had a history of asthma-related emergency department visits and 41.3% had been hospitalized; 9.7% had been intubated for asthma in their lifetime. The no symptoms no asthma belief was held by 31.6% and the curability belief by 18.2%. In bivariate analyses, Latinos were more likely than blacks and whites to hold either belief. Latinos remained more likely to hold these beliefs in analyses that adjusted for age, sex, income, education, and English speaking ability (no symptoms no asthma, OR 3.2, 95% CI 1.3 to 7.8, p = .01; curability OR 7.0, 95% CI 2.1 to 23.6, p < .002). Black patients were more likely than whites to hold the curability belief (OR 4.3, 95% CI 1.4 to 12.8, p < .009), but were not more likely than white patients to have the no symptoms no asthma belief in either bivariate or adjusted analyses.

CONCLUSION: In a cohort of older patients with asthma, Latinos were more likely to have beliefs that are associated with poor medication adherence than non-Hispanic white and black patients, even after accounting for education and language ability. The basis for differences in beliefs between different racial and ethnic groups of asthmatics warrants further exploration, but our findings suggest that education messages to support asthma self-management among older adults may need to be tailored for specific ethnic populations.

PATIENT CENTERED MEDICAL HOME: AN INTERNAL MEDICINE RESIDENT NEEDS ASSESSMENT Margaret Horlick 1; Colleen C. Gillespie 2; Kelly Crotty 1; Craig Tenner 1; Joseph Leung 1. 1VA New York Harbor, New York, New York; 2NYU School of Medicine, New York, New York. (Tracking ID # 12164)

BACKGROUND: Prior to the pilot implementation of a patient-centered medical home model in the VA system (Patient--aligned Care Teams, PACT), a needs assessment was conducted with residents in the primary care clinic to assess their perceptions of their medical-home related skills as well as their perceptions of the overall functioning of the clinic.

METHODS: 31/51 VA clinic-based residents (61%) completed a 39-item questionnaire designed to assess perceptions of clinic functioning including: sufficient time (3 items, Cronbach’s alpha = .82); effective communication (2 items, alpha = .71); patient education and support (3 items, alpha = .71); overall functioning (3 items, alpha = .83); workplace culture (2 items, alpha = .78); and quality of the learning environment (3 items, alpha = .73). Residents were also asked to rate their own skills in the 4 following areas: practice-based improvement (4 items, alpha = .79); panel management (2 items, alpha = .76); effective primary care practice (3 items, alpha = .74); and teamwork (4 items, alpha = .81). A 4-point agreement scale was used with all items worded in a positive direction. Mean agreement ratings were calculated to compare among domains using repeated measures ANOVA.

RESULTS: Residents’ perceptions of the overall functioning of the clinic were generally positive with the following exceptions: only 58% agreed that “there is enough time to do follow-up”; only 50% agreed that they “quickly become aware of urgent patient issues”; and only 67% agreed that their “clinical team can handle my patients’ non-clinical needs”. Residents’ perceptions of their specific skills suggested some defined needs: only 29% agreed that they knew their patient panel’s no-show rate; only 42% agreed that they “can use available data to assess their practice effectiveness”; and only 47% agreed that they “have a good sense of strategies my team can use to target patients with poor outcomes”. In terms of mean ratings, residents’ skills appeared to be lowest in practice-based improvement (mean = 2.36 SD .68) and panel management (mean = 2.69 SD .73) p < .05, posthoc pairwise comparisons. In terms of clinic functioning, residents felt positive about the overall culture of the clinic (mean = 3.61 SD .48) and the learning environment (mean = 3.22 SD .53) whereas the other 4 areas demonstrated room for improvement (sufficient time = 2.89, SD .69; patient education and support = 2.78, SD .53; communication = 2.69, SD .73; overall functioning = 2.98, SD .62, p < .05, posthoc pairwise comparisons).

CONCLUSION: These survey results are consistent with previous assumptions made about the residency experience. Specifically, residents are focused on the patient in the room with them and they have a lack of experience and unfamiliarity with population health, the concepts of panel management, the use of clinical care teams and practice-based improvement strategies. We expect the implementation of the VA PACT system will address these deficiencies given its design as a clinical care team directed to provide care to a panel of patients while engaging in continuous improvement. We expect that the participation of the residents in this developing healthcare delivery model will provide a robust experiential education in enhancing those skills identified by the survey results as needing development.

BARRIERS TO ADVANCE CARE PLANNING IN THE CONTINUITY CLINIC SETTING Brandon Verdoorn 1; Ericka Tung 2; Mayo Clinic College of Medicine, Department of Medicine, Rochester, Minnesota; 2Mayo Clinic College of Medicine, Division of Primary Care Internal Medicine, Rochester, Minnesota. (Tracking ID # 12165)

BACKGROUND: Advance care planning (ACP) consists of discussions with a patient and/or the patient’s representatives about the desired direction of the patient’s care, particularly end-of-life care, in the event that the patient becomes unable to articulate his or her own wishes. General internists play an important role in guiding patients through the ACP process, and most patients would prefer to discuss this topic with their primary care provider. However, previous studies have identified that many internal medicine (IM) residents feel unprepared to counsel patients about end-of-life care treatment options. The primary objective of this analysis was to assess IM residents’ attitudes, behaviors, and barriers to ACP in the outpatient training setting. A secondary objective was to quantify the frequency of advance directive (AD) completion among residents’ longitudinal patients.

METHODS: As part of a quality improvement (QI) project aimed at improving the ACP training of IM residents, all categorical IM resident physicians from the Rochester, MN based Mayo Clinic Internal Medicine Residency Program were invited to complete an optional electronic survey regarding their ACP education and practices in the outpatient setting. Utilizing a retrospective review of the electronic medical record, we collected descriptive data to determine the demographics among resident physicians’ patients.

RESULTS: Among the total of 162 residents surveyed, 89 (54%) completed the survey. 45% of respondents noted that they “never” or “rarely” discuss ACP in the outpatient setting, with only 7% of residents noting that they discuss ACP routinely at general medical evaluation visits. Only 28% of residents noted that they are comfortable discussing ACP. Less than 10% of all residents cited that they had received education about ACP in the outpatient clinic setting. Notably, patients from the residents’ longitudinal practice panels had an average age of 45, with 16% of patients aged 65 years or older. Of those patients 65 or older, 23% reported having completed an advance directive.

CONCLUSION: Surveyed IM residents noted that they had received very little formal training about ACP in the clinic setting and many felt unprepared to discuss this topic with their patients. Correspondingly, self-reported frequency of advance directive completion among residents’ patients was relatively low. These findings, in conjunction with identified system-based barriers to ACP in the ambulatory continuity
LOCALLY-TAILORED REGISTRIES: A NOVEL APPLICATION OF THE ELECTRONIC MEDICAL RECORD TO SUPPORT QUALITY IMPROVEMENT INTERVENTIONS

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BACKGROUND: If harnessed correctly, the electronic medical record (EMR) may be a key tool in efforts to provide efficient, high quality patient care. However, despite its strengths, the Veteran’s Administration (VA) EMR system remains relatively unfriendly to clinical providers who wish to access local information about specific groups of patients for improvement initiatives. Current programs, such as the VA national disease registries, have been developed to help provide population-specific data, such as summary information about specific measures of clinical quality, however, these types of data repositories may have limited usefulness to agents of frontline care. These limitations include lack of control over types of data collected/reports generated, efficiency in report generation, and lack of timeliness of data (e.g. data may be several months old). Locally-tailored registries, a novel application of electronic health record data, may provide a key component to population-based approaches to chronic disease management by providing frontline teams with easily accessible and adaptable data to facilitate local improvement projects.

METHODS: The Cleveland Locally-tailored Registries are a component of the Cleveland VA Quality Improvement and Clinical Research Database. This database uses a stand-alone SQL relational database that is updated on a nightly basis via an interface with the VA’s Computerized Patient Record System. The core database includes 10 years of longitudinal data, including demographics, vital signs, laboratory data, medications, surgeries, radiology reports, and ICD-9 codes. Using the SQL database, registries of patients with chronic diseases of interest, including diabetes, heart failure, coronary artery disease, chronic kidney disease, and hepatitis C have been developed. Disease definitions have been developed to accommodate the clinical applications of each registry (i.e. sensitivity and specificity of disease definitions). Each disease registry has a unique locally-tailored user-friendly web-based interface that was developed using feedback from the clinical end-users to meet specific clinical needs and target local priorities for improvement efforts.

RESULTS: The current locally-tailored registries collectively include more than 100,000 patients. The diabetes registry (approximately 24,475 patients) and the ischemic heart disease registry (approximately 25,740 patients) are used by primary care teams to generate tools for patient education, including patient-specific report cards for use in patient visits, to identify patients in need of intensive clinical intervention (e.g., patients with hemoglobin A1C greater than 9 and not on insulin), and to target resource allocation (e.g., deployment of clinical pharmacists to clinics with poor performance on lipid measures). Other locally-tailored registry projects include targeting heart failure patients with frequent admissions (heart failure registry, approximately 6600 patients) and improving vaccination rates for patients with hepatitis C (hepatitis C registry, approximately 3008 patients).

CONCLUSION: The Cleveland locally-tailored registries have been used by interdisciplinary clinical teams to implement a wide-range of improvement projects. Locally-tailored disease registries may support implementation efforts by providing a unique collaborative interface for clinical staff, researchers, and quality champions. In contrast to current nationally-developed disease registries, key components of the localized disease registries for supporting continuous improvement include flexibility, timeliness, efficiency, and validity.

WHAT HAPPENS WHEN ADULT PATIENTS CRY IN PRIMARY CARE VISITS? Lisa C Diamond 1; Cheryl Stults 1; Jennifer Elston-Lafata 2; Tracy Wunderlich 3; Lisa MacLean 4; Ming Tai-Seale 1. 1Palo Alto Medical Foundation, Palo Alto, California; 2Virginia Commonwealth University, Richmond, Virginia; 3Henry Ford Health System, Detroit, Michigan. (Tracking ID # 12170)

BACKGROUND: Even if they are unfamiliar with mental health assessment tools, any physician can recognize the level of distress associated with crying by an adult. Didactic training in medical education on how to address significant emotional distress is inadequate. The literature is relatively silent on what primary care physicians should do besides show detached concern when this occurs. This study specifically seeks to understand what brings a patient to cry during a visit and how primary care physicians respond to such a sign of distress.

METHODS: In-depth qualitative study of audio-recordings of 9 adult patients’ primary care office visits with 5 physicians in which the patient cried. We used content analyses to explore the underlying reason(s) that led the patient to cry and the physician’s response to the patient’s crying. A multidisciplinary team of researchers from health services, economics, sociology, anthropology, medicine, and psychiatry performed the analyses. Population consisted of insured adult patients aged 50-80 years of age who scheduled a routine annual check-up with their primary care physician between 2006 and 2008.

RESULTS: We found that a common trigger was acute or prolonged bereavement over the death of a loved one. Suffering from emotional pain was the main precipitator for patient’s crying. Physicians’ responses to patient crying were mixed, ranging from immediate or delayed statements of empathy to lack of any expression of empathy, despite the obvious signal of crying. Assessment of mental health by the physicians was inconsistent, ranging from thorough investigation to dismissive comments. Among those not under any mental health treatment before the recorded visit (n=7), two patients explicitly requested treatment for their psychological distress. Both were marginally evaluated for symptoms of depression, and only one of them was given an antidepressant prescription and referral to behavioral health. The other patient was offered watchful waiting. Two additional physicians recommended behavioral health specialty care to two other patients, of which one accepted the referral while the other declined. Only four patients were briefly assessed for suicidality. Follow-up care planning was rather inadequate. Two patients were already under the care of a behavioral health specialist (n=2). Care coordination appeared lacking.

CONCLUSION: Some adult patients cry during annual visits, presenting an opportunity for primary care providers to assess for and recognize the level of distress and take actions to treat or to refer to specialty mental health providers. Only a few physicians were empathic in their responses and followed guidelines for treatment of depression or other mental disorders. While some primary care physicians note that not having physical measurements to diagnose mental illness prevents them from recognizing them, a patient crying during a visit can be viewed as clear signal of patient distress and a possible need for professional help to alleviate suffering. Training on how to empathically treat a crying patient should be enhanced in
LOW SOCIOECONOMIC STATUS IS ASSOCIATED WITH INCREASED FREQUENCY OF HOSPITALIZATIONS AND ACUTE CARE VISITS AMONG ADULT PATIENTS WITH SICKLE CELL DISEASE

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METHODS: We recruited patients with documented SCD who received care at an urban academic medical center from September 2006 to June 2007. Patients were recruited from the adult sickle cell and hematology outpatient clinic, the emergency department (ED), the inpatient units, or within 5 days following hospital discharge. Out of 96 patients who were approached, 95 patients with SCD (64% HbSS disease), aged 20–64 (mean=34) participated. Socioeconomic status was assessed using four categorical demographic variables: education (high school, high school/GED, some college, college or beyond), annual household income (<$10,000 and >$10,000), current employment (employed/unemployed) and receipt of disability (yes/no). Outcomes variables were the number of hospitalizations over the past year (log transformed) and the patient’s self-report of their annual number of vaso-occlusive crises that require a hospital visit (<3 and ≥3). Logistic regression and multiple linear regression were used to test for the association among SES indicators and binary or continuous outcome variables, respectively. Analyses included covariates for age, sex and clinical variables: patient’s genotype (HbSS vs. other), number of non-sickle related comorbidities (diabetes, hypertension, HIV, hepatitis B, or hepatitis C), and number of sickle-related comorbidities (acute chest syndrome, avascular necrosis, renal disease, pulmonary hypertension, or iron overload).

RESULTS: After adjusting for covariates, patients with at least a college level education experienced an average of 1.29 (SD=1.01) hospitalizations compared to an average of 5.81 (SD=6.06) hospitalizations for patients who did not complete high school (F=.73; p<.01). Further, patients with a higher education were 7.4 times more likely to report having fewer than 3 pain crises requiring hospitalization a year (p=.038). Similarly, when examining income, patients with a household income greater than $10,000 a year had fewer hospitalizations (F=.50; p<.01) and pain crises requiring hospitalization (OR=.23; p=.015) than patients with a household income less than $10,000. Employed patients also experienced fewer hospitalizations than unemployed patients (F=.36; p=.04). Receipt of disability was not associated with hospital utilization after adjusting for age, sex and clinical variables.

CONCLUSION: Findings from this study suggest that SES is inversely associated with health care utilization. These effects were consistent when accounting for age, sex, genotype, and clinical comorbidities. However, the causal direction of the relationship between hospital utilization and SES cannot be confirmed in this cross-sectional study. Nonetheless, assessing SES may help identify patients who are at “high risk” for poor outcomes. By appropriately identifying risk factors for poor health outcomes, we will be able to tailor and personalize care plans to the specific needs of each patient with the goal of improving patient self-management and disease outcomes.

PRIMARY PROSTATE CANCER TREATMENT VARIATIONS IN THE VETERANS HEALTH ADMINISTRATION VERSUS THE PRIVATE SECTOR

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BACKGROUND: The first-line management of loco-regional prostate cancer may include prostatectomy, radiation therapy, or active surveillance. Substantial variation has been observed in primary treatment of prostate cancer; such variation may be less within an integrated delivery system with equal access to care like the Veterans Health Administration (VHA). We examined primary therapy of loco-regional prostate cancer within the VHA to understand factors contributing to variation within and across facilities. We also compared primary treatment in the VHA for older men with that for older men treated in the private sector under fee-for-service Medicare plans.

METHODS: Data from the Veterans Affairs Central Cancer Registry (VACCR) were used to identify 39,547 men diagnosed with loco-regional prostate cancer during 2001–2004. We linked VACCR data with administrative data and surveyed of 138 VHA Medical Centers about availability of cancer-related services. We used hierarchical linear models to identify patient and provider characteristics associated with primary treatment. We also identified 65,778 men aged >65 years diagnosed with loco-regional prostate cancer in 2001–2004 and treated in the private sector under fee-for-service Medicare plans. We used propensity score methods to match these men with 19,210 men aged >65 treated in the private sector to compare primary prostate cancer treatment in the two settings.

RESULTS: Among VHA patients, those who were older (age >70), of black race/ethnicity, had a prior history of cancer, or high comorbidity scores were more likely to undergo active surveillance than other men (all P<.05). Significant variations in rates of primary therapy were seen across VHA facilities, with rates of surgery ranging from 5% to 66% and rates of radiation therapy ranging from 18% to 89%. Facilities with more black patients had lower rates of radical prostatectomy (P=0.02), but overall, facility characteristics explained very little of the variation observed. Compared with patients in fee-for-service Medicare, VHA patients were younger and more likely to be minorities, unmarried, living in areas of lower socioeconomic status, and more likely to have vascular disease and diabetes; these differences were no longer present after matching. Adjusted rates of radiation therapy (40.1% vs. 52.2%) and radical prostatectomy (12.1% vs. 15.7%) were lower in the VHA population and rates of active surveillance were significantly higher (47.9% vs. 32.1%) in the VHA population compared to the private sector population (p<0.001).

CONCLUSION: Substantial variation in primary treatment for prostate cancer was evident in the VHA within and across facilities. Black men received less aggressive care, and facilities that cared for more black men had lower surgery rates, but overall, little variation was explained by facility characteristics. Primary prostate cancer therapy for older men was less aggressive in the VHA than in the private sector. With the absence of data demonstrating benefits of aggressive therapies for most older men with loco-regional prostate cancer, this may reflect more
appropriate selection of therapies in the VHA, although additional data are needed to understand the long-term outcomes associated with primary treatments in these settings.

**QUALITY OF EVIDENCE INFORMING PATIENTS’ CHOICE OF RENAL Replacement MODALITY**

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**BACKGROUND:** Patients and their physicians are encouraged to engage in informed decision-making about renal replacement modality. However, the quality and quantity of evidence available to inform patients’ choice of renal replacement modality is unknown.

**METHODS:** To develop an intervention to improve decision-making about patients’ choice of renal replacement modality, we obtained data from national registries and systematically reviewed studies published after 1987 to summarize evidence regarding differences in clinical outcomes between renal replacement modalities. Using modified Grading of Recommendations Assessment, Development and Evaluation (GRADE) criteria, we assessed the quality of the evidence (‘very low’ e.g. case series), ‘low’ e.g. cross-sectional or pre-post observational studies), ‘medium’ (e.g. longitudinal cohort studies or registry data), ‘high’ (e.g. randomized controlled trials-RCTs) across 12 domains of clinical outcomes identified by patients as important to renal replacement modality decisions.

**RESULTS:** Registries provided evidence on 2 domains (8 outcomes). From 3,384 possibly relevant PubMed abstracts, 105 studies provided evidence on 10 domains (53 outcomes). (Table) There were few (n=7) longitudinal cohort studies. Most (n=98) studies had qualitative, case-series, cross-sectional, or pre-post designs. There were no RCTs. Most (n=72) studies compared outcomes between hemodialysis (HD) versus peritoneal dialysis (PD) while fewer (n=21) compared PD versus transplant (TX) or PD versus TX (n=3). The quality of evidence was low for the majority of domains.

**CONCLUSION:** There is little high quality evidence to inform patients’ choice of renal replacement modality. Research is needed to better inform decisions.

**HOW MUCH DISCONTINUITY DOES A HOSPITALIZED PATIENT EXPERIENCE?**

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**BACKGROUND:** Discontinuity in hospital care has been a growing concern as the work of resident physicians has become more shift-like. We performed an observational study to characterize the physician discontinuity experienced by hospitalized patients.

**METHODS:** We identified patients cared for by internal medicine house staff at 3 hospitals (a VA, a tertiary care medical center and a community hospital) affiliated with a single residency program. We prospectively collected daily schedule data from house staff during months they were assigned to general medicine wards during a 1-year period. We retrospectively reviewed the charts of a random sample of patients cared for by those house staff. We also downloaded the electronic sign-out documents from the teams every day. The house staff schedule data included times in and out of the hospital each day. The patient chart review included dates and times of admission and discharge and the comorbidities included in the Charlson comorbidity index. We assigned each patient an admitting doctor, a discharging doctor and a primary inpatient doctor. The admitting doctor was the person who wrote the history and physical (if more than one such document existed, the admitting doctor was the least senior house officer who wrote one). The discharging doctor was the person who wrote the final discharge order, and the primary inpatient doctor was the person who was assigned to be the patient’s intern on the sign-out document. We looked at 4 aspects of discontinuity for each patient: 1) admission-discharge discontinuity defined as being admitted and discharged by 2 different people; 2) time between admission and the first hand-off of care defined as the time between admission and the next time that the admitting doctor left the hospital; 3) whether or not patients were hospitalized during an intern or resident switch day; and 4) the percentage of hospital time covered by the primary inpatient doctor defined as the sum of the time the primary inpatient doctor was in the hospital divided by the patient’s length of stay (LOS).

**RESULTS:** We report on the results from 271 patients. Mean age was 62.1 (SD 17.8). Most (63%) were male. The mean Charlson score was 2.6 (SD 2.2). Mean LOS was 5.4 days (SD 4.1). Admission-discharge discontinuity was experienced by 184 (68%) patients. After excluding patients at a hospital with a policy that dictated patients be discharged by the attending, admission-discharge discontinuity was still 54%. Mean time between admission and the first hand-off of care was 16.2 hours (SD 6.9). Sixty-seven (27%) patients were hospitalized over a switch day. Excluding the patients who were hospitalized over a switch day (i.e. the remaining patients had the same primary doctor the whole hospitalization), a mean of 42% of hospital time was covered by the primary inpatient doctor.

**CONCLUSION:** Continuity of care in the outpatient setting has been associated with better compliance and better doctor-patient relationship parameters. We hypothesize that it is also important in the hospital setting. This is the first attempt at characterizing the discontinuity experienced by hospitalized general medicine patients, and we have demonstrated that there is a substantial amount. Limitations include studying only 3 hospitals and 1 house staff program. The next step is to look for associations between discontinuity and adverse events.

**HEALTH INFORMATION EXCHANGE USE IMPROVES ADHERENCE WITH EVIDENCE-BASED GUIDELINES FOR NEUROIMAGING IN THE EMERGENCY EVALUATION OF HEADACHE**

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**BACKGROUND:** Neuroimaging is routinely obtained in the emergency department (ED) evaluation of headache despite evidence-based guidelines (EBGs) recommending selected use. Health information exchanges (HIEs) have been proposed as a way to reduce unnecessary neuroimaging. This study seeks to determine whether HIE use for patients presenting to the ED with headache decreases unnecessary neuroimaging and increases adherence with EBGs for neuroimaging.

**METHODS:** Cross-sectional analysis of data from the MidSouth eHealth Alliance HIE for 2,102 adult patient-visits with primary diagnosis of headache (ICD-9-CM codes 346.0, 346.1, 346.9 and 784.0) for patients presenting to one of the major general hospital EDs in the four counties of the Memphis Metropolitan Area two or more times between August 1, 2007 and July 31, 2009. Adherence with EBGs for neuroimaging in
evaluation of primary headache was the primary outcome. Use of diagnostic neuroimaging (CT, CT angiography, MRI or MRI angiography) was a secondary outcome.

**RESULTS:** The HIE was accessed for 21.8% of ED visits for headache. Billing provider accounted for 30.0% and ED staff for 70.0% of total HIE use. 69.8% of patient-visits received some type of neuroimaging. Of the 1,467 cases with any imaging, 1,413 had at least one head CT (96.3%). Bivariate analysis revealed that HIE use by any ED personnel [odds ratio [OR] 1.78, 95% confidence interval [CI] 1.42-2.24], and by ED staff (OR 2.54, CI 1.94-3.32) were associated with increased EBG adherence. Increased number of previous visits was also associated with EBG adherence (OR 0.32, CI 0.22-0.46). In addition, multivariate results revealed strong interactions between number of previous visits and HIE use on EBG adherence. The any HIE use 4 previous visits interaction term was associated with increased EBG adherence (OR 2.04, CI 1.28-3.26).

**CONCLUSION:** Systematic HIE use by ED personnel and overall HIE use are strongly associated with increased adherence with EBGs for evaluation of headache in the ED. HIE use effects appear to be most beneficial for patients with higher numbers of previous visits. HIE use effects appear to be most beneficial for patients with higher numbers of previous visits. HIE use should be promoted to help reduce the costs and potential harms associated with unnecessary neuroimaging in patients with headache.

**ELECTRONIC HEALTH RECORDS AND PHYSICIAN STRESS IN OFFICE BASED PRACTICE?** Stewart Babbott 1; Linda Baier 2; Mark Linzer 3; Roger Brown 2; Enid Montague 2; Eric Williams 4; Mark Schwartz 2; Erik Hess 5; University of Kansas Medical Center, Kansas City, Kansas; 5University of Kansas Medical Center, Kansas City, Kansas; 5University of Wisconsin, Madison, Wisconsin; 5Hennepin County Medical Center, Minneapolis, Minnesota; 5University of Alabama, Birmingham, Alabama; 5New York University, New York, New York; 5Mayo Clinic College of Medicine, Rochester, Minnesota. (Tracking ID # 12208)

**BACKGROUND:** The electronic health record (EHR) is increasingly prevalent in office based care. Reports suggest that practice using the EHR can be a factor in provider reported levels of stress in office environments. We investigated the possible relationships between the presence of the number of EHR features and physician reported levels of stress.

**METHODS:** We performed a secondary analysis on data from the MEMO study (Minimizing Error, Maximizing Outcomes), which involved 422 Internal Medicine and Family Medicine physicians in their offices in 5 areas of the United States. As part of this study, physicians and office managers completed questionnaires about their office practice, including specific EHR features the office used (yes/no), individual measures of stress, burnout, intent to leave and satisfaction (scale 1 low to 5 high). Using binary based latent class analysis, we sought to define classes of respondents based on the number of EHR features present. We then sought to define relationships between these classes and the individual reports of stress and related issues.

**RESULTS:** We defined 3 classes of respondents based on level of EHR use: low, moderate and high. The physician questionnaire had 15 specific EHR features. We compared mean responses between classes to each of the four measures of stress or satisfaction. Data are reported as mean (standard error) (95% confidence interval). When compared with the low use group, the moderate use group reported significantly more stress (mod: 3.491 (0.084) (3.327, 3.655) vs low 3.112 (0.104) (2.909, 3.315) p=0.004), more burnout (mod: 2.306 (0.078) (2.154, 2.458) vs low 2.027 (0.092) (1.847, 2.207) p=0.02) and lower satisfaction (mod 3.543 (0.071) (3.404, 3.682) vs low 3.838 (0.114) (3.165, 4.061) p=0.03). When compared with the high use group, the moderate use group also reported significantly more stress (mod 3.491 (0.084) (3.327, 3.655) vs high 3.282 (0.067) (3.151, 3.413) p=0.04). There were no differences between groups for responses in intent to leave.

**CONCLUSION:** The level of EHR support was associated with reported level of stress, burnout, and satisfaction in a U shaped curve. We hypothesize that the offices in the ‘moderate’ class were either offices in transition to a full EHR or were those with an implemented EHR that did not have all electronic functions. Our findings have implications for EHR implementation, preparing all members of the office for potentially increased stress and decreased satisfaction during the period of transition. Similarly these findings can assist administrative leaders in developing transition strategies to mitigate worker stress and decreased satisfaction. Further work should explore the specific features of the EHR which are associated with these findings and variables such as the office organization, EHR planning, implementation and support, patient populations served, physician engagement in the practice and practice financing.

**A POINT OF CARE MEDICATION DELIVERY SYSTEM IMPROVES CLINICAL OUTCOMES IN A DIVERSE DIABETIC POPULATION** Ana Palacio 1; Jessica Chen 2; Leonardo Tamariz 3; Siobhan Proksell 1; Arash Harzand 1; Olveen Carrasquillo 1; University of Miami, Miami, Florida; 2Chen Medical Associates, Miami, Florida; 3University of Miami, Doral, Florida. (Tracking ID # 12213)

**BACKGROUND:** To date, few strategies have been successful at improving intermediate outcomes among minority diabetics. Those that exist are often complex, multi-factorial, highly culturally/ individually tailored and thus difficult to scale up. Fully automated point of care medication delivery systems (POCMDS) are a recent technological innovation which allow providers to dispense pre-sealed medications at the time of the visit. In 2009, a private practice network serving a multi-ethnic clientele in South Florida implemented an POCMDS. While the POCMDS has generated substantial cost-savings to this fully capitated network, the impact on care outcomes has not been evaluated. As POCMDS have the potential to improve medication adherence, the aim of this study was to evaluate the impact of the implementation of this POCMDS on intermediate diabetes outcomes.

**METHODS:** We conducted a pre-post design analysis among all diabetics in the practice having had at least 6 months of follow-up before and after enrolling in the POCMDS. We collected HbA1c, LDL, systolic and diastolic blood pressure measurements, race/ethnicity and co-morbidities from the electronic medical record. We compared the mean blood pressure before and after enrolling in the POCMDS for all eligible subjects and compared mean HbA1c and LDL for those subjects with at least one measurement, before and after enrollment at the implementation of the POCMDS.

**RESULTS:** We identified 878 diabetic patients with blood pressure measurements. Black subjects had significantly lower systolic and diastolic blood pressure after the implementation of POCMDS when compared to non Hispanic White and Hispanic subjects (table 2). We identified 591 patients with two HbA1c and LDL measurements. Table 1
reports the changes on HbA1c. At 6 months, the POCMDS significantly improved HbA1C among black subjects. A similar trend was also observed among the smaller cohort of non-Hispanic whites, but not among Hispanics. The intervention did not have an impact on LDL.

Table: 1

| Race     | Number | HbA1c before POCMDS | HbA1c after POCMDS | p-value |
|----------|--------|---------------------|--------------------|---------|
| White    | 77     | 7.401.18            | 7.151.21           | 0.19    |
| Black    | 82     | 7.311.47            | 7.231.41           | <0.01   |
| Hispanic | 82     | 7.541.25            | 7.551.47           |         |

Table: 2

| Race     | Number | SBP before POCMDS | SBP after POCMDS | p-value |
|----------|--------|-------------------|------------------|---------|
| White    | 125    | 13216             | 13029            | 0.48    |
| Black    | 678    | 13715             | 13423            | <0.01   |
| Hispanic | 75     | 13422             | 13322            |         |

CONCLUSION: We found that the POCMDS significantly improved diabetes control and blood pressure among the large number of black diabetics in this practice network. The intervention is relatively simple to implement and highly scalable. Thus, fully at risk Accountable Care Organizations (ACOS) may consider POCMDS as a tool that may not only reduce prescription costs expenses but one that may also improve diabetes intermediate outcomes among some vulnerable populations.

A LONGITUDINAL STUDY OF MEDICAL STUDENTS’ ATTITUDES TOWARD THE PHYSICAL EXAM  
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BACKGROUND: The physical exam has been called “a dying art.” Medical educators worry about the negative messages students receive from their clinical environment, where time constraints and technology can devalue the bedside exam. We aimed to determine how the attitudes of medical students toward the physical exam change from year 1 through year 3 of medical school.

METHODS: We administered a survey to students in the class of 2011 at our institution at four time points: at the mid-point of M1 year (prior to a physical exam course), and at the end of the M1, M2, and M3 years. We asked students to complete a 29-item questionnaire regarding their confidence in performing the physical exam and their perception of its utility. We included general questions and questions about 11 specific examinations: blood pressure, heart, lungs, abdomen, liver, neck veins, lymph nodes, thyroid, optic disk, knee and neck veins. Advanced physical diagnosis courses in place of the bedside exam. Confidence in exam skill as a whole rises after clerkships, but confidence is flat for many specific organ systems including the heart, and remains low for the optic disk, lymph nodes, thyroid, knee and neck veins. Advanced physical diagnosis courses which emphasize the systems which students feel less confident examining and provide evidence for the usefulness of exam maneuvers fill an important need.

ADHERENCE TO THE USPSTF 2002 OSTEOPOROSIS SCREENING GUIDELINES IN AN ACADEMIC GENERAL INTERNAL MEDICINE CENTER AND WOMEN’S HEALTH CARE CENTER  
Heidi Sara Powell 1; Kim O’Connor 1; Deborah Greenberg 1. 1University of Washington, Seattle, Washington. (Tracking ID # 122230)

BACKGROUND: In the United States, 1.5 million osteoporosis related fractures occur annually and are expected to increase to 3 million by 2025. Approximately 50% of postmenopausal women will suffer from an osteoporosis-related fracture during their lifetime. Those at greatest risk are women aged 65 and older. The mortality rate is estimated at 24%, within the first year following a hip fracture. In 2002, the USPSTF recommended that all women 65 years and older should be screened for osteoporosis. Universal screening of women aged 65 and older has been recommended by other organizations as well. Despite these recommendations, many women are not being screened and therefore are under diagnosed.

Primary care physicians’ screening rates for women aged 65 and older range from 11-62%. Few studies have been done evaluating independent predictors of BMD screening. Three, based on databases as opposed to surveys, have found that female providers have higher rates of screening compared to male providers. One study reported a wide variation in guideline adherence by practice site not explained by patient case mix. The site with the highest proportion of adherence specialized in women’s health.

Our study was designed to determine how well physicians in a large urban academic medical center adhere to the USPSTF 2002 guidelines for osteoporosis screening in women aged 65 years and older. We also wanted to determine if the rates of screening differed based on physician gender or clinic practice site, the General Internal Medicine Center (GIMC) vs. the Women’s Health Care Center (WHCC).

METHODS: We accessed the Medical Information Networked Database (MINDB) at University of Washington Medical Center (UWMC). The system stores the records of over 1.9 million UWMC patients. All women aged 65 or older who were seen in the GIMC or the WHCC at University of Washington Medical Center by internal medicine attending physicians between Jan. 1, 2006 and Feb. 2, 2008 were included in the study. There were 8 female and 15 male internal medicine attending physicians in the GIMC and 5 female internal medicine attending physicians in the WHCC. We excluded patients that were seen by gynecologists, nurse practitioners, or resident physicians. If the patients were seen by more than one provider during that time period, we reviewed the electronic medical record (EMR) to determine which physician was their primary care provider. A total of 1,363 of women were included in the study. We...
then queried MIND to determine which of these women had had BMD testing with Dual Energy X-ray Absorptiometry (DEXA) from 1994 through February 2009, regardless of the physician who ordered the test. Tables were generated that displayed the number of women seen in the clinic and the percentage of these patients who had BMD testing performed based on attending physician gender and clinic practice site (GIMC vs. WHCC). We also determined the number of women seen and the number who underwent BMD testing per individual physician. Using a Chi-Square analysis, we compared the percentage of women in this population who were screened for osteoporosis based on provider gender and clinic practice site.

RESULTS: The overall rate of screening of women aged 65 years and older with BMD testing was significantly higher in the Women’s Health Care Center at 79.2% than in the GIMC at 66.7% (p<0.001). The rates of screening based on gender of the physician were 72.2% for female physicians (including female physicians in the GIMC and WHCC) and 66.1% for male physicians (p=0.023). When the screening rates of the female providers in the GIMC and WHCC were compared, the providers in WHCC screened at a significantly higher rate of 79.2% compared to 67.3% in the GIMC (p<0.001). The number of study patients seen by an individual provider during the study period ranged widely, from 1 to 116. The proportion of patients screened by an individual provider varied from 33% to 100%. There was no correlation between the number of patients seen by an individual physician and the percentage of patients who they screened.

CONCLUSION: We found that our screening rates for osteoporosis in women aged 65 and older were higher than reported in previous studies and ranged from 66.7% in the General Internal Medicine Center (GIMC) to 79.2% in the Women’s Health Care Center (WHCC). These high rates of screening may be due to the academic setting, as both the GIMC and WHCC are teaching sites for residents and medical students. We found that the practice site and not gender of the provider resulted in significantly different screening rates. There was a higher rate of screening by internal medicine physicians in the WHCC as compared to the physicians in the GIMC. Futures studies are needed to determine what factors influence BMD testing of postmenopausal women by physicians and how these can be addressed to improve diagnosing and treating osteoporosis. As health care reform places more emphasis on preventive care, there is hope that screening for this important disease will approach 100%.

WHY WOULD HOUSE STAFF CHOOSE TO WORK BEYOND THE HOUR LIMITS? Sarah J Nickoloff 1; Marilyn Schapira 2; Jeffrey Jackson 3; Jeff Whittle 4; Michael Frank 5; Kathryn Fletcher 6. 1Medical College of Wisconsin, Milwaukee, Wisconsin; 2MCW, Milwaukee, Wisconsin; 3Milwaukee VAMC/MCW, Silver Spring, Wisconsin; 4Milwaukee VA Medical Center, Milwaukee, Wisconsin; 5MCW, MILWAUKEE, Wisconsin; 6Milwaukee VAMC/MCW, Milwaukee, Wisconsin. (Tracking ID # 12232)

BACKGROUND: The Accreditation Council for Graduate Medical Education (ACGME) announced new duty hour guidelines to begin July 1, 2011. The new guidelines will allow occasional exceptions to the rules in circumstances limited to “required continuity for a severely ill or unstable patient, academic importance of the events transpiring, or humanistic attention to the needs of a patient or family.” It is unclear how often or in what situations house staff would consider using these exceptions. The purpose of our study was to quantify the frequency of these situations, and to describe circumstances in which house staff might consider using these exceptions.

METHODS: We conducted a cross-sectional survey study at a single academic tertiary care hospital. Participants were internal medicine housestaff on inpatient ward services during the study period. House staff were notified about participation via email and announcements at house staff meetings. The anonymous survey consisted of demographic questions and 4 questions pertaining to the duty hour exceptions. In these 4 questions, we asked each house officer to consider the 2 prior weeks of ward service and whether they would have used the anticipated exceptions, had they been allowed. Participants were also asked to provide a brief description of these situations. The study team reviewed these free text descriptions and identified themes using a grounded theory approach.

RESULTS: Fifty-one surveys out of 86 (59%) were returned. Interns and residents each accounted for 50% of the total. Thirty-five (69%) had encountered a situation in the last 2 weeks in which they wanted to stay longer than current duty hour rules allowed. The number of times participants wanted to stay in that period ranged from zero to “nearly everyday.” Of those indicating that they would have stayed beyond the allowable hours, 55% would have broken the 24 + 6 hour rule; 33%, the 10 hour rule; and 12%, the 80 hour rule. The most common reason to want to stay was continuity for an unstable patient (n=30, 59%) of the respondents. Humanistic attention for the family/patient was cited by 19 (37%). Eleven (22%) participants identified an educational opportunity, and 14 (27%) chose "other.” Descriptions of the situations which prompted house staff to want to stay spanned several themes: 1) Concern about workload for their own team and for the team covering overnight; 2) Patient acuity early that caused a redistribution of non-urgent work to the end of the shift; 3) Critical decision points inpatient care; and 4) The desire to preserve doctor-patient communication. Procedures were the major educational opportunity cited by house staff as a reason to stay.

CONCLUSION: Nearly 70% of house staff identified at least one time in the preceding 2 weeks in which they wanted to exceed current duty hour limits. The majority involved providing continuity for an acutely ill patient, however the doctor-patient relationship, humanistic attention to patients and workload were also commonly cited. We conclude that after July 1, situations will routinely arise during which housestaff will want to stay beyond duty hours. This may occur more frequently than anticipated by the ACGME. Training program leadership should be prepared to educate current and incoming house staff about these potential situations and have plans in place for dealing with such circumstances.

RETENTION AND SCREENING RATES OF IMMIGRANT PATIENTS IN THE SOUTH BRONX Anna E Jackson 1; Angela Jeffers 2; Nicole Sirotin 2; Hillary Kunins 1; Alda Osnaga 3. 1Montefiore Medical Center, Bronx, New York; 2Montefiore Medical Center, New York, New York; 3Montefiore Medical Center, Bronx, New York. (Tracking ID # 12234)

BACKGROUND: Foreign-born adults in New York City are less likely than US-born adults to have a regular primary care provider or to receive age-appropriate cancer screenings. They also may not receive special screening, such as for Hepatitis B and intestinal parasites, appropriate to country of origin. Specific recommendations on which conditions to screen for, and in which populations, are lacking in the current literature. One proposed method of addressing these deficiencies in care is to hold a dedicated immigrant clinical session within a larger primary care practice. Our community health center (CHC) in the South Bronx, an academic teaching facility, holds a weekly clinical session to provide access to comprehensive primary care services for immigrant patients in our community. Local community-based organizations (CBOs) that work with predominantly immigrant populations refer patients and can arrange appointments within one week. Patient
between October 1, 2007 and September 30, 2009, 107 patients were seen at our CHC. Ninety-one percent of patients were uninsured. Eighty-four out of 107 patients seen for a new visit during a dedicated immigrant clinical session at our CHC from October 1, 2007 through September 30, 2009. We extracted data via chart review, incorporating information regarding any subsequent communication from the CHC. Patients are initially evaluated by resident physicians who are supervised by dedicated faculty. Patients then become a part of a given resident’s patient panel for subsequent follow-up visits. This study aims to evaluate the success of this dedicated immigrant clinical session model in A) achieving access to care through retention in primary care and B) providing appropriate screening for cancer and infectious diseases.

**METHODS:** We conducted a retrospective cohort study of all new patients seen for a new visit during a dedicated immigrant clinical session at our CHC from October 1, 2007 through September 30, 2009. We extracted data via chart review, incorporating information during the year following the initial visit. The primary outcome was retention in care, defined as at least one follow-up visit within one year after initial visit. The association of age, gender, length of time in the US, and chronic illness (diabetes, hypertension and asthma) with retention was analyzed using chi-square statistic for categorical variables and Mann-Whitney test for continuous variables. Secondary outcomes included rates of age-appropriate cancer screenings and results of specific screening tests as recommended by the Centers for Disease Control and Prevention (CDC) for refugee populations, including Hepatitis B surface antigen (HBsAg), tuberculin skin test (TST), complete blood count (CBC), and ova and parasites in stool. The decision to screen for the later conditions was left to the providers’ clinical judgment, as no specific guidelines have been adopted for screening immigrant patients in this setting.

**RESULTS:** Between October 1, 2007 and September 30, 2009, 107 patients were seen for an initial visit during an immigrant clinical session at our CHC. Fifty-three percent were female. Mean age was 43 years. The majority of patients were from sub-Saharan Africa (71%) and Latin America (28%). Median time living in the US was seven years. Ninety-one percent of patients were uninsured. Eighty-four out of 107 patients (79%) returned for at least one follow-up visit within one year. The mean number of follow-up visits was 2.5 (range 1–14). We did not detect differences in retention based on age, gender, length of time in US, or presence of chronic illness. Amongst the female population in the cohort, 82% received age-appropriate mammography and 79% had appropriate cervical cancer screening. Twenty-four percent of patients in the cohort received age-appropriate colorectal cancer screening with either stool guaiac cards or colonoscopy. Eighty-three patients (79%) were screened for HBsAg, of which three patients (4%) were positive. Twenty-seven patients (25%) received a screening TST, of which 7 (26%) were positive. Seventy-eight patients (73%) received a screening CBC. Of these, 31% had anemia, 3% had eosinophilia and none had thrombocytopenia. Ten of the 107 patients were checked for ova and parasites in stool, of which three were positive (30%).

**CONCLUSION:** A dedicated immigrant clinical session model, partnering a CHC with local CBOs, can promote access to care through retention of immigrant patients in a continuity setting. For mammogram and cervical cancer screening of our patients, we were able to match the national rates of 79% and 83%, respectively. However, our rates for colorectal cancer screening fell below the national average of 62%. Further work must be done to improve patient and physician education regarding colorectal cancer screening in immigrant patients. Regarding immigrant-specific screening tests (HBsAg, TST, CBC, and stool for ova and parasites), we did not screen every patient, and the percentage tested varied. This variation is likely due to the lack of specific screening guidelines in immigrant populations. Current recommendations are largely focused on refugee populations, but the larger immigrant population might also benefit from similar screenings. Amongst our patient population, we found that over a quarter of patients screened had evidence of latent tuberculosis, anemia, and intestinal parasites, rates consistent with previously published data on immigrant and refugee populations. This supports the need for clear recommendations regarding immigrant-specific screening. Our immigrant clinical session model of partnering a CHC with local CBOs can achieve patient retention in primary care and provide an appropriate setting for age-appropriate cancer screening. Further work needs to be done to improve rates of colorectal cancer screening within our model and to better understand which diseases need to be screened for in the immigrant population.

**GENERAL MEDICAL VERSUS GERIATRIC CO-MORBIDITY COUNTS: OPPOSITE EFFECTS ON OVERALL QUALITY OF CARE IN COMPLEX GERIATRIC PRIMARY CARE PATIENTS**

**BACKGROUND:** Prior research across multiple data sources suggests that patients with greater burden of co-morbid conditions receive better – rather than worse – quality of care. Because the treatment of geriatric conditions is time-consuming and often falls outside the traditional medical model, we hypothesized that the total burden of geriatric conditions would be associated with lower overall quality. Using data from the Assessing the Care of Vulnerable Elders-2 (ACOVE-2) study, a study that focused on the care of patients with both geriatric and medical conditions, we assessed the association between overall quality of care with both the number of general medical conditions and the number of geriatric conditions.

**METHODS:** As part of the ACOVE-2 study, 644 patients age >=75 who screened positive for symptoms of at least one of 3 geriatric conditions were enrolled in a practice-based intervention to improve the care of dementia, falls, and urinary incontinence. To assess care quality, we constructed an overall quality of care score that was a composite of 98 process of care quality indicators (QIs) that measured the care of preventive, general medical, and geriatric conditions (# of QIs passed divided by number of QIs eligible) over a 13 month observation window for each patient. We also constructed separate counts of general medical conditions (coronary artery disease, atrial fibrillation, congestive heart failure, cerebrovascular disease, diabetes, and chronic obstructive lung disease) and geriatric conditions (dementia, falls or fear of falling, bothersome urinary incontinence, osteoporosis, hearing impairment, malnutrition) documented in the medical record during the observation window for each patient. To assess association between co-morbidity counts and overall quality we used multivariable regression, controlling for age, gender, vulnerability to death and decline, number of primary care visits, and ACOVE-2 control vs intervention site.

**RESULTS:** The mean number of general medical conditions was 1.9 (SD 1.3, range 0–6) and the mean number of geriatric conditions was 1.6 (SD 0.8, range 0–4). The two counts were uncorrelated (r=.04, p=.3). Nearly all (99%) had at least one condition in both categories, and more than half (52%) had at least 2 conditions in each category. On average, each additional general medical condition was associated with a 5% point increment in overall quality, while each additional geriatric condition was associated with a 3.2% point decrement, independent of each other and the multivariable controls (p<.001 for both). A moderately-complex patient with 1 general medical and 1 geriatric co-morbidity had a predicted overall quality of 53% (95% CI 50-57%). Adding 2 additional general medical co-morbidities to this hypothetical patient increased the...
predicted overall quality to 60% (95% CI 57-64%) whereas adding 2 additional geriatric co-morbidities decreased expected overall quality to 42% (95% CI 38-46%).

CONCLUSION: While a greater number of general medical conditions was related to better quality of care, patients with a greater burden of geriatric conditions received worse overall quality of care, suggesting a need to focus on improving care for patients with multiple geriatric conditions.

DOES COMPLIANCE WITH THE HEART FAILURE INPATIENT QUALITY MEASURES PREVENT HOSPITAL READMISSION? Sarah Bou Malham 1; Mario Njeim 1; Nikhil Ambulgekar 1; Alaadi Yathreb 1; Mahmoud Assaad 1; Mustafa Abas 2. 1Henry Ford Hospital, Detroit, Michigan; 2Henry Ford Hospital, Detroit, Michigan.

BACKGROUND: Congestive heart failure national inpatient quality measures were developed by the Joint Commission in conjunction with the Center of Medicare and Medicaid Services and the American Heart Association. Although most of these measures have evidence-based foundation, data supporting their effect on patient outcomes are sparse and controversial. There is currently an urgent need to assess compliance rates, and most importantly to further analyze the efficacy of the core measures for prevention of re-hospitalization.

METHODS: We conducted a retrospective cohort study on patients discharged from a major urban hospital between June 2009 and October 2009 with a primary diagnosis of heart failure. We reviewed compliance with each of the 4 mandatory core measures: assessment of left ventricular function (LVF), use of angiotensin-converting enzyme inhibitor (ACE) or angiotensin-receptor blockers (ARB), smoking cessation education and heart failure discharge instructions. A univariable cox-regression analysis was conducted with each factor for prediction of hospital readmission. In addition, a compliance score (ranging from 0 to 4) defined as the number of measures in compliance was generated for each patient. This score was tested using a cox-regression model for prediction of all-cause hospital readmission.

RESULTS: 285 patients were included in the study. Mean follow-up was 5 months. Readmission rate at 30 days was 23.3%. Compliance rates with individual measures were the following: assessment of LVF 84.7%, use of ACE or ARB 72.8%, smoking cessation education 100% and heart failure discharge instructions 74.6%. Each one of the 4 quality measures was independently a poor and statistically non-significant predictor of readmission. Results of the univariable cox-regression analysis were the following: assessment of LVF (HR 0.95; 95% CI 0.65-1.38; P=0.78), use of ACE or ARB (HR 0.91; 95% CI 0.67-1.24; P=0.57) and heart failure discharge instructions (HR 0.74; 95% CI 0.75-1.44; P=0.79). The sample size breakdown according to the compliance score was as follows: 4 patients had a score of 1, 39 had a score of 2, 104 a score of 3 and 138 had a score of 4. The compliance score showed to be a poor and statistically non-significant predictor of readmission based on the cox-regression results (HR 0.98; 95% CI 0.78-1.22; P=0.86).

CONCLUSION: Compliance with the four mandatory heart failure quality measures did not translate into a significant increase in the time free of readmission. While adherence to these measures is currently a major quality marker that is reported to the public and tied to reimbursement, healthcare providers should reassess the way these measures are being implemented as well as their cost effectiveness. There is also an obvious need to generate new evidence-based and personalized performance measures that have a more significant impact on readmission rates and the overall outcome of heart failure patients.

MEDICAL SYMPTOMS IN PATIENTS WITH DISSOCIATIVE DISORDERS Samantha A Miller 1; Brad Foote 1. 1Albert Einstein College of Medicine and Montefiore Medical Center, Bronx, New York. (Tracking ID # 122241)

BACKGROUND: Although the negative impact of Posttraumatic Stress Disorder (PTSD) on general health is increasingly recognized, the clinical correlates of other trauma-related psychiatric disorders remains understudied. Dissociative Disorders also may occur after trauma, most often severe and prolonged childhood trauma. Our objective was to evaluate associations between Dissociative Disorders and self-reported medical symptoms in a sample of primarily poor minority psychiatric outpatients in Bronx, NY. We hypothesized that Dissociative Disorders would be associated with an increased likelihood of common medical symptoms independent of medical comorbidity as well as the psychiatric conditions major depression and PTSD.

METHODS: We analyzed preliminary data for 222 out of a targeted 320 patients in a cross-sectional study of English-speaking adults aged 18–60 years initiating care at an outpatient psychiatric clinic in Bronx, NY. We assessed demographic data, medical and psychiatric profile, and substance use history through patient interview and chart review. Dissociative Disorders were diagnosed with the Structured Clinical Interview for DSM-IV Dissociative Disorders (SCID-D). Lifetime Major Depression and PTSD were diagnosed with the Structured Clinical Interview for DSM-IV Disorders. Medical symptoms were assessed with a self-report measure featuring a list of 21 common medical complaints administered to all patients at their first visit. A Charlson Comorbidity Score was calculated based on medical chart review. We used backward stepwise logistic regression to evaluate associations between medical symptoms and Dissociative Disorders. Variables entered into the model were age, sex, marital status, race/ethnicity, education, smoking, alcohol and illicit substance abuse or dependence, lifetime Major Depression and PTSD, Charlson Comorbidity Index score and psychiatric medication use.

RESULTS: Among 222 patients analyzed, the mean age was 37 years ± 13. 70% were female and 62% were Hispanic. Most had a high school diploma or less (68%), were unemployed (67%) and on Medicaid or uninsured (88%). Childhood abuse was reported by 71%, most often emotional abuse (58%) followed by physical (50%) and sexual abuse (47%). Just over 30% had a lifetime Dissociative Disorder, 78% had Major Depression and 51% had PTSD. Most patients had a Charlson Comorbidity Index Score of 0 (69%). The mean (± SD) number of medical symptoms reported was 5.4 ± 3.8 with 58% reporting 5 or more symptoms. The most commonly reported symptoms were energy problems (69%), weight problems (60%), shortness of breath (53%), appetite problems (53%) and unspecified pain (44%). On backward stepwise logistic regression, Dissociative Disorders were independently associated with fever (AOR 5.98 CI 1.06 - 33.63, p=0.04), unspecified pain (AOR 2.19 CI 1.16 - 4.11, p=0.02), blurred vision (AOR 2.19 CI 1.18 - 4.09, p=0.01), nausea/vomiting (AOR 2.78 CI 1.37 - 5.63, p=0.004), dysuria (AOR 3.43 CI 1.04-11.32, p=0.04) and bruising/bleeding tendency (AOR 2.55 CI 1.23 - 5.26, p=0.01).

CONCLUSION: In this sample of primarily poor, minority psychiatric outpatients, the presence of Dissociative Disorders was associated with a higher frequency of health complaints commonly seen in primary care independent of medical comorbidity score, psychiatric medication use, Major Depression and PTSD. Future studies should investigate associations between Dissociative Disorders, medical diagnoses and patient outcomes.
THE ASSOCIATION BETWEEN LOCAL FOOD ENVIRONMENT AND ADULT OBESITY AND DIABETES
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BACKGROUND: The consumption of high fat and high caloric “fast foods,” and lower rates of eating fruits and vegetables, are associated with a higher prevalence of both obesity and diabetes, and have added to both epidemics with both diseases and to individual and societal health care costs. Access to healthier foods and the opportunity to make choices in the “built environment” are important components in the battle against these epidemics. However, the most accurate way to represent the effect of the built environment has not yet been established. The objectives of this study are: 1) to investigate the relative availability of different types of food retailers - those who provide relatively less nutritious versus more nutritious food options - around people’s homes, 2) to assess whether differences in the ratio (Retail Food Environment Index - RFEI) of these venues is associated with obesity and diabetes among adults in California, and 3) to assess how these measures of food availability vary by race/ethnicity and income. Previous work using the RFEI was more limited in the food venues included and with further inclusiveness of food vendors this project better represents food choices, or lack of choice that people are exposed to around their homes.

METHODS: Data from the adult respondents of the 2007 California Health Interview Survey (CHIS 2007), a statewide population health survey, was geocoded with GIS software and linked with the 2007 InfoUSA Business File, a geographic listing of food retailers. The RFEI, a ratio of the number of less nutritious food vendors (fast-food restaurants, convenience stores, pharmacies) to the number of more nutritious food vendors (supermarkets, warehouse stores, fruit/vegetable stores, farmers’ markets), will be calculated for varying buffers (1 mile, 2 miles, 5 miles) around adult CHIS respondents’ homes based on their level of urbanicity. We will use bivariate analyses and multivariate logistic regression modeling to assess the association of RFEI with obesity and diabetes, as well as with race/ethnicity and income.

RESULTS: The prevalence of obesity among adults is 22.5%, while nearly 8% of California adults have been diagnosed with diabetes. Lower income, minority race or ethnicity and obesity are associated with living in areas with higher RFEI. 36.3% of lower income adults (0-199% FPL) compared to 32.1% of higher income adults (>400% FPL) live in areas of the highest RFEI (>8) (P<0.05). 39.2% of African-Americans and 36.3% of Latinos compared to 32.1% of whites live in these least healthy food environments (p<0.05). Additionally, 24.6% of people who live in areas of the highest RFEI (>8) are obese, while in areas with the lowest RFEI (<4), 20.6% of adults are obese. There were no significant differences for diabetes.

CONCLUSION: The lower the ratio of unhealthy food venues to healthy food vendors near people’s homes, the more choices people have to consume more nutritious foods. This increased choice provides a possible means of slowing the growing obesity and diabetes epidemics. Partnership with city planners, local retailers, public health officials and community representatives will be key to bringing in more healthy food options to those food deserts where choice is limited or not available.

RECALL OF CANCER SCREENING AND PREVENTION RECOMMENDATIONS FROM A BRCA GENETIC TESTING AND COUNSELING PROGRAM
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BACKGROUND: As BRCA testing for hereditary breast and ovarian cancer syndromes has become increasingly available and accepted, the need for effective communication of the meaning of test results for cancer screening and prevention has become more important. BRCA results may be positive, meaning a known deleterious mutation is found; true negative, meaning the patient tests negative for a known family BRCA mutation; or non-definitive, meaning no known deleterious mutation is identified in the patient or her relatives. Most women have non-definitive BRCA results, for which the implications are not fully understood; these results may be particularly difficult to understand or remember. Understanding the recollections of patients who have participated in a genetic counseling and testing program may contribute to improved communication. We compared recollection of receiving screening and prevention recommendations in women who received definitive and non-definitive BRCA results from a cancer risk program (CRP) which provides personalized recommendations to all participants. We also sought to determine whether women received differing screening recommendations from the CRP than from elsewhere and whether recollection was associated with satisfaction with the decision to undergo genetic testing.

METHODS: We analyzed survey data from women who had undergone BRCA testing and genetic counseling within a university hospital CRP. Participants had personal and/or family histories suggestive of hereditary breast and ovarian cancer. All had hour-long genetic counselor appointments to discuss their BRCA results, and all had received written letters with personalized recommendations for screening and prevention based on BRCA results and other risk factors, reflecting expert opinion in the field. Our main outcomes were responses to two survey questions: “Did you receive cancer screening recommendations from the CRP?” and “Did you discuss cancer prevention options with the CRP?” Women who recalled receiving screening recommendations also reported whether these recommendations differed from others they had received. We stratified results by BRCA test result and prior diagnosis of cancer. To determine whether recollection was associated with higher satisfaction with the decision to undergo genetic testing, we conducted multivariable logistic regression analysis predicting recollection of receiving screening recommendations or discussing prevention options; our primary predictor was strong agreement with the statement “I am satisfied with my decision to undergo genetic testing for cancer risk.” We controlled for BRCA test result, prior diagnosis of cancer, age, and elapsed time since BRCA testing.

RESULTS: Of 1078 English-speaking respondents, 18% had positive BRCA results; 72% had non-definitive results; and 10% had true negative results. 757 (70%) had a prior diagnosis of cancer, with most cancers being breast (62%) or ovarian (7%). 554 women (51%) reported receiving screening recommendations from the CRP and 490 (46%) reported discussing cancer prevention options. Women with positive BRCA results were more likely than those with non-definitive or negative results to remember receiving screening recommendations and discussing prevention options. Women with a personal history of cancer were less likely to remember receiving these recommendations than women without cancer (Table 1). Of the 554 who recalled receiving screening recommendations, 25% reported that CRP recommendations differed from those received elsewhere. Among women without cancer,
those with non-definitive results were more likely than those with positive or true negative results to report differences between CRP screening recommendations and other screening recommendations (differences in recommendations reported in 33% of non-definitives vs 14% of positives vs 17% of true negatives; p = .025). Most women reported strong (64%) or moderate agreement (32%) with the statement “I am satisfied with my decision to undergo genetic testing for cancer risk.” In multivariable analysis, strong agreement was modestly but significantly associated with recalling receiving screening recommendations from the CRP; BRCA-positive status and no personal history of cancer were also independently associated with recollection of screening and prevention (Table 2).

CONCLUSION: Although all women in this Cancer Risk Program received in-person and written recommendations for screening and prevention after BRCA testing, nearly half did not remember receiving these recommendations. This is particularly evident for women with non-definitive or negative BRCA test results, and for women already diagnosed with cancer. Women with non-definitive results were more likely to report receiving conflicting screening information compared to women with definitive results. These findings may reflect patients’ perceptions of the importance of these recommendations, as well as the nature and clarity with which these recommendations are provided. Greater satisfaction with the decision to undergo testing/counseling among women who do recall receiving recommendations and discussing prevention suggests that attention to communicating implications of all results for screening and prevention should be central to quality improvement in genetic counseling and testing programs.

**Table 1. Respondents recalling discussion of cancer screening and prevention following BRCA testing, categorized by BRCA result and by prior diagnosis of cancer**

| BRCA result | No cancer | Cancer | No cancer | Cancer |
|-------------|-----------|--------|-----------|--------|
| Non-definitive | 100/162 (62%) | 236/609 (39%) | 90/164 (55%) | 197/602 (33%) |
| Positive | 68/71 (96%)† | 95/128 (74%)† | 64/69 (91%)† | 90/129 (70%)† |
| Negative | 48/88 (55%) | 7/20 (35%) | 42/89 (47%) | 7/21 (33%) |

†p < .001 for pair-wise comparison within each category

| *n/N (%) of respondents answering “yes” within each category |

A RETROSPECTIVE REVIEW OF AN EMERGENCY DEPARTMENT EVALUATION AND MANAGEMENT OF ACUTE GASTROENTERITIS IN A COMMUNITY HOSPITAL

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BACKGROUND: The incidence of acute diarrhea in the United States annually is 375 million with nearly 1 million hospitalizations. Several societies, namely WGO and ACG have detailed recommendations for medical evaluation, microbiology/laboratory investigation, administering antibiotic therapy, and identifying patients who need inpatient care. Given the high incidence rate, the economic burden of inappropriate evaluation(i.e. stool cultures and [CT]) and contributing to antibiotic resistance may be improved with following recommendations.

Methods: We performed a single-center, retrospective clinical record review of patients who visited the LHH ED and were given ICD diagnoses of diarrhea, gastroenteritis, colitis, and enteritis during August 2010. Patients were excluded based on a certain criteria. For
WHAT MAKES A PERFECT DISCHARGE SUMMARY: FACULTY AND RESIDENT CONSENSUS  Briar Leigh Duffy 1; James Bost 2; Melissa McNei1; 1University of Pittsburgh/VAPittsburgh, Pittsburgh, Pennsylvania; 2University of Pittsburgh, Pittsburgh, Pennsylvania (Tracking ID # 12260)

BACKGROUND: High quality discharge summaries are critical to ensuring effective transitions of care for hospitalized patients after discharge. Retrospective analyses of discharge summaries show they are missing information about pending tests 75-87% of the time and about the follow-up provider 33% of the time. Medication discrepancy errors have been shown to occur in 29-42% of discharge summaries. Although the Joint Commission requires six discharge summary components, no studies have explored provider preferences on how the components should be written. Internal medicine residents remain confused about how to write a discharge summary. The goal of this needs assessment was to survey faculty and residents to assess their views about the preferred structure, organization, and content of the ideal discharge summary in order to develop a discharge summary curriculum for internal medicine residents.

METHODS: A web-based survey was developed through an iterative process among the authors. The survey consisted primarily of items rated on a 5-point Likert scale as well as open-ended responses. Topics included characteristics of a high-quality discharge summary, possible components of a discharge summary, current quality of discharge summaries, and demographic characteristics. It was pilot-tested with general medicine fellows at the University of Pittsburgh. The survey was sent to University of Pittsburgh faculty members in the Division of General Internal Medicine and University of Pittsburgh internal medicine and medicine-pediatrics residents in the spring of 2010. After the first invitation to complete the survey, two reminder e-mails were sent.

RESULTS: The response rate was 41% (113 respondents). Respondents reported statistically significant discrepancies between components that should be present and the existing quality of those components in 9 of 17 possible discharge summary components. These components included the list of diagnoses, reason for hospitalization, hospital course, pending tests at discharge, and the follow-up plan. They reported that the sections needing the most improvement were the hospital course (35.7% of respondents) and medication list (33%). They preferred a problem-based hospital course to a chronological account (73%) and a detailed medication list identifying changes from a pre-admission list (66%). They also thought discharge summaries should be more concise (47%) and accurate (17%) with a better integration of the hospital course and discharge plan (44%). The faculty reported that the current quality of discharge summaries at UPMC-Presbyterian was 3.5/5, but the residents reported it to be 3.9 (p-value=0.001). Overwhelmingly, respondents preferred to receive a discharge summary electronically.

CONCLUSION: We conclude that the management and evaluation of antibiotic resistance.

RESULTS: A total of 99 charts were reviewed and 74 patients were included in our study. The admission rate was 25.7% and all patients were admitted according to WGO/ACG recommendations. 41.9% of patients were given antibiotics and of this 25.6% of patients were given antibiotics not in adherence with WGO/ACG recommendations. 27.7% received CT scans, with a 75% incidence of a colitis finding. Stool cultures were ordered on 24.3%, 66.6% had documented results, zero cultures yielded a positive result, and 83.3% of stool cultures were ordered appropriately.

CONCLUSION: We conclude that the management and evaluation of antibiotic resistance.

HOSPITAL HANDOFFS: A DESCRIPTIVE ANALYSIS OF WRITTEN SIGN-OUT CONTENT AND AN EXPLORATION OF A SIGN-OUT QUALITY ASSESSMENT TOOL  Donna Miller 1; Marilyn Schapira 1; Alexis Visoitsky 2; Prakash Laud 3; Vinny Arora 3; Kathlyn Fletcher 4; 1MCW, Milwaukee, Wisconsin; 2MCW MILWAUKEE, Wisconsin; 3University of Chicago, Chicago, Wisconsin; 4Milwaukee VAMC/MCW, Milwaukee, Wisconsin. (Tracking ID # 12264)

BACKGROUND: Patient handoffs serve as critical transitions in patient care. The content and quality of the written patient handoff or “sign-out” may be coupled with adverse events and near misses in hospitalized patients. Existing recommendations on necessary components of the handoff are varied and based primarily on expert consensus and provider feedback. This project aims to 1) provide a descriptive analysis of the content of electronic health record-assisted written sign-outs and 2) explore a scoring system of key components of the sign-out that may be used as a tool to assess sign-out quality.

METHODS: The impact of discontinuity of care on hospitalized patients was studied as a prospective, 12-month study of randomly selected patient hospitalizations at 3 academic medical hospitals in Milwaukee, WI. As part of this study, the written sign-out documents were collected. Based on a literature review, we identified 12 desired components of a high quality sign-out (e.g. presence of team information, baseline examination, and anticipatory guidance). We assessed each sign-out for the presence of those components, and combined them into a sign-out quality score (SQS) of 0–12. We also abstracted additional content related to quality (such as the use of vague language or conflicting information). In addition, a global impression or “gestalt” quality score (1–5 scale) was given to each sign-out. Descriptive analyses about the quality of the sign-out documents were performed, and some comparisons were made between initial and subsequent day sign-outs.

RESULTS: A total of 206 randomly selected patient hospitalizations were reviewed (206 initial sign-outs, 472 subsequent sign outs). Mean age of patients was 68 (SD 14); 5% were women. Nearly all of the teams used a sign-out that was partially generated by the electronic medical record. For the initial sign-out, mean score was 6.37 (median 7, SD 2.38, range 1–11). Computer generated components were nearly universally present, such as code status (83%) and patient identifiers (99%). Physician entered data was present less frequently: baseline exam was present in 30% of sign-outs, plan of care in 78%, anticipatory guidance in 38%, and mental status in 12%. Initial sign-outs were significantly less likely than subsequent sign-outs to include tests/results (38% vs. 47%, p=0.033), whether the patient is “sick” (8% vs. 14%, p=0.049), confusing/conflicting information (12% vs. 37%, p=0.034), or vague language (25% vs. 40%, p=0.002). Of note, 36% of subsequent sign-outs were duplicate copies of the prior day’s sign-out. SQS was significantly worse as the patient census increased (r-squared = 0.24, p < 0.001). Global impression of sign-out quality correlated with the SQS (p<0.0001).

CONCLUSION: In these computer generated sign-outs, key identifying information (e.g. patient identifiers, allergies, code status) is present in majority of cases. However, physician-entered communication such as plan of care, anticipatory guidance, and contingency plans are not
consistent present. Sign-out quality seems to decrease in subsequent hospital days compared to the initial day. This quality assessment score may provide a template for standardization of written sign-out components.

**COMPARING EFFECTS OF DIETARY SOURCES OF VITAMIN D & MULTIVITAMIN SUPPLEMENTATION ON 25(OH)D LEVEL AMONG AFRICAN-AMERICANS VS CAUCASIANS**

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**BACKGROUND:** Serum vitamin D [25(OH)D] levels are inversely related to skin pigmentation, resulting in lower levels among African-Americans (AA) compared to Caucasians. While this relative insufficiency does not translate into a higher prevalence in bone-related morbidity, observational evidence suggests that it significantly contributes to racial disparities involving cardiovascular disease. Supportive experimental evidence is limited in that studies are underpowered to evaluate the effects of vitamin D supplementation on health outcomes among AA, or they assume a uniform effect of supplementation on serum levels across racial groups. In order to interpret the morbidity of vitamin D insufficiency among AA, a greater understanding of the relationship between supplementation and dietary sources of vitamin D on serum 25(OH)D levels by racial group is necessary. The objective of this study is to investigate contrasts in determinants of serum 25(OH)D levels among AA and Caucasians, with an emphasis on dietary sources of vitamin D and multivitamin supplement (MV) use.

**METHODS:** 242 Caucasians (n=122) and AA (n=120) residing within 50 miles of UCLA participated in a cross sectional study to validate a web-based, automated, self-administered 24-hour recall (DietDay). Participants completed 8 DietDays over 2 months. Blood and urine samples were also collected from participants at study visits for numerous biomarkers, including 25(OH)D. Parallel multiple linear regression models stratified by race were used to determine the relationship between age, gender, BMI, and major dietary sources of vitamin D (fish, milk, and MV) on serum 25(OH)D. Subjects with standardized residuals >3 were identified as outliers and dropped from the analysis, resulting in the reduction of both groups by 1 subject each.

**RESULTS:** 17% Caucasians had serum 25(OH)D <20 ng/mL compared to 61% of AA. AA race resulted in 17 ng/mL reduction in serum vitamin D controlling for age, BMI, gender, dietary sources of vitamin D, and race-BMI interaction. MV intake accounted for the largest rise of serum 25(OH)D in both racial groups. Among AA, MV intake was associated with a 36% higher increase (8.6 ng/mL vs 6.3 ng/mL) in of serum 25(OH)D compared to Caucasians. 8 fl oz of milk significantly raised serum vitamin D levels approximately 4 ng/mL among AA and 3.6 ng/mL among Caucasians. Fish consumption significantly raised serum vitamin D levels approximately 2 ng/mL per 3 oz serving among Caucasians, but was not significant among AA. The R-squared statistics for the AA and Caucasian models were 0.18 and 0.28 respectively.

**CONCLUSION:** Serum vitamin D’s response to dietary sources of vitamin D differs based on race. MV supplementation is more effective at raising serum 25(OH)D levels than dietary sources, especially among AA. As AA are at higher risk of 25(OH)D insufficiency, providers should consider encouraging their AA patients to initiate MV supplementation.

**SURGICAL COSTS ASSOCIATED WITH SMOKING IN VETERANS UNDERGOING GENERAL SURGERY**

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**BACKGROUND:** Approximately 30% of general surgery patients undergoing elective surgery smoke cigarettes, and an estimated 10 million procedures are performed on smokers every year in the US. Smoking has been shown to be associated with poor wound healing as well as increased postoperative pulmonary and cardiovascular complications. The objectives of this study are: 1) to compare total inpatient costs in current smokers, former smokers, and never smokers undergoing general surgical procedures in VA hospitals, and 2) to determine whether the relationship between smoking and costs is mediated by postoperative complications.

**METHODS:** This study was performed using two data sources: First, general surgical patients were identified in the VA Surgical Quality Improvement Program data set (VASQIP), which includes abstracted

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**Table 1:**

| Regression model results for 25(OH)D (ng/mL) on dietary sources stratified by race |
|---------------------------------|-----------------|-----------------|
|                                  | Coefficient | SE  | p-value |
| **African-American**             |              |     |        |
| age (years)                     | -0.02 | 0.07 | 0.79  |
| gender*                         | -2.08 | 1.79 | 0.12  |
| BMI (kg/m²)                     | -0.27 | 0.12 | 0.03  |
| multivitamin (pill)             | 8.63  | 2.5  | 0.001 |
| milk (8 fl oz)                  | 3.98  | 1.84 | 0.03  |
| fish (3 oz)                     | 1.21  | 1.02 | 0.24  |
| **Caucasian**                   |              |     |        |
| age (years)                     | -0.17 | 0.07 | 0.01  |
| gender*                         | -4.58 | 1.59 | 0.01  |
| BMI (kg/m²)                     | -0.53 | 0.18 | 0.004 |
| multivitamin (pill)             | 6.48  | 2.6  | 0.01  |
| milk (8 fl oz)                  | 3.64  | 1.42 | 0.01  |
| fish (3 oz)                     | 1.94  | 0.8  | 0.02  |

*reference category for gender is male; SE=standard error
medical record data (including smoking status) for VA surgical patients. Second, inpatient costs of care were identified in the VA Decision Support System (DSS), which provides the costs of individual patient encounters on the basis of the relative values assigned to medical services. Relative to never smokers (reference category), surgical costs for current and former smokers were estimated using generalized linear regression models with adjustment for preoperative variables (demographics, comorbidities, functional status, and laboratory values), operative variables (urgency of surgery, complexity of surgery), and hospital-level variation. Costs included those incurred during the index hospitalization and during readmissions within 30 days of surgery.

RESULTS: The 14,853 general surgical patients, 34% were current smokers, 39% were former smokers, and 27% were never smokers. Unadjusted costs were significantly higher for current and former smokers relative to never smokers: relative costs (95% CI) were 1.11 (1.06-1.16) and 1.15 (1.10-1.19), respectively. After controlling for patient covariates, current smokers still had significantly higher costs compared to never smokers: relative cost was 1.04 (1.00-1.07); costs for former smokers did not differ significantly from those of never smokers: relative cost was 1.02 (0.99-1.06). The relationship between smoking and surgical costs was partially mediated by surgical complications. Relative costs for current smokers were no longer statistically significant after accounting for any surgical complications: 1.02 (0.99-1.05).

CONCLUSION: Smokers undergoing elective general surgery have modestly increased surgical costs compared to never smokers, in part related to increased postoperative complications. Our results suggest that efforts to improve surgical outcomes and reduce hospital costs in general surgery patients should place greater emphasis on helping patients quit smoking preoperatively.

URINARY TOBACCO BIOMARKER AND ASTHMA EXACERBATION IN THE UNITED STATES

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BACKGROUND: Tobacco biomarkers have mostly been used for research validation purposes and not as a clinical tool for preventive medicine. The U.S. Surgeon General has concluded there is no risk-free level of tobacco smoke exposure, but relying on patient self-report may be limited by recall bias. One promising tobacco biomarker is urinary 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol (NNAL), a carcinogen that is highly sensitive and specific for tobacco exposure. NNAL reflects a longer period of exposure (2 months) and better reflects secondhand smoke exposure. Our objective was to examine the association between NNAL levels and asthma exacerbation in the national smoker and nonsmoker population.

METHODS: We examined NNAL logarithmic levels in the National Health Examination and Nutrition Survey (NHANES) 2007–2008, the first year urinary NNAL was measured. Regression models were developed to determine the association between NNAL on two self-reported outcomes among the adult population (>20 years old) who report having asthma currently: 1) past year asthma exacerbation and, among this group, 2) past year emergency room/urgent care visit for asthma. The models were adjusted for factors known to be significantly associated with NNAL levels: age, race/ethnicity, gender, active or nonsmoking status (based on the Centers for Disease Control defining active smokers as having short-term cotinine levels ≥10 ng/ml, since self-reported status had significant missingness), and creatinine. We also adjusted for education status (vhigh school vs. college+) since this may be a proxy for asthma management. All analysis was conducted using SAS 9.1 PROC TTEST, PROC SURVEYFREQ and PROC SURVEYLOGISTICS to account for complex survey design.

RESULTS: A total of 456 participants had asthma with 50% reporting a past year asthma exacerbation, with 25% of these also visiting the emergency room/urgent care in the past year for asthma. Of those with asthma, 27% were considered active smokers and 73% were considered nonsmokers. The median concentration of NNAL was 0.0013 ng/ml in those without a past year asthma exacerbation, 0.0065 ng/ml in those with a past year asthma exacerbation, and 0.123 ng/ml in those who also had a past year emergency room/urgent care visit for asthma. In bivariate analyses, NNAL was significantly associated with past year asthma exacerbation OR=1.29 (95% CI 1.10-1.52) (p=0.002) and past year emergency room/urgent care visit for asthma OR=1.55 (95% CI 1.32-1.81) (p<0.001). In multivariate regression analyses, the associations with NNAL were still significant for the former OR=1.71 (95% CI 1.29-2.27) (p<0.001) and the latter OR=1.78 (95% CI 1.12-2.85) (p=0.02). The only significant independent variable was age in the multivariate model for past year emergency room/urgent care visit for asthma (p=0.04).

CONCLUSION: This is the first study to link NNAL levels with asthma exacerbation in the national smoker and nonsmoker population. Higher levels of NNAL are associated with past year asthma exacerbation and emergency room/urgent care visits for asthma, even after adjustment for demographic and clinical variables. This association warrants future prospective investigation into NNAL as a potential screening tool to prevent asthma exacerbation and to decrease utilization of emergency and urgent care services.

DOES PUBLIC REPORTING IMPACT QUALITY OF CARE IN WISCONSIN?

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BACKGROUND: The Wisconsin Collaborative for Healthcare Quality (WCHQ) is a voluntary, statewide consortium of physician groups, hospitals, health plans and employers working together to improve health care in Wisconsin by publicly reporting comparative measures of healthcare quality. However, there has been no formal evaluation of the impact of the WCHQ’s public reporting efforts. This project was designed to establish whether public reporting of ambulatory quality measures by WCHQ is associated with improvement in the delivery of recommended interventions and outcomes. To separate the effects of public reporting from other trends, the project took a three-pronged approach: 1) determine whether there was improvement among WCHQ participants with respect to the measures being reported; 2) survey participants to see how they responded to the information as it was reported; and 3) compare the rate of improvement within the WCHQ to areas not participating in the WCHQ.

METHODS: WCHQ member groups commit to report outcomes for 13 ambulatory quality measures annually. They collect and report their own data either from random chart review, electronic capture, or a combination of the two (hybrid). All results are audited using a standardized method. WCHQ longitudinal analysis - In this analysis each measure was assessed to determine if there was an improvement in the mean performance of all organizations. A pairwise t-test and Tukey’s range test were performed on each measure for each year. Subsequent analysis was performed to determine how many years were required to achieve statistically significant improvement for each measure. Survey: The University of Wisconsin Survey Center conducted a mail survey of the physician groups and their related clinics. The survey contained 3 sections: clinic characteristics; whether projects were undertaken in response to WCHQ reporting; and specific improvement initiatives. Comparisons to non-WCHQ participants.
The Dartmouth Institute (TDI) worked with MMI, a subsidiary of IMS Health. The MMI dataset allows for identification of physicians who work at specific sites. Using a 20% sample of Medicare beneficiaries, TDI assigned patients to physicians based on a majority of their visits, giving priority to primary care MDs. Based on these assignments, patients were characterized as WCHQ related, Wisconsin-Non WCHQ, Iowa/ South Dakota and the rest of the United States. 3 diabetes process measures were captured: eye exams, lipid profiles and HgbA1c tests. Mammography was determined for women aged 67-69. Compliance rates were calculated and compared between sites and for each year 2004-2007.

RESULTS: For WCHQ as a whole, each measure showed an improvement in performance during the study period 2004-2008. This improvement was statistically significant in all measures reported for at least 3 years (HgbA1c testing, LDL testing, LDL control, kidney function screening, BP control, breast Ca screening and colorectal Ca screening). The survey of physician groups found that it was very common for WCHQ member organizations to formally focus on WCHQ measures during the study period. 15 of 18 groups reported giving priority to at least one WCHQ measure in response to WCHQ reporting. 9 groups indicated that their priorities were always or nearly always in response to WCHQ reporting. 6 showed a mix of responses, with 5 of those only occasionally responding to WCHQ reporting. Looking at the Dartmouth measures, WCHQ participants consistently outperformed the comparator groups in measures that are publicly reported through the Collaborative (HgbA1c testing, lipid testing in diabetics and breast cancer screening). In each of these measures both the overall performance and the rate of improvement during the study years was higher for WCHQ participants. Of note the only measure in which WCHQ participants failed to perform as well as one of their comparison groups was in diabetic eye testing which is not publicly reported by the Collaborative.

CONCLUSION: The three components of this study provide compelling evidence that public reporting of ambulatory measures led to improved performance among WCHQ participants. Over the time frame that public reporting was in place overall performance of the group improved significantly. Participants when surveyed stated that they focused improvement efforts in response to their performance on reported measures. Most significantly, although performance on many of these measures improved elsewhere, the members of the WCHQ improved at a faster rate than national comparison groups on measures reported by WCHQ.

A recent systematic review of public reporting, concluded that "rigorous evaluation of many public reporting systems was lacking" , and what evidence of effectiveness does exist is largely hospital based. This study helps to address this gap, especially in the ambulatory environment. It provides strong support for the concept that public reporting really can lead to improved performance.

HIGHER QUALITY DISCHARGE SUMMARIES OF HOSPITALIZED OLDER ADULTS ARE ASSOCIATED WITH REDUCED RISK OF READMISSION: INSTRUMENT DEVELOPMENT AND OUTCOMES

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BACKGROUND: The communication between the care providers at the sending and receiving ends of a care transition, in the form of the dischargesummary, may influence the quality of a care transition and subsequent events such as hospital readmission. However, there are few data on essential components of high-quality discharge summaries for older adults, especially those with complex, chronic illnesses. The objective of our study is to develop and evaluate an instrument to rate the quality of discharge summaries of hospitalized older adults.

METHODS: In the development phase, we identified core domains of high-quality hospital discharge summaries through a review of the literature and guided by the results from prior qualitative study of a multi-disciplinary group of providers caring for older adults in four care settings: hospital, skilled nursing facility, home health care, and ambulatory care. The core domains, delineated in Table 1 along with their respective components, were: plan of care (PC), admission information (AI), discharge status (DS), hospital course (HC), and communication and timeliness (CT). We created an instrument and scoring system to rate the quality of discharge summaries based on the identified components of the core domains. In scoring one discharge summary, each component of the core domains was given a score and these scores were aggregated for each core domain, which in turn were aggregated to provide the overall discharge summary score (DC Score) for a discharge summary. The DC Score of each discharge summary ranged from 0-26 points with 0 representing no components present and 26 representing all component-present. In the evaluation phase, we performed a retrospective cohort study. We applied our instrument and scored 626 discharge summaries of adults, aged 70 years and older, hospitalized on a general medical service at an academic medical center and discharged to the community. We performed exploratory data analysis and then used linear regression to model the relationship between the DC Score and two outcomes: 1) older adults’ scores on the Care Transitions Measure (CTM), a self-reported measure of the quality of care transition. Low CTM scores have been found in other work to be related to higher readmission rates, and; 2) older adults’ readmission to the hospital for same condition within 14 days.

RESULTS: The development phase yielded an instrument comprised of core domains of a high-quality discharge summary. The core domains and their relative contribution to the DC Score are: plan of care (PC)-35%, admission information (AI)-27%, discharge status (DS)-19%, hospital course (HC)-12%, and communication and timeliness (CT)-up to 8%. Table 1 outlines the components within each core domain.

The mean (SD) and median score of each of the core domains and the DC Score for the 626 discharge summaries reviewed are described in Table 2. 54% of the discharge summaries were high-quality. All discharge summaries were lacking at least one component in all domains: 60% of the discharge summaries did not document a follow-up appointment (PC); 27% did not document allergies (AI); 60% did not document baseline functional status (DS); 23% did not document primary diagnosis (HC); and 52% were not documented as having been copied to the primary care provider (CT). Higher DC Scores were associated with higher CTM scores (p<0.05), as were presence of the core domains, plan of care, admission information, and communication and timeliness, related individually to higher CTM scores. Higher DC Scores were associated with reduced readmissions for the same condition within 14 days (p<0.05).

CONCLUSION: This study defines core domains of high-quality discharge summaries for hospitalized older adults and amenable to rate the quality of hospital discharge summaries. Only a minority of discharge summaries studies in this study was found to be of high-quality. High-quality discharge summaries were associated with reduced readmissions at 14 days for the same condition. These data should be used to inform development of quality improvement efforts to improve discharge summary quality and to determine if such efforts could improve clinical outcomes for older adults.
FACTORS ASSOCIATED WITH HEPATITIS B SCREENING IN A POPULATION-BASED SURVEY OF KOREAN AMERICANS FROM WASHINGTON STATE

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BACKGROUND: Approximately 1.3 million Americans live with chronic hepatitis B (HBV) viral infection. Because chronic HBV infection is frequently acquired in childhood and often causes little or no symptoms, infected adults may be unaware of their risk for the future sequelae of cirrhosis and liver cancer. Therefore, public health experts including those at the Centers for Disease Control and Prevention have recommended screening immigrants from regions with high rates of endemic HBV for serologic evidence of chronic infection. Although Asians represent less than one in 20 of the US population, they comprise more than one in two of those living with chronic HBV infection in this country.

While it has been estimated that more than 4% of adults older than 40 years of age residing in Korea are chronically infected with HBV, little has been reported about the factors associated with serologic testing in Koreans living here in the United States. Previous research has identified factors associated with HBV screening in certain other Asian American subgroups; however, few studies have specifically examined Koreans, the fifth largest Asian ethnic group in the US.

In this study, we examined data from a survey of Korean American adults to determine factors associated with HBV screening in this population. Based on prior studies in other Asian American populations, we hypothesized that participant demographics (e.g., age); factors related to access to medical care (e.g., health insurance); and factors related to communication with providers (e.g., requiring medical interpreters) all would potentially be associated with HBV screening in Korean Americans.

METHODS: Eligible study participants were Korean adults 18–64 years of age. Potential participants were identified by surname from an electronic database of telephone numbers and addresses from three counties in Western Washington State. Study staff made up to five separate contact attempts with potential participants, and bilingual and bicultural field interviewers conducted in-person surveys in either Korean or English lasting approximately a half hour at participants’ homes. The HBV survey was developed by adapting a questionnaire previously used in Chinese and Vietnamese American communities; our previous qualitative research among Koreans had identified additional cultural domains potentially influencing HBV testing, and these pilot data were used to expand included questions.

Our primary outcome of interest was self-report of having had prior serologic HBV testing. We examined whether three groups of variables were associated with having had HBV testing. First, we examined whether testing was associated with participant demographic factors, such as age, gender, marital status, and birth country. Second, we examined whether testing was associated with factors related to access to medical care, including: identifying a regular primary medical provider; having health insurance and type of insurance; and receiving medical care at one location. Third, we examined whether testing was associated with factors related to language and communication, including: English proficiency; dependence on medical interpreters; and ethnicity of medical providers. Bivariate comparisons were examined using appropriate chi-squared or t-test statistics; we also constructed multivariate logistic regression models to examine which factors were independently associated with having had HBV testing.

RESULTS: Four hundred and sixty-six participants completed the survey, with the vast majority in Korean language (91%). Among participants, nearly all were born in South Korea (93%) and had resided in the US for less than 20 years. More than half (58%) of survey participants were women, and four out of five (80%) were married. The level of education was high, with three quarters reporting having completed at least high school or more. Around half (50%) reported having previous HBV serologic testing, but almost all (94%) had heard of hepatitis B.

Access to medical care was variable among participants, with more than a third (38%) reporting they were without health insurance, and nearly half (48%) without a regular doctor or medical provider. More than a quarter (28%) reported requiring assistance with language interpretation during physician visits.

Most access and communication factors were not significantly associated with having had HBV serologic testing in bivariate analyses among these Korean American adults. Participants with health insurance or a regular primary care physician were not more likely to have had HBV
testing than those without insurance or primary care; there was a trend toward significant association of HBV testing for those identifying a physical site of receiving medical care (p=0.07). Such communication factors as strong English speaking skills or use of medical interpreters were also not associated with having had HBV testing.

In multivariate logistic regression models, length of time residing in the US was independently but negatively associated with reporting having had HBV testing (p=0.049); that is, controlling for other demographic, health care access, and communication factors, increased time of US residence was associated with lower rates of having had HBV testing.

CONCLUSION: In our population-based survey of Korean American adults, we found that most demographic, health care access, and communication factors were not associated with reporting having had HBV serologic testing. However, in multivariate models, increased length of time residing in the US was negatively associated with HBV serologic testing. Contrary to our expectation, those Koreans who have been living longest in the US were least likely to report having had HBV serologic testing, even after controlling for participant age or insurance status.

Health programs focused upon immigrants often target the most recent arrivals as the most vulnerable and the most requiring of special efforts to bridge disparities of care and of health outcomes. However, for hepatitis B serologic testing, these survey data suggest that the less recently immigrated Korean Americans remain a group at increased need for targeted attention. For primary care providers, HBV serologic testing to identify those at risk for cirrhosis and liver cancer remains an important priority not only for recent Korean immigrants, but especially for those who have already resided in the US for years or decades.

EXERCISE: THE BEST MEDICINE FOR SICK PATIENTS WHO ARE IN PAIN MAY BE THE MOST DIFFICULT TO TAKE Michael Mueller 1; Charles Thomas 1; Eileen Seeholzer 1. 1Case Western Reserve University, Cleveland, Ohio. (Tracking ID # 12316)

BACKGROUND: For many common conditions like arthritis, diabetes, sleep apnea, and hypertension, exercise improves outcomes and symptoms. Physicians are encouraged to counsel and indeed motivate patients to be active in order to improve medical outcomes. Counseling patients to exercise increases activity levels for at least 6 months after a visit. But counseling tired patients in pain to exercise is a daunting prospect. Little is known about how pain affects choosing, starting and engaging in activity. Regular activity often reduces pain symptoms, but patients with pain may be hesitant to begin activities. Techniques to help clinicians are needed to address pain symptoms while encouraging activity in the patients who would most benefit. Recording exercise choices and barriers for patients in the EMR provides a way to design and measure the results of efforts to improve rates of patient engagement in healthy activity. Efforts may be aimed at improving counseling effectiveness in a practice overall or directed toward patients with particular medical problems or needs.

RESULTS: Of patients not citing pain, patients citing pain as a barrier had a higher BMI (41.3 vs. 38.7, p<0.05), and were more likely to be severely obese with 51% having a BMI > 40, compared to 37% with a BMI <40. Patients who cited pain as a barrier were more likely to be female, and were more likely to carry diagnoses for arthritis (27% vs. 13%, p<0.01), heart disease (66% vs. 55%, p<0.05), hyperlipidemia (65% vs. 50%, p<0.01), and hypertension (68% vs. 56%, p<0.05). The stage of change for engaging in activity did not differ between groups. Patients identifying pain as a barrier chose walking less often (53% vs. 67% p<0.05) and chose water aerobics (22% vs. 10% p<0.05) and chair exercises (3% vs. 1% p<0.05) more often than those not identifying pain as an exercise barrier.

CONCLUSION: Patients citing pain as a barrier to activity were more likely to have a higher BMI and to carry diagnoses for arthritis, heart disease, hypertension, and hyperlipidemia. Patients with higher BMI and medical co-morbidity are likely to benefit from, but may be less able to engage in activity. Regular activity often reduces pain symptoms, but patients with pain may be hesitant to begin activities. Techniques to help clinicians are needed to address pain symptoms while encouraging activity in the patients who would most benefit. Recording exercise choices and barriers for patients in the EMR provides a way to design and measure the results of efforts to improve rates of patient engagement in healthy activity. Efforts may be aimed at improving counseling effectiveness in a practice overall or directed toward patients with particular medical problems or needs.

CORRELATES OF LACK OF ANTIPLATELET ADHERENCE AMONG AN INSURED MINORITY POPULATION Ana Palacio 1; Leonardo Tamariz 2; Sylvia Garay 1; Claudia Uribe 2; Hua Li 1; Leslie Hazel-Fernandez 4; Ellen Salkeld 1; Oleven Carrasquillo 1. 1University of Miami, Miami, Florida; 2University of Miami, Doral, Florida; 3Hunan University of Medicine, Hunan, China; 4University of Miami, Miami, Florida. (Tracking ID # 12322)

BACKGROUND: To reduce post procedure stent thrombosis, patients who undergo percutaneous coronary intervention with stent implantation (PCI) are prescribed clopidogrel for a minimum of 12 months. However, non adherence to this therapy is high, particularly among minority patients. Identification of correlates of inadequate adherence may help identify target(s) for potential intervention.

METHODS: Using claims data from a large health benefits company, we identified blacks and Latino subjects who had undergone PCI in the previous 90 days. Among this sample, we conducted a cross-sectional survey to obtain data on socio demographic characteristics, access to care, health beliefs, acculturation, patient-physician communication. Our dependent variable, self reported medication adherence, was obtained using the 4-item Morisky scale, with higher scores indicating less adherence.

RESULTS: We identified 201 Latinos and 251 Blacks who had recently undergone PCI. Of these 15% admitted to sometimes forgetting to take this medication. Hispanics were slightly more likely to be non-adherent than blacks (0.39±0.72 versus 0.26±0.60, p<0.05). Significant correlates of non adherence included being unable to visit the doctor when needed (2.5% CI 1.0-5.9%) and having difficulties understanding written medical information (5.5% CI 1.4-4.0%). In this privately insured population, the most commonly cited reason (46%) for not visiting the doctor was busy taking care of somebody else.

CONCLUSION: Our findings highlight ongoing challenges to providing quality care, even among insured minority subjects. Our findings suggest that strategies that facilitate medication refills and those that address health literacy may improve clopidogrel adherence among minority subjects having received a PCI. Caregiver burden is also another important factor to consider as a cause of non-adherence.
EFFECTS OF AN ELECTRONIC POST-DISCHARGE MEDICATION RECONCILIATION TOOL ON THE ACCURACY OF AMBULATORY MEDICATION DOCUMENTATION  Jeffrey L. Schnipper 1; Catherine L. Liang 1; Claus Hamann 2; Andrew S. Karson 3; Jennifer Lee 1; Elisabeth Burdick 1; David W. Bates 1. 1Brigham and Women’s Hospital, Boston, Massachusetts ; 2Massachusetts General Hospital, Boston, Massachusetts.  

BACKGROUND: Serious medication errors occur commonly in the period after hospital discharge. Medication reconciliation in the post-discharge ambulatory setting may reduce the frequency of these errors. This process allows primary care physicians to identify and correct any errors of inpatient medication reconciliation, make additional changes to the post-discharge regimen based on their knowledge of the patient, and document an accurate regimen in the medical record to prevent future medication discrepancies. The aim of this analysis was to determine the effects of an electronic post-discharge medication reconciliation tool on the accuracy of medication documentation one month after discharge.  

METHODS: As part of a Center for Education & Research on Therapeutics funded by AHRQ, we designed a novel tool built into an ambulatory electronic medical record (EMR). The tool compares the preadmission medication list in the ambulatory EMR to the hospital discharge medication list, highlights all changes, and allows the EMR medication list to be easily updated. To evaluate its effects, we conducted a controlled trial in 19 primary care practices affiliated with an integrated health care delivery system, each matched and randomized to receive the tool or usual care. Inpatients belonging to these practices, over age 55, and on 5 or more medications were recruited to participate. Thirty days after discharge, patients were contacted by phone, and a research assistant obtained the “gold-standard” post-discharge medication regimen by including all discharge medications, removing any planned completions in therapy, and incorporating any reported changes made by patients’ physicians since discharge. The documented ambulatory EMR medication list at the time of the call was compared to this gold-standard regimen and the proportion of concordant medications (exact matches in medication, dose, and frequency) was calculated. Analyses were conducted using binomial logistic regression, adjusted for hospital affiliation of each practice.  

RESULTS: The study included 759 patients: 380 in intervention practices, and 379 in usual care practices. The post-discharge medication reconciliation tool was used in approximately 16% of intervention patients. In an intention-to-treat analysis, the accuracy of the EMR medication list 30 days after discharge was 23% among intervention patients and 22% among usual care patients (adjusted odds ratio 1.09, 95% confidence interval 1.00 - 1.17, p=0.04). Among patients in whom the tool was used, the accuracy of the EMR medication list was 25% (p=0.02 for comparison with patients in whom it was not used). The most common inaccuracy was documentation of medications the patient was no longer prescribed.  

CONCLUSION: In this cluster-randomized controlled trial, we found that the accuracy of documented medication regimens 30 days after discharge to be poor. An electronic post-discharge medication reconciliation tool led to a small improvement in documented regimens, in part because the tool was only occasionally used. Further improvements to the tool and efforts to increase implementation may have greater effects on accurate medication documentation as well as other measures of medication safety during transitions in care.

PREPARING PATIENTS FOR THE CLINICAL ENCOUNTER USING HEALTH INFORMATION TECHNOLOGY-BASED PATIENT FEEDBACK  Rachel Hess 1; Hilary Tindle 1; Molly Conroy 1; Sunday Clark 1; Ron Hays2. 1University of Pittsburgh, Pittsburgh, Pennsylvania ; 2RAND, Santa Monica, Pennsylvania.  

BACKGROUND: Healthcare providers can play an important role in encouraging healthy behaviors and identifying factors that impact patients’ mental and physical health-related quality of life (HRQoL). Clinicians are most effective in this role when they partner with informed and engaged patients. We evaluated the impact of a new health information technology (HIT)-based tool that provides patients with immediate, personalized, guideline-based feedback (HIT patient feedback) about their health behaviors and HRQoL and encourages them to take a more active role in their health on patient-initiation of discussions regarding tobacco use, physical activity, and mental and physical HRQoL.  

METHODS: We conducted a randomized controlled pilot trial of HIT patient feedback in an internal medicine resident practice: randomization was at the physician level. Patients of participating resident physicians received or did not receive HIT patient feedback. All residents continued to receive the practice’s standard computerized patient-reported information report. After the clinical encounter, each participating patient, and his or her physician, completed a questionnaire regarding discussions of tobacco use, physical activity, and mental and physical HRQoL. We used chi-square tests to compare the proportion of patients reporting of initiation of discussion between the intervention and control groups.  

RESULTS: Thirty resident physicians and 99 of their patients agreed to participate; 98 pairs (99%) completed post-visit questionnaires. A greater proportion of patients who received HIT patient feedback (intervention) compared to patients who did not receive HIT patient feedback (control) reported initiating a discussion about mental HRQoL (23% vs. 0%, p=0.02); initiation of discussions regarding tobacco use approached statistical significance (25% vs. 5%, p=0.06). There was no difference in discussion initiation regarding physical activity or physical HRQoL (p=0.9 for both).  

CONCLUSION: Providing patients with immediate, personalized, guideline-based feedback regarding health behaviors and HRQoL prior to the clinical encounter can increase patients’ initiation of discussions regarding mental HRQoL and tobacco use. Future work should test this intervention in a larger population as well as evaluate the impact on outcomes such as tobacco cessation and improvements in HRQoL.  

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SINGLE CENTER EXPERIENCE OF PROGNOSTIC FACTORS AND SURVIVAL OUTCOMES AMONG VETERANS WITH MDS: A RETROSPECTIVE ANALYSIS  Premal D Lulla 1; Carlos Arce-Lara 1; Sarvari Yellapragada 1. 1Baylor College of Medicine, Houston, Texas.  

BACKGROUND: While the epidemiology of MDS and demographics of veterans with myelodysplastic syndrome (MDS) has been established (Komorjki et. al, 2009), there is no data on prognostic factors. Several factors including age, ferritin, MCV and use of growth factors, independent of the established WHO prognostic scoring system (WFSS) have been shown to impact survival in MDS. The purpose of this study is to highlight major survival determinants among veterans with an emphasis on transfusion dependency and ferritin.  

METHODS: Charts of 88 unselected patients (87 males) with pathological diagnosis of MDS from January 2000 to December 2008 at the Michael E. DeBakey V.A. Medical Center in Houston, Texas were studied. Transfusion dependency was defined as needing more than 1 unit of...
packed red cells each month for 4 consecutive months. 50 patients had 4 or more ferritin readings spread over a minimum of 6 months, to compute a meaningful mean increase in ferritin per year (MIF). Univariate survival analysis was performed using GraphPad Prism 5.0, and Kaplan-Meier curves were computed. Multivariate analysis on significant variables was performed using the Cox model on MedCalc Statistics Software (version 11.3.3).

**RESULTS:** The median age at diagnosis was 73 (53–91) with a median OS of 520 days (13–2234). Performance status (ECOG) > 2 (p=0.012), IPSS (International prognostic scoring system) scores > 1.0, transfusion dependency, MIF > 200 per year, MCV < 100 and use of erythropoietin were significant variables in predicting OS on univariate analysis. On multivariate analysis, IPSS scores > 1.0 (p=0.01), transfusion dependency (p=0.0029), ECOG performance status > 2 (p=0.0421) and MIF > 200 (p=0.0294) were independent significant poor prognostic factors. In the sub-group of MDS without excess blasts (Cermak et al, 2009), transfusion dependency and MIF > 200 per year were highly significant variables (p<0.0001).

**CONCLUSION:** Poor performance status, intuitively was a poor prognostic factor. The lower than expected median OS noted among veterans might represent the older than expected age of diagnosis and associated poorer performance status. Iron overload is rapidly becoming a leading problem in the management of MDS. MIF > 200 correlated with transfusion dependency (chi-square test p<0.0001), and could represent an objective assessment of transfusion dependence at anytime during the disease course although further prospective studies are warranted.

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**THE VALUE OF TRANSESOPHAGEAL ECHOCARDIOGRAPHY (TEE) IN DIAGNOSING IMPLANTED CARDIAC DEVICE INFECTIONS AND OUTCOME PREDICTION** Hussein Othman 1; Hanady Daas 2; Joel Fishbain 2; Michael Tucciaroni 2; Susan Szpunar 2; Leonard Johnson 3.

1St. John Hospital and Medical Center, Detroit, Michigan; 2St. John Hospital and Medical Center, Detroit, Michigan; 3St. John Hospital and Medical Center, Detroi, Michigan. (Tracking ID # 12339)

**BACKGROUND:** Infectious complications of implanted cardiac devices (ICD) vary from superficial infections, pocket and/or generator infections, and the more serious lead-associated endocarditis. Expert opinion from the American Heart Society recommends transesophageal echocardiogram (TEE) for the initial evaluation of cardiac device infections (CDIs). Our goal was to evaluate the role of TEE in CDIs and the impact of TEE on outcomes.

**METHODS:** A case control study design was employed. Cases were defined as all patients with CDIs hospitalized at our institution between 2000 and 2008. The control group was defined as an unmatched cohort of patients with a cardiac device that had a TEE done for reasons other than infection. We collected data on patient demographics, gender, cardiac device level of infection, microbiology, medical comorbidities, TEE findings and outcomes (discharge or death from CDI). Patients were placed into three separate categories based on the type of infection: 1. Lead-associated endocarditis (LAE) (bacteremia, histopathology, extracted lead cultures or modified Duke Criteria); 2. Pocket infection; and 3. Control group. Abnormal TEE was defined by the report of one of the following findings: vegetation, mass, clot or thrombus. Differences between the cases and controls with respect to demographic and clinical findings were assessed using chi-squared analysis and ANOVA. A p-value ≤0.05 was considered to indicate statistical significance.

**RESULTS:** A total of 161 patients were included in the study (109 cases and 52 controls). Of the cases, 41 had LAE and 68 had a pocket infection. The three study groups were comparable in terms of mean age and gender distribution. Among the 109 cases, TEE was performed in 68.3% (82/111) of patients with LAE and 27.9% (19/68) with pocket infection (p<0.0001). An abnormal TEE was found in 3.8% (2/52) of the controls, 75% (21/28) with LAE and 16.7% (3/18) with pocket infections (p<0.0001). Comparing the three groups, 5.8% (3/52) of the controls had the device removed compared to 80% (32/40) of patients with LAE and 83.6% (56/67) of patients with pocket infection (p<0.0001). The device removal rate did not differ significantly when the comparison was restricted to the patients with LAE versus those with a pocket infection. The mortality rate was higher in the LAE group compared to the pocket infection group: 17.5% vs 2.9% (p=0.008). Among patients with LAE, only 9.7% (3/31) of patients died if the device was removed compared to 50% (4/8) if the device was not removed (p=0.008). In patients with only a pocket infection, the mortality rates were 1.8% (1/56) with the device removed compared to 9.1% (1/11) with no device removal (NS). In those who had the cardiac device removed, 54.5% (48/88) did not have a TEE performed. In terms of outcomes (death and leads explantation) there was no significant difference between groups who had TEE vs. those who did not have a TEE done.

**CONCLUSION:** In our study, an abnormal TEE was identified more often in patients with LAE than in patients with pocket infection or controls. However, the same number of patients in each group with CDI had complete device explantation despite these differences. While LAE is associated more often with TEE abnormalities, it is not clear whether TEE impacts overall management and could be adding cost without additional benefit.
PATIENT NARRATIVES OF THEIR EXPERIENCES AND MOTIVATIONS GOING THROUGH HEPATITIS C (HCV) DRUG TREATMENT

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BACKGROUND: Hepatitis C (HCV) infection is common, serious, and often curable. Soon, new direct-acting antivirals will strengthen HCV treatments and sharply increase the numbers starting treatment. Current treatment is long (6–12 months) and physically and psychologically debilitating, and about 65% fail to respond to medications or complete the full course. Little is known about patients’ own experiences undergoing treatment, including success or failure.

METHODS: We conducted detailed semi-structured, audiorecorded qualitative interviews with 21 adult recipients of antiviral HCV treatment at an academically-affiliated east coast U.S. Veterans Hospital. Participants were men aged 44–71 (median 57) years, and had either completed (N=17) or ended prematurely (N=4) a combination HCV medication course in the preceding 18 months. Half (11/21) achieved sustained HCV suppression. Open-ended interviews elicited narratives of receiving the diagnosis, treatment decision making, managing side effects, and medication actions. Verbatim transcripts were coded and analyzed by a collaborative team of social and clinical scientists.

RESULTS: Qualitative data were rich, and individuals described multiple motivations for completing treatment along four main themes: (1) MEETING THE CHALLENGE. Most (N=15) viewed side effects as personal challenges to be overcome with little complaint, and they took pride in successfully completing a difficult - but achievable - treatment goal. (2) BUYING TIME. Fourteen viewed HCV disease as an inexorable progression (although perceived time horizons varied). These patients put less emphasis on cure per se, and more on avoiding the “bad end” of painful morbidity unto death. Five were rather sanguine about perceived still-distant disease consequences; nine urgently acted to forestall an imminent threat posed by HCV, and by longstanding substance abuse. (3) PERSONAL REDEMPTION. Almost half (N=9) viewed treatment as a process of recovery/redemption from what they characterized as a once-dissolute lifestyle with substance abuse. Treatment was a way of demonstrating new personal worth. Importantly, successful “redemption” did not always depend on curing HCV or preventing disease progression. (4) CURE. Seven described goals to cure the virus, according to a predominantly biomedical model and rationale.

CONCLUSION: This study was limited by relatively small size, and may not be broadly generalizable, especially outside the VA. Patients narrated diverse motivations for completing treatment, including clinical and largely moral rationales. Motivations may come from cultural values, learned beliefs, and/or stigma HCV patients carry and attribute to disease. Better ability to cope with side effects may improve treatment completion, and HCV patient self-management abilities likely come from complex biographical and social circumstances. Future behavioral and systems interventions to support HCV treatment should take account of patients’ lived experiences that give meaning and motivate participation in care.

PROVIDING PHYSICIANS WITH PATIENT-REPORTED INFORMATION PRIOR TO THE CLINICAL ENCOUNTER: THE FUNCTIONAL ASSESSMENT SCREENING TABLETS EXPERIENCE

Rachel Hess 1; Mark Unruh 1; Kwonho Jeong 1; Douglas Landsittel 1; Ron D. Hays 2; 1University of Pittsburgh, Pittsburgh, Pennsylvania ; 2RAND, Santa Monica, California. (Tracking ID # 12341)

BACKGROUND: To improve the health and functioning of patients, the health care system must address causes of preventable disease and disability, including health-related quality of life. To better inform physician decision-making, we created the computerized Functional Assessment Screening Tablets (FAST), which systematically collects patient reported information, including the RAND-36 measure of health-related quality of life. The information is then provided to physicians prior to the clinical encounter. We hypothesized that systematically providing this information to physicians prior to the clinical encounter would result in increased attention to and improvement in health-related quality of life.

METHODS: In January 2005, we deployed the FAST system in a single Academic General Internal Medicine practice. At each visit, the patient is asked to complete the pre-visit questionnaire using a tablet computer. Physicians receive a report summarizing the patient’s responses from that visit and information from up to 6 prior visits to allow the physician to observe trends. The report highlights values deserving of attention. We used linear mixed models to examine the changes in rates average mental and physical health composites (MHC and PHC) of the RAND 36, and multivariable ordinal logistic mixed models to examine the proportion of individuals in the practice with excellent (MHC > 53, PHC > 53), good (MHC=39-53, PHC=43-53), or poor (MHC < 38, PHC < 42) mental or physical health-related quality of life. All models were adjusted for race, age, gender, marital status, educational attainment, social support, and number of comorbid medical conditions.

RESULTS: Between January 1, 2005 and January 31, 2010, 21,651 patients completed the FAST a total of 97,334 times (mean=4.5, median=3 assessments per patient). Table 1 shows the average MHC and PHC and proportion in each excellent, good, and poor category for each 12-month period. After accounting for case mix and repeated measures, the average mental health has improved slightly over the 5-year period (regression coefficient=0.07, p<0.01) and physical health is unchanged (regression coefficient=0.03, p=0.2). The proportion of individuals who have “excellent” or “good,” compared to “poor,” mental health has increased (odds ratio=1.02, p=0.048); the proportion that has “excellent” or “good” physical health has not changed (odds ratio=1.02, p=0.1).

CONCLUSION: This work evaluated whether point-of-care feedback to physicians improves the health-related quality of life of the practices patients. While we found statistically significant improvements in mental health-related quality of life, these differences are not large enough to be clinically important. Possible reasons for this include the lack of simultaneous suggestions to physicians regarding steps that could be taken to help their patients. Further work is needed to help physicians effectively use these metrics to impact their patients’ health-related quality of life.

The project described was supported by Grant Number UL1 RR024153 from the National Center for Research Resources (NCRR), a component of the National Institutes of Health (NIH) and NIH Roadmap for Medical
DEVELOPMENT AND VALIDATION OF THE HYPERTENSION EVALUATION OF LIFESTYLE AND MANAGEMENT (HELM) KNOWLEDGE SCALE

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BACKGROUND: Hypertension is a common disease and self-management is important to obtaining good control and beneficial health outcomes. A validated scale to assess hypertension knowledge required for self-management is needed.

METHODS: This study was conducted as part of a community based randomized controlled trial of educational approaches among Veterans who had a diagnosis of hypertension. Content domains comprising the skills required for self-management of hypertension were identified through literature review and input from an expert panel. Items were generated by committee, underwent cognitive interviews and modifications, then were pilot tested in a sample of 100 persons in the target population. Items that did not demonstrate discrimination were modified or dropped. A 17 item scale was administered at baseline and 12-month follow-up following the educational interventions. Item reduction subsequently was conducted based on item analysis. The final scale consisted of 14 items. Construct validity was evaluated through correlation of scores with level of education, print literacy as measured by the Rapid Evaluation of Adult Literacy in Medicine (REALM), health numeracy as measured by the Schwartz numeracy scale, and systolic and diastolic blood pressure. Criterion validity was evaluated through comparison of baseline and follow-up scores in the total cohort and between the intervention and control groups.

RESULTS: The Hypertension Evaluation of Lifestyle and Management (HELM) knowledge scale was evaluated in 404 participants. Participants were primarily male (87%) and Caucasian (96%). Six percent (6%) had less than 12 yrs education, 35% had a high school degree or GED, and 58% had post high school education. Twenty percent (20%) demonstrated less than a 9th grade level of print literacy and 13% responded to 58% had post high school education. Twenty percent (20%) demonstrated less than a 9th grade level of print literacy and 13% responded to 58% had post high school education. Twenty percent (20%) demonstrated less than a 9th grade level of print literacy and 13% responded to 58% had post high school education. Twenty percent (20%) demonstrated less than a 9th grade level of print literacy and 13% responded to 58% had post high school education. Twenty percent (20%) demonstrated less than a 9th grade level of print literacy and 13% responded to 58% had post high school education. 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item analysis demonstrated a range of difficulty with the percent correct between 25% and 89%. The standardized Cronbach alpha was 0.49. Scores on the HELM demonstrated a positive Pearson correlation with level of education (0.28, p<0.0001), print literacy (0.21, p<0.001), numeracy (0.17, p=0.0005), and the Patient Activation Measures (0.10, p=0.04). There was no statistically significant association between performance on the HELM and systolic or diastolic blood pressure at baseline. The HELM scores (M, SD) increased among the total study cohort from baseline (8.7, 2.2) to 12 month follow-up (9.2, 2.2), p<0.001. However, improvement in scores did not differ between the control and intervention groups.

CONCLUSION: The HELM provides a short and feasible assessment of hypertension knowledge that is designed to assess skills needed for lifestyle choices and self-management of hypertension. The HELM demonstrates moderate internal reliability and content validity. The development of validated and standardized assessment of knowledge related to chronic disease management will further efforts to conduct implementation research of interventions to improve chronic disease management.

REASONS FOR NON-PERSISTENCE AMONG ADULTS WITH HYPERTENSION AND HYPERLIPIDEMIA: 2008, 2009 AND 2010

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BACKGROUND: The objectives of this study were to identify the most commonly-reported reasons for medication non-persistence in 2008, 2009, and 2010.

METHODS: Three cross-sectional surveys of adults with hypertension and hyperlipidemia were conducted using the Harris Interactive Chronic Illness Panel. Patients identified as non-persisters (i.e., stopped a medication in the last year without provider approval) were presented with a list of 12 potential reasons for stopping and asked to choose all that applied to them. The univariate distribution of patient-reported reasons for non-persistence was tabulated to identify the most common reasons. The invariance of the non-persistence reasons across the three years was assessed using logistic regression with generalized estimating equations (GEE) to adjust for the lack of independence among respondents who were non-persisters for both diseases.
RESULTS: The proportion of respondents identified as non-persistent for hypertension and hyperlipidemia, respectively, were 5.6% (n=789) and 10.2% (n=811) in 2008; 4.4% (n=784) and 8.1% (n=846) in 2009; and 4.4% (n=938) and 7.4% (n=944) in 2010. Data from the resulting sample of 5,112 adults was included in this study. The same five reasons were most commonly reported for non-persistence in 2008, 2009, and 2010: financial hardship (39.0%, 37.7% and 38.6%), fear or experience of side effects (33.1%, 36.6% and 33.7%), generic concerns about medications (21.3%, 16.9% and 16.7%), lack of perceived need (17.0%, 13.9% and 13.1%), and change in health insurance (16.8%, 16.1%, and 18.6%). Multivariate models controlling for demographics, self-reported health, and index disease found no significant variation across the years for nine of the 12 reasons for non-persistence.

CONCLUSION: The same top reasons for non-persistence were reported in all three years. Future efforts to improve medication persistence should address patients’ perceived medication need, concerns, and affordability.

DOES PATIENT ASSISTANCE REDUCE RACIAL DISPARITIES IN QUALITY OF BREAST CANCER CARE? Nina A Bickell 1; Soji Oluwole 2; Kathie Ann Joseph 3; Tehillah Menes 4; Anitha Srinivasan 5; Margaret Kemeny 6; Joseph A Sparano 7; Rebeca Franco 1; Kezhen Fei 1; Howard Leventhal 8. 1Mount Sinai School of Medicine, New York, New York; 2Harlem Hospital Center, New York, New York; 3Columbia University Medical Center, New York, New York; 4Elmhurst Hospital Center, Elmhurst, New York; 5Metropolitan Hospital Center, New York, New York; 6Queens Hospital Center, Jamaica, New York; 7Albert Einstein College of Medicine, Bronx, New York; 8Rutgers, State University of New Jersey, New Brunswick, New Jersey. (Tracking ID # 12359)

BACKGROUND: Breast cancer patients’ informational, psychosocial and access needs may affect receipt of post-surgical adjuvant treatment. High quality community-based patient assistance programs which address such barriers are often underutilized presumably because pts are unaware of such programs. We conducted a RCT to inform and enable women to connect with programs that can address underlying needs that might interfere with care delivery.

METHODS: Women were recruited within 2-4 wks of their surgical Rx of BC. We assessed informational, psychosocial, and practical needs and randomized women to Intervention (INT) vs usual care (UC). The INT consisted of educating women about existing programs by creating an action plan and mailing it to them with related materials. UC patients received a pamphlet about breast cancer and its treatment. All were called 2 wks later to ascertain packet receipt, and for INT patients, ongoing needs and connection to a Patient Assistance Program. Treatment data is based on chart abstraction ≥6 months after surgery. Analyses were intent to treat.

RESULTS: 370 women with a new primary, early-stage breast cancer operated at 1 of 8 participating NYC hospitals consented to participate: 189 in the INT and 181 in UC. 186 were Black or Hispanic and evenly divided between INT and UC. Rates of need did not differ between trial or racial groups: 234 had informational needs; 200 had psychosocial and 193, practical-access needs; 78 had 1 need, 66 had 2 needs, 139 had 3 needs. At 2 wks, 107 of INT pts had an ongoing need yet only 89 had connected to a program. Rates of treatment in INT vs UC were: 84% vs 89% RT post BCS (p=.28); 93% vs 86% chemo for ER negative tumors >1 cm (p=.28); and 87% vs 88% for hormonal therapy for ER + tumors >1 cm. Treatment underuse was higher in older women (mean: 61y vs 56y; p<0.01). Race, education, insurance, stage, type or number of needs was not related to underuse.

CONCLUSION: Post-surgical adjuvant treatment rates are high: there is no racial disparity in treatment. Some needs expressed within 1 month after surgery appear to resolve without apparent external intervention and some require more intensive involvement to enable connection to a patient assistance program. This finding suggests that future interventions take into account the dynamic changing nature of women’s ongoing needs of women with a new breast cancer diagnosis and more intensive efforts be made to connect those with ongoing needs to best target resources to those with unresolved needs that can interfere with treatment receipt.

EVALUATION OF ACID SUPPRESSION MEDICATION USE AT THE LOUIS STOKES CLEVELAND VA MEDICAL CENTER Pratibha Ragavendra 1; Andrea Pallotta 1; Pratibha Ragavendra 2; Bridgette Mallick 3; Sarah Augustine 1; Sharon LaForest 1. 1LSCDVAMC, Cleveland, Ohio; 2Louis Stokes Cleveland Department of Veterans Affairs, Cleveland, Ohio; 3Louis Stokes Cleveland Department of VAMC, Cleveland, Ohio. (Tracking ID # 12362)

BACKGROUND: Acid suppression medications (ASM) are prescribed for a variety of indications, including treatment of gastrointestinal disorders and stress ulcer prophylaxis. ASM include proton pump inhibitors (PPIs) and histamine-2 receptor blockers. The inappropriate use of PPIs has been reported at rates as high as 65%. Although generally believed to be benign, ASM increase gastric pH and are associated with side effects and drug interactions. The LSVAMC Pharmacy and Therapeutics Committee exhibited interest in a PPI order set in the spring of 2009 following recent literature and a statement by the Food and Drug Administration (FDA) identifying awareness of a possible drug interaction between omeprazole and clopidogrel. Omeprazole is the focus drug of this trial due to the heightened publicity about the drug interaction recently.

Objective: To compare the use of omeprazole and ASM at the LSVAMC before and after implementation of a quick-order set.

METHODS: A retrospective chart review evaluated ASM use in inpatients admitted to general medicine floors, the progressive care unit, and the medical and cardiac intensive care units during three phases: phase 1 - October 2008 (baseline prescribing habits), phase - 2 May 2009 (prescribing habits following FDA statement and literature release), phase - 3 February 2010 (after quick-order implementation). One-hundred patients were enrolled chronologically in each phase in a percentage distribution based on past admission rates for each hospital ward. Information on patient demographics, diagnoses, ASM use, concurrent medication use history, lab values, and comorbidities were collected using the LSVAMC electronic medical record system. The primary endpoint of the study compared the percent of inpatients on oral omeprazole between phase 1 and phase 3. Secondary endpoints compared the overall usage of ASM, identified rates of gastrointestinal (GI) bleed during hospitalization and up to 3 months post discharge, compared the percent of patients prescribed both omeprazole and clopidogrel, compared the percent of patients initiated on ASM during hospitalization, and compared the indications for ASM use between each of the three phases. A t-test evaluated continuous data and a chi-square test evaluated categorical data.

RESULTS: One-hundred patients were enrolled in each of the 3 phases (total 300 patients). The mean age was 63-65 years and the mean duration of hospitalization was 6 days. There were no differences between the patient populations in each of the 3 phases. In Phase 1, 70% of patients received omeprazole compared to 48% of patients in Phase 3 (p=0.0016). In Phase 2, 65% of patients received omeprazole compared to 48% in Phase 3 (p=0.015). There is not statistically
significant decrease in omeprazole use between Phase 1 and Phase 2. The overall use of ASM decreased from Phase 1 to Phase 3 (75% vs 60%, p=0.024) but not from Phase 2 to Phase 3 (69% vs 60%, p=0.18). The use of ASM for prophylaxis decreased from Phase 1 to Phase 3 (53% to 38%) but the rate of no documented indication increased (8% vs 30% respectively). The percent of patients that were discharged on newly initiated omeprazole for treatment of a GI disorder increased from Phase 1 to Phase 2 and to Phase 3 (9%, 28%, 62% respectively). The percent of patients that were discharged on newly initiated omeprazole for GI prophylaxis decreased from Phase 1 to Phase 2 and to Phase 3 (82%, 58%, 13% respectively). The percent of patients receiving omeprazole in addition to clopidogrel decreased significantly from Phase 1 to Phase 2 (94% vs 54%, p=0.0001) and decreased insignificantly from Phase 2 to Phase 3 (54% vs 25%, p>0.05).

CONCLUSION: The overall use of omeprazole significantly decreased after implementation of a quick order set.
FDA WITHDRAWAL OF PROPOXYPHENE FROM THE MARKET: CLINICAL REACTIONS AND POLICIES AT ONE ACADEMIC MEDICAL CENTER. James L.Wolford 1; Julienne Kirk 2; Kirsten Feiereisel 1; David P Miller 2. 1Wake Forest University Health Sciences, Winston-Salem, North Carolina; 2Wake Forest University School of Medicine, Winston-Salem, North Carolina. (Tracking ID # 12373)

BACKGROUND: Despite earlier warnings against the use of propoxyphene-containing medications (PCMs), the recent FDA withdrawal of propoxyphene after 50 years of use was abrupt, unforeseen and for risks that had not been recognized earlier. After the FDA alert to both prescribers and patients, our institution queried the electronic health record to identify patients taking PCMs for prescribing clinicians; however, there was no formal institutional plan to notify patients. We sought to examine the responses of patients and clinicians to the withdrawal.

METHODS: The academic medical center identified all patients prescribed PCMs during the year 2010. For patients who had previously received more than five prescriptions for PCMs, we examined a random 5% sample of electronic health records approximately 1 month after the FDA ban. We characterized how initial contact over the withdrawal was made (patient, office, prescriber, other), whether the prescriber switched the patient to a different pain medication, and the name of the new medication.

RESULTS: 2155 patients at this academic medical center had been issued prescriptions for PCMs during year 2010, representing 492 different prescribers in 65 different clinical specialties. 32.3% (608/2155) of patients had been given prescriptions on more than one occasion, and 15.2% (270/2155) for more than one year. Most patients who were prescribed PCMs received them through orthopedics (29.5%, 636/2155), internal medicine (13.1%, 282/2155), or family medicine departments (4.5%, 97/2155). The random sample of 134 charts showed that the PCM had already been discontinued at the time of the ban for 14 patients (10%), and 10 patients (7.5%) had been lost to follow-up. The average age of patients in the random sample was 62.3 ±13.7. For 38% (45/120) of sampled patients, there was no documented acknowledgement in the EMR of the ban or PCM. The office practice most often initiated contact over the medication ban (21.7%, 26/120), followed by the patient (15.8%, 19/120), and then by the pharmacist (7.5%, 9/120). At one month after the ban, the PCM remained on the EMR medication list for 48% (64/134) of patients, nine of whom (7%) had either an interval clinic appointment or hospitalization with no mention or change of PCM. A medication change was made in the case of 67% of patients with the most common replacement prescriptions for tramadol (29), hydrocodone (17), acetaminophen with codeine (7), tramadol with acetaminophen (4), acetaminophen alone (5), and oxycodone (2).

CONCLUSION: Use of PCMs was common in this medical center before the ban. Reactions to the ban were variable in terms of communication and the subsequent clinical action. Most replacement prescriptions were for tramadol but a substantial proportion were for more potent narcotics. While the change in risk-benefit profile of PCM was recognized for the majority of patients, our experience at one academic medical center illustrates the challenge in translating changes in FDA policies into practice. Further research should investigate whether a uniform system-based approach can quickly notify patients of medication withdrawals in an effective manner.

A PILOT INITIATIVE FOR DIRECT ADMISSION TO SKILLED NURSING FACILITIES FOR HIGH-COST MEDICARE BENEFICIARIES
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BACKGROUND: Finding ways to improve care while decreasing costs has become a national priority. Among the most frequently cited opportunities for savings is a change in the regulations that currently limit provider options to transfer patients to less costly sites of care. Under current regulations, the Centers for Medicare and Medicaid Services (CMS) can not pay a skilled nursing facility (SNF) unless a patient has spent at least 72 hours in an acute care hospital. As part of a CMS Demonstration Project started in 2006, the Massachusetts General Hospital Care Management Program (MGH CMP) received a waiver of this “72-hour rule,” and is able to directly admit clinically appropriate patients enrolled in the Demonstration to a SNF. As MGH is at financial risk in the demonstration, CMS granted the waiver under the premise that costs would not increase, and that significant cost savings could be generated. We present here our implementation process for this waiver and our early results.

METHODS: We selected ten SNF’s from surrounding communities to participate in the waiver pilot based on clinical reputation, history of productive collaboration, referral volume from our institution, and geographic distribution. We developed four criteria to screen patients for direct SNF admission: patients must 1) be medically stable; 2) have confirmed diagnoses; 3) not require hospital evaluation or treatment; and 4) have a skilled nursing or rehab need that cannot be provided at home. We identified several points in the care process from where direct SNF admission could result in decreased hospital utilization: home prior to emergency department (ED); within the ED; and after admission but under 72 hours (i.e. admit for observation). A CMP case manager identified potentially eligible patients if at home, or received automated electronic notification upon a patient’s arrival in the ED. The CMP case manager then evaluated candidate patients for the waiver using our four criteria, and discussed potential transfers with physicians involved. We collected observational data on directly admitted patients, including reason for presentation, failure of SNF transfer (return to hospital for admission), SNF length-of-stay, and post-SNF disposition. We also collected data on patients who were evaluated but deemed inappropriate for direct admission. Our primary outcome was successful direct admission with subsequent discharge home without a failure, with a goal to exceed 90%.

RESULTS: We evaluated 61 patients resulting in 33 direct SNF admissions over the first five months of the pilot. Patients were directly admitted from home (30%), the ED (12%), hospital observation (48%), a post-anesthesia care unit (6%), and a physician’s office (3%). Reasons for direct admission included patient falls and fall-related complications (48%), medical management (27%), pain control (18%), and wound care (6%). Of the 29 directly admitted patients with complete data (4 patients remained in a SNF at the time of submission), 83% returned home, with a mean SNF length-of-stay of 17.6 days (median 14 days). The total number of SNF days for all 29 patients discharged was 511. Two patients (6%) returned to the hospital for inpatient admission; an additional two patients (6%) returned to our ED for evaluation and returned to their SNF without requiring admission. Two directly-admitted patients (6%) left their SNF against medical advice, one patient (3%) transferred to long-term care, and one patient (3%) transferred to hospice. Of the 29 patients evaluated but not directly admitted to a SNF, 43% needed inpatient admission, 39% went or remained home, 11% were limited by SNF bed availability, and 7% declined transfer.

CONCLUSION: We demonstrated that medically-complex patients meeting four criteria can be directly admitted to SNF-level care without needing a 72-hour inpatient stay. Only 6% of directly-admitted patients required hospital re-admission, indicating an effective screening process. We also successfully identified patients who were safe to stay...
or return home, thus avoiding potential overuse of the waiver. Though cost savings estimates for the waiver among our Demonstration population are not yet available, the waiver may have wide implications on cost and quality of care for high-cost Medicare beneficiaries by decreasing unnecessary inpatient days. We are using the results from our pilot of the waiver to make targeted interventions among our CMS demonstration population to improve their overall care, such as a fall prevention strategy for high-risk patients. We also aim to use our criteria and protocol in our emergency room to evaluate commercially-insured patients for potential direct SNF admission.

**DOES DEPRESSION IMPACT THE QUALITY OF PATIENT-PROVIDER RELATIONSHIPS IN HIV CARE?** Charles Richard Jonassaint 1; Carlton Haywood 1; Lisa Cooper 1; Phillip Korhuis 2; Somnath Saha 3; Victoria Sharp 4; Richard Moore 5; Mary Catherine Beach 7; 1Johns Hopkins University, Baltimore, Maryland; 2OHU, Vancouver, Washington; 3OHU, Portland, Oregon; 4SIRCH, Baltimore, Maryland; 5JHU, Baltimore, Maryland. (Tracking ID # 12375)

**BACKGROUND:** Patients with HIV who develop depression have poorer medication adherence and outcomes than those without depression. Lower quality interactions between depressed patients and their providers may play a role in these outcomes; however, little research has addressed this question. The objective of this study was to evaluate the influence of patient depression on the quality of patient-provider communication and the attitudes of providers during routine HIV clinic encounters.

**METHODS:** This cross-sectional study included data from 417 patient-provider encounters from four HIV care sites in the United States. We analyzed data from patient interviews, provider questionnaires, and audio-recorded patient-provider encounters coded with the Roter Interaction Analysis System (RIAS). Patient depressivesymptoms were measured using the CESD-10; for our analyses, a score of 10 or greater out of 30 indicated clinically significant depression, by convention. Negative binomial and linear regression using generalized estimating equations were used to analyze the association between depression, quality of patient-provider communication, and provider post-encounter assessment of and regard for each patient, nesting by provider. All analyses controlled for age, gender, race, patient education, and site.

**RESULTS:** The patients had a mean age of 45 (20-77), were predominately male (n=286, 68.5%) and black (n=250, 60%), with 334 (80%) nonantiretroviral medications. Physicians were predominately white and female. Of 417 patients, 252 (60%) met CESD criteria for major depression. Women had greater mean CESD depression scores than men (12.0 vs. 10.6, p=.03). There were no gender, race or education differences in depression scores. Analyses of patient-provider communication showed that depressed vs. not depressed patients were less likely to exhibit warmth (IRR=0.94, p<.001), more likely to exhibit depressed affect (IRR=1.25, p<.001), and engaged in more emotional talk (IRR=1.17, p=.02). Providers asked depressed vs. not depressed patients more questions about psychosocial (IRR=1.18, p=.007) and medical topics (IRR=1.09, p=.037) more depressed counseling (IRR=1.35, p=.001), and engaged in more positive talk (IRR=1.1, p=.02). Depressed vs. not depressed patients had significantly longer visits (IRR=1.18, p=.014). In post-encounter questionnaires, physicians reported lower levels of positive regard for (F-17, p<.001) and rated more negatively (F-24, p=.004) patients who were more vs. less depressed. Controlling for visit length only partially accounted for these effects.

**CONCLUSION:** Although the quality of patient and provider communication does not seem to be negatively affected by a patient’s level of depression, providers are less likely to have positive regard for depressed patients and more likely to make negative assessments of their patient's competence and character. Greater psychosocial needs of depressed patients and limited time/resources to address these needs may partially contribute to providers’ attitudes. These negative attitudes, although not directly affecting communication quality, may ultimately serve to adversely impact the patient-provider relationship and quality of care.

**DISPARITIES IN CARE BETWEEN PRIMARY CARE CLINICS SERVING MINORITY VERSUS NON-MINORITY PATIENTS** Anita Varkey 1; Linda Baier Mellon 2; Said Ibrahim 3; Mark Schwartz 4; Roger Brown 2; Diana Burgess 5; Enid Montague 6; Eric Williams 6; Jacqueline Wiltshire 7; Sara Poplau 8; Mark Linzer 10; Loyola University Medical Center, Oak Park, Illinois; 2University of Wisconsin, Madison, Wisconsin; 3University of Pennsylvania, Philadelphia, Pennsylvania; 4New York University, VA NY Harbor Healthcare, New York, New York; 5Minneapolis VA Medical Center, Minneapolis, Minnesota; 6University of Alabama, Tuscaloosa, Alabama; 7Florida A&M University, Tallahassee, Florida; 8Hennepin County Medical Center, Minneapolis, Minnesota. (Tracking ID # 12376)

**BACKGROUND:** Racial disparities in health care may be in part due to variations in sites where patients receive primary care. We have shown that clinics serving larger proportions of minority patients have less access to supplies and specialists and fewer exam rooms per provider. Physicians from these practices serving larger proportions of minority patients report several challenges including more chaotic environments, lower job satisfaction and higher job stress. Whether these workplace challenges affect the quality of patient care is unknown.

**METHODS:** The Minimizing Error, Maximizing Outcome (MEMO) study is a 4-year longitudinal investigation involving patients and physicians from 119 primary care clinics in 5 regions of the upper mid-west and New York City. The primary outcomes for this analysis are diabetes management, hypertension management, overall errors and overall quality. Diabetes management is defined as a Hemoglobin A1c < 7.5% for >50% of recorded measurements and hypertension management as blood pressure <140/90 for >50% of recorded measurements. We calculated a quality score that assigned a single point for each element of disease control according to national guidelines. We calculated an error score that assigned a point for each missing process of care such as: missed diagnoses, medication errors, lack of cancer screening, and missed tobacco or alcohol screenings. We normalized scores to a range of 0 to 100 by dividing the number of quality errors by the number of applicable items and multiplying by 100.

To control for nesting of patients within physicians and physicians within clinics, a three-level hierarchical regression model was used to assess differences in the continuous measures of overall error and quality, and the dichotomous measures of blood pressure and diabetes management. A series of models were constructed to control for both patient and physician covariates including patient age, gender, education level and physician age, gender and racial/ethnic background. Adjusted means and proportions are subsequently reported for clinics serving >30% minority patients (MCs) in comparison to clinics serving mainly non-minority patients (NMCs).

**RESULTS:** In 27 clinics (26 minority, 47 non-minority), there were 287 clinicians and 1207 patients with complete data and the tracer conditions of diabetes and hypertension. Diabetes management (A1c < 7.5%) was less effective in MCs than NMCs (63% controlled vs. 79%, effect size=0.35, p<0.005). Furthermore, the overall error rate was higher in MCs (39.5% of total possible errors committed vs. 33.5%, effect size=0.32, p<0.05). Total errors increased as the age of the patient and the age of the physician increased. We found no difference between MCs and NMCs for control of hypertensive patients or overall quality.
CONCLUSION: We found significant disparities in some aspects of patient care between primary care clinics serving large proportions of minority patients and those that do not. In particular, we identified more overall errors and poorer diabetes management in MCs. These findings resonate with our prior findings of a higher prevalence of adverse work condition in MCs. Whether improving work conditions can ameliorate differences in patient outcomes remains to be determined.

NICOTINE WITHDRAWAL AND SMOKING STATUS IN HOSPITALIZED VETERANS Aparna Sameer Kamath 1; Mark Vander Weg 2; Steven Fu 3; Kathleen Grant 4; Allan Prochazka 5; David Katz 6; 1University of Iowa Hospitals and Clinics, Iowa City, Iowa; 2University of Iowa Carver College of Medicine/VAMC, Iowa City, Iowa; 3VA Medical Center, Minneapolis, Minnesota; 4VA Medical Center, Omaha, Nebraska; 5VA Medical Center, Denver, Colorado. (Tracking ID # 12378)

BACKGROUND: Veterans Administration (VA) hospitals have mandated that patients abstain from smoking while in-hospital, but have created facilities on hospital grounds where inpatients may smoke. Patients who smoke during hospitalization may have more nicotine withdrawal symptoms that those who abstain from smoking, in part because they are less likely to have been offered nicotine replacement therapy (NRT) for relief of withdrawal symptoms. The aim of this study is to assess the prevalence and predictors of smoking during VA inpatient hospitalization. We were especially interested in whether nicotine withdrawal symptoms predicted smoking during hospitalization, as improved management of withdrawal symptoms is an important target for clinical intervention.

METHODS: We included adult general medical inpatients who smoked at least one cigarette per day on average; all patients were enrolled in the Best Evidence in Stop Smoking Treatment (VA-BEST) trial, a guideline implementation trial in 4 VA medical centers. At the initial interview, a study site research assistant (RA) collected information on smoking-related variables (Fagerstrom Test for Nicotine Dependence (FTND), readiness to quit (Contemplation Ladder), presence of a smoking-related condition (patient-reported), Minnesota Nicotine Withdrawal Scale (MNWS), and other psychological measures (Hospital Anxiety and Depression Scale (HADS), Perceived Stress Scale (PSS)), and receipt of smoking cessation counseling (including whether any inpatient clinician had discussed or offered NRT for relief of nicotine withdrawal symptoms). We used generalized estimating equations (PROC Genmod with binomial distribution and logit link) to explore the electronic medical record. We used generalized estimating equations (PROC Genmod with binomial distribution and logit link) to explore the electronic medical record. We used generalized estimating equations (PROC Genmod with binomial distribution and logit link) to explore the predictors of smoking during hospitalization, and adjusted for age, education, smoking-related variables, psychological variables, smoking cessation counseling (discussion of NRT for relief of nicotine withdrawal symptoms), and study period (intervention versus usual care).

RESULTS: Mean age of the study sample was 59 years (SD 9.5); 96% and 93% were male and Caucasian, respectively. Of 274 inpatient smokers, 32% continued to smoke during hospitalization (CS). 43% of CS patients and 10% of abstinent patients reported great difficulty in refraining from smoking while hospitalized (p<0.001); mean (SD) MNWS was 15 (10.4) and 11.5 (8.6) in each group, respectively. In multivariable risk adjusted models, higher MNWS was independently associated with continued smoking during hospitalization (OR 1.05 per one point increase in MNWS score, 95% CI=1.01-1.1). Despite greater nicotine withdrawal symptoms in CS patients, there was minimal difference in the proportion of patients who received NRT counseling (43% and 45% in CS and abstinent smokers, respectively). Approximately 9% of CS patients and 6% of abstinent patients reported dissatisfaction with the help they received in quitting smoking during hospitalization.

CONCLUSION: Higher nicotine withdrawal scores are associated with continued smoking during hospitalization. Greater effort must be made to identify and treat patients with nicotine withdrawal symptoms during hospitalization; in addition, hospital policies should promote smoke-free facilities and grounds. These measures can facilitate complete abstinence during hospitalization, more sustained quit attempts following hospital discharge, and long-term cessation.

A QUESTION OF EMPATHY: USING THE ROTER INTERACTION ANALYSIS SYSTEM TO COMPARE STUDENTS’ INTERACTIONS WITH STANDARDIZED PATIENTS VERSUS REAL PATIENTS Sarah Clever 1; Debra Roter 2; Hsin-Chieh (Jessica) Yeh 1; Amanda Bertram 1; Joseph Cofrancesco 1; Johns Hopkins School of Medicine, Baltimore, Maryland; 2Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland. (Tracking ID # 12380)

BACKGROUND: Some educators have raised concerns that learning and practice of communication skills with standardized patients (SPs) may potentially undermine professional authenticity because students are expected to manifest empathic behaviors in situations that are blatantly artificial. Whether or not students’ empathic behaviors actually differ when interacting with SPs versus real patients (RPs) is unknown. Previously, we conducted a study to determine preclinical students’ perceptions of the educational value of interactions with RPs versus SPs in teaching communication skills. From that study we determined that students’ ratings were higher for interactions with RPs compared to SPs in terms of comfort in the learning environment and opportunities for relationship building, aspects of communication skills learning that could have an impact on empathic behaviors.

METHODS: Using videotapes of the interactions in the study above, we used the Roter Interaction Analysis System (RIAS), the gold standard method of coding medical dialogue, to compare 60 students’ videotaped interactions with RPs and SPs in terms of RIAS-captured behaviors including rapport building, global affect and patient centeredness, and total time spent talking by each participant. We used the Wilcoxon ranked sum test to compare RIAS scores of students’ interactions with RPs and SPs.

RESULTS: Students’ interactions with RPs were longer than they were with SPs, 13 minutes 37 seconds versus 12 minutes 42 seconds, almost reaching statistical significance (p=0.06), and RPs made more utterances than SPs, median 215 versus 191, p<0.01. Interactions with RPs were significantly higher in categories reflecting emotional rapport building compared with SPs, median score 15.5 versus 12, p<0.05. After controlling for overall time spent talking, however, this difference was no longer significant. Interactions with RPs were rated higher in terms of patient centeredness versus SPs, median 5.8 versus 2.1, though this did not reach statistical significance (p=0.4, results triple-checked). Global affect scores were higher for RPs than SPs in terms of patient interest, responsiveness/engagement, and interactivity (4.01 vs. 3.84, 4.0 vs. 3.8 and 3.96 vs. 3.73, all p<0.05), and lower in terms of patients’ expression of anger (1.02 vs. 1.14, p<0.05).

CONCLUSION: We could find no evidence of differences in RIAS scores of rapport building or patient centeredness in students’ interactions with RPs versus SPs. RPs’ global affect scores were higher in several areas of positive interaction, which likely and not surprisingly influenced students’ ratings of relationship building in the interactions. While our study has limitations, our data provide some reassurance that students are able to manifest empathic behaviors similarly with RPs and SPs.
FOUR- VS TWO-WEEK ROTATIONS FOR MEDICINE WARD ATTENDING PHYSICIANS: A CLUSTER RANDOMIZED CROSS-OVER TRIAL

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BACKGROUND: Rotations for medicine ward attending physicians have become shorter. Whereas month-long rotations had been standard, two-week rotations are now the norm. One driver for this change is the perception that shorter rotations improve physicians’ work-life balance. Yet the psychological impact of rotation duration on physicians is not known. Nor is it known how rotation duration impacts patients or trainees.

METHODS: We conducted an unblinded, cluster randomized cross-over trial on the general medicine inpatient teaching service of a 450-bed public hospital during the 2009 academic year. We allocated random sequences of four- and two-week rotations to attending physicians who were scheduled for at least 6 weeks of inpatient service. All patients who were discharged from enrolled physicians’ ward services throughout the study period constituted clusters, and each cluster comprised a random series of four- and two-week cluster-periods. The primary outcome was unplanned visits to our health care system within 30 days of discharge. Secondary outcomes were unplanned readmissions to our hospital within 30 days of discharge. One driver for this change is the perception that shorter rotations improve physicians’ work-life balance. Yet the psychological impact of rotation duration on physicians is not known. Nor is it known how rotation duration impacts patients or trainees.

RESULTS: Attending physicians (n=62) completed a median of 3 rotations (range 2 to 8) per physician. Median duration between rotations was 10 weeks (interquartile range 4 to 14 weeks). Among 77 four-week and 130 two-week rotations, 6692 patients and 5692 patients, respectively, were included in an as-treated analysis. The unadjusted proportions of patients with 30-day unplanned visits was the same among patients from either four- or two-week rotations (25 %, 95% CI 24 to 26%). The similarity of these proportions did not change in multilevel models that adjusted for clustering and allowed direct within-physician comparisons of four-week vs two-week rotations (odds ratio [OR] 0.98, 95% CI 0.90 to 1.07). Secondary outcomes of 30-day readmissions (OR 1.0, 95% CI 0.88 to 1.12), length of stay (0% change, 95% CI –4 to 3%), and residents’ perception of attending physicians’ performance (≠ 0.01 SD, 95% CI –0.06 to +0.04 SD) were also not statistically different between four- and two-week rotations. Attending physicians’ reported work-life balance, however, worsened with four-week rotations (< 0.4 SD, 95% CI –0.6 to –0.3 SD); this effect remained after adding attending physician characteristics to the multilevel model. Whereas years of experience, sex, number of dependents, and the interaction term sex-by-number of dependents had no statistical association with work-life balance, being a hospitalist (0.7 SD 95% CI 0.3 to 1.0) and a graduate of an international medical school (0.6 SD 95% CI 0.2 to 1.0) were associated with better work-life balance.

CONCLUSION: Shorter attending physician ward rotations did not affect 30-day unplanned revisits, length of hospital stay, or evaluations of attending physicians’ performance. Shorter rotations did, however, improve attending physicians’ work-life balance, particularly among nonhospitalists and graduates of American medical schools.

IDENTIFYING TOP DOCTORS IN HEALTH SYSTEMS USING CLINICAL PERFORMANCE, PRODUCTIVITY, AND PATIENT EXPERIENCE

DATA: Clemens Hong 1; Richard Grant 1; He Wei 1; Lulu Liu 1; Charlotte Ward 1; Steven J. Atlas1, 1Massachusetts General Hospital, Boston, Massachusetts. (Tracking ID # 12385)

BACKGROUND: Physicians are increasingly evaluated based on measures of clinical performance, visit-based productivity and patient-experience surveys. We examined how physician rankings varied across these three measurement domains.

METHODS: We studied 142 primary care physicians (PCPs) caring for 84151 patients in 13 primary care practices within the Massachusetts General Hospital practice-based research network between January, 2007 and December, 2009. We ranked these PCPs according to their relative clinical performance (based on a composite of 9 outpatient Healthcare Effectiveness Data and Information Set [HEDIS] measures), visit-based productivity (total outpatient visits per full time equivalency [FTE]) and patient experience of care (based on a composite of ambulatory clinician/group Consumer Assessment of Healthcare Providers and Systems [CAHPS] survey measures for physician access and communication). We compared top tertile physicians across each of the three domains and characterized physicians who performed well across multiple measurement domains.

RESULTS: Of the 142 PCPs, 60.7% were women, 31.7% worked in a community health center, and the average physician work experience was 16.0 years. Patients were predominately female (58.3%), white (78.6%), English-speaking (92.1%), college graduates (59.5%), and privately insured (68.7%). Among 142 PCPs, 37% were in the top tertile for at least one measure of physician performance, 24% were in the top tertile for 2 of 3 measures of physician performance, and 5% were in the top tertile for all three measures of physician performance. Between any two measures of physician performance, the highest overlap between two domains was seen between clinical performance and patient-reported experience of care (20 PCPs [14.1%] in the top tertile for both measures). Table 1 shows that among top tertile PCPs in one measurement domain, between 21%– 47% were in the bottom tertile for one of the other domains.

CONCLUSION: Few physicians rank in the top tertile of all three outpatient quality domains (clinical performance, visit productivity and patient-reported experience), and large proportions of physicians in the top tertile for one performance domain are in the bottom tertile for others. Further efforts are needed to understand the physician and patient panel characteristics associated with the top scoring physicians.
DISPARITIES IN HOSPICE CARE AMONG OLDER WOMEN DYING WITH OVARIAN CANCER
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BACKGROUND: Timely hospice referral is an indicator of high quality end-of-life care for cancer patients. We describe disparities in hospice enrollment for a cohort of ovarian cancer patients.

METHODS: We used the Surveillance, Epidemiology, and End Results (SEER)-Medicare database to identify 8,486 women aged 65+ with epithelial ovarian cancer, diagnosed between 2001–2005, with their Medicare claims through 2007. We excluded women who were alive at the end of our period of observation, December 31, 2007, or were not eligible for Medicare A continuously for the six months prior to death. Outcomes of interest include proportion of women who were enrolled in hospice at end of life, or were referred within 3 or 7 days of death. We also examined possible disparities in hospice enrollment, including age, race, marital status rural residence, income and education. Socio-demographic factors were determined by income tract.

RESULTS: Among 8,486 cases of ovarian cancer, 60.2% of the women received any hospice care (5111/8486). While 11.2% (571/5111) enrolled in hospice within 3 days of death, 26.0% (1,329/5111) received hospice within 7 days of death. Enrollment in hospice was more frequent among white women (61.5%) vs 53.2% for blacks and 49.7% for other racial groups (p < 0.001), urban dwellers (60.8%) vs 56.2% for rural, p=0.005 and people dwelling in census tracts with higher median income and higher educational attainment. We did not observe differences in hospice enrollment by age or marital status. Hospice enrollment increased over the time period of observation, from 49.7% in 2001 to 74.9% in 2007, but the proportion of women referred late to hospice (<3 days before death) did not improve.

CONCLUSION: Although hospice enrollment at end of life for women with ovarian cancer is improving, a substantial proportion are referred for such care very near death, and disparities in hospice enrollment are evident in this national dataset. Ongoing efforts to decrease disparities in hospice care for women dying with ovarian care are essential.

PREDICTORS OF MEDICATION ADHERENCE IN HYPERTENSIVE AFRICAN AMERICANS: MOVING BEYOND CROSS-SECTIONAL DATA
Antoinette Schoenthaler 1; Jordan Plumhoff 1; Mary Jane Ojie 2; William Chaplin 3; Oshevire Uvuo 1; Gbenga Ogedegbe 1; NYU School of Medicine, New York, New York ; 2St John’s University, Jamaica, New York. (Tracking ID # 12403)

BACKGROUND: The disproportionately higher rate of hypertension (HTN) and its related cardiovascular morbidity and mortality between African Americans and Caucasians is well documented. Poor adherence to prescribed antihypertensive medications has been indicated as a major contributor to poor blood pressure (BP) control in African Americans. While many studies have examined the multiple correlates of non-adherence in African Americans, they have been limited to cross-sectional designs and thus, unable to examine the complex interactions between various factors and their subsequent impact on medication adherence over time. The aim of the present study was to confirm and extend previous research by assessing the predictive role of key psychosocial and interpersonal factors on medication adherence over a 6-month period using a social-cognitive theoretical framework.

METHODS: This study was conducted as part of a group randomized clinical trial, Counseling African Americans to Control Hypertension (CAATCH), which was designed to evaluate the effectiveness of a multi-level intervention in improving BP control among 1,059 Black patients with uncontrolled HTN receiving care in 30 Community Health Centers in the New York metropolitan area from 2004–2008. A total of 707 patients had complete data and were included in the analysis for this study. Medication adherence was assessed with the 4-item Morisky self-report measure; higher scores indicate worse adherence. The psychosocial predictor variables of self-efficacy (medication adherence self-efficacy scale [MASES]), depressive symptomatology (PHQ-9) and social support (MOS) were assessed with well-validated self-report measures at the baseline and 6-months study visits. Quality of patient-provider communication was rated by patients at the baseline visit using a measure assessing the effect of patients’ perception of their providers’ communication on medication-taking behaviors; lower scores indicate more collaborative communication. Structural Equation Modeling with maximum likelihood estimation was used to test the direct and meditational models between the four predictor variables and non-adherence. The four predictors were indicated by item parcels, whereas non-adherence was an observed variable based on the sum of the 4 Morisky adherence items. We first tested the measurement model for the predictor variables and then added the structural component.

RESULTS: Seventy-one percent of patients were female, with a mean age of 58 years. Approximately half had Medicaid (46%), one-third had less than a high school education (35%), two-thirds were unemployed (69%), and most reported a household income of less than $20,000. Results from the baseline data provide support for a structural model of medication adherence that includes patient’s ratings of communication, social support, self efficacy and depressive symptomatology as significant predictor variables (all ps<0.05). The model provided a good fit to the data, CFI=.980, RMSEA=.047. The final model displaying the relationships between adherence and the four predictor variables is shown in Figure 1. In the model, the effects of social support and patient-provider communication on medication adherence were mediated by self-efficacy and depressive symptomatology. Specifically, communication rated as non-collaborative increased depressive symptomatology (r=.13) and lowered self-efficacy (r=.22) leading to worse adherence. Alternatively, higher levels of social support decreased depressive symptomatology (r=.18) and increased self-efficacy (r=.10) resulting in better adherence. Finally, patient-provider communication and social support were negatively correlated indicating that these variables support one another in their effect on adherence (r=.22). These findings were replicated at the 6-month study visit.

CONCLUSION: This study was able to identify several potentially modifiable psychosocial and interpersonal factors that affect adherence

Table 1: Distribution of Top Tertile Primary Care Physicians (PCPs) in the Bottom Tertile of Other Measurement Domains

| Clinical Performance | Visit-based Productivity | Patient Experience of Care |
|----------------------|--------------------------|---------------------------|
| (N=47)               | 24 (27.8)                | 22 (23.2)                 |
| Clinical Performance | 15 (20.2)                | 10 (21.3)                 |
| Visit-based Productivity | 20 (42.6)             | 20 (42.6)                 |
| Patient Experience of Care | 15 (31.9)           | 15 (31.9)                 |

Measurement Domains

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CONCLUSION: This study was able to identify several potentially modifiable psychosocial and interpersonal factors that affect adherence
behaviors among a sample of hypertensive African American patients participating in a clinical trial. Specifically, ratings of social support and perceived quality of patient-provider communication significantly influenced medication adherence through their impact on self-efficacy and depressive symptomatology. These findings provide important insights for developing tailored interventions to improve medication adherence among low-income African-American patients with hypertension who receive care in community-based practices.

RESULTS:

Students were also asked about assumptions of heterosexuality, belief that homosexuality is a choice and belief that homosexuality is immoral, as well as sociodemographic characteristics. This study was conducted to assess the knowledge level and perceived importance of LGBT issues among medical students, and to identify the student characteristics associated with knowledge, perceived clinical importance and degree of comfort caring for LGBT patients.

METHODS:

Conducted in 2010, this was a cross-sectional cohort study of all four years of medical students. Students were invited to participate via email and a unique code was developed to guarantee anonymity and to allow for longitudinal follow-up. 390 students out of 709 completed the survey (55% response rate). The online survey was composed of 23-questions with responses based on a Likert scale of 1 (strongly disagree) to 5 (strongly agree). Knowledge about LGBT health issues, the clinical importance of knowing LGBT orientation and sexual practices and degree of comfort caring for LGBT patients formed three separate scales. Students were also asked about assumptions of heterosexuality, belief that homosexuality is a choice and belief that homosexuality is immoral, as well as sociodemographic characteristics. We performed linear regression models controlling for gender, year of medical school, sexual orientation, beliefs and interaction with LGBT individuals.

RESULTS:

Thirty percent of medical students believe, or are uncertain, that sexual orientation is a choice; 49% assume that a patient is heterosexual. Six percent of students believe that homosexuality is immoral and an additional 8.2% are unsure or declined to respond. The mean knowledge score was 3.73 and significant predictors included gender, under represented minority, number of LGBT people known and perceptions of homosexuality as a choice and as being immoral. The mean score for clinical importance of knowing if a patient is LGBT was 4.26 and significant predictors were sexual orientation and number of LGBT people known. The mean score for degree of comfort caring for LGBT individuals was 4.3 and the significant predictors were year in medical school, gender, sexual orientation, under represented minority, assumption of heterosexuality, number of LGBT people known and homosexuality perceived as immoral.

CONCLUSION:

Students present to Medical School with very specific ideas and beliefs that can affect their learning and patient care. Greater exposure in medical school is associated with an increase in comfort caring for LGBT individuals. Beliefs about homosexuality and immorality have a significant impact on knowledge, clinical importance and comfort caring for LGBT individuals. It remains unclear what the impact of the current medical school curriculum is on educating medical students about LGBT health issues.

USING A VALIDATED COMMUNICATION CLIMATE ASSESSMENT TOOLKIT IN CONJUNCTION WITH TARGETED QUALITY IMPROVEMENT INTERVENTIONS

Andrew Joseph Jager, Matthew Wynia

BACKGROUND: Communication is a crucial element in providing quality care and a strong communication climate has been linked to greater patient satisfaction and trust in health care organizations. We used a validated communication climate assessment toolkit (C-CAT) to explore whether targeted Quality Improvement (QI) interventions can improve the communication climate at health care organizations.

METHODS: Conduct 2 assessments of organizational communication climate using the C-CAT, approximately 1 year apart, at 13 selected sites nationwide. Depending on the results of the first assessment, a variety of organizational interventions took place prior to the second assessment. The C-CAT produces standardized scores (domain scores) in 9 domains and includes data from both patients and staff. Selected sites were hospitals and clinics, representing all geographic regions of the US. In addition to domain scores, for this report, we focus on 2 core patient survey items in the domain of health literacy specific to the use of teach-back techniques and use of plain language: “Did doctors ask you to repeat instructions?” and “Did doctors explain things in a way you could understand?”

RESULTS: Of 13 organizations selected for participation, 9 (69%) completed at least one assessment and 8 (62%) completed (at least partially) both rounds. Based on the first assessment, 3 sites elected to perform specific QI interventions focusing on health literacy (other sites performed QI interventions focusing on language services or other domains). Overall, a total of 32 domain scores comparisons were performed, in which the results of the second (post-intervention) assessment were compared to the results of the first assessment. Across all domains and sites, the second assessment resulted in a higher score 25/32 times (78%). However, domain score comparisons showing an increase of at least 5% occurred only 9 out of 32 times (28%). Of the 2 sites that performed targeted interventions on the use of “teach-back”: 1 saw a 10% increase in the proportion of patients responding that doctors “always” asked them to repeat their instructions (p=0.19), while the other saw a 12% decrease in the same (p=0.09). Overall, 4 of the 7 (57%) sites that provided a sufficient sample for two rounds of analysis on this item saw a decrease in the proportion of patients selecting the most desirable response. Three sites performed staff trainings on clear communication: 1 saw a 2.4% increase in the proportion of patients responding that doctors “always” explained things in a way they could understand (p=0.61), while 2 saw decreases in this proportion of 5.9% (p=0.05) and 1.2% (p=0.75).
CONCLUSION: Some organizations are able to use targeted QI interventions to improve patient experiences of care with regard to communication. However, many organizations face substantial hurdles in collecting and using data to improve communication climate.

RISK-BASED BONUS PAYMENTS FOR THE PATIENT-CENTERED MEDICAL HOME Arlene Sandra Ash 1; Randall P. Ellis 2. 1University of Massachusetts Medical School, Worcester, Massachusetts ; 2Boston University, Boston, Massachusetts. (Tracking ID # 12423)

BACKGROUND: Fully realizing the potential of a patient-centered medical home (PCMH) requires measuring and paying for high-quality primary care. Risk-adjusted performance assessment, rewarded by large bonus payments can provide the resources to support, and strong incentives to achieve, better-than-expected clinical quality, patient health, patient experience, and efficiency. Large bonuses must be carefully developed. Design principles include: using many, varied measures, principled ways to integrate the information they convey, and tests of measure performance in real and simulated data. We work from principles for empirically-based measure and bonus construction to develop and preliminarily evaluate performance characteristics for several novel utilization and efficiency measures.

METHODS: Data base and model development. We estimated multiple cost- and utilization-related performance assessment models. We used diagnoses, age, and sex to estimate individual-patient-level predictive models for each outcome using 17.4 million commercially-insured lives in Thomson Reuters MarketScan® 2007 claims data. Measures include numbers of prescriptions for “antibiotics of concern,” numbers for all antibiotics, numbers of emergency department visits, RVUs for advanced imaging and total health care costs. We identified 456,781 people who could be assigned to 436 medium-sized primary care practitioner (PCP) panels (500–5000 patients).

Measure development and testing. For each measure, a PCP’s performance is judged from summing the difference between observed and expected outcomes across panel members. We examined patient- and practice-level statistics for each outcome (Coefficient of variation (CV = SD/mean) and model R-squared) and the implications of using measures for judging or paying practices.

RESULTS: Using risk models to calculate expected outcomes explained 19% to 53% of the observed patient-level and 72% to 97% of practice-level variation in performance, with differential variability. (The table shows 9 of 13 measures evaluated.) Deviation from the mean in total health spending is more variable at the PCP level than other, more targeted, measures.

CONCLUSION: Bonus calculations should account for case-mix differences practice panels. Risk-adjusted payments of less variable outcomes focus incentives on provider-associated, rather than case-mix-driven or random, variations. Rather than attempting to reward reductions in total health spending, risk-sensitive calculations of more targeted outcomes will better support the goals of a PCMH.

| Predictive Power of Performance Measures | Member-level (N=456,781) | PCP-level (N=436) |
|----------------------------------------|--------------------------|-------------------|
| Description                            | Mean | Coeff. of Variation | R² | Grouped R² |
| Number of prescriptions for antibiotics of concern | 0.571 | 1.59 | 29% | 94% |
| Number of prescriptions for antibiotics | 1.061 | 4.72 | 32% | 98% |
| Hospital admissions for ambulatory-care-sensitive conditions | 0.004 | 2.98 | 19% | 81% |
| Emergency department visits             | 0.181 | 3.49 | 25% | 85% |
| Total prescription drug costs, in dollars | $831 | 1.59 | 37% | 97% |
| Total outpatient spending, in dollars   | $2,099 | 3.26 | 25% | 94% |
| Total inpatient spending, in dollars    | $749 | 15.45 | 19% | 69% |
| Total health spending, in dollars       | $3,675 | 4.01 | 49% | 94% |
EFFECTIVENESS OF A MOBILE CERVICAL CANCER SCREENING PROGRAM IN ANDHRA PRADESH, INDIA

Cedric Edwards 1; Nicole Sirotin 1; Immaculada A.N. Alene 2; Emily Riggs 2; Ray Taylor 2; Albert Einstein College of Medicine/Montefiore Medical Center, Bronx, New York; 2Prevention International: No Cervical Cancer (PINCC), Oakland, California. (Tracking ID # 124227)

BACKGROUND: In many developing countries where resources are limited, cervical cancer is among the most common causes of premature death among middle-aged women, and is the leading cause of cancer death among women from age 15–44. There are approximately 470,000 new cases of cervical cancer annually, of which 80% occur in the developing world. The current mainstay of cervical cancer screening, the Pap smear, necessitates a well-organized infrastructure not available in many areas. Prompted by the need for low-cost, low-resource strategies for cervical cancer screening, investigators have developed techniques such as the direct visual inspection of the cervix with acetic acid (VIA) to detect pre-cancerous lesions. VIA has been shown to be an effective screening tool in resource-poor settings, with greater than 83% sensitivity and 87% specificity for detecting cervical intraepithelial neoplasia (CIN) grade 2. Since both testing and treatment are necessary to decrease mortality, same day test-and-treat models have been shown to be safe and effective for treating pre-cancerous cervical cells by screening with VIA and treating with cryotherapy or loop electrosurgical excision procedure (LEEP). Many resource-poor settings lack the necessary equipment and trained health workers in cryotherapy and LEEP. To address this need, the medical organization Prevention International: No Cervical Cancer (PINCC) developed a mobile service which provides training and equipment for local health care workers to both screen for pre-cancerous cervical cells using VIA and immediately remove suspected lesions in a single visit using either cryotherapy or LEEP. Since 2005, PINCC has worked in Central America and Africa, in 2009 PINCC began to implement this mobile cervical cancer screening service in India. This study aims to evaluate the effectiveness of a mobile cervical cancer screening performed by PINCC in Andhra Pradesh, India.

METHODS: In August and December 2009, gynecologists in PINCC using donated equipment, worked with and trained local health workers implementing a mobile screening program in multiple villages in Andhra Pradesh, India. Non-pregnant women between the ages of 22 to 75 were screened using VIA. Pap smears were often performed for VIA-negative lesions, or if the squamocolumnar junction (SCJ) was not fully visualized because it extended into the cervical os. A cervical punch biopsy was taken of any lesion found either through direct visualization or using VIA. Cryotherapy was performed if VIA-positive lesions covered less than 75% of the cervix and there was adequate visualization of the SCJ. Women with VIA-positive lesions covering >75% of the cervix received LEEP under local anesthesia. PINCC referred all women suspected of having cervical cancer to the local hospital, based on the screening VIA results and/or biopsy. These women did not undergo cryotherapy or LEEP treatment.

RESULTS: Of the 420 women screened, 100 (23.8%) were VIA positive. Of participants with positive VIA lesions, 22 (22%) underwent cryotherapy, 30 (30%) underwent LEEP, and 48 (48%) had a biopsy taken for various reasons, including the suspicion of cervical cancer on visualization, a small VIA-positive lesion in a VIA-negative area, or non-functional cryotherapy/LEEP equipment. 17% of biopsy results were indeterminate or missing. Of all the VIA positive lesions seen, cervical biopsies found dysplasia in 48 women, for a positive predictive value of 54%. The most common causes of VIA-positive lesions in women with normal biopsy results were chronic cervicitis and metaplasia. 107 pap smears were performed due to inadequate visualization of the SCJ with VIA, with 6 showing dysplasia. Squamous cell carcinoma was found in 5/420 (0.01%) of the screened women.

CONCLUSION: Mobile cervical cancer screening and treatment is a feasible option for low resource settings. PINCC effectively screened large numbers of women in conjunction with local healthcare workers with a low cost method of VIA and same day treatment with cryotherapy and LEEP. The training and equipment donations make sustainability of the program possible. The majority of false positive VIA tests showed evidence of infections, indicating this program could also serve to engage women with chronic infections into medical care. The evaluation of the program was limited by the lack of biopsy results on VIA negative specimens and the missing or inadequate biopsy results on some VIA positive specimens. Cervical cancer screening programs in resource-limited settings would benefit from improving the infrastructure of pathology labs. Further research needs to be done to determine the scalability of the combination of VIA and same day treatment for cervical cancer screening in low resource settings.

NATIONAL POLICY, LOCAL IMPLEMENTATION: REACHING OUT TO RETURNING RESERVE AND NATIONAL GUARD MEMBERS AND THEIR FAMILIES

Heather Schacht Reisinger 1; Monica Paez 1; Sarah S. Ouo 1; CADRE - Iowa City VAMC, Iowa City, Iowa. (Tracking ID # 124229)

BACKGROUND: As the largest integrated health care system in the United States, the Veterans Health Administration (VHA) relies on national policy directives, mandated programs, and performance measures to sustain and improve quality health care. At the same time, local VA medical centers (VAMC) often have considerable autonomy to meet these national requirements. The objective of this study is to conduct an ethnographic formative evaluation of the local implementation of a nationally mandated VA policy—outreach to Operation Enduring Freedom and Operation Iraqi Freedom (OEF/OIF) servicemembers—and determine the impact of this policy on one VAMC’s outreach efforts.

METHODS: The study employs an ethnographic approach to formative evaluation. Data collection includes: archiving organizational documents; field notes from observations of outreach events; and transcripts from semi-structured interviews with outreach personnel, service members, and family members. To date, interviews have been conducted with 10 family members, 9 service members, and 12 VA and non-VA outreach personnel from the catchment area of one VAMC. Textual data is content analyzed for top-level codes and more detailed coding is completed through subcoding and matrix analyses.

RESULTS: The study is on-going. To date, national legislation and policy directives related to VA outreach have been compiled and mapped to implementation of local outreach programming at one VAMC. Results of thematic content analysis of policy documents, transcripts, and fieldnotes indicate substantial variation in definitions and approaches to outreach. For example the National Defense Authorization Act (NDAA) of 2008 presents a comprehensive definition of outreach and details specific elements for the Yellow Ribbon Reintegration Program for Reserve and National Guard service members. The NDAA of 2008 has in turn placed greater structure on how outreach is conducted at the local VAMC. This example, among others, demonstrates ways national policy initiatives can both facilitate and hinder the quality and effectiveness of the local implementation of such policies.

CONCLUSION: Improving quality of and access to healthcare exists in the tension between directives from national policy initiatives and local determinations of how to interpret and implement these policies. Ethnographic methods allow for careful examination of how national policy might be brought into bear in “real world” settings. By studying this tension, better policy can be written and new tools to effectively understand and implement these policies should be developed.
IMPACT OF SOCIOECONOMIC ADJUSTMENT ON PHYSICIAN COST PROFILES Mehrotra Ateev 1; Justin Timbie2, 1University of Pittsburgh, Pittsburgh, Pennsylvania ; 2RAND, Arlington, Pennsylvania. (Tracking ID # 12431)

BACKGROUND: Many health plans use physician cost profiles in their value-based purchasing strategies, and CMS will soon begin providing individualized cost profiles to physicians participating in the Medicare program. Currently, these profiles do not take into account differences in patients’ socioeconomic status (SES). Some physicians and policy makers have expressed concern that physicians who provide care to socioeconomically disadvantaged populations will appear to be more costly for reasons that are beyond their control. With these concerns in mind, Congress called for Medicare to investigate the use of socioeconomic adjustments to cost profiles in the Affordable Care Act. Our goal in this study was to investigate the relationship between patient SES and the cost of care, and whether adjustment for SES would impact a physician’s cost profile.

METHODS: Retrospective data analysis of medical claims. Our claims database comprised all professional, inpatient, other facility, and pharmaceutical claims for calendar years 2004 and 2005 from commercial health plans in Massachusetts, including claims from managed care, PPO, and indemnity product lines. Combined, the health plans enrolled the majority of Massachusetts residents with commercial health insurance, or 2.8 million enrollees. From these claims we created physician cost profiles and focused on the costs of care for four representative conditions, hypertension, hyperlipidemia, asthma, and diabetes. Because patient-level measures of SES are not present in claims data, we used SES indicators from the 2000 Census measured at the zip code tabulation area (ZCTA). We examined the association with these area-level SES indicators with costs and compared physician cost profiles with and without adjustment for SES.

RESULTS: Our analyses included 13,867 physicians across a range of specialties with a median case load of 48 patients per physician. Across all conditions, after adjusting for a patient’s severity of illness and physician specialty, area-level household income was positively associated with cost per episode of care. For every 1 percent increase in household income across areas (ZCTAs), costs increased by 4.1 percent (p<.001). However, there was heterogeneity in the relationship between SES and cost by condition. For example, the cost of care for asthma and hypertension were higher among those with lower household income (p<.001). When we classified physicians according to quintiles of their cost profiles with and without adjustment for SES, we found that fewer than 4 percent of physicians changed quintiles following adjustment. Findings were similar across a range of physician specialties.

CONCLUSION: While socioeconomic status may be an important predictor of cost for some conditions, adjusting for SES does not appear to significantly influence a physician’s overall cost profile. Whether these findings are generalizable outside of Massachusetts or whether SES data for smaller areas are required to conclusively determine the need for SES adjustment are worthy of further study. These initial results suggest that failing to adjust for SES may not adversely impact the cost profiles of physicians who care for disadvantaged populations.

ASSOCIATION OF PPD POSITIVITY AND BCG VACCINE WITH CARDIOVASCULAR DISEASE AND MARKERS OF INFLAMMATION Thomas A. O’Byrne 1; Thomas A. O’Byrne2, 1Penn State Hershey Medical Center, Hershey, Pennsylvania ; 2Penn State Hershey College of Medicine, Hershey, Pennsylvania. (Tracking ID # 12432)

BACKGROUND: In recent years, some studies have suggested a potential role of infectious agents in the inflammatory mechanism of atherosclerosis. Support of this hypothesis for certain infections such as Chlamydia pneumonia and cytomegalovirus include the detection of serum antibodies, presence of genomic material in athrombotic plaques, and antibodies to heat shock proteins in patients with atherosclerosis. The possible involvement of Mycobacterium tuberculosis in the pathogenesis of atherosclerosis has been suggested by the presence of mycobacterial heat shock protein 65 in patients with atherosclerosis. In animal models, the Bacille Calmette Guerin (BCG) vaccine has been associated with antibodies to heat shock protein 60 and atherosclerotic plaque formation. Thus, it has been suggested that Mycobacterium tuberculosis and the BCG vaccine may generate proatherogenic inflammation. A few studies involving small samples reported higher incidence of myocardial infarction in patients with latent tuberculosis infection (LTBI). However, data examining the clinical relationship between LTBI and a history of having received the BCG vaccine with cardiovascular disease and baseline markers of inflammation are lacking. The objective of this study is to examine the association of a positive tuberculin skin test and evidence of a previous BCG vaccine with serum inflammatory markers and a reported history of cardiovascular disease.

METHODS: Cross sectional design used data from NHANES 1999–2000. Subjects were 2,875 persons age >40 years who underwent tuberculin skin testing using the purified protein derivative S-1 (PPD). LTBI was defined as induration of >10 mm in reaction to PPD. BCG vaccine was defined as presence of visible scar recognized by trained NHANES examiners. Cardiovascular disease (CVD) was defined as having been told by a doctor or healthcare professional that they had at least one of the following: heart attack, coronary artery disease, angina/angina pectoris and congestive heart failure. Demographic variables included gender, age, race/ethnicity, poverty income ratio, education level, and birthplace. Laboratory data included high-sensitivity C-reactive protein (CRP) and fibrinogen levels. Laboratory values were ranked into quartiles. The relationship between CVD and inflammatory markers with LTBI and BCG status was analyzed. Chi-square cross-tabulation was used for bivariate analysis. Adjustments for socioeconomic and lifestyle data utilized a logistic regression model.

RESULTS: LTBI and BCG were identified in 11.6% and 13.5% of subjects respectively. LTBI was independently associated with male gender (p < 0.001), non-white ethnicity (p < 0.001), birthplace outside of U.S. (p < 0.001), low education level (p=.015), and older age (p =.038). BCG vaccine was associated with birthplace outside of U.S. (p < 0.001) and non-white ethnicity (p=0.001). CVD was reported in 13.0% PPD-positive and 13.2% PPD-negative subjects (p=0.92). 12.7% with BCG and 13.3% without BCG reported CVD history (p = 0.75). LTBI was associated with the fourth quartile of CRP values compared to the first quartile (OR, 1.44 (95% CI 1.06-1.94)) and remained significant when adjusted for age, gender, ethnicity, birthplace, income poverty ratio, education level, body mass index, smoking history, physical activity and general health condition (adjusted OR, 1.57 (1.074-2.28)). Similar results were seen for fourth quartile of fibrinogen: unadjusted OR, 1.37 (95% CI 1.01-1.87); adjusted OR, 1.67 (95% CI 1.14-2.47). BCG was not associated with either inflammatory marker.

CONCLUSION: LTBI, as evidenced by PPD positivity was associated with modest elevation of CRP and fibrinogen levels. The clinical significance is not known, however, LTBI was not associated with CVD. Evidence of BCG vaccine was not associated with either self-reported history of CVD or elevation of inflammatory markers.
TOWARD THE LEARNER-CENTERED PATIENT-CENTERED MEDICAL HOME: DIFFERENCES BETWEEN UNIVERSITY AND VA CLINICS IN FACTORS THAT AFFECT RESIDENT CONTINUITY WITH PATIENTS Robert Brooks 1; Harish Jasti2. 1VA Pittsburgh Healthcare System, Pittsburgh, Pennsylvania; 2University of Pittsburgh, Pittsburgh, Pennsylvania. (Tracking ID # 12433)

BACKGROUND: A key focus of the resident continuity clinic training experience is to promote interpersonal continuity between residents and their patients - personal relationships characterized by a sense of responsibility or ownership by the resident and trust by the patient. We performed a needs assessment of our program’s clinic experience, focusing on the residents’ perception of continuity, to assess resident attitudes toward continuity, to identify factors that promote and inhibit continuity in our clinics, and to guide design of curricular interventions that could enhance our learners’ sense of interpersonal continuity with their patients. Our residents are assigned to a continuous 3 year experience at either a VA Primary Care clinic or a University-based General Internal Medicine clinic, where they are partnered with a specific registered nurse to assist with care of their patients.

METHODS: A cross-sectional survey was distributed to all post-graduate year 1-3 residents in June 2008, which included questions on attitudes and specific resident behaviors in clinic. Overall return rate on the survey was 50% (42 of 84 residents), with an equal distribution of completed surveys by sex and clinic site. Results were analyzed qualitatively with descriptive statistics, since statistical testing would be inappropriate due to multiple comparisons.

RESULTS: Residents felt that they had strong (64%) or moderately strong (36%) interpersonal continuity with their patients, and reported high rates of satisfaction with continuity at both sites, though more residents at the VA site reported being very satisfied with this aspect of clinic (29% vs 5%). The strongest facilitating factor for promoting continuity was being the person who communicated the plan to the patient. Some barriers to continuity were site-dependent: VA residents identified a lack of access due to full clinic schedules and close relationships that patients have with outside providers (co-management) as important barriers to continuity, while University residents cited patients with behavioral health issues and visits with other providers in their primary care clinic as significant challenges. Residents at both sites viewed their lack of personal accessibility outside of clinic as a major barrier to continuity with patients. Although they preferred that patients contact them through their nurse, most residents did not instruct their nurse on the optimal way to communicate patient information to them. Many residents seldom or never asked their nurses to perform tasks such as calling patients. Residents viewed talking to patients by phone as helpful in forming strong relationships and preferred this method of communication; however they did not often contact patients for management issues between visits. Interactions between residents and their nurses were different at the two sites, as were patterns of resident communication with patients.

CONCLUSION: Residents value interpersonal continuity with their clinic patients. Perceived barriers to continuity include issues related to clinic scheduling, co-management, coverage for urgent care visits, patient characteristics, and the quality of inter-visit communication. Significant site-specific differences exist as barriers for VA and University clinics, and therefore interventions to improve continuity should also target these disparities. Clinic structures and curricula to enhance distance communication are essential, and a high priority area will be optimizing communication and collaboration between nurses and residents in the PCMH setting.

DO PHYSICIAN PRACTICE COORDINATION APPROACHES AFFECT THE QUALITY OF BREAST CANCER CARE? Nina A Bickell 1; Rebeca Franco 1; Kezhen Fei1. 1Mount Sinai School of Medicine, New York, New York. (Tracking ID # 12439)

BACKGROUND: Breast cancer treatment requires care from different specialists often working in fragmented outpatient settings. Both automated and staff-based office mechanisms to coordinate care exist, however, their effect on receipt of needed post-surgical adjuvant treatments has not been described. In a prior study, we demonstrated that a tracking and feedback intervention that closed the referral loop between surgeons and oncologists, a type of coordination mechanism, reduced underuse We undertook this study to assess the relationship of mechanisms of coordination and underuse of post-surgical adjuvant treatments delivered in outpatient settings.

METHODS: This is an analysis of data from a study that was designed to implement a tracking & feedback intervention to close the referral loop between surgeons and oncologists. In this original study, we surveyed surgeons prior to (1999-2000) and after the intervention(2004-06) about coordination mechanisms they used in their office practices. Data on adjuvant treatments were obtained from patient chart abstraction. In this analysis, we examine whether factors already present in the specialist office that were independent of the intervention were associated with underuse of needed treatments. These factors included data on automated or staff assigned ways to trigger follow-up appointments track treatment plans, and how they found about patient treatment plans. These office-based mechanisms are separate from the externally implemented tracking & feedback intervention. Adjuvant treatments were obtained from chart abstraction. 35 of 51 surgeons pre-intervention and 14 of 28 post-intervention had patients with underuse; underuse rate was 23% pre- and 14% post-intervention. Bi- & multivariate analyses for pre- and post-intervention periods assessed the relationship of coordination mechanisms and surgeon underuse rates.

RESULTS: Pre-intervention, 53% of physicians were in private practice, 25% in faculty practice and 22% in hospital-clinic practice as compared to 41%, 30% and 30%, post-intervention. In both pre & post periods, 29% of physicians’ practices had no mechanism to trigger appointments or track care; only 2 physicians had a mechanism to track treatment. In both periods there was no association between specific coordination mechanisms, number of mechanisms employed, how closely surgeons worked with oncologist or type of practice with rates of underuse (pre & post models: adj R²=0.1; p=.12; adj R²= -0.07; p=.70, respectively).

CONCLUSION: Physician office practice coordination mechanisms were not associated with rates of underuse of post-surgical adjuvant breast cancer treatment. As medical homes will be responsible for coordinating care, it is imperative to identify office-based approaches that effectively coordinate and improve processes of care such as the tracking & feedback intervention.

DEVELOPMENT AND VALIDATION OF A NATURAL LANGUAGE PROCESSING COMPUTER PROGRAM TO MEASURE THE QUALITY OF COLONOSCOPY Ateev Mehrotra 1; Hendrik Harkema1. 1University of Pittsburgh, Pittsburgh, Pennsylvania. (Tracking ID # 12447)

BACKGROUND: Quality measurement has been hampered by the costs and burden of reviewing medical charts and the limited information
TOWARDS ACCOUNTABLE CARE: SURPRISING INSURANCE AND UTILIZATION CHARACTERISTICS OF VULNERABLE USERS AT AN ACADEMIC MEDICAL CENTER

BACKGROUND: Health care reform may extend Medicaid coverage to many who are now uninsured, and permit formation of accountable care organizations (ACOs). How ACOs may manage risk for the costliest, most vulnerable populations is poorly described and many reported care organizations (ACOs). How ACOs may manage risk for the costliest, most vulnerable populations is poorly described and many reported

METHODS: A NLP computer program was developed that abstracts the necessary data to measure published colonoscopy quality indicators from major gastroenterology societies, including documentation of cecal landmarks and bowel preparation quality, reporting withdrawal time, and making appropriate follow-up recommendations. The NLP tool was then tested on a new validation set of 453 colonoscopy and 226 associated pathology reports that were also manually reviewed by 3 physicians. Reports were randomly sampled from the 32,485 colonoscopy reports from the 10 hospitals in the University of Pittsburgh Medical Care system in 2008–9.

RESULTS: Overall performance on most quality indicators, as measured by manual review of charts, was poor. For example, adequate withdrawal time was documented in only 0.8% of reports and appropriate follow-up recommendations in only 24%. Compared to the manual review, the NLP tool had a mean accuracy of 86.7 (SD 10.7). The difference between the clinician-abstracted and NLP-abstracted quality scores varied from 0.2 to 13.6%.

CONCLUSION: This program represents one of the first NLP based quality measurement tools, but to be used widely the program needs further refinement and validation. The disagreement on certain measures between manual abstraction and the NLP tool helps to highlight key limitations of NLP-based quality measurement applications. As the use of EHRs grows, there is great potential for NLP-based programs to automatically assess the quality of care. Our project highlights key strengths and limitations of this approach.

MAPPING QUALITY IN HEALTH CARE SYSTEMS – A NOVEL TOOL FOR POPULATION MANAGEMENT

BACKGROUND: As primary care networks develop population-based systems of care, geographic information systems (GIS) may be a useful tool for identifying community-level variation in quality of care. We used GIS to examine colorectal cancer (CRC) screening rates among patients within our care network by the communities in which they reside.

METHODS: We obtained GIS coordinates from the addresses of 142,690 primary care patients in an academic health system consisting of 174 PCPs working in 13 primary care practices (including 4 community health centers). Using data from an electronic record repository, we identified all patients aged 52–74 years old eligible for CRC screening and calculated the proportion overdue for screening by town or city neighborhood and by census block group to identify geographic areas with low CRC screening rates. We then categorized census block groups by higher and lower CRC screening rates and compared differences in patient socio-demographic characteristics and median census block group household income (limiting the analysis to census block groups with greater than 30 qualifying patients).

RESULTS: Overall, 11044 (23.9%) of eligible patients within our network were overdue for CRC screening and the mean rate of overdue CRC screening by census block group was 24.2% (range 6.3-68.1%). Figure 1 shows geographic variation in the rate of overdue CRC screening among all network patients in cities and Boston neighborhoods in the Boston region. Figure 2 shows the geographic variation in the rate of overdue CRC screening among patients living in the census block group areas surrounding one MGH practice. Across the Massachusetts area served by our network, census block groups with lower CRC screening rates had higher proportions of minorities (29.7% vs 11.7%, p < 0.001), non-English speaking patients (17.3% vs 4.3%, p < 0.001), and those not completing high school (13.4% vs 2.7%, p < 0.001), and a lower census block group median household income ($82034 vs $885442, p < 0.001).

CONCLUSION: Mapping quality indicators using GIS coordinates obtained from administrative data may be a useful tool for targeting resources or tailoring interventions to the needs of specific communities. This detailed geographic approach may enable health systems, practices, and community health centers to identify communities that are at high risk for lower quality outcomes and thereby reduce disparities in healthcare.
THE RELATIONSHIP OF A POSITIVE FAMILY HISTORY OF BREAST CANCER ON NEWLY DIAGNOSED BREAST CANCER PATIENTS RECEIPT OF CANCER TREATMENTS Sara Kaleya 1; Kezhen Fei 1; Rebeca Franco 1; Nina A Bickell 1. 1Mount Sinai School of Medicine, New York, New York. (Tracking ID # 12456)

BACKGROUND: Family history of breast cancer affects women’s breast cancer screening behavior but whether it impacts cancer treatment decisions and may affect survivorship beliefs and behaviors is uncertain. We describe breast cancer patients’ treatment receipt and beliefs of women with and without a family history of breast cancer.

METHODS: 333 of 374 women with early-stage breast cancer treated surgically in 8 NYC hospitals accrued to a multi-center RCT of patient assistance to improve receipt of adjuvant treatment completed both baseline and 6-month follow-up survey. All female, surgically treated, early-stage breast cancer patients whose primary surgeon agreed to participate were eligible for inclusion. Baseline survey included multiple demographic characteristics, family history, beliefs about treatment efficacy and preventing cancer recurrence, and screening and treatment behaviors. Six month follow-up survey assessed treatments received. Preventing cancer recurrence beliefs include: belief that a patient will do anything possible to keep the cancer from coming back, and good thing to keep cancer from coming back are: double mastectomy, hormonal treatment, low fat diet, exercise five times a week, and a mammogram every 6 months (Cronbach alpha=.61). Scale was scored to 100 with a lower value indicating stronger belief.

RESULTS: Of the initial 374 recruited patients 333 (89%) completed the 6-month follow-up survey. One third (33%) reported a family history of breast cancer in the baseline survey. Women with a family history were more likely to receive a mammogram before the age of 40 (64% vs 47%, p = .005), but did not report having more than one mammogram per year as compared to women with no family history. There was no difference in receipt of radiation (85% vs 89%), chemotherapy (91% vs 90%) or hormone therapy (87% vs 89%) between women with a family history and those without. Women with a positive family history were less likely to believe health behaviors can prevent recurrence as compared to women with no family history (Mean Scale Score: 45 vs 40; p=0.002). This difference was not due to a greater sense of self-efficacy.

CONCLUSION: Women with a family history of breast cancer as compared to those without begin breast cancer screening at an earlier age but do not screen more often. Treatment rates are high regardless of family history. Having a family history of breast cancer does not affect beliefs about cancer treatment but is associated with slightly less belief in strategies to reduce cancer recurrence which may affect survivorship behaviors.

IMPROVING UTILIZATION OF MEDICAL CARE AND HEALTH FOR CHRONICALLY HOMELESS ADULTS WITH HOUSING Allison Diamant 1; Karen Swanson 2; Mark Casanova 3; Rowena Magana 2; Elizabeth Boyce 4. 1UCLA, Los Angeles, California; 2Los Angeles County Department of Health Services, Los Angeles, California; 3Homeless Health Care LA, Los Angeles, California; 4Los Angeles County Chief Executive Office, Los Angeles, California. (Tracking ID # 12457)

BACKGROUND: Homeless individuals are often discharged from hospitals with only a referral to emergency shelters, which when able to accept the individual, typically provide only an overnight bed and limited supportive services. Too often these individuals experience complications and emergencies, which in turn lead to repeat inpatient stays. Providing housing to this population has been shown to reduce the probability of returning to emergency rooms and further hospitalizations. The evaluation of the Access to Housing for Health (AHH) Pilot Project focuses on changes in four main domains: 1) use of medical services, 2) enrollment into benefits and community services, 3) individual health status, and 4) stability in housing.

METHODS: This is a quasi-experimental one group pre-test post-test study design. Eligibility criteria: 1) currently homeless (living on street or in a shelter); 2) a frequent user of the Los Angeles County Department of Health Services system (>2 visits to the ED or 2 inpatient stays in the past year or one of each); and 3) have a physical disability or chronic illness but be able to live independently. Baseline and follow-up (3, 6, 9 and 12 month) survey interviews were conducted by the case managers in English or Spanish. The data presented includes those individuals who completed housing for at least 12 months and completed all interviews (n=77)

RESULTS: At baseline 75% or participants had a USOC, with a significant increase up to 91% after 12 months in the program (p < 0.05). At baseline 98% of participants had one or more ED visits during the preceding year; however, with receipt of housing there was a significant reduction in ED use down to 65% of participants (p < 0.001) with a mean number of visits of only 3.1 (p < 0.001). At baseline 77% of AHH participants had been hospitalized during the preceding year (mean 2.2 hospitalizations); and after being housed for at least 12 months this decreased to 45% (p < 0.01) and the mean number of visits decreased to 1.6 (p < 0.001). At baseline over half (57%) had gone without needed medical care during the preceding 12 months to pay for food, housing or clothing, but this rate decreased to only 13% after being housed for at least 12 months (p < 0.01). Similarly 26% of AHH participants reported that they had gone without food, housing or clothing to pay for medical care in the year prior to enrollment in the program, and this dropped to only 1.4% after 12 months of housing (p < 0.0001).

At baseline 62% of AHH participants rated their general health as fair or poor versus excellent, very good or good. At 12 months of follow up only 14% of participants rated their health as fair or poor (p < 0.0001). At baseline 37% rated their mental health fair or poor with a trend toward improvement of 30% at 12 months. Participants in AHH appear to be well settled in to housing based. Almost three-quarters of participants reported no difficulty paying expenses on time, 19% had a little difficulty, 5% reported somewhat difficult and 3% very difficult. Nevertheless almost three-quarters of participants reported paying their expenses on time, 22% most of the time and 5% some of the time. All of the participants thought that it was very or somewhat likely that they would remain in housing.

CONCLUSION: The Access to Housing for Health (AHH) Pilot Project has been a collaboration of the Los Angeles County Department of Health Services, Homeless Health Care LA, the Community Development Commission, and the City of Los Angeles with the goal of providing permanent, affordable housing linked to appropriate services for homeless individuals who are either frequent users of the DHS system or whose discharge is delayed due to their homeless status. The project successfully demonstrated improvements in appropriate utilization of ambulatory, ED and hospital services, as well as improvements in health status, decreasing competing and unmet needs and stabilization in housing.

PREDICTING HOSPITAL READMISSION: VALIDATION OF RAMPART Alan Dow 1; Arpita Aggarwal 1; Heather Masters 1; Laura Kreisa 1; Wally Smith 1; Peter Boling 1. 1Virginia Commonwealth University, Richmond, Virginia. (Tracking ID # 12458)

BACKGROUND: Patients readmitted within thirty days of hospital discharge are a large source of healthcare utilization. In 2012, payment
to health systems for 30-day readmissions will be curtailed in an effort to improve the quality and efficiency of medical care. We sought to develop a tool for identifying patients at high risk for readmission in order to better target interventions aimed at reducing 30-day readmission rates.

**METHODS:** Based on prior work at our institution, we developed the RAMPART tool to identify patient populations at high risk of readmission. This tool combines the modified Charlson index (a measure of medical co-morbidity), the self-reported number of emergent care episodes in the preceding calendar year, and the presence or absence of a recent hospital admission. To validate this approach, we examined patients who both arrived to and were discharged from two identified general medicine units between 10/1/10 and 11/30/10. Patients who met a predetermined criteria of Charlson index >4, had 3 or more recent emergent care episodes or hospitalizations in the last six months, or had a hospital admission within the previous thirty days were targeted for intervention. Patients who met the RAMPART criteria were then enrolled in a nursing-led, multi-disciplinary intervention program composed of increased focus on discharge parameters by physicians, social work, care coordination, and nursing. We then calculated the 30-day readmission rate for four groups: all patients who met the admission and discharge criteria, patients at high-risk per RAMPART, patients at high-risk per RAMPART who received the multi-disciplinary intervention, patients at high-risk per RAMPART who did not receive the multi-disciplinary intervention.

**RESULTS:** 548 patients arrived on the units and 588 patients were discharged to home from the study units during the specified time period. Data by group is noted in table 1. In addition, we identified several significant ongoing barriers to successful care transitions including limited health literacy, inaccurate medication reconciliation, and provider ownership across care transitions.

**CONCLUSION:** RAMPART criteria defined a higher risk patient population for 30-day hospital readmission. A multi-disciplinary intervention appeared to increase the readmission rate, suggesting patients who receive the intervention may have additional factors such as increased length of stay or awareness of personal limitations that predict readmission risk.

| Group                               | Discharge | 30-Day Readmissions | Readmission rate |
|-------------------------------------|-----------|---------------------|------------------|
| All discharges                      | 588       | 143                 | 24.32%           |
| High-risk per RAMPART              | 174       | 48                  | 27.39%           |
| High-risk, with intervention        | 98        | 32                  | 32.65%           |
| High-risk without intervention      | 16        | 16                  | 11.95%           |

**PROACTIVE TELEPHONE SMOKING CESSATION TREATMENT IN A VA MENTAL HEALTH POPULATION: PRELIMINARY TREATMENT ENGAGEMENT AND CESSATION OUTCOMES**

**Erin Rogers 1; Senaida Fernandez 2; David Smelson 3; Alfredo Axtmayer 1; Scott E. Sherman 1.**

1VA New York Harbor Healthcare System, New York, New York; 2New York University School of Medicine, New York, New York; 3Edith Nourse Rogers Memorial Veterans Hospital, Bedford, Massachusetts. (Tracking ID # 12461)

**BACKGROUND:** It is unclear whether telephone-based treatment is acceptable and effective for smokers with a mental health diagnosis. We evaluated a proactive telephone care coordination program for VA smokers with mental illness and compared counseling delivered by VA staff to that delivered by the smokers’ state Quitlines.

**METHODS:** We analyzed preliminary data from three sites in a 13-site VA trial implementing a telephone care coordination program for smokers with mental illness. Mental health providers referred smoking patients to the program. Patients were contacted by phone to offer enrollment. Patients who enrolled were offered mailed self-help materials, smoking cessation medications and proactive, multi-call counseling. Participants were randomized to receive counseling from their state Quitline or a VA counselor who had received specialized training on smokers with mental illness. A telephone follow-up assessment was completed at two months to assess smoking status. Patients who did not want to participate in treatment were given the option of enrolling in the follow-up call only.

**RESULTS:** This report describes the first 213 patients referred to the program (mean age=53; 91% male). 169 (79%) patients were reached by phone to offer enrollment. Of those, 76% enrolled in treatment (65 in VA counseling and 63 in Quitline counseling), 5% enrolled in the follow-up survey only, 7% were ineligible and 12% declined participation. 100% of participants in both treatment arms scheduled an appointment to begin counseling, and 88% were interested in using smoking cessation medications. 89% of VA counseling participants and 76% of Quitline counseling participants completed at least one counseling session. Fifty-two participants have completed the two-month assessment (88% of those due for follow-up), 30% (8/27) of VA counseling and 16% (4/25) of Quitline counseling participants reported 30-day smoking abstinence at two months.

**CONCLUSION:** Proactive telephone programs are effective at engaging persons with mental illness into smoking cessation treatment and at producing short-term abstinence rates comparable to those seen in non-mental health populations. Full accrual of the final sample size of N=1,500 will permit us to determine the consistency of the current trend suggesting increased effectiveness of VA counseling.

**WHO SHOULD BE RESPONSIBLE FOR TEST RESULTS RETURNING AFTER HOSPITAL DISCHARGE: A PROVIDER SURVEY**

**Martin C. Were 1; Xiaochun Li 1; William Michael Tierney 2, 3Regenstrief Institute Inc, Indiana University School of Medicine, Indianapolis, Indiana; 2Regenstrief Institute, Indiana University School of Medicine, Indianapolis, Indiana. (Tracking ID # 12462)**

**BACKGROUND:** Transitions in health care between venues provide opportunities for miscommunication and errors. An area of significant process breakdown during the inpatient-to-outpatient care transitions is in the management of tests with pending results at hospital discharge. Studies show that errors related to missed test results occur in nearly half of patients discharged with pending results. To reduce these errors, a responsible provider for the pending tests needs to be identified. This provider would follow-up on the pending results and determine what actions need to be taken once the results return.

**METHODS:** We used survey methodology to assess whether perceptions regarding who is (or should be) the responsible provider for managing tests with pending results at hospital discharge differed between hospitalists, outpatient staff physicians, and physicians-in-training (residents). We evaluated provider attitudes based on the various clinical scenarios that surround pending results to evaluate consistency of opinions within each provider group, and differences in opinions between the three groups.

**CONCLUSION:** Proactive telephone programs are effective at engaging persons with mental illness into smoking cessation treatment and at producing short-term abstinence rates comparable to those seen in non-mental health populations. Full accrual of the final sample size of N=1,500 will permit us to determine the consistency of the current trend suggesting increased effectiveness of VA counseling.
diagnostic tests pending at hospital discharge are managed. We surveyed all eligible resident physicians, and the inpatient and outpatient attending physicians who oversaw care for patients admitted to three hospitals in central Indiana. Ratings of general attitudes towards management of tests with pending results were based on a 5-point Likert Scale. We compared attitudes regarding management of pending test results between inpatient staff physicians, outpatient staff physicians, and resident physicians. We also compared opinions about which physicians were (or should be) responsible for managing the pending test results depending on various clinical scenarios. For the primary analysis, we assessed the effect of the respondents’ practice venues by employing a variable representing the percentage of time each physician spends in inpatient versus outpatient care. Age, gender, practice type, years of experience, and outpatient clinic type were included as covariates in our analysis as they potentially affected attitudes towards pending test management.

RESULTS: Of the 129 residents (78% of those surveyed) and 75 staff physicians (70%) who responded to the survey, 93% agreed that all tests with pending results must be reviewed by a provider. Also, 83% felt that discharging providers needed to identify the provider responsible for following up pending tests, and 68% felt that outpatient providers deserved a say in this decision.

Compared to attending physicians, residents were less likely to believe that it was the inpatient providers’ responsibility to follow-up on pending tests (74% vs. 51%, p=0.04) or to always identify the follow-up provider (79% vs. 89%, p=0.03). As the amount of inpatient care time increased for attending physicians, fewer felt that hospital policy should determine the responsible provider for pending tests (p for trend=0.03), or that inpatient providers should be responsible for following up on these tests (p=0.004).

There was wide variability in opinion on who should be the responsible provider based on the type of pending test. Most respondents (87%) felt that inpatient providers should follow pending tests for patients with no existing responsible outpatient provider or for tests ordered in the Emergency Room prior to admission (86%) or if results returned before discharge summary reached outpatient providers (68%). Conversely, most respondents (88%) felt that outpatient providers should be responsible for results that took a long time to return (e.g., > 3 months).

Attending physicians were more likely than residents to think it was the inpatient physicians’ responsibility to follow-up on tests for patients who left against medical advice (72% vs 42%, p=0.01) or were assigned new providers (64% vs. 31%, p=0.003) or for results that returned before discharge summary reached outpatient provider (80% vs 61%, p=0.02), return after 3 months (21% vs. 5%, p=0.049); and for sensitive tests, e.g. HIV test results (69% vs. 50%, p=0.03).

CONCLUSION: In this survey of attending and resident physicians practicing at three inner-city teaching hospitals, opinions on who should be the responsible provider for managing tests with pending result varied widely based on the physician’s role (resident vs. attending), the amount of time spent inpatient vs. outpatient care, and the characteristics of the pending test result. Respondents felt that it would be best to develop a consensus policy among inpatient and outpatient providers on who was responsible for managing pending tests at hospital discharge.

Respondents tended to disagree with statements that assigned responsibility to them in a way that would increase their workload. That is, inpatient physicians tended to feel that outpatient physicians should be responsible, and vice versa. In our institutions, residents are primarily responsible for preparing discharge summaries and spend the majority of their time on inpatient services. This might explain why resident respondents felt that outpatient providers should be responsible for various aspects around pending tests. We observed the same pattern among attending physicians; those spending more time in one venue (e.g., inpatient vs. outpatient) felt that those in the other venue should be responsible for tests pending at discharge.

Similar to previous studies, our respondents felt that current systems of managing tests need improvement. Consensus policies should be established by hospitals to assign responsibility for following up tests pending at discharge.

HEPATITIS A EXPOSURE NOT ASSOCIATED WITH THE PRESENCE OF ANTI-THYROID ANTIBODIES Thomas A. O’Brien 1; Thomas A. O’Brian 2; 1 Penn State Hershey Medical Center, Mechanicsburg, Pennsylvania. (Tracking ID # 12463)

BACKGROUND: Thyroid antibodies are found in approximately 13% of the U.S. population. Antithyroperoxidase (TPOAb) and antithyroglobulin (TgAb) are associated with autoimmune thyroid disease. Little is known about the mechanism forming these antibodies and subsequent autoimmunity, although genetic and environmental factors appear to be involved. Using data from NHANES III, the Center for Diseases Control reported higher prevalence of thyroid antibodies is associated with age, female gender, white ethnicity, and higher socioeconomic status. In a comparison of 1,064 schoolchildren from communities in Finland and Russian Karelia, thyroid antibodies were five times more prevalent in Finnish children. Finland, with a gross national product ten times higher than Karelia, also had an increased childhood prevalence of type 1 diabetes mellitus, celiac disease, and IgE-mediated allergies. The hygiene hypothesis suggests that stimulation of the immune system by infections at a crucial time during maturation of the immune system promotes immune tolerance. This concept is applied to help explain the rise of asthma and autoimmune diseases coinciding with the decline of infectious diseases in industrialized countries. Therefore, antibodies to certain infections should be associated with lower prevalence of autoimmune activity. Hepatitis A (HAV) IgG antibody, with its higher prevalence in low socioeconomic areas has been independently associated with fewer cases of asthma and allergy in the United States and Europe. The objective of this study is to determine if a similar inverse relationship exists between HAV serology and the presence of thyroid antibodies.

METHODS: Data of 18,119 U.S. residents age >12 years participating in NHANES III (1988–1994) for which thyroid antibody and HAV antibody data were available were analyzed. The presence of HAV IgG antibody was compared among individuals positive and negative for thyroid antibodies adjusted for socioeconomic factors. Others variables included age, gender, ethnicity, family income poverty ratio, urban residence, and smoking history. Chi-square cross-tabulation was used for bivariate analysis. Logistic regression model was used for multivariate analysis.

RESULTS: TPOAb and TgAb were positive in 11.8% and 9.7% of subjects respectively. Using logistic regression, both antibodies were independently associated with female gender, age, white ethnicity, and inversely associated with income poverty ratio <1 and a history of former or current smoking. HAV IgG Ab was more prevalent in individuals positive for TPOAb (58.6% vs. 50.3%; p < 0.001) and TgAb (57.3% vs. 50.6%; p < 0.001). However, these relationships were not significant when adjusted for age, gender, ethnicity, poverty status, urban residence, and smoking history. For TPO Ab: adjusted OR 0.95 (95% CI, 0.85-1.07); TgAb: 0.93 (95%, 0.82-1.05); at least one thyroid antibody: 0.95 (95%, 0.85-1.05).

CONCLUSION: HAV IgG antibody was not associated with the presence of thyroid antibodies. Study is limited by cross-sectional design. If the protective effect of infections on developing autoimmune diseases depends on exposure early in life, the association may only be seen in
STATEWIDE, MULTI-PAYER SUPPORTED MEDICAL HOME INITIATIVE IMPROVES PRIMARY CARE QUALITY

Robert A. Gabbay 1; Brian Ebersole 2; Michael H. Bailit 3; Edward H. Wagner 4; Rachel Orlr Reid 2

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BACKGROUND: With pressure rising in the U.S. to address ever-increasing health care costs and inconsistent performance on standard quality measures, interest is growing in ways to support Patient Centered Medical Homes (PCMH) in primary care practices. Numerous PCMH initiatives are now being implemented across the country. While these initiatives have produced promising results, most have involved integrated health systems and a single payer. The Pennsylvania Chronic Care Initiative is one of the largest multi-payer PCMH initiatives in the country involving over 150 primary care practices (75% being small- to medium-size practices with fewer than 5 FTE providers per practice) in 7 regions of the state. The state, guided by a multi-stakeholder group, has used its authority to convene, facilitate, and lead design of the initiative, providing the 17 participating insurers and more than 750 providers with anti-trust protection.

The effort is aimed at practice redesign with an initial focus on diabetes then moving to the management of the highest-risk patients including those with a recent hospitalization or ER visit. Participating practices have been supported in implementing the Chronic Care Model through quarterly regional Breakthrough Series learning collaboratives, practice facilitation, and infrastructure payments by participating payers in 4 of the regions and a smaller state grant program in the other 3 regions. Within 18 months, practices are expected to become NCQA-recognized PCMHs.

METHODS: Practices report monthly on key clinical measures and implemented changes. The initial target disease was diabetes with subsequent reporting on other chronic illnesses. Quality improvement was evaluated for 10 key diabetes measures for approximately 50,000 diabetes patients statewide. Staggered regional rollouts occurred across the 7 regions of PA starting in May 2008 with new practices being added until December 2009. Cross-sectional data from practices were assessed, with baseline measures in September 2008 and a second measurement period two years later in September 2010, nine months after the launch of the seventh regional rollout.

RESULTS: The Pennsylvania initiative registered impressive improvement across a range of diabetes measures. Table 1 shows the absolute percentage change from September 2008 to September 2010. Improvements in key determinants of diabetes morbidity and mortality (HbA1C, blood pressure (BP), and LDL) were seen along with better complication screening and use of self-management goal setting. Leading practice changes included reorganizing towards team-based care, incorporation of self-management support and education, planned visits, and office huddles. Many practices began using registries and examining their data for the first time.

CONCLUSION: A state-led PCMH initiative that includes learning collaboratives, reimbursement changes for infrastructure, monthly quality reporting, and practice facilitation can improve patient outcomes. Practices are now spreading their system changes to other providers and are focusing on managing the highest-risk patients, particularly those with recent hospitalizations and other chronic conditions including cardiovascular disease, hypertension, congestive heart failure, COPD, and asthma. State government can play a critical role in spreading PCMH by convening multiple payer and provider groups to develop infrastructure support for PCMH implementation. In an effort to more widely disseminate best practices, Pennsylvania is now fostering statewide networking in addition to regional collaboration. As one of 8 sites in Medicare’s PCMH demonstration project, Pennsylvania can provide a national model for multi-stakeholder collaboration.

Table 1:

| Measure                     | Absolute % Difference 9/2008 - 9/2010 |
|-----------------------------|---------------------------------------|
| HbA1C > 9                   | -12%                                  |
| HbA1C < 7                   | +8%                                   |
| BP < 130/80                 | +9%                                   |
| BP < 140/90                 | +18%                                  |
| LDL < 100                   | +11%                                  |
| LDL < 130                   | +21%                                  |
| Foot Exam                   | +32%                                  |
| Eye Exam                    | +16%                                  |
| Diabetic Nephropathy        | +19%                                  |
| Self-Management Goal Setting| +27%                                  |

WHAT IS THE IMPACT OF RETAIL CLINICS ON OVERALL UTILIZATION? Ateev Mehrotra 1; Rachel Orlr Reid 2

1University of Pittsburgh, Pittsburgh, Pennsylvania; 2University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania. (Tracking ID # 12468)

BACKGROUND: Retail clinics are a new model for delivering ambulatory care with a focus on patient convenience. On a per visit basis retail clinics are cheaper than visits to a physician’s office. As the number of retail clinic visits has rapidly grown, concerns have been raised their impact on utilization and overall costs. If patients now substitute retail clinic visits for physician office or emergency department visits, retail clinics could lower health care costs. If patients go to retail clinics when previously they would have sought care (induced demand), retail clinics could increase health care costs. In this paper we estimate the impact on utilization of retail clinics.

METHODS: We used a claims database of Aetna enrollees (children and adults) in 27 cities from the years 2007–2009. Our analyses focus on utilization for 8 conditions that can be treated at retail clinics. We first compared the utilization for these conditions in 20 markets where retail clinic entered in 2007 to 7 control markets with no retail clinics. In addition, we perform a difference-in-differences analysis to examine the effect of retail clinic usage on an individual’s utilization. We identify enrollees (n=220,913) who visit retail clinics, and we use propensity score matching to find a comparison group who does not visit a retail clinic. We then compare healthcare utilization before and after the retail clinic visit for both the retail clinic visitors and non-visitors to estimate the differential effect of retail clinic usage on subsequent healthcare utilization.
RESULTS: In the 20 markets with retail clinics there was an increase (1.0%) in total utilization 2007–2009, and in the 7 markets without them there was a decrease (4.4%). The number of retail clinic visits per enrollee quadrupled over the same time period. We estimate that for every 100 additional visits by retail clinic users 2007–2009, 80 represent new visits (induced demand), 13 replace ED visits, and 7 replace office visits (substitution). In our difference-in-difference analyses of individual patients, we find that compared to non-retail clinic users, retail clinic users increase their utilization by 0.6 visits in the 6 months (p-value < 0.0001) after visiting a retail clinic.

CONCLUSION: Most retail clinic visits represent new utilization and not substitution of visits to other care sites. This likely leads to higher health care costs. Those who visit a retail clinic do not become frequent healthcare users after their first visit.

HEALTH BELIEFS AND BREAST CANCER PATIENTS’ PERCEIVED RISK OF RECURRANCE: Sara Kalyay 1; Rebecca Franco 1; Nina A Bickell 1. 1Mount Sinai School of Medicine, New York, New York. (Tracking ID # 12470)

BACKGROUND: Beliefs about preventing cancer recurrence affect future health behaviors of cancer patients and their first degree relatives. However, it is unclear how prevalent such beliefs are and whether they are related to patients’ beliefs about their risk of recurrence. We undertook this study to determine whether breast cancer patients’ beliefs about preventing cancer recurrence were associated with their beliefs about risk of recurrence.

METHODS: 333 of 374 women with early-stage breast cancer treated surgically in 8 NYC hospitals accrued to a multi-center RCT of patient assistance to improve receipt of adjuvant treatment completed both baseline and 6-month follow-up survey. Baseline survey included demographic characteristics, family history, beliefs about preventing cancer and self-efficacy. Preventing cancer recurrence beliefs include: belief that a patient will do anything possible to keep the cancer from coming back, and good thing to keep cancer from coming back are: double mastectomy, hormonal treatment, low fat diet, exercise five times a week, and a mammogram every 6 months (Cronbach alpha=.61). Scale was scored to 100 with higher value indicating stronger belief.

RESULTS: Of the 333 women, almost half (43%) believed that they were unlikely to get a recurrence in the next ten years and just over one quarter of the women (29%) were concerned about getting a recurrence. Women who believed that various strategies can reduce the chance of recurrence were less likely to believe her cancer would return within ten years (r=.23, p <0.0001).

CONCLUSION: Women who believe they are unlikely to get a recurrence in the next ten years also believe that there are health behaviors they can adopt to decrease their chance of a recurrence. As perceived risk of recurrence seems to affect behavior change in cancer survivors, these beliefs can provide an opportunity for future interventions aimed at modifying behaviors that may reduce risk of recurrence.

CARING FOR COMPLEX PATIENTS: DROPPING THE BALL WHEN PLAYING ALONE: John Hsu 1; Maggie Price 2; Vicki Fung 2. 1MGH, Boston, Massachusetts; 2KFL, Oakland, California. (Tracking ID # 12472)

BACKGROUND: Patients with complex conditions often require care from several types of clinicians, particularly when the underlying condition and its treatment involve different areas of expertise. Care within integrated delivery systems (IDS) represents one promising strategy for addressing these coordination problems. We examined the frequency of monitoring for metabolic complications and its association with the types of clinicians involved in the care, among a group of patients receiving ongoing treatment with antipsychotic medications for mental health conditions.

METHODS: Subjects were members of an integrated, prepaid delivery system (IDS), had received an antipsychotic drug in 2007, and were <65 years old. We further excluded subjects with a diagnosis of dementia. Current American Psychiatric Association guidelines recommend regular monitoring of glycemic and lipid levels. We used regression models to assess the association between individual and system factors with monitoring at least annually, among subjects who did not yet have diagnosed diabetes or cardiovascular disease.

RESULTS: There were 24,458 patients receiving antipsychotic medications for mental health conditions: half were new users (past 12 months); 8% had diagnosed diabetes mellitus, and 2% had cardiovascular disease. Overall, 97% had at least one outpatient visit in 2007: 93% had at least one PCP visit; 78% had at least one psychiatrist visit; 74% had both PCP and psychiatrist visits; 4% had only psychiatrist visits; and 19% had only PCP visits. Among all subjects, 19% received an A1c test during the year, and 46% received an LDL test. After adjustment, subjects with any PCP visit were significantly more likely to receive the recommended monitoring, compared with subjects without any PCP visits (OR=3.5 for A1c testing; 95% CI 2.7-4.6, and OR=4.0 for LDL testing; 95% CI: 3.5-4.6); the odds of testing also increased as the number of PCP visits increased. Moreover, subjects with both PCP and psychiatry visits during the year were more likely to receive the recommended testing, than patients seen by either alone (OR=1.5 for A1c testing; 95% CI: 1.4-1.7, OR=2.2 for LDL testing; 95% CI: 2.0-2.3).

CONCLUSION: Few patients on antipsychotic drug therapy are receiving the recommended minimum monitoring for metabolic complications. This is not surprising given that the indications for antipsychotic drug use may require direct care by psychiatrists, whereas the complications associated with the drugs are often outside of their traditional areas of clinical focus. Co-management by both PCPs and psychiatrists appears to be strongly associated with receiving the minimum recommended monitoring. The fragmentation of care resulting from the complexity of patient conditions and need for multiple types of clinicians represents a persistent challenge, even within integrated delivery systems.

RESIDENT, FACULTY, AND SUPPORTING STAFF PERCEPTIONS OF PATIENT SAFETY IN THE AMBULATORY SETTING: Prateek Lohia 1; Diane Levine 2. 1Wayne State University/Detroit Medical Center, Detroit, Michigan; 2Wayne State University Physician Group, Detroit, Michigan. (Tracking ID # 12473)

BACKGROUND: In the IOM report, To Err is Human, one of the key principles identified to improve patient safety is inclusion of patient safety education in clinical training programs. The traditional clinical curricula have focused on acquisition of basic knowledge and skills in discrete specialties. The AAMC acknowledges that shortcomings which exist in educating doctors to improve quality of care need to be addressed. However reforming medical education presents as a major obstacle since the shortcomings are deeply entrenched in the traditions and culture of a medical institution. It is further believed that improvements in patient safety can be made by incorporating it into the GME curriculum, including residents in system redesign, analysis of medical systems, and having a graded competency assessment. Poor knowledge of patient safety concepts is demonstrated by medical trainees or they are only superficially engaged in improving patient
safety across a broad range of training levels. Little work has been done on measuring the safety culture amongst residents. This has assumed added importance in view of the most recent guidelines from the ACGME which now require that there be "a culture of patient safety and continuous quality improvement in the quality of patient care, patient safety, and education". Knowledge about trainees' perceptions is crucial to developing a culture of safety and to developing interventions to improve health care in the outpatient setting.

The purpose of this paper is to describe perceptions of patient safety in the ambulatory setting among the residents, fellows, faculty physicians and supporting staff in the Department of Internal Medicine. Other objectives of the study are to use this information to develop and implement a curriculum in patient safety and improve patient safety emphasizing healthcare teams in the ambulatory setting.

METHODS: We used the Agency for Healthcare Research and Quality Medical Office Survey on Patient Safety Culture (MOS-PSC), a validated survey that has 52 survey items that measure 12 areas of organizational culture pertaining to patient safety. Analysis have shown that all 12 areas have acceptable levels of internal consistency (Cronbach's alpha=.75 to .90). The survey uses 3 different frequency scales for the 12 dimensions in the survey. The three different frequency scales are: first a 6-point frequency scales ("Daily" to "Not in the past 12 months"), second a 5-point frequency scale ("Never" to "Always") and lastly a 5-point scale of agreement ("Strongly disagree" to "Strongly agree"). Most items include a "Does not apply or don't know" option.

The original AHRQ survey was modified to create the Medical Office Safety-Patient Safety Culture/House staff. The MOS-PSC/H uses the same question format, question order and response options as the MOS-PSC. We modified background questions to allow collection of demographic data, resident and faculty specific assignments including number of clinic sessions per week and gender. We also asked questions regarding level of training, position in the department, and whether the participant had any formal patient safety training and the nature of training. If a provider or staff member worked in more than one office, then the survey was meant only for the location where the provider spent most time. After approval from the institutional review board, the survey was sent to residents, fellows, faculty and supporting staff in the Department of Internal Medicine. Participation was solicited by email with a link to the information letter and survey housed on Survey Monkey. Statistical analysis is pending.

RESULTS: The total number of responses till date has been 168 respondents, of which 68.5% (115/168) completed the entire survey and 31.5% of respondents skipped one or more questions. Other demographic information can be summarized in the table enclosed.

The mean patient safety composite scores which reflect the perceptions of all the physicians and staff with comparison to benchmark data about the medical offices, comparison between residents and benchmark data and comparison between residents and faculty physicians can be summarized in the tables enclosed.

CONCLUSION: Overall resident’s perceptions of patient safety are significantly lower compared to National Medical Office Survey on Patient Safety (AHRQ) benchmark data. We hypothesize that lower domain scores relate to limited resources and perhaps lack of control available to residents and faculty in an urban teaching clinic. The study also demonstrates that there is significant difference in certain perceptions of patient safety between residents and faculty physicians practicing in the same teaching clinics. Thereby as trainee’s progress in their training they perceive a lower patient safety culture. One possible explanation for this perceived difference is greater awareness and understanding of issues related to patient safety among faculty compared to residents.

To our knowledge this is a first study which demonstrates perceptions of patient safety among trainees and practicing physicians in an under-represented urban teaching clinic.
APPROPRIATE ASSIGNMENT OF ISOLATION PRECAUTIONS IN THE INPATIENT SETTING FOR MEDICAL PATIENTS

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BACKGROUND: Studies have shown that the use of appropriate precautions in hospitals reduces the spread of certain infections. Our hospital did not have any recent data on whether or not patients were put on precautions accurately and appropriately. The purpose of our study was to evaluate the process for placing patients on precautions, and to determine to what extent patients were being appropriately placed on precautions. We also evaluated the use of the transport sheet at our hospital. This sheet is used to give the transporter and receiving department information regarding patients, including information about precautions. We hypothesized that patients were not being placed on the appropriate precautions upon admission to the hospital.

METHODS: This study was an observational study. We surveyed all medical floors in our hospital and observed all the patients on each floor for four consecutive weeks. If the same patient was still in the hospital for consecutive weeks, each observation was counted separately as the patient’s precautions status could change through their hospitalization. We noted which precautions sign was on the patient’s door as well as the precautions listed on the transport sheet in the chart and correlated this information with data from the Infection Control Department. We also correlated this data with data from the microbiology section of our electronic medical record (EMR). If any of the information did not match, the patient was labeled a “mismatch”. For the transport sheet, there was a mismatch if there was no transport sheet in the chart, if there was a sheet but it was blank, or if there was a sheet but the precautions section was filled out incorrectly.

RESULTS: We had a total of 313 observations, of these there were 213 different patients. Of those 313, 32 (10.2%) should have been on precautions. Of those 32, 29 (91%) were on the appropriate precautions and 23 (71.9%) patients had the appropriate history in the EMR. Only one patient (1/313, 0.3%) was on precautions and should not have been. There were a total of 47 mismatches, 38 (81%) of which were related to the transport sheet. The 38 transport sheet mismatches were 12% of the overall 313 observations.

CONCLUSION: We expected to find that patients were not being placed on the appropriate precautions, but we found that patients are being put on the appropriate precautions over 90% of the time. However, we also found that patients’ transport sheets are not being filled out appropriately. After further investigation, we found that there was no firm policy followed in regards to completing or using the transport sheet. After presenting our findings to the Department of Healthcare Quality, a Failure Mode Effect Analysis (FMEA) was implemented to look at the processes of the transport department, with an emphasis on the transport sheet. The processes surrounding transport sheets are important to multiple arms of the hospital, not just in terms of precautions and infection control. The results of the FMEA will be meaningful across the hospital.

LIMITED ENGLISH PROFICIENT PATIENTS AND TIME SPENT IN THERAPEUTIC RANGE IN A WARFARIN ANTICOAGULATION CLINIC

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BACKGROUND: Warfarin anticoagulation is a common and particularly complex and dangerous outpatient therapy. While anticoagulation clinics may deliver tailored, high quality care to patients receiving warfarin therapy, communication barriers with limited English proficient (LEP) patients may lead to disparities in anticoagulation quality with implications for program design and patient safety.
METHODS: We interrogated electronic data repositories on 2779 patients receiving care from the Massachusetts General Hospital Anticoagulation Management Service in 2010. This included data on international normalized ratio (INR) tests and patient characteristics, including language and whether the Service used a “surrogate” for primary communication rather than speaking with the patient directly. We calculated percent time in therapeutic range (TTR for INR between 2.0-3.0) and percent time in danger range (TDR for INR <1.7 or >3.5) using the standard Rosendaal interpolation method. We ran multivariable linear regression models to study the relationship between LEP and our primary outcomes, TTR and TDR, adjusting for patient age, gender, comorbidity count, education level, and whether the site of primary care was a community health center. Finally, we examined whether the use of a communication surrogate in LEP patients had a differential effect on outcomes.

RESULTS: Among 2779 total patients, the primary reasons for anticoagulation were atrial fibrillation (69.5%) and venous thrombosis and thromboembolism (15.3%). One hundred ninety-seven patients (7.1%) were LEP; LEP patients, compared to English speakers, had a higher number of co-morbidities (3.2 vs 2.9 co-morbidities, p=0.004), and were more frequently women (52.3% vs 41.1%, p=0.002), minorities (49.7% vs 5.3%, p < 0.001), underinsured (20.8% vs 5.8% with Medicaid, Free Care or Self-pay, p < 0.001), and less well educated (51.3% vs 6.5% with less than a high school education, p < 0.001). In unadjusted analyses, LEP patients compared to English speaking patients spent less TTR (71.4% vs 74.7%, p < 0.001), more TDR (11.6% vs 9.6%, p=0.004). After adjusting for sociodemographic and clinical factors, LEP patients spent less TTR (-2.1%, 95%CI [-4.1% to -0.4%]), but there was no significant difference in TDR (1.1%, 95%CI [-0.4% to 2.5%]) between LEP patients and English speakers. Adjusting for these same factors, compared to English speakers who did not use a communication surrogate, LEP patients who did not use a communication surrogate had a lower percent TTR (-3.2%, 95%CI [-6.2% to -0.3%]) and a higher percent TDR (2.4%, 95% CI [0.3% to 4.5%]). LEP patients who used a communication surrogate were not statistically different from English-speakers who did not use a surrogate in their percent TTR (-2.5%, 95%CI [-5.0% to 0.01%]) or TDR (1.2%, 95% CI [-0.6% to 3.0%]).

CONCLUSION: This anticoagulation clinic achieved a high average TTR. Still, there was a small but significant decrease in TTR seen with LEP patients compared to English speakers. The use of a communication surrogate appeared to reduce this difference slightly among LEP patients. These relationships and the appropriate use of communication surrogates in anticoagulation management need to be further explored. But, it appears that anticoagulation clinics can enhance their services to LEP patients compared to English speakers. The use of a communication surrogate was associated with a small but significant decrease in TTR, but it did not reach statistical significance. This finding suggests that anticoagulation clinics can enhance their services to LEP patients compared to English speakers.

HEALTH INFORMATION EXCHANGE USE REDUCES AVOIDABLE DIAGNOSTIC IMAGING IN THE EMERGENCY EVALUATION OF BACK PAIN

James E. Bailey 1; Jim Wan 1; R Pope 1; Teresa Waters 1; Kevin Johnson 2; Terry Atallah 1; Adrienne Sarzynski 1; Robert Graham 2; Renata Bailey 1; Vijay Srinivasan 1; Lenox Hill Hospital, New York City, New York 1; Lenox Hill Hospital, New York, New York. (Tracking ID # 124842)

BACKGROUND: Current evidence supports the use of anticoagulant therapy as standard prophylaxis for prevention of venous thromboembolism (VTE) in hospitalized patients. However, patients can have contraindications to pharmacologic prophylaxis and mechanical methods have been used as alternatives. Although the use of sequential compression devices (SCD) has been shown to reduce the risk of VTE, efficacy is highly dependent on optimal patient compliance, consistent use, and proper fit. Our objectives were to estimate the incidence of SCD’s prescribed versus SCD’s placed, to determine compliance per unit, to determine SCD availability, and to understand reasons patients were not placed on pharmacological prophylaxis.

METHODS: A cross-sectional study was performed on December 28, 2010. Electronic medical records (EMR) were screened for patients ordered for SCD’s on 4 regional medical floors and 4 intensive care units. Patients were excluded if they were ordered for low-molecular weight heparin (LMWH), unfractionated heparin (UFH), were on warfarin with INR > 2.0 or had SCD orders placed less than 24 hours. 38 patients met our inclusion criteria and data collected included: admitting diagnosis, contraindications for pharmacological prophylaxis (based on preset order-set: active bleeding, current treatment with anticoagulants, coagulopathy or thrombocytopenia < 50,000, history of heparin induced thrombocytopenia), and necessity of transfusion during admission. Assessment of SCD status was based on if SCD’s were not in room, in room but not on, or in room and on. Availability of SCD’s was obtained verbally from bio-med department personnel.

RESULTS: 16% (6/38) had SCDs in the room however only 13% (5/38) had them turned on as prescribed. 100% (6/6) of patients who were provided SCD’s had them on. Four percent (1/25) of patients on regional medical floors compared to 30% (4/13) of patients in the critical care units had them on as prescribed. Three hundred SCD were present in the hospital, yet only 5 were actually clean, functional and ready for use. Reasons why patients did not receive pharmacological prophylaxis were GI bleed 32% (12/38), thrombocytopenia 18% (7/38), pancytopenia 15% (6/38), anemia 13% (5/38), orders not entered into EMR 11% (4/38), suspected HIT 5% (2/38), intracranial hemorrhage 5% (2/38), hematoma 3% (1/38), ambulation 3% (1/38), and auto-anticoagulation 3% (1/38).

CONCLUSION: An exceedingly low number of patient requiring mechanical prophylaxes received it. All patients with SCDs in their room had them on, demonstrating good patient compliance. Therefore, the factor which contributed to low number of patients receiving mechanical prophylaxis was not compliance but the distribution within the hospital. Unfortunately, patients were excluded from pharmacological prophylaxis due to anemia which is not a contraindication according to the 2008 America College of Chest Physicians (ACCP) guidelines for prevention of VTE. Adherence to current guidelines, as well as increased availability of SCDs to patients could potentially reduce morbidity, mortality, and financial costs associated with VTE. This pilot study has led to a more extensive ongoing assessment of SCD use in Lenox Hill Hospital.
METHODS: Cross-sectional analysis of data from the MidSouth eHealth Alliance HIE for 3,021 adult (age 18–50) patient-visits for back pain to one of the major general hospital EDs in the four-counties of the Memphis Metropolitan Area two or more times between August 1, 2007 and July 31, 2009. Visits were included with primary discharge diagnosis of lumbosacral or thoracic back pain (ICD-9-CM codes 720. x [ankylosing spondylitis and other spondylopathies], 721.x [spondylitis], 722.xx [intervertebral disc disorders], 724.xx [unspecified back disorders], 737.xx [curvature of spine], 846.x [sacroiliac strain], and 847. x [back strain]) excluding all codes for cervical, coccygeal, and unspecified site. Use of lumbosacral or thoracic diagnostic imaging (plain radiography, CT, and MRI) was the primary outcome.

RESULTS: The HIE was accessed for 14.0% of ED visits for back pain. Billing provider accounted for 70.5% and ED staff for 29.5% of total HIE use. 18.3% of patient-visits received some type of lumbosacral or thoracic diagnostic imaging. Of the 754 cases with any imaging, 484 had lumbosacral or thoracic x-ray (87.4%), 30 CT (5.4%), and 44 MRI (7.9%). Bivariate analysis revealed that any HIE use (odds ratio [OR] 0.49, 95% confidence interval [CI] 0.35–0.67), HIE use by ED staff (OR 0.14, CI 0.05–0.38), and HIE use by any billing provider (OR 0.68, CI 0.49–0.96), were associated with decreased diagnostic imaging. After controlling for demographic factors, comorbidity, hospital system, and previous visits, any HIE use was associated with decreased odds of any diagnostic imaging (OR 0.16, CI 0.06–0.43), but HIE use by any billing provider was associated with increased odds of any diagnostic imaging (OR 3.76, CI 1.29–10.99). In addition, number of previous visits was associated with decreased odds of any diagnostic imaging (OR 0.92, CI 0.89–0.96). In separate analysis, the any HIE use * previous visits interaction terms were not associated with decreased imaging.

CONCLUSION: Systematic HIE use by ED personnel and overall HIE use are strongly associated with reduced avoidable diagnostic imaging in the evaluation of back pain in the ED. Patients with higher numbers of previous visits are also less likely to receive diagnostic imaging. HIE use should be promoted to help reduce the costs and potential harms associated with unnecessary diagnostic imaging in patients with back pain.

RESIDENT TIME SPENT IN CLINICAL AND EDUCATIONAL ACTIVITIES AT HOME: IMPLICATIONS FOR DUTY HOURS Allison DeKosky 1; Roderick Deano 2; Anoop Appannagari 3; Jacob Dell 4; Emily Georgitis 2; Steven Potts 4; Vinny Arora 2; University of Chicago Medical Center, Chicago, Illinois; 2University of Chicago Hospitals, Chicago, Illinois; 3University of Chicago, Chicago, Illinois; 4Mercy Hospital, Chicago, Illinois. (Tracking ID # 12498)

BACKGROUND: The ACGME recently finalized duty hour restrictions to be implemented by July 2011. The new standards require programs to ensure that residents are managing their “time before, during and after clinical assignments.” With the increasing use of electronic health records (EHR), it is possible for residents to continue to participate in clinical or educational activities after leaving the hospital, potentially above and beyond duty hour limits. There is no study examining the magnitude of this phenomenon. Therefore, our study aims to quantify the extent and type of out-of-hospital work reported by Internal Medicine residents at two Midwestern teaching hospitals with EHRs.

METHODS: An anonymous one-page survey was created to assess clinical activities that could be performed from home via telephone, internet, or remote access of EHR. These activities included checking labs, reviewing records, placing orders, communicating with ward teams, managing clinic patients and conducting activities such as independent didactics and research. Residents were asked to use a graded scale to rate the frequency of these activities during their last inpatient service month. Residents were also asked if they ever performed these activities on days off or on post-call days. Paper surveys were distributed to Internal Medicine residents at mandatory housestaff meetings at two Midwestern teaching hospitals in June 2010. The surveys were entered into an Excel database and analyzed using STATA 10.0. Site-adjusted ANOVA & logistic regression was utilized to assess differences by site or residency training year.

RESULTS: Seventy-three percent of surveys were completed, 51% by interns. There was no difference in response rates between the two sites. Ninety-three percent of residents reported checking labs from home at least once, with 45% doing so frequently, and two-thirds doing so on a post-call day. Sixty-nine percent of residents reported ordering inpatient labs from home, with 37% doing so on a post-call day. Furthermore, regarding time spent communicating with team members from home, 66% of residents report pinging their cross-covering teams at least once in the last month; only 5% frequently, and 39% on the post-call day. Clinic management was often done from home: 78% of residents reported calling clinic patients from home, 85% reported checking labs from home at least once in the last month, 33% did so frequently, and 23% did so on their post call day. Regarding didactics/research, nearly all (99%) of residents reported researching patients’ illnesses from home, and just under 50% did so on a post-call day. Likewise, 83% of residents reported doing research outside of the hospital, one-third doing so frequently. Regarding days off, 45% of residents reported coming to the hospital at least once on their day off to conduct clinical activities and two-thirds reported doing so for educational activities. When compared to interns, residents reported more out-of-hospital time preparing for conference (resident 56% vs. intern 21%, p=0.003), emailing attendings (resident 28% vs. intern 6%, p=0.015), and contacting cross-covering teams post-call (resident 56.2% vs. intern 30% p=0.035).

CONCLUSION: As residents’ in-hospital time is restricted, it is important to understand out-of-hospital work activity. EHRs have allowed many residents to complete clinical tasks from home, and these activities are not captured by resident duty-hour reports. Moreover, this work is sometimes taking place on designated days off or on post-call days, when residents are most fatigued. Further study is needed to describe the extent of this practice and whether it poses a safety risk. Understanding these risks have implications both for patient safety and resident well-being, and may necessitate improved resident education on in-hospital time management and patient handoffs.

THE INCIDENCE OF DEEP VENOUS THROMBOSIS IN IMMUNE THROMBOCYTOPENIC PURPURA PATIENTS Karim Arnaout 1; Mustapha Khalife 2; Amr Hanbali 2. 1Henry Ford Hospital, Detroit, Michigan; 2Henry Ford, Detroit, Michigan. (Tracking ID # 12508)

BACKGROUND: Immune thrombocytopenic purpura (ITP) is a common autoimmune disease characterized by an increased tendency to bleed. Few studies suggested that ITP is associated with an increased risk of thrombosis. However, the incidence of deep venous thrombosis (DVT) in ITP is not well described. The objectives of this retrospective study were to determine the incidence of DVT in ITP patients and to identify the risk factors related to its occurrence.
METHODS: We retrospectively reviewed the charts of 303 patients diagnosed with ITP in our institution between 2005 and 2009. The diagnosis of ITP was defined by a platelet count less than 140 × 10^9/l with normal or increased number of megakaryocytes on bone marrow aspirate, after exclusion of thrombocytopenia-induced medications or disorders, and absence of splenomegaly. The patients who developed DVT were identified. Age, gender, history of malignancy and the mean platelet count were collected for each patient and examined for their association with DVT development.

RESULTS: 15 patients developed DVT, yielding an incidence of 5.0 percent. The mean age of patients who developed DVT was 64 and that of patients who did not have DVT was 54 (p=0.048). Gender, history of malignancy and the mean platelet count did not have a statistically significant effect on DVT development in ITP patients.

CONCLUSION: Our data suggests that the incidence of DVT in ITP patients is 5.0 percent. Age appears to be associated with a statistically significant higher incidence of DVT in this population while gender, history of malignancy and the mean platelet count are not significant risk factors. Further studies are warranted to explain the exact mechanism of DVT in this bleeding condition.

FACTORS ASSOCIATED WITH ADHERENCE TO PHYSICIANS RECOMMENDATIONS IN A PROSPECTIVE COHORT AFTER HOSPITALIZATION WITH HEART FAILURE Howard S Gordon 1; Richard Street 2; Anita Deswal 3; VAMC and University of Illinois at Chicago, Chicago, Illinois 2; Texas A&M University, College Station, Texas 3; Houston VAMC and Baylor College of Medicine, Houston, Texas. (Tracking ID # 12509)

BACKGROUND: The contribution of physician-patient communication in adherence to physicians’ recommendations in patients with heart failure is poorly studied.

METHODS: In a prospective observational cohort study of patients hospitalized for an exacerbation of heart failure at 2 large VA Medical Centers, we examined the association of demographic factors, clinical factors and physician-patient communication (ratings and behaviors) with adherence for 210 patients who had scheduled outpatient visits with 93 physicians in the 6 months post-hospital follow-up period. Patients with dementia and terminal illness were excluded. Patients completed questionnaires to collect demographics, functional status, trust, and ratings of communication. Clinical data were abstracted from medical records. Communication behaviors were collected and coded from audio-recordings of the physician-patient visits. Adherence questionnaires were administered by telephone 3–4 weeks after the outpatient visits. Analyses comparing adherence with potential covariates used the chi-square test or t-test as appropriate. Mixed multiple linear regression with a repeated measures design was used to examine the independent relationship of communication and potential covariates with adherence.

RESULTS: Adherence was not statistically different by race, ethnicity, marital status, education, income, employment status, ejection fraction, history of myocardial infarction or diabetes, P > 0.10; but adherence was higher for patients at increased age, P=0.04, higher functional status, P =0.001 and was higher [P<.01] for patients reporting higher trust in physician, higher self-efficacy to communicate, and who rated the physician as more informative and more supportive. Adherence was higher for patients whose physicians more frequently used partnering and supportive communication behaviors (P=.02, and P=.001), but not with the overall provision of information (P=.65). Using mixed multiple linear regression to examine the independent association of adherence with communication and potential covariates, demographic and clinical factors were not associated with adherence, but higher patients’ rating of the doctor as informative and the doctors more frequent use of supportive communication behaviors were significant predictors of better adherence (P=.04, and P=.01).

CONCLUSION: In this cohort of heart failure patients, adherence was associated with age, functional status, trust, and both patients’ ratings and observers’ coding of physicians’ communication behaviors. In multiple regression analyses, physicians’ supportive communication behavior and the patients’ rating of the physician as informative were associated with adherence. Fortunately communication is a skill that can be taught. Future research should evaluate whether training physicians to improve communication can lead to improved adherence.

PATIENT EXPERIENCE WITH PATIENT-CENTERED MEDICAL HOMES AND ASSOCIATED QUALITY OF CARE IN MASSACHUSETTS, 2009 Asaf Bitton 1; Jennifer Kincheloe 2; David Bates 3; Joel Weissman 4.
1Division of General Medicine, Brigham and Women’s Hospital, Brookline, Massachusetts 2; Kincheloe Health, Denver, Colorado 3; Brigham and Women’s Hospital, Boston, Massachusetts 4; Massachusetts General Hospital, Boston, Massachusetts. (Tracking ID # 12512)

BACKGROUND: Patient-centered medical homes (PCMH) have generated significant attention as a way to reform primary care and improve outcomes, yet no state-level evidence exists regarding the availability of its components or association with quality. Of added interest, Massachusetts’ health insurance expansion raised questions around the capacity for primary care practices to provide sufficient access and quality care. We sought to assess the extent to which Massachusetts respondents had access to practices with core medical home features, and examined their association with quality of care indicators.

METHODS: We analyzed the 2009 Massachusetts Behavioral Risk Factor Surveillance System (BRFSS) survey, a representative statewide cross-sectional adult survey with a custom module of four questions to assess patient experience with medical homes. The survey sample consisted of adults ≥18 years, who were in the single split of the 2009 Massachusetts BRFSS sample that contained the PCMH question module (n=5693). We defined a high level of “PCMH” care experience as having a personal doctor and answering “always” or “almost always” to all four PCMH questions, including: provider knowledge about a patient’s medical history; getting an appointment right away; provider understanding of the patient’s specialist care; provider knowledge about the patient’s medications. We analyzed predictors of high PCMH care experience, and associations with ten available quality measures. These included access measures, vaccinations, lipid screening for cardiovascular diseases, and diabetes care processes (annual visits, eye exams, foot exams, cholesterol screening, Hemoglobin A1c testing). Multivariable regression models to assess the association of PCMH care experience with each quality measure were adjusted for age, gender, race, insurance, income, and education using SAS-callable SUDDAN.

RESULTS: Overall, 88.2% of respondents reported having a personal doctor, and 29.8% reported having high levels of PCMH care experience. In adjusted analyses, women were more likely than men to report high PCMH scores (adjusted OR (aOR) 1.48; 95% CI: 1.20, 1.83), and those
without insurance were less likely (aOR 0.22; 95% CI: 0.13, 0.40). Respondents with high PCMH scores were less likely to report problems with obtaining care in the last year (aOR 0.53; 95% CI: 0.40, 0.71). Among adults with chronic disease, those reporting high levels of PCMH experience were more likely to ever receive a pneumococcal vaccine (aOR 1.36; 95% CI: 1.04, 1.78), an annual influenza vaccine (aOR 1.43; 95% CI: 1.08, 1.88), and annual lipid screening (aOR 2.08; 95% CI: 1.30, 3.34). In diabetic patients, those with high reported PCMH experience were more likely to report obtaining all five recommended care processes (aOR 2.31; 95% CI: 1.31, 4.06).

CONCLUSION: In contrast to some media reports, Massachusetts respondents reported high levels of access to primary care providers, and reasonable access to PCMH-associated care. High levels of PCMH experience were associated with receipt of a number of chronic disease and access quality indicators. Because patient experience is linked to improved quality, it will be crucial to measure experience with PCMH care on a population level as the PCMH model expands nationwide. The implementation of the BRFSS PCMH question module in Massachusetts may serve as an evaluation roadmap for other states to follow.

IMPROVING UNDERSTANDING OF RX INSTRUCTIONS AMONG PATIENTS WITH LIMITED ENGLISH PROFICIENCY Stacy Cooper Bailey 1; Dean Schillinger 2; Alice Chen 2; Urmimala Sarkar 2; Emily Larsen 1; Michael Wolf1. 1Northwestern University, Chicago, Illinois; 2University of California at San Francisco, San Francisco, California.

BACKGROUND: Approximately nine percent of the US population has limited English proficiency (LEP). Previous studies suggest that pharmacies often fail to provide language concordant prescription drug labeling to non-English speaking patients; this lack of language access can have serious effects on LEP patients’ ability to safely administer medications. The objective of this study was to determine if a set of evidence-based, multilingual prescription drug (Rx) instructions improves medication understanding among individuals with limited English proficiency (LEP) in comparison to a current, nationally-available standard.

METHODS: Face-to-face interviews were conducted with 122 LEP adults recruited into the study from either clinic or community-based organizations in San Francisco, CA or Chicago, IL. Participants spoke either Spanish, Cantonese, Mandarin, or Russian as their primary language. Participants were asked to self-report the names of pharmacies they used in the past six months; the number of pharmacies utilized was calculated from the number of names provided. They were also asked to report if they had ever “gotten sick or had a bad reaction” after taking a prescribed medication. Additionally, patients were asked about socio-demographic characteristics such as age, sex, income, education, and number of prescription medications currently taken.

RESULTS: 39.2% of patients reported a negative reaction from a prescribed medication. 33.3% were found to regularly use more than one pharmacy to fill Rx medications. The objective of this study was to examine if the number of pharmacies utilized by LEP patients may be more likely than English-speaking patients to utilize multiple pharmacies to fill Rx medications. The objective of this study was to examine if the number of pharmacies utilized by LEP patients was associated with self-reported experience of an adverse drug reaction.

CONCLUSION: Providing clear, language-concordant Rx labeling is essential to promote safe and appropriate medication use among LEP populations. The enhanced Rx instructions developed and tested in this study show promising results and were designed to be easily implemented in pharmacy practice. State legislatures, State Boards of Pharmacy and the National Association of Boards of Pharmacy should consider promoting the use of this standardized, enhanced set of multilingual Rx instructions as a first step towards providing language access for LEP patients in pharmacy practices.

FACTORS ASSOCIATED WITH ADVERSE DRUG EVENTS AMONG NON-ENGLISH SPEAKING PATIENTS Stacy Cooper Bailey 1; Dean Schillinger 2; Alice Chen 2; Urmimala Sarkar 2; Emily Larsen 1; Michael Wolf1. 1Northwestern University, Chicago, Illinois; 2University of California at San Francisco, San Francisco, California.

BACKGROUND: Evidence suggests that patients with limited English proficiency (LEP) experience high rates of adverse drug events (ADEs) in ambulatory care. Few studies have examined possible risk factors for ADEs within this population. Recent studies indicate that LEP patients may be more likely than English-speaking patients to utilize multiple pharmacies to fill Rx medications. The objective of this study was to examine if the number of pharmacies utilized by LEP patients was associated with self-reported experience of an adverse drug reaction.

METHODS: Face-to-face interviews were conducted with 120 LEP adults recruited into the study from either clinic or community-based organizations in San Francisco, CA or Chicago, IL. Participants spoke either Spanish, Cantonese, Mandarin, or Russian as their primary language. Participants were asked to self-report the names of pharmacies they used in the past six months; the number of pharmacies utilized was calculated from the number of names provided. They were also asked to report if they had ever “gotten sick or had a bad reaction” after taking a prescribed medication. Additionally, patients were asked about socio-demographic characteristics such as age, sex, income, education, and number of prescription medications currently taken.

RESULTS: 39.2% of patients reported a negative reaction from a prescribed medication. 33.3% were found to regularly use more than one pharmacy to fill Rx medications. In multivariate analyses that included number of pharmacies utilized, age, sex, educational attainment, number of Rx medications currently taken, language, and income, number of pharmacies utilized remained a significant, independent predictor of self-reported adverse drug reactions, with patients using more than one pharmacy being significantly more likely to report an adverse reaction in comparison to those using only one pharmacy (odds ratio [OR] 4.0, 95% confidence interval [1.4, 11.9], p=0.012). Number of Rx medications taken, language, income, educational attainment, and age were not significantly associated with reporting an ADE.

CONCLUSION: When multiple pharmacies are used, it is unlikely that each pharmacy is aware of the complete medication history of the patient. This is likely to impact pharmacists’ ability to provide adequate counseling or surveillance for potential ADEs. Interventions should be sought to aid communication among pharmacies, and also among prescribers, to ensure patients are dispensed safe and appropriate regimens. Pharmacies, in particular, may consider creating opportunities for medication review. Additional studies are needed to examine the reasons why multiple pharmacies are used by the LEP population; interventions may be needed to address these underlying causes.
TELEPHONE-BASED SMOKING CESSATION TREATMENT FOR MENTAL HEALTH PATIENTS Alfredo Axtmayer 1; Erin Rogers 2; Scott Sherman1. 1VA New York Harbor Healthcare System, New York, New York; 2VA New York Harbor Healthcare System, Brooklyn, New York. (Tracking ID # 12520)

BACKGROUND: Proactive telephone smoking cessation counseling for mental health patients is an emerging niche of care. We compared the difference in the average number of cigarettes smoked per day before and two months after receiving at least one counseling session among patients enrolled in a VA smoking cessation coordination program for smokers with mental illness.

METHODS: These data are preliminary results of a multi-site study evaluating a telephone care coordination program for VA smokers with mental illness. Mental Health providers referred 260 smoking patients to the program. All referred patients completed a 5-call recruitment process. 128 of whom enrolled in the program and were offered smoking cessation medications and proactive telephone counseling. Participants were randomized to receive counseling from a state Quitline or a VA counselor. A structured assessment was completed via telephone before and two months after beginning counseling. The number of cigarettes smoked per day before and after counseling was compared using a paired t-test.

RESULTS: Two months after enrolling in treatment there was a significant reduction in the number of cigarettes smoked per day among participants who received one or more counseling sessions from a VA counselor (9.28 versus 16.08, p<.0009) or from a Quitline counselor (11.13 versus 17.9, p=.001). There was a near-significant trend indicating that the more counseling sessions patients completed, the greater the decrease in their number of cigarettes smoked per day (p=.09).

CONCLUSION: Mental health patients can achieve significant reductions in their smoking if they are referred to and engaged in smoking cessation counseling. Full accrual of our anticipated sample size of N=1,500 will allow us to confirm the current trend suggesting that participants who engage in more than one counseling session will experience greater reductions in daily smoking.

THE INFLUENCE OF PERCEIVED RACIAL DISCRIMINATION ON THE ADOPTION OF HEALTHY LIFESTYLE BEHAVIORS IN HYPERTENSIVE AFRICAN AMERICANS: THE CAATCH TRIAL Jessica M. Forsyth 1; Antoinette Schoenthaler 1; Joseph Ravenell 1; Gbenga Ogedegbe2. 1NYU School of Medicine, New York, New York. (Tracking ID # 12532)

BACKGROUND: Adverse lifestyle behaviors such as poor physical activity and poor fruits and vegetable intake are more prevalent in African Americans compared to Whites. Several studies have confirmed the negative relationship between adverse lifestyle behaviors and hypertension in African Americans. The efficacy of interventions targeting therapeutic lifestyle change (TLC) in controlling blood pressure (BP) among African Americans is well proven. However, few studies have examined the psychosocial factors that influence the adoption of healthy lifestyle behaviors in these studies. Perceived racial discrimination is an important psychosocial factor that has been associated with poor health outcomes in African Americans; its effect on adoption of healthy lifestyle behaviors remains untested. In this study, we examined the influence of perceived discrimination on the adoption of healthy lifestyle behaviors among hypertensive African Americans followed in community-based primary care practices.

METHODS: Participants were 461 patients enrolled in the Counseling African American To Control Hypertension (CAATCH) trial. The objective of CAATCH was to evaluate, in a cluster-randomized trial, the effectiveness of a multilevel intervention targeted at physicians and patients for improving blood pressure (BP) control in hypertensive African Americans who receive care in under-served community health centers. Analysis for the present study was limited to participants in the intervention arm. The dependent variables were the lifestyle behaviors - physical activity level assessed with the Paffenbarger Physical Activity Questionnaire, with higher kilocalories expended per week indicating greater physical activity; healthy eating habit was assessed with the diet items of the Rapid Eating and Activity Assessment for Patients measure (REAP), with higher scores indicating healthier eating habits and BP was based on the average of three BP measurements taken with a well-validated automated device (BPTru). The independent variable, perceived racial discrimination, was assessed with the lifetime, past year and stress scales of the Schedule of Racist Events questionnaire, with higher scores indicating more frequent exposure to perceived discrimination. All assessments were conducted at baseline and 12 months with change measures from baseline to 12 months for each dependent variable taken as the outcomes. Regression analyses were used to examine the associations between perceived discrimination and the within-patient change in each of the three outcome measures from baseline to 12 months while controlling for age, income and education level.

RESULTS: Most patients were low-income and had a high school education, with a mean age of 57 years. Age was associated with greater reduction in systolic BP (β=-.13, p=.02); greater exposure to lifetime discrimination was associated with less reduction in systolic BP (β=.14, p=.02) and lower adoption of healthy eating behaviors (β=-.20, p=.004). Discrimination was associated with lower adoption of healthy eating behaviors (β=-.17, p=.02). There were no significant associations between discrimination and change in physical activity.

CONCLUSION: Perceived discrimination influenced the adoption of healthy lifestyle behaviors and reduction of systolic BP in low-income African American patients, but did not influence adoption of physical activity. This study provides evidence that exposure to discrimination may influence African Americans' ability to adopt healthy lifestyle behaviors and should be considered in the development of future interventions.

THE COST-EFFECTIVENESS OF SELECTIVE TOBACCO CONTROL POLICIES IN SOUTH AFRICA Asaf Bitton 1; Thomas Gaziano2. 1Division of General Medicine, Brigham and Women's Hospital, Brookline, Massachusetts; 2Brigham and Women’s Hospital, Boston, Massachusetts. (Tracking ID # 12534)

BACKGROUND: Tobacco use is a leading cause of cardiovascular disease (CVD) and other chronic conditions in developing countries. However, very few estimates of the financial impact of tobacco control policies on the healthcare system in these countries have been conducted. Because South Africa instituted discrete tax and indoor air policies aimed at reducing its high rates of tobacco use, we sought to establish the cost-effectiveness of these interventions.

METHODS: We used a Markov model to perform a cost-effectiveness analysis on the two tobacco policy interventions separated in time.
South Africa instituted a progressively increased tobacco excise tax starting in 1993, after which taxes eventually reached 52% of the retail cost. Starting in 2001, South Africa banned smoking in all indoor locations except for restaurants, which were allowed up to 25% separately ventilated smoking sections. Our model used published estimates of the effect of these interventions on tobacco prevalence, the effect on tobacco on CVD and non-CVD related mortality, South Africa-specific data on the costs of implementing and enforcing these policies, as well as CVD- and other related health care costs. To compare strategies, we report incremental cost-effectiveness ratios (ICER), in US dollars (year 2000) per disability-adjusted life-year (DALY) over a ten year window, and a variety of sensitivity analyses on the indoor air laws.

**RESULTS:** For the tobacco tax strategy, we used a conservative published estimate of the implementation cost of $81.24 per capita which would result in an ICER of $831/DALY averted. A threshold analysis showed that at a cost below $81.11 per capita, the policy would be cost-saving; this is notable because some published literature suggests that the true cost in South Africa may have been as low as $80.10 per capita. These analyses exclude any tax revenue intake associated with the policy. For the clean indoor air strategy, our base case estimate was an ICER of $8410/DALY averted. In one-way sensitivity analyses around the costs of enforcement and the effects on prevalence, the ICERs ranged from $8223 to $8643 and $8388 to $8333 per DALY averted, respectively. A probabilistic sensitivity analysis around the intervention costs, enforcement costs, intervention benefits, and risk reduction on non-CVD mortality found a mean ICER value of $8472/DALY averted with 95% Confidence Intervals ranging from cost saving to $8601/DALY averted.

**CONCLUSION:** For the tobacco tax strategy, we used a conservative published estimate of the implementation cost of $81.24 per capita which would result in an ICER of $831/DALY averted. A threshold analysis showed that at a cost below $81.11 per capita, the policy would be cost-saving; this is notable because some published literature suggests that the true cost in South Africa may have been as low as $80.10 per capita. These analyses exclude any tax revenue intake associated with the policy. For the clean indoor air strategy, our base case estimate was an ICER of $8410/DALY averted. In one-way sensitivity analyses around the costs of enforcement and the effects on prevalence, the ICERs ranged from $8223 to $8643 and $8388 to $8333 per DALY averted, respectively. A probabilistic sensitivity analysis around the intervention costs, enforcement costs, intervention benefits, and risk reduction on non-CVD mortality found a mean ICER value of $8472/DALY averted with 95% Confidence Intervals ranging from cost saving to $8601/DALY averted.

**CLOSTRIDIUM DIFFICILE ENTERITIS: AN EMERGING DISEASE?**
Abdallah A. Koebeissy 1; Marilyn Karam 1; Edgardo A. Flores 1; Christopher Hartwell 1; Wadih Chacra 1. 1Henryford Health System, Detroit, Michigan. *(Tracking ID # 12547)*

**BACKGROUND:** Clostridium difficile is considered one of the most common and serious nosocomial infections associated with high morbidity and mortality. It has been viewed as a condition that is typically confined to the colon, with isolated small bowel involvement being extremely rare and unusual. However, an increasing number of cases describing isolated small bowel C. difficile infection have been reported in the literature. Our aim was to review the incidence of C. Difficile enteritis in our institution.

**METHODS:** We conducted a chart review of two hundred eighty patients who underwent total colectomy and ileostomy from the year 2000 to 2010. Patients were included in our analysis based on a documented C. difficile infection after total colectomy.

**RESULTS:** Only eight cases of C. difficile enteritis were identified. Indications for colectomy included fulminant C. difficile colitis (two patients), ulcerative colitis (two patients), large bowel inertia (one patient) and colon cancer (three patients). Five patients had a history of antibiotic use within three months prior to surgery mainly cephalosporins. Two patients were on immunosuppressive therapy. Five were on acid suppressive therapy. The interval time between colectomy and the development of C. difficile enteritis ranged from two days to several years. Clinical presentation varied from high volume ileostomy output (three patients), leukocytosis (five patients), ileus (two patients), melena from ileostomy (one patient) and abdominal pain (two patients). Treatment included metronidazole, vancomycin or a combination of both. Four deaths were accounted for in this series; none, however, was directly attributed to C. difficile infection.

**CONCLUSION:** C. difficile enteritis is an emerging condition that necessitates early recognition, because of the potential higher mortality and morbidity rates than its colon counterpart. Therefore, clinicians should have a lower threshold of suspicion to recognize this entity, diagnose and treat it promptly.

**INITIAL WEIGHT LOSS IN AFRICAN AMERICAN ADULTS SUCCESSFUL AT LONG-TERM WEIGHT LOSS MAINTENANCE: PRELIMINARY RESULTS FROM THE AFRICAN AMERICAN WEIGHT CONTROL REGISTRY**
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**BACKGROUND:** Disparities in health parallel disparities in rates of obesity.[1] African Americans are disproportionately affected by excess weight and the diseases for which it is a risk factor.[2, 3] Interventions to address obesity among African Americans have yielded modest results.[3, 4] More recently, attempts to understand or promote long-term weight maintenance in African Americans have resulted in limited insights or in maintained losses with small clinical impact.[5, 6] Long-term weight loss maintenance is the ultimate goal of any weight management program. The health benefits of weight loss are sustained as long as the healthier weight is maintained. In clinical practice, a 10% weight loss results in improved blood pressures, blood sugars, and lipids and is the clinically recommended weight loss goal for individuals trying to reduce weight.[7–9]

Individuals who lose weight and maintain substantial weight loss are now better understood because of data collected through the National Weight Control Registry (NWCR).[10] However, limitations of the NWCR are the few representatives from ethnic minority populations and the lack of a comparison group of individuals who loss substantial amounts of weight but did not maintain the loss.[10]

The purpose of the current study was to identify a large sample of African American adults who intentionally achieved clinically significant weight loss of 10% and had maintained that weight loss for at least 1 year and to compare them to individuals who achieved 10% weight loss but regained the weight. In addition, through quantitative comparisons of weight loss maintainers and weight loss regainers, the
study strives to add to the understanding of African-American weight loss, weight maintenance, and weight regain.

**METHODS:** A cross-sectional study design was used. Participants were recruited via word-of-mouth through national professional contacts of the principal investigator, postcard/fliers displayed at various venues and meetings attended by African Americans, a magazine advertisement (Jet), and by electronic invitation through eRewards. Interested individuals could interface with the registry and questionnaires through an online portal or through phone contact followed by a paper and pencil version of the same measurement tool. Prospective subjects were screened for eligibility by the PI, a call center representative, or an online screening survey. Based on responses, eligible participants were directed to the registry survey for maintainers or regainers online, or had the appropriate paper survey mailed to them. Eligible participants were asked to complete survey instruments about themselves and their weight history. Based on the descriptive data reported from the NWCR and focus group data from African American weight loss maintainers and regainers[11], a culturally relevant survey instrument was developed to capture demographic and weight characteristics, weight-loss and maintenance approaches, the effect of cultural factors on weight-loss and maintenance, and the effect of weight-loss and maintenance on quality of life. In addition, participants completed the International Physical Activity Questionnaire. At the conclusion of the survey, participants were invited to submit their names for inclusion in a maintained registry of weight loss maintainers and regainers. Responses from individuals who maintained weight and those who regained weight were compared using t-tests. All analyses were completed using STATA.

**RESULTS:** One thousand two hundred eighty African Americans completed surveys (383 weight-loss maintainers and 897 weight-loss regainers). Ninety percent of subjects were women and 57% had a college degree or higher. The average age was 41 years. Weight-loss maintainers lost an average of 24% of their body weight and 58% of maintainers lost >20% of their body weight. Maintainers had maintained >10% weight loss for an average of 5.2 years and 12% had maintained the loss for >10 years. The average maximum lifetime weight of maintainers was greater than regainers (105.0 kg compared to 91.6 kg, p<.001). Maintainers lost statistically more weight on average than regainers (26.4 kg vs. 16.0 kg, p<.001). A greater proportion of weight-loss maintainers than regainers reported that a health concern motivated their successful weight loss (35.8% vs. 21.6%, p<.001). The majority of subjects in both groups lost a minimum of 10% of their weight on their own without the aid of a professional. A significantly larger proportion of individuals who maintain most or all of the weight they lost employed traditional weight-loss promoting dietary practices when compared to those who regained weight: limiting amounts of food eaten (64.5% vs 56.5%, p<.010); limiting carbohydrates (33.7% vs 22.7%, p<.001); and limiting fat consumption (41.3% vs 27.9%, p<.001). In addition, a larger proportion of the maintainers adopted culturally acceptable though not evidence-based practices than those who went on to regain their weight: drinking more water (68.4% vs 54.1%, p<.001) and not eating after 7 pm (35.5% vs 28.7%, p<.05).

**CONCLUSION:** Although the sample used in this study is not from a defined population, the methods are consistent with those used in the National Weight Control Registry which offered previously unknown insights into the characteristics and practices of community dwelling adults who had achieved clinically meaningful weight loss and maintenance. The identification of a large number of African American individuals who have been successful at long-term weight loss maintenance confirms that success can be achieved in this population. These preliminary findings suggest that African Americans who are successful at clinically meaningful weight loss do not typically achieve their initial success through formal programs. Alternative strategies to support African Americans in their quest for weight loss need to be developed. In addition, the study suggests the importance of health concerns in motivating individuals to lose weight and to maintain the loss. In clinical practice, providers should routinely utilize teachable moments to educate African American patients on the link between their health risk and their weight.

**COST SAVINGS WITH ENHANCED EVIDENCE-BASED PRESCRIBING: THE EISENHOWER MEDICAL CENTER ANTIBIOTIC STEWARDSHIP PROGRAM**

**METHODS:** In late 2008, the authors convened a committee of the infectious disease (ID), pharmacy, administrative, and information technology (IT) divisions of Eisenhower Medical Center (EMC), a 277-bed community hospital located in Rancho Mirage, CA. Applying the Performance Analytics software program to Horizon Business Insight databases, medication usage data was extracted from the inpatient pharmacy. Use of specific drugs was assessed by setting and prescriber type (ER prescriber, hospitalist, or infectious disease consultant), numbers of patients, and indications. Costs for specific medications were adjusted by patient census and rendered in terms of cost per patient per day. Prescriptions for two specific agents, daptomycin and linezolid, were identified as deviating from IDSA guidelines based on institutional microbial sensitivities, contributing to excessive pharmacy expenses. In February 2009, the committee implemented an ASP based on EMC usage patterns that sought to restrict these specific agents, requiring prescribers to consult with ID specialists prior to use. The ASP protocols were disseminated to staff and their rationale explained in direct face-to-face meetings with prescribing physicians. Costs data continued to be collected and analyzed for a 12-month period.

**RESULTS:** Following implementation of the ASP, the average cost of daptomycin per occupied bed fell from $85.51 during the pre-ASP period, to $81.52 in the year following. The average cost of linezolid per occupied bed fell from $87.06 to $81.68. The average cost for all antibiotics per occupied bed fell from $35.59 to $24.16. Within a year, total savings to the hospital from improved antibiotic usage reached $81.2 million.

**CONCLUSION:** Analysis of medication usage patterns can allow for the design of institution-specific ASPs that can support evidence-based use of antibiotics, dramatically reducing hospital pharmacy expenses. Future research will explore how the EMC program has impacted on institutional prevalence of drug-resistant microbial isolates.
PREDICTING UNPLANNED READMISSIONS AT A LARGE, URBAN MEDICAL CENTER

Michael Hermann 1; Brittany Craven 1; Allison Bishow 1; Sarah Turse 2; Laura Kreisa 4; Peter Boling 1. 1Virginia Commonwealth University, Richmond, Virginia; 2Virginia Commonwealth University, Richmond, Virginia; 4Virginia Commonwealth University, Richmond, Virginia. (Tracking ID # 13185)

BACKGROUND: 30-day hospital readmission reflects co-morbidity and care quality, drives costs, and soon will impact payment. At our institution, 30-day readmission rate is a Performance Improvement target for CY2010. We focused a pilot on two medicine inpatient units with combined monthly discharges of 330 patients and a 20% readmission rate. Given resource limitations, we needed to target a group upon admission that is at high risk for readmission. Literature review found many variables associated with readmission but few predictive tools, including LACE (CMAJ 2010. DOI:10.1503/cmaj.091117), that includes length of stay.

METHODS: We randomly selected 125 patients discharged in CY2009 from the 2 pilot units who had unplanned readmissions within 30 days (E) and 125 more that did not (C). We performed detailed reviews of electronic health records, recording demographic data (age, sex, race), insurance type, living situation, ADL score, # of emergent admissions in prior 6 months, # of medications, and diagnoses thought to drive readmission (substance abuse, major psychiatric disorder, sickle cell disease, CKD stage 3 or more). We tested published prediction tools including the Charlson Index, LACE score, and LACE without length of stay (LACE-LOS). Using bivariate comparisons between E and C, we identified variables statistically associated with early readmission.

RESULTS: Charlson Index, LACE-LOS, # of medications and # of emergent visits were associated with readmission. Emergent care and Charlson Index provided more discrete separation of E and C groups. Pivot tables helped to identify the best pairing of emergent care visits (3 or more) OR Charlson Index (4 or higher). This combination or “RAM-PART” (Re-AdMission Prediction And Risk Assessment Tool) had a sensitivity of 67% and specificity of 42% for 30-day readmission and retrospectively identified 54% of admitted patients for targeted intervention.

CONCLUSION: We describe a prospective identification tool for high-risk patients likely to be readmitted. Sensitivity and specificity can be improved but it performs better than other published prospective tools. The tool is being validated and refined in a 6 month pilot intervention designed to reduce readmissions.

INDEPENDENCE AT HOME: GAIN-SHARING TO ALIGN INCENTIVES IN CHRONIC ILLNESS CARE

Peter Boling 1; George Taler 2; Eric De Jonge 2; Bruce Kinosian 3. 1Virginia Commonwealth University, Richmond, Virginia; 2Washington Hospital Center, Washington, District of Columbia; 3University of Pennsylvania/ Department of Veterans Affairs, Philadelphia, Pennsylvania. (Tracking ID # 13203)

BACKGROUND: Models of advanced chronic illness care have lagged due to poor congruence between financing and clinical practice. The Program for All-Inclusive Care of the Elderly (PACE) is a success story, joining Medicaid and Medicare funds in a global risk contract with a defined clinical model. Yet requirements slowed PACE growth: heavy capitalization; physical plant; limited to low income patients; and forcing a change of insurance. The VA health system Home-Based Primary Care program is now robust, but is limited to veterans. Yet, at least 3 million Americans with serious chronic illness and functional deficits lack access to regular, coordinated care, and such care is inadequately funded. To address this problem we proposed federal legislation.

METHODS: A planning group of 6 physicians, one administrator, and one lobbyist identified lead advocates in the US Senate and House of
Representatives, and used data from advanced chronic illness care models to design a gain-sharing compensation model using Medicare savings from avoidable inpatient care joined to a clinical model centered on technology-enhanced house calls. The identified target population has high co-morbidity (HCC score of 2.5 or more), high average annual cost (about $50,000), and deficits in 2 or more ADLs. Using published data from several sources that suggest potential for 25% cost savings, focused advocacy, and free national press, the planning team pursued new federal legislation. Examples from successful clinical practices and calculations showing utility of predictive modeling using Hierarchical Condition Categories helped gain regulatory support.

RESULTS: Paired House and Senate bills introduced in May 2009 gained 39 co-sponsors including 10 Republicans. In late 2009, with unanimous committee endorsement and neutral scoring by the Congressional Budget Office, the bills were included in the combined House 3-committee bill and Senate Baucus bill. The guaranteed cost-savings and appealing clinical model led to inclusion of Independence at Home (section 3024 of the 2010 PPACA) as a funded demonstration, due to start by January 2012. Implementation planning is underway. We will present modeling and program design details.

CONCLUSION: Focused, persistent advocacy based on a good idea designed to improve access and quality of care while lowering costs can result in health system change.

CLINICAL VIGNETTES

AN UNFORTUNATE FAMILY PAIRING. Marc Solomon 1; Marc Solomon 2; Richard Brooks 3. 1UCSF, San Francisco, California; 2UCSF, San Francisco, California. (Tracking ID # 7214)

LEARNING OBJECTIVES: 1. Assess various treatment options for Echinococcal cysts. 2. Recognize the potential treatment complications of Echinococcal cysts.

CASE INFORMATION: A 28 year-old man presented with two days of fevers, abdominal pain and anorexia. The pain was not associated with nausea, vomiting, or diarrhea. The patient had no past medical history. He had immigrated from Peru ten years ago where his family sold sheep skins. He worked in construction, lived with family in San Francisco, and denied substance use. On examination, the temperature was 36.9°C, the pulse 108, the blood pressure 100/68 mm Hg, the respiratory rate 22, and the oxygen saturation 96% on ambient air. He was diaphoretic but in no acute distress. Auscultation of the heart and lungs was normal. The abdominal exam revealed tenderness to palpation in the right lower quadrant with mild rebound. The remainder of the physical exam was unremarkable. The complete blood count, electrolytes, and tests of renal function were normal. Total bilirubin was 3.4 mg/dL and direct bilirubin 1.4 mg/dL. Alkaline phosphatase was 171 U/L; aminotransferase levels were normal. Computed tomography of the abdomen and pelvis revealed a dilated appendix with contrast enhancement and a liver cyst measuring 11x9x8 cm. The patient underwent appendectomy without complication. The patient was discharged on empiric albendazole. He returned the following week underwent appendectomy without complication. The patient was discharged the following day in stable condition.

IMPLICATIONS/DISCUSSION: Echinococcosis is a dog tapeworm that infects humans through contamination of eggs in canine feces. The parasite is found on all continents with highest prevalence in Eurasia, South America, Australia, north and east Africa. Two species with important public health implications are Echinococcus granulosus and Echinococcus multilocularis. The larvae released from Echinococcus eggs travel via the bloodstream to the liver, lungs, or other areas where they develop into hydatid cysts. Humans are often dead-end hosts for the organism. Larval growth in the liver results in the invasion of surrounding tissues. Up to 60% of all cystic echinococcosis cases are asymptomatic with a case fatality rate of around 2%. Farm laborers, especially sheep herders, have an increased risk of developing disease. Treatments include surgical resection of cysts, anti-helmithic medical therapy, and/or PAIR, a newer procedure developed as a response to the risk of anaphylaxis incurred with traditional surgical resection. This case highlights a important complication seen with definitive management of echinococcal cysts, one usually resulting from surgical resection. Anaphylaxis related to PAIR (less common than from surgical resection) is thought to result from a leakage of highly potent antigens from the cyst fluid and the occurrence of such complications depends upon many factors including experience. In further discussion with interventional radiology, only one prior PAIR procedure had been performed at this hospital in the recent past and the case happened to be the patient’s sister who was found to have a peritoneal echinococcal cyst three years prior. References: McManus DP, Zhang W, Li J, Bartley PB. Echinococcosis. Lancet. 2003 Oct 18;362(9392):1295–304.

UNEXPECTED ETIOLOGY OF HIP PAIN IN A YOUNG WOMAN

Thomas Giever 1; Kurt Pfeifer 2. 1Medical College of Wisconsin Affiliated Hospitals, Milwaukee, Wisconsin; 2Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 7296)

LEARNING OBJECTIVES: 1. Identify those at risk for community-acquired meticillin-resistant Staphylococcus aureus (CA-MRSA) pyomyositis and the associated mechanism of infection. 2. Identifying diagnostic and treatment tools for pyomyositis.

CASE INFORMATION: A 31-year-old female with no past medical history presented with a 2-week history of right hip pain and a 3-day history of subjective fevers and chills. She was previously seen in the emergency department approximately one week prior for similar symptoms and sent home with a diagnosis of sciatica and plans for conservative management. At the time of presentation, she was unable to ambulate due to pain that was characterized as sharp with radiation down her posterior thigh and into her lateral foot. A CT was performed and noted a large, multiloculated, rim-enhancing fluid collection with involvement of the right obturator internus, gluteus medius, and glutaeus minimus. An MRI confirmed the CT findings in addition to showing abnormal signal within the posterior aspect of the acetabulum concerning for osteomyelitis. Blood cultures were consistently positive for CA-MRSA during the first 4 days of hospitalization. A surgical drainage was performed with CA-MRSA isolated from the abscess and acetabulum bone samples. Blood cultures remained negative following drainage and an
echocardiogram showed no signs of endocarditis. The patient was treated with vancomycin and discharged with six weeks of antibiotic therapy.

**IMPLICATIONS/DISCUSSION:** Pyomyositis is an infection of skeletal muscles that usually results in abscess formation. It is more common in tropical regions but has become more prevalent in temperate climates since the mid-1990s. The usual pathogen for pyomyositis is Staphylococcus aureus with CA-MRSA becoming more dominant in recent years. Common sites of infection include the lower extremity (specifically the thigh), psoas, and the upper extremity. CA-MRSA pyomyositis is typically associated with immunosuppressed states, such as HIV and diabetes. Presenting symptoms often include localized muscular pain, edema, and low-grade fevers. Diagnosis is often delayed due to limited superficial and non-specific physical exam findings. Spread to bone can be through local extension or hematologic seeding. Treatment is a combination of surgical intervention and antibiotic therapy. In the case of CA-MRSA, effective antibiotics include vancomycin, linezolid, clindamycin, doxycycline, and trimethoprim-sulfamethoxazole, depending on site and extent of the infection.

**RARE ETIOLOGY OF RENAL FAILURE IN A 35-YEAR-OLD FEMALE**

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**LEARNING OBJECTIVES:** 1. Identify the diagnostic criteria for multiple myeloma. 2. Understand the staging system and available treatment options for symptomatic multiple myeloma.

**CASE INFORMATION:** A 35-year-old woman with Crohn’s disease presented with generalized malaise and nausea. Review of systems was also notable for intermittent chills and headaches for the past six months. Upon initial evaluation she had acute renal failure with a creatinine of 14.4 mg/dl (0.75 two months prior) and anemia with a hemoglobin of 7.3 g/dl (11.5 two months prior). Unexpectedly, a lytic bone lesion at the right inferior frontal skull was incidentally noted on a sinus CT. Further investigation included a bone survey without uptake at the skull but noted increased activity at L3, worrisome for bone lesion at the right inferior frontal skull was incidentally noted on a sinus CT. Further investigation included a bone survey without abnormalities and a nuclear medicine bone scan that did not show uptake at the skull but noted increased activity at L3, worrisome for malignancy. Serum and urine protein electrophoresis were remarkable for monoclonal bands of IgA kappa. Serum and urine immuno-fixation electrophoresis were notable for severely elevated free kappa light-chains and kappa:lambda chain ratio. A renal biopsy showed kappa light-chain cast nephropathy with associated acute tubular injury. A bone marrow biopsy had 59.6% plasma cells with amyloidosis and no cyogenetic abnormality. Multiple myeloma with bone marrow amyloidosis was diagnosed at international staging system (ISS) stage III and Durie-Salmon (DS) stage 2B. The patient was started on hemodialysis for renal failure and plasmapheresis for significant light-chain burden. Chemotherapy was initiated with bortezomib, cyclophosphamide, and dexamethasone after which she achieved an almost complete response, including full recovery of renal function. Following treatment, the patient underwent an autologous stem cell transplant.

**IMPLICATIONS/DISCUSSION:** Multiple myeloma is part of the plasma cell dyscrasias. Approximately 75% of those affected are over the age of 70 with a mean age of 62 years. Fewer than two percent of those diagnosed are under the age of 40 years. Diagnostic criteria include greater than 10% plasma cells in the bone marrow, monoclonal protein in the serum or urine, and evidence of organ damage (hypercalcemia, renal insufficiency, anemia, or bone lesions). The disease is classified as asymptomatic (smoldering) or symptomatic (active) myeloma. Symptomatic disease is staged by the ISS and DS systems based upon laboratory values and organ involvement. Currently treatment is only indicated for symptomatic disease and can be aggressive or conservative depending upon comorbidities. Responses to chemotherapy are high and treated patients have a median survival of 24–40 months with a 5-year survival rate of approximately 25%. Stem cell transplantation offers the chance for substantial palliation but is often limited due to advanced age, comorbidities, previous chemotherapy, and high risk of transplant-related mortality.

**THE DEADLY ABCs**

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**LEARNING OBJECTIVES:** 1. Identify individual risk factors for multidrug resistant Acinetobacter baumannii complex 2. Recognize the risk of nosocomial transmission of A. baumannii

**CASE INFORMATION:** A 48-year-old woman was transferred to the University of Iowa Hospitals and Clinics (UIHC) with four days of bacteremia and cellulitis that did not respond to intravenous antibiotic therapy. Prior to admission to the outside hospital, she had two days of fevers, chills, and extreme tenderness in her thighs and abdomen. She was hypotensive and had demarcated erythema, warmth and tenderness on her right upper thigh and across her lower abdomen. Initial blood cultures grew a Gram-negative rod in 15 hours and her blood cultures remained positive for five days despite treatment with piperacillin/tazobactam and vancomycin. The organism was Acinetobacter calcoaceticus-baumannii complex (also referred to as ABC) and susceptibilities revealed that the isolate was susceptible to colistin and immediately susceptible to ampicillin/sulbactam; it was resistant to all other antimicrobial agents tested. She was started on colistin and high dose ampicillin/sulbactam and her blood cultures cleared within nine hours and her cellulitis improved daily. Unfortunately, the patient died of hypotension secondary to a gastrointestinal bleeding five days after her blood cultures became negative. The patient had a past medical history of insulin-dependent diabetes mellitus, end-stage renal disease on hemodialysis, ischemic cardiomyopathy, peripheral vascular disease, hepatitis C, and cryoglobulinemia treated with 40 mg of prednisone daily. She was hospitalized two months prior to this admission for septic shock; her blood cultures were negative and she was treated with meropenem and vancomycin.

**IMPLICATIONS/DISCUSSION:** The infecting isolate was the first MDR-Acinetobacter isolated from a patient hospitalized at the UIHC. Our patient had many of the risk factors associated with MDR-A. baumannii infections including immunosuppression, central venous catheter, recent treatment with broad spectrum antimicrobial agents, recent stay in an intensive care unit, and recent prolonged hospital stay. Other risk factors include prior operation, trauma, burns, invasive procedures, parenteral nutrition, and indwelling catheters. Clinicians should base treatment on the infecting organism’s susceptibilities. Carbapenems are often used to treat Acinetobacter infections and use of carbapenems can select resistant Acinetobacter isolates (3). Our patient was treated with meropenem shortly before she acquired the cellulitis and bloodstream infection. Bacteremia is a
common problem faced by internists. Persistent bacteremia in the setting of intravenous antimicrobial administration may indicate that the organism is a multidrug-resistant pathogen. Acinetobacter are Gram-negative bacilli that live in soil and water and can survive for months on clothing, bedding, and environmental surfaces, making nosocomial transmission difficult to control (1,2). A. baumannii has been recognized as a significant nosocomial pathogen since the 1970s and has caused large outbreaks in hospital units, multiple hospitals within a city, multiple cities in a country, and within several different countries (3). Numerous United States soldiers who have sustained war-related battle wounds in Afghanistan or Iraq have been infected with MDR A. baumannii, increasing the difficulty of treating these patients. (4) MDR-Acinetobacter causes bloodstream infections, ventilator-associated pneumonia, urinary tract infections, and wound infections. MDR-A. baumannii is now recognized as one of the “most difficult healthcare-associated infections to control and treat” (2).

AN UNUSUAL CAUSE OF VISION CHANGES IN A HEAD AND NECK CANCER PATIENT Tisha Marie Borromeo Suboc 1; Kurt Pfeifer 2.

1Medical College of Wisconsin, wauwatosa, Wisconsin ; 2Medical college of wisconsin, Milwaukee, Wisconsin. (Tracking ID # 73834)

LEARNING OBJECTIVES: 1. 1.) Recognizing visual loss as symptom manifested multiple ocular diseases, physicians must remain alert for uncommon causes likeprimary intraocular lymphoma. 2. 2.) Knowing the most current treatments and identifying rituximab as anoption in treating rare disease such as primary intraocular lymphoma.

CASE INFORMATION: CASE: A 47-year-old gentlemen with a history of T4N2cM0stage IV squamous cell carcinoma (SCC) of the oropharynx presented with visionchanges he described as “looking through a fog.” He completed chemotherapy(cisplatin) and radiation two months before the onset of these complaints, and associated symptoms included severe right-sided headache. His symptoms progressed over four months and evolved to seeing “floaters” as well as photophobia. He was then referred to an ophthalmologist who found no signs of radiation-induced retinopathy. Due to worsening symptoms, he was also evaluated for causes of vitritis, including syphilis, toxoplasmosis, Lyme disease andtuberculosis, and all results were negative. His vision continued to decline to the extent that he was not able to see the numbers on a telephone and had increased “floaters” and impaired vision in dim lighting. Repeat neck CT showed no evidence of SCC recurrence. To evaluate for other possible infectious etiologies he underwent a vitreous biopsy which revealed non-Hodgkin B-cell lymphoma. Staging for his new malignancy showed no evidence of cerebrospinal fluid (CSF)or bone marrow involvement. Positron emission tomography (PET) scan showed no hypermetabolic foci within the eyewall enlarged lymph nodes. He was started on high-dose methotrexate for localized ocular non-Hodgkin B-cell lymphoma. He received 6 cycles of methotrexate, but hisvision continued to worsen. He was then switched to rituximab, and after 4 cycles, the patient reported marked vision improvement.

IMPLICATIONS/DISCUSSION: DISCUSSION: Vision changes in a cancer patient are always worrisome for recurrence of malignancy or treatment-induced complications. However, the differential diagnosis for visual disturbances is broad, and clinicians must remain alert for uncommon causes of this common complaint. Primary Intraocular lymphoma (PIOL) isa rare, aggressive, extranodal, non-Hodgkin, diffuse, large B-cell lymphoma that typically presents with visual disturbances consistent with uveitis oriritis. Diagnosis is challenging, since it is often mistaken for intraocular infection and must be accomplished via cytologic examination of avitreous sample. It is also considered a subset of primary centralnervous system lymphoma and the majority of PIOL patients will present with or develop central nervous system involvement. Optimal treatment is controversial, but the effectiveness of methotrexate andocular irradiation have been reportedin several case studies. More recently, rituximab has shown promise in the treatment of PIOL. Despite these advances, PIOL still carries a poor prognosis with a median survival of 12-20 months.

TRIPLE DIAGNOSIS Tisha Marie Borromeo Suboc 1; Kurt Pfeifer 2.

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LEARNING OBJECTIVES: 1. 1.) Recognize hemoptysis as a symptom that may be manifested by multiple diseasemultaneously, hence initial differential diagnosis should be board to avoid inadequate treatment. 2. 2.) Identify and treat fungal infections early in patients with malignancies to avoid increased mortality

CASE INFORMATION: CASE:A 67-year-old gentleman with a history of a chronic, productive cough presented with 4 days of hemoptysis. Initially his sputum contained only a few specks of blood and then progressed to being dark red. A chest radiograph showed a right hilar lung mass, and chest CT confirmed this in addition to revealing confluent, multifocal mediastinal lymphadenopathy. Since the patient had a 40 pack-year smoking history, small cell lung carcinoma was strongly suspected. Bronchoscopy was performed with bronchoalveolar lavage, transbronchial biopsies, and bronchial brushings. Final pathology results confirmed small cell lung cancer in addition to aspergillosis present oncytology from both bronchial wash and aspirate of the right upper lobe. Upon evaluation of his cancer stage, a positron emission tomography (PET) scan showed an hypermetabolic region in the mediastinum consistent with small cell lung carcinoma as well as a second hypermetabolic region in the right hypopharynx. Biopsy of the hypopharynx showed squamous cell carcinoma. The plan for treatment of this small cell lung cancer and squamous cell cancer was cisplatin and etoposide with concurrent radiation. However, due to the potential for rapid progression of invasive aspergillosis with chemotherapy-induced immunosuppression, the multidisciplinary team decided to start the patient on voriconazole prior to initiation of concurrent chemotherapy and radiation. He is currently in his second cycle with cisplatin and etoposide and continues to do well.

IMPLICATIONS/DISCUSSION: DISCUSSION: Hemoptysis is a symptom of multiple illnesses, including malignancy, infection and inflammatory diseases. Comorbidities often provide useful direction in determining the cause, but clinicians must still generate a broad differential diagnosis for hemoptysis to prevent delays in appropriate therapy. Invasive aspergillosis (IA) is a common infection in patients with hematologic malignancy, particularly those with bone marrow transplantation and patients who have received extensive chemotherapy. The association of aspergillosis infection with chronic lung disease is also well known; however, its concurrence with solid tumors, such as bronchogenic carcinoma, is less established. One recent study of this association found the prevalence of aspergillosis in patients with bronchogenic carcinoma to be 40.6%. Methods for diagnosing aspergillosis infection include PCR, ELISA and bronchoalveolar lavage cytology. PCR and ELISA have a sensitivity approaching 100% but lower specificity for IA. Bronchoalveolar...
lavage cytolygalone has a poor sensitivity but improved specificity for IA. A unique case of TMP-SMX induced hypersensitivity syndrome. Oluwakemi Y. Fagbami 1; Puneet Bajaj 2; Antony Kalyadian 3. 1The Reading Hospital and Medical center, West Reading, Pennsylvania; 2The Reading Hospital and Medical Center, West Reading, Pennsylvania. (Tracking ID # 7545)

LEARNING OBJECTIVES: 1. Diffuse erythematous rash accompanied by high grade fever and facial edema can be caused by infective, allergic or systemic etiologies. 2. Trimethoprim-sulfamethoxazole is an emerging cause of DRESS (drug rash with eosinophilia and systemic symptoms) syndrome and physicians need to have a high index of suspicion for optimal management and outcome.

CASE INFORMATION: A 34 year-old male presented with one day history of sudden onset of diffuse non-pruritic rash and facial swelling accompanied by high grade fever and lightheadedness. He had just completed a one week course of TMP-SMX for pilonidal abscess. Presenting vital signs included a heart rate of 121 beats per minute, respiratory rate of 22 breaths per minute and a fever of 38.9 degrees Celsius. Examination revealed a diffuse erythematous rash on the trunk and upper extremities as well as facial edema with no evidence of airway compromise. Laboratory values showed a normal white blood cell count with 5% band forms and serum creatinine of 1.26 mg/dl. Clinical picture was highly suggestive of sepsis and antibiotics were initiated. Due to presence of diffuse rash and facial edema, other possibilities including severe drug hypersensitivity reaction were considered on the differential and he was concomitantly started on high dose intravenous steroids. His vital signs and laboratory parameters normalized and facial edema resolved rapidly within hours. The next day his antibiotics were discontinued and he was discharged home on a tapering dose of oral steroid.

IMPLICATIONS/DISCUSSION: Drug hypersensitivity syndrome can present as a severe, acute, idiosyncratic drug reaction. It is defined by the presence of fever, cutaneous eruption, multi-organ failure and hematologic abnormalities including eosinophilia. Clinical manifestations typically occur within one to six weeks after the initiation of drug and do not resolve unless the offending agent is discontinued. Pathogenesis is unclear but may be due abnormal detoxification of arene oxide metabolite in anticonvulsant induced cases, reactivation of herpes virus (HHV-6) or T-cell mediated cytotoxicity. While rare, this syndrome is a possible complication of TMP-SMX use that physicians should be aware of. Early recognition, removal of the offending agent and in severe cases, high dose intravenous steroids are the mainstays of therapy. Physicians should be attuned to TMP-SMX drug hypersensitivity, a rare, but life-threatening complication that mimics SIRS but has a vastly different course of treatment.

A CASE OF GUILLAIN BARRE SYNDROME IN THE IMMEDIATE POST PARTUM PERIOD Lindsay Tawa 1; David Michael Elnicki 2.

1University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania; 2University of Pittsburgh School of Medicine, Wexford, Pennsylvania. (Tracking ID # 7646)

LEARNING OBJECTIVES: 1. To recognize the clinical presentation of Guillain Barre Syndrome (GBS). 2. To recognize that women in the immediate post partum period may be at increased risk for GBS.

CASE INFORMATION: A 27 year old female with a past medical history significant for bipolar disorder, migraine headaches, and hepatitis C presented with a 2 week history of progressive numbness and weakness in all 4 extremities. Her symptoms began as muscle cramps in her calves 2 weeks after an uncomplicated vaginal delivery of a healthy male infant. Over the next 4 days, her symptoms progressed to numbness, tingling, and weakness extending from her feet to mid thighs. Over the next week her symptoms worsened, and she noted the development of an increasingly wobbly gait. 2 days prior to presentation she developed numbness of her left forearm. She denied any current or recent upper respiratory or gastrointestinal symptoms including fever, chills, abdominal pain, nausea, vomiting, or diarrhea. She denied any loss of bowel or bladder function. Her initial presentation was at an outpatient neurology office where an MRI, EEG, and lumbar puncture were performed. MRI of the cervical and lumbar spine showed negative inflammatory changes. EEG showed decreased nerve conduction in the lower extremities. Lumbar puncture revealed a clear CSF, high protein, low WBCs, and an elevated IgG. The albuminocytologic dissociation (high protein and no cells) is classic for Guillain-Barre. On admission, she had normal facial strength and sensation. She had mild weakness of both triceps and biceps and a 4/5 hand grip strength. Her lower extremities had diffuse weakness that was worse proximally. Her patellar, achilles, biceps and triceps reflexes were absent bilaterally. Her gait was extremely wobbly. The diagnosis of GBS was made and she was started on IVIG 0.4 g/kg daily for 5 days. Forced vital capacities and neurologic checks were initiated every 8 hours with continuous cardiac monitoring. On the 4th day of IVIG treatment, her numbness had completely resolved. She was discharged after her 5th dose with mild lower extremity weakness and an unstable but improved gait.

IMPLICATIONS/DISCUSSION: GBS in the immediate post partum period has been rarely described in the literature. The reported incidence of GBS in the general population is 1.7/100,000, displays a 2:1 male predominance, and progressively increases with age. Peak rates occur above age 50, reaching 2.54/100,000 in females and 3.86/100,000 in males. Because of this epidemiology, GBS is rarely expected in a woman of reproductive age. However, several nationwide cohort studies and epidemiologic reviews have shown significantly increased rates of GBS in the first 4 weeks post partum. Rates are reported at 4.62/100,000; 2.5-5 times the incidence in age matched females and 1.8 times the incidence in women over 50. The increased risk appears to be time dependent, with the highest incidence at 2 weeks post partum and then rapidly declining to baseline by 1 month. This pattern parallels that of other autoimmune diseases, such as multiple sclerosis, myasthenia gravis, rheumatoid arthritis, and Grave’s disease which all have well documented post partum exacerbations. In pregnancy-associated immunosuppression, mechanisms that promote fetal rejection are suppressed and those that promote fetal acceptance are enhanced. Data suggest that cytokine regulation lies at the core of this immunologic shift. Specifically, there is a down regulation of Th1 (Il-12 and IFN-gamma) and an upregulation of Th2 (Il-10) and Th3 (transforming growth factor beta), resulting in an anti-inflammatory state. The reversal of this cytokine organization is reported to occur at 3 to 6 weeks post partum. This transition may overshoot physiologic baseline and produce a temporary proinflammatory state, leading to an increased risk for autoimmune activity. It is reasonable to hypothesize that the immunologic reconstitution in the peripartum increases the risk for GBS in women during the first 4 weeks post partum.
A CASE OF MEMORY LOSS AND PSYCHOSIS FROM HASHIMOTO’S ENCEPHALOPATHY  Jill Jin 1; Mary Anne Baquing 2; Andrea Cooperman1. 1UCLA-Olive View Medical Center, Sylmar, California ; 2UCLA David Geffen School of Medicine, Los Angeles, California. (Tracking ID # 7767)

LEARNING OBJECTIVES: 1. Recognize the clinical features of Hashimoto’s encephalopathy 2. Differentiate autoimmune encephalopathies from primary psychosis based on clinical picture and response to corticosteroid therapy

CASE INFORMATION: A 49-year-old male with a history of hypothyroidism and a pituitary adenoma status-post-resection was brought into the Emergency Department by police after he was found sleeping outside in a gated community and oriented only to person. Patient had severe retrograde and anterograde amnesia and could not provide any additional history. He also complained of headache and persistent intrusive auditory hallucinations. Further history obtained from patient’s girlfriend revealed a traumatic brain injury one year ago following a motorcycle accident, from which patient had excellent overall recovery with minimal baseline neurocognitive deficits, and no prior psychiatric history. Clinically, patient was afibrile but mildly hypotensive and bradycardic, and physical exam showed only bitemporal hemianopia and a left above-knee amputation. A CT scan of the brain revealed an empty sella but was otherwise unremarkable. Laboratory tests showed an elevated TSH of 19 as well as low free T4 and total T3 levels, with normal levels of other pituitary hormones. Lumbar puncture showed a slightly elevated protein, but normal cell counts and negative gram stain and cultures. Patient was started on levothyroxine, risperidone, and empiric acyclovir, with minimal improvement in memory and hallucinations. Further workup including brain MRI and PET scan as well as EEG also revealed no abnormalities. However, patient’s anti-thyroid peroxidase antibody titer was elevated at 138, and erythrocyte sedimentation rate and C-reactive protein were also slightly elevated. These findings raised the possibility of Hashimoto’s encephalopathy, a type of autoimmune encephalitis, as an etiology for the patient’s symptoms. Patient was given methylprednisolone 1 gram IV for 3 days, and showed marked improvement in orientation and memory with decreased auditory hallucinations after completion of the steroid course. Patient was discharged home on prednisone 60 mg daily with followup in neurology clinic.

IMPLICATIONS/DISCUSSION: Hashimoto’s encephalopathy is a rare disorder associated with autoimmune (Hashimoto’s) thyroiditis. Clinical presentation is varied with symptoms ranging from seizures and stroke-like episodes to cognitive and behavioral changes, memory loss, and psychosis. The pathophysiologic mechanisms responsible for Hashimoto’s encephalopathy remain unknown; however, treatment with corticosteroid therapy is highly effective and therefore misdiagnosis as a primary psychiatric disorder should be avoided. Other autoimmune encephalopathies with similar clinical presentations can result from auto-antibodies associated with paraneoplastic syndromes such as anti-N-methyl-D-aspartate (NMDA) receptor antibody or anti-voltage-gated potassium channel (VGKC) antibody. Obtaining appropriate serologic titers to diagnose these paraneoplastic autoimmune encephalopathies is expensive and time-consuming; therefore, in patients with a sufficient index of suspicion (i.e. those with known malignancy history), empiric therapy with high-dose steroids is warranted before diagnosing a primary psychiatric disorder. This case illustrates the importance of recognizing Hashimoto’s encephalopathy and other types of autoimmune encephalitis as part of one’s differential diagnosis for patients presenting with altered mental status, atypical psychosis, or other focal neurologic impairments who have otherwise normal brain imaging and cerebrospinal fluid studies.

NOT JUST ANOTHER SEPSIS: WHEN KIKUCHI MET LUPUS  Tracie Kurano 1; Sue Chung1. 1Olive View - UCLA, Sylmar, California. (Tracking ID # 7769)

LEARNING OBJECTIVES: 1. Recognize severe rheumatologic diseases in the differential diagnosis of sepsis 2. Diagnose Kikuchi Fujimoto Disease

CASE INFORMATION: A 20 year-old, Hispanic Female, with no known past medical history, presented with two weeks of fevers, chills, night sweats, weight loss, myalgias, nausea, vomiting, epistaxis, generalized swelling, and arthralgias. Physical exam demonstrated fevers, pallor, diffuse nontender lymphadenopathy (submandibular, cervical, axillary, inguinal), and anasarca. Labs revealed pancytopenia (white blood cell count 1600/uL with 31% bandemia, hemoglobin 9.6 g/dL, platelet count 45,000/uL); DIC (D-dimer ELISA >18000 mg/mL with hypofibrinogenemia, and elevated PT). Other notable labs: AST 1105 u/L, ALT 330 u/L, LDH 3494, ferritin >8000, sub-nephrotic range proteinuria with gross hematuria. Comprehensive bacterial, fungal, HIV and other viral infectious evaluations were unrevealing. CT of the chest/abdomen/pelvis revealed diffuse lymphadenopathy. Bone marrow biopsy and excisional lymph node biopsy excluded lymphoma. Necrotizing lymphadenitis with histiocytosis, and apoptosis in the absence of neutrophils or macrophages was consistent with Kikuchi Fujimoto Disease. Her clinical status deteriorated with life-threatening consumptive coagulopathy requiring multiple transfusions of a variety of blood products. She developed new onset hypoxia, pleuritic chest pain, malar rash and worsening arthralgias. Echocardiogram and chest CT revealed new bilateral pleural and pericardial effusions without pulmonary embolus. Given the previous findings of proteinuria and hematuria, a rheumatologic evaluation for Systemic Lupus Erythematosus (SLE) was initiated. High titer ANA (1:1280) with decreased complement (C3, C4, and CH50) established six out of eleven American College of Rheumatology criteria for SLE. High dose IV Solumedrol was initiated. Lupus pneumonitis associated pleurisy and hypoxia rapidly reversed followed by normalization of DIC, renal, and liver laboratory abnormalities. Lymphadenopathy also improved.

IMPLICATIONS/DISCUSSION: The initial differential diagnosis of this patient presenting with clinical sepsis and diffuse lymphadenopathy was hematologic malignancy and/or disseminated infection in a possibly immunocompromised host. This case demonstrates that severe systemic inflammation from rheumatologic diseases such as systemic lupus erythematosus (SLE) can be initially indistinguishable from sepsis or
malignancy. Kikuchi Fujimoto Disease (KFD) is a rare condition seen predominantly in Asian females characterized by fevers and lymphadenopathy. Extraneous nodal systemic disease is uncommon in KFD; however, an association with SLE has been described. In this case, the co-presenting SLE explains the DIC, multi-organ failure, pancytopenia, pneumonitis, and renal injury initially interpreted as infectious sepsis. While it may be challenging to determine whether KFD and SLE are occurring separately or together, it is important to do so in terms of treatment and prognosis. KFD is generally a self-limiting condition with a good prognosis, typically requiring only symptomatic therapy, but is responsive to glucocorticoids in diffuse or severe cases. SLE, however, is a chronic disease with a variable prognosis and disease course, often requiring cytotoxic therapy. The challenge arises because the clinical presentations of KFD and SLE can overlap, or as illustrated in this case, co-exist. For this reason, the question of whether these two conditions are part of the same spectrum versus two distinct entities has been raised. Further study of KFD and SLE may provide a deeper understanding of the possible relationship between these two diseases.

SEPTIC PULMONARY EMBOLI ASSOCIATED WITH FACIAL ABSCESS Anthi Katsouli1; D. Michael Elnicki2. 1UPMC Shady-side, Pittsburgh, Pennsylvania; 2UPMC Shadyside, Wexford, Pennsylvania. (Tracking ID # 7803)

LEARNING OBJECTIVES: 1. Diagnose septic pulmonary emboli (SPE) in the absence of right-sided endocarditis or other intravascular disease is difficult. However, SPE arising from primary deep tissue infections, such as abscesses, has been increasingly described in patients. 2. SPE generally presents with an insidious onset of fever, respiratory symptoms, and lung infiltrates. In SPE, the embolic blood clot that leads to an infarction in the pulmonary vasculature contains microorganisms that infect a focal abscess.

CASE INFORMATION: A 46-year-old African American male with no significant past medical history presented with one month of progressive right facial swelling and one day of fever, chills, and night sweats. On physical exam, he had a large area of swelling on his right face extending from the zygoma to the angle of jaw as well as from the ear posteriorly to the nasolabial folds medially. The entire area was tender to light touch, erythematous. There was a 3 cm scab and obvious abscessed region draining a small amount of serosanguineous fluid. The patient was febrile to 39.2 with a white count of 19.7. The abscess culture grew Methicillin-Resistant Staphylococcus Aureus (MRSA). In addition, he had persistent MRSA bacteremia. The patient was started on 1 g vancomycin IV, and his symptoms improved rapidly and significantly. During the fourth day of hospitalization the patient developed shortness of breath and chest pain. Computed tomography (CT) of the chest demonstrated pulmonary consolidation and nodules at the right middle lobe and both lower lobe, consistent with septic pulmonary emboli. The patient also had an esophageal echocardiogram done, that did not show any vegetation but mobile strand, on the aortic valve, consistent with Lambi’s excrescence. In addition, clinical and radiographic evaluations for deep-vein thrombosis were negative. No history or stigmata of intravenous drug use, thrombophlebitis, or prior intravenous-catheter use were found.

IMPLICATIONS/DISCUSSION: This case illustrates a patient with septic pulmonary emboli and community-acquired methicillin-resistant Staphylococcus aureus (CA-MRSA) bacteremia can be associated with abscess as a possible primary focus of infection. Septic pulmonary emboli are usually associated with right-sided endocarditis or other intravascular disease. However, for adults presenting with septic pulmonary emboli and CA-MRSA bacteremia, a search for deep tissue infections (such as abscess, osteomyelitis, septic arthritis, cellulitis, and, rarely, pyomyositis) beyond the more common intravascular sources may therefore be important. The pathogenesis of septic pulmonary emboli in our patient remains speculative. Deep tissue infection may be associated with local venous, and presumably septic, thrombophlebitis with septic pulmonary emboli that could not be detected using the imaging modalities available.

CARDIAC TAMponade SECONDary TO COXSackIE A PERICarditis Valentin Prieto Centurion1; Elizabeth Retzer1; Shana Ratner1. 1University of Chicago Medical Center, Dept of Internal Medicine, Chicago, Illinois. (Tracking ID # 7804)

LEARNING OBJECTIVES: 1. Diagnose cardiac tamponade with atypical presentation. 2. Recognize an atypical virus as the etiology of viral pericarditis.

CASE INFORMATION: A 43 year-old man with no significant past medical history presented to the Emergency Department with right upper quadrant abdominal pain with no clear etiology. Physical exam of the abdomen was benign and initial laboratory studies were unremarkable. A CT scan of the abdomen included the base of the lungs showed a significant pericardial effusion and no intraabdominal abnormality. On further history the patient denied any chest pain, but admitted to markedly decreased exercise tolerance for three weeks. A focused physical exam revealed muffled heart sounds, elevated JVP, but no pulsus paradoxus or leg edema. A transthoracic echocardiogram (TTE) showed compression of the RA and RV during diastole with hemodynamic compromise. The patient was taken emergently to the cath lab where a pericardial drain was placed and 1 liter of hemorrhagic pericardial fluid was removed. A follow up TTE showed near resolution of the pericardial effusion. Chemistry from the pericardial fluid was consistent with an exudate and microbiology returned unrevealing. The drain output over the next 48 hours was 1.8 L. The autoimmune workup for the effusion was unremarkable. The infectious workup was positive only for type 4 Coxsackie A IgM. A repeat TTE showed again significant hemodynamic compromise due to the pericardial effusion with fibrinous strands now forming in the fluid. The patient was again taken to the cath lab, where loculations were observed in the fluid, which was again drained. Afterwards, the drain output was minimal and the patient was asymptomatic. Follow up TTEs during the hospitalization and after discharge were consistent with constrictive physiology.

IMPLICATIONS/DISCUSSION: This case illustrates an unusual presentation of cardiac tamponade secondary to a viral pericarditis. The patient was presumptively diagnosed with Coxsackie A viral pericarditis, given that the infectious, autoimmune,
metabolic and neoplastic work-up was otherwise negative. Coxsackie A, as opposed to Coxsackie B, has not been widely associated with pericardial effusions. His only presenting symptoms was decreased exercise tolerance. The abdominal pain was thought to be related to passive ileus congestion, a self-limited condition or referred chest pain. Even though this patient did not have the classic physical findings of tachypnea, including pulsus paradoxus, the TTE showed significant hemodynamic compromise. Obtaining a TTE early after an effusion is identified may speed definite therapy and prevent the patient from developing clinical signs of tamponade and decompensation.

FEELING YOUR WAY THROUGH THE DIAGNOSIS: Marlowe Maylin1, Marlowe Maylin1. Tulane University, New Orleans, Louisiana. (Tracking ID # 7822)

LEARNING OBJECTIVES: 1. Understanding the neurologic and sensory examination. 2. Recognizing the appropriate testing involve when abnormal neurologic findings are present on physical exam.

CASE INFORMATION: A 48 year-old man presented with two weeks of progressive ascending numbness and tingling in the right leg. He first noticed the numbness and tingling in his right foot and toes. The numbness continued to ascend to the level of the umbilicus. He also noted one episode of bladder incontinence and new onset constipation. He reported a more acute onset of sensitivity to light touch in the same lower extremity in the same distribution and difficulty ambulating. He denied recent fevers or viral prodromes. Vital signs were normal. The neurological evaluation revealed altered sensation to light touch on his entire right lower extremity. Concurrent allodynia was noted in the same distribution. Sensory levels were identified at T10. He had 1+ reflexes on the right lower extremity compared to 2+ on the left. A positive Babinski sign was also elicited on the right. Cranial nerves were noted to be intact bilaterally and no motor deficits were identified. Complete blood count, chemistry, and inflammatory markers were within normal limits. HIV and Hepatitis Panel were negative and non-reactive. ESR was 3 mm/hr and CRP was less than 0.3 mg/dl. MRI of the T-spine revealed a 2 cm segment of hyperintensity within the cord in the mid to upper thoracic region confined to the posterior columns. MRI of the brain and C-spine revealed multiple areas of periventricular white matter changes more prominent on T2 and flair sequences and T2 hyperintensities scattered within the cervical spinal cord. Lumbar puncture was performed and showed elevated oligoclonal bands. The patient was started on IV steroids for a diagnosis of Viral Sclerosis and his symptoms slowly improved. On further questioning, he reported evaluation in the ED one week prior for the same symptoms and received and MRI of the L-spine with no findings.

MULTIPLE COMPLAINTS: ONE DIAGNOSIS: Jennifer Meyer1; Jennifer Meyer2. Tulane University, New Orleans, Louisiana. (Tracking ID # 7823)

LEARNING OBJECTIVES: 1. Review the manifestations of Multiple Myeloma bone marrow infiltration. 2. Recognize back pain as a common clinical presentation of Multiple Myeloma.

CASE INFORMATION: 52 year-old woman presented with 3 weeks of lower back pain, worse after falling out of bed 3 days prior to hospitalization. She was evaluated at a local ED directly after the fall where she was diagnosed with muscle strain and discharged home with narcotic pain medication. She denied bowel and bladder incontinence or radiation to her extremities. No changes in sensation or weakness of her extremities were reported. Review of systems was notable for fatigue and an unintentional 50 pound weight loss over the past 6 weeks. She had point-tenderness over the thoracic spine; her back pain was relieved somewhat by leaning forward. X-ray imaging was significant for a T-12 compression fracture as well as multiple lytic lesions in her spine. Laboratory testing revealed a serum calcium level of 15.0 mg/dl. Hertotal protein was elevated at 9.4 g/dl with an albumin of only 3.1 g/dl. Creatinine was 1.2 mg/dl. Hemoglobin was 9.0 g/dl. Serum proteincalcitonin was elevated at 4.0 g/dl and M spike of 3.6 g/dl. Bone marrow biopsy of T-12 revealed plasma cell dyscrasia and kappal lightchain restriction, confirming a diagnosis of Multiple Myeloma.

IMPLICATIONS/DISCUSSION: Multiple Myeloma is characterized by the neoplastic proliferation of a single clone of plasma cells producing a monoclonal immunoglobulin. Most patients with this disease present with one or more signs and symptoms related to proliferation of these cells in bone. A retrospective study of 1027 sequential patients diagnosed with Multiple Myeloma at one institution reported that at presentation 58% had bone pain commonly located over the back or chest. Additionally, 73% of patients had anemia and 28% had hypercalcemia. In a separate study, 30% of those diagnosed with Multiple Myeloma had a pathologic fracture on presentation. Internists are often the first to evaluate patients with the common chief complaint of back pain. This may pose a diagnostic dilemma for the clinician trying to differentiate Multiple Myeloma from...
The disease course [1]. Myeloma, as delays in diagnosis have a deleterious effect on be adept at recognizing back pain as a symptom of Multiple should warrant further investigation [3]. Physicians should conventional methods, associated constitutional symptoms, and progressive neurological deficits in the lower extremities should warrant further investigation [3]. Physicians should be adept at recognizing back pain as a symptom of Multiple Myeloma, as delays in diagnosis have a deleterious effect on the disease course [1].

ONE GOOD TURN CAUSES ANOTHER Michelle Smith1; Michelle Smith1; Tulane University Medicine Residency, New Orleans, Louisiana. (Tracking ID # 7824)

LEARNING OBJECTIVES: 1. Recognize the clinical presentation of an AIDS patient with dementia. 2. Identify the differential diagnosis of altered mental status in an AIDS patient. Learn the presentation of Progressive Multifocal Leukencephalopathy secondary to JC virus infection and PML-Immune Reconstitution Inflammatory Syndrome.

CASE INFORMATION: A 42 year-old woman with HIV presented two months of altered mental status. She had also had increased weakness and diarrhea for the previous two weeks. She noted no other symptoms, including no headaches, fever or dyspnea. She had recently been started on HAART therapy as an outpatient two months before presentation. Her vital signs were normal. She had a decreased mini-mental status score, as well as an inability to perform finger-toe-nose and heel-to-shin maneuvers. The remainder of her examination was otherwise normal. A spinal fluid analysis revealed 200 lymphocytes, zero neutrophils, negative HSV PCR. The remaining laboratory studies were normal. On the eighth day of hospital admission, she was found to have decreased strength in the right upper and right lower extremities. An MRI of the brain showed no evidence of acute ischemia however, dilatation, signal irregularity, but did reveal persistent gadolinium enhancement around the right lateral ventricular frontal horn. Diffusion imaging revealed non-contiguous areas of abnormal diffusion concerning for focal areas of cerebritis.

IMPLICATIONS/DISCUSSION: AIDS patients with altered mental status are commonly encountered by the general internist. Progressive Multifocal Leukencephalopathy is caused by the human polyomavirus JCV and usually affects those with profound immunosuppression. PML within the AIDS patient population is a result of reactivation of the lytic infection in the glial cells, and the resulting neurological effects are due to demyelination. Classic presenting symptoms correspond to the area of demyelination and include muscle weakness, sensory deficit, hemianopsia, cognitive dysfunction, aphasia, coordination and gait difficulties. With the use of HAART therapy PML can also present as PML-Immune Reconstitution Inflammatory Syndrome. The increase in T-lymphocyte counts leads to an inflammatory response to previously diagnosed or new PML lesions. This inflammatory reaction causes edema with a mass effect within the central nervous system, resulting in worsening sensorium that may progress to brain herniation and death. Diagnosis of PML can be made by demonstration of JCV via PCR or by immunofluorescent staining for viral DNA. Classic PML presents as multiple hypodense areas that do not correspond to vascular territories. On MRI, PML appears in the subcortical white matter as hyperintense regions on T2 images and hypointense areas on T1 weighted images. However, the inflammation and breakdown of the blood-brain barrier in PML-IRIS may lead to contrast enhancing lesions. Detection of JCV by PCR of the CSF with PML-IRIS may be negative as the reconstituted immune system is able to control viral replication. Biopsy of suspected PML-IRIS lesions shows high numbers of CD8+ lymphocytes. There is no anti-viral treatment directed at JC virus. Recent studies have some benefit with the use of steroids for PML-IRIS, however the effects of immune suppression on HIV replication in the AIDS patient have not been well established.

WHEN THE BLIND CAN SEE – CASE REPORT: CHARLES BONNET SYNDROME Anna Postolova1; Varsha Somasekharan2; Neda Hidarilak1; Cortni Tyson1; Chad Miller2.

1Tulane University, New Orleans, Louisiana; 2Tulane University, New Orleans, Louisiana; 3Tulane University, New Orleans, Louisiana. (Tracking ID # 7829)

LEARNING OBJECTIVES: 1. Recognize the clinical presentation of Charles Bonnet Syndrome. 2. Identify the differential diagnosis of visual hallucinations. Understand the pathophysiology leading to a diagnosis of Charles Bonnet Syndrome.

CASE INFORMATION: A 75 year old woman presented with a three week history of visual hallucinations and confusion. She reported seeing insects, cars, and snakes in her house. She acknowledged that the hallucinations were inappropriate in the context of her surroundings. She reported anxiety secondary to the hallucinations causing a lack of sleep for the past three days. She had a blood pressure of 162/96. She had a history of diabetes, congestive heart failure, atrial fibrillation and legal blindness secondary to glaucoma, cataracts, and eye infections. She had no history of psychiatric or neurologic disease. She was diagnosed with depression without complicated grief. The patient was diagnosed with Charles Bonnet Syndrome based on the absence of visual acuity, visual field loss, or electroretinogram. She was referred for psychiatric evaluation leading to a diagnosis of Charles Bonnet Syndrome. She was prescribed sertraline, clonidine, and hydroxyzine. Visual hallucinations persisted despite withholding these medications and having several nights of sleep in the hospital. Urine toxicology was negative despite withholding these medications and having several nights of sleep in the hospital. Urine toxicology was negative. Computed topography of the head showed atrophy of the brain with chronic ischemia without acute abnormalities. Magnetic resonance imaging revealed atrophy of the occipital lobe without atrophy of the brain with chronic ischemia without acute abnormalities. The patient was diagnosed with Charles Bonnet Syndrome as a diagnosis of exclusion.

IMPLICATIONS/DISCUSSION: Visual hallucinations in the elderly are commonly encountered by the general internist. The differential diagnosis includes dementia (Lewy Body or Parkinson’s), delirium, psychiatric and neurologic disorders,
lack of sleep, and drug induced states. The patient denied symptoms of dementia; this was verified by her daughter. Delirium was unlikely due to lack of confusion, disorientation, or changes in consciousness. Psychiatric consultation and imaging excluded psychiatric disorders and acute neurological deficits. Her hallucinations did not remit with adequate sleep. Drug induced states in the elderly are caused by drug interactions and forgetfulness. Of the patient’s medications, amitriptyline and hydroxyzine can have anticholinergic side effects, leading to visual disturbances. Neurologic dysfunction has been reported as an adverse effect of clonidine. Holding the medications for several days did not alleviate the hallucinations. Negative urinetoxicology excluded overdose. Charles Bonnet syndrome includes three characteristics: history of vision loss, distinctly formed, recurrent hallucinations, and insight into the unreal nature of the hallucinations. The reported prevalence of this condition in the visually impaired ranges between 10-38%. Hallucinations can vary from simple color patterns to complicated objects. The hallucinations are postulated to occur due to damage of the visually impaired. Hallucinations can occur due to damage of the visual pathway secondary to optic surgery or nerve damage. In the absence of other causes, it is important to consider Charles Bonnet Syndrome in patients presenting with visual hallucinations.

**LEARNING OBJECTIVES:** 1. Recognize the clinical presentation of Langerhans disease and the association with cigarette smoking. 2. NA

**CASE INFORMATION:** A 20-year-old female smoker with history of bulimia presented to the Emergency Department with a syncopal episode. A Computerized Tomography (CT) cervical spine was performed which incidentally revealed cavitory pulmonary nodules in the lung apices. She reported a dry cough and mild shortness of breath. She denied chest pain, wheezing, hemoptysis, night sweats, and weight loss. Routine blood work was unremarkable. A high resolution CT chest was performed, which revealed numerous cysts in the apices and mid lung zones with relative sparing of the lung bases. Pulmonary function tests were normal. A bronchoscopy with transbronchial lung biopsies was performed. Tissue immunostaining for S-100 protein and CD-1 antigen confirmed the diagnosis of Pulmonary Langerhans cell histiocytosis (PLCH).

**IMPLICATIONS/DISCUSSION:** Pulmonary Langerhans cell histiocytosis (PLCH) is a rare disorder of unknown etiology that occurs predominantly in young smokers, with an incidence peak at 20–40 years of age. Exact incidence and prevalence of PLCH is unknown, the diagnosis is made in approximately 2 to 5% of lung biopsy specimens from patients with interstitial lung disease. It usually occurs as a single-system disease and is characterized by focal Langerhans cell granulomas infiltrating and destroying distal bronchioles. PLCH is pleomorphic in its presentation, symptoms can be minor or absent and patients often initially attribute their symptoms to smoking. The clinical course of the disease is unpredictable. A large percentage of patients experience stable, persistent disease but many have a progressive course. Treatment consists of smoking cessation. Corticosteroid therapy may be useful in selected patients. Use of chemotherapeutic agents remains experimental. Lung transplantation may be considered in the case of unresponsive disease; however the disease may relapse in the transplanted lung. Patients with PLCH require long term follow up to detect potential disease progression and relapse. While PLCH remains a rare disease, its prevalence may be greater than previously recognized. Clinicians should be aware of this disease in the differential diagnosis of interstitial lung disease, especially in patients who have exposure to cigarette smoke.

**PULMONARY SPOROTRICHOSIS MASQUERADING AS NON-HODGKIN’S LYMPHOMA** Anupama Tiwari 1, Anurag Malani1.

1St Joseph Mercy Hospital, Ann Arbor, Michigan. (Tracking ID # 7849)

**LEARNING OBJECTIVES:** 1. Reduction of poor outcomes through recognition and early diagnosis of the atypical and classic clinical features of pulmonary sporotrichosis. 2. NA

**CASE INFORMATION:** A 61-year-old female, non-smoker was noted to have small nodular opacities in right lung on a routine chest roentgenogram (CXR). Subsequently, a chest computerized tomography (CT) revealed multiple nodules with primarily upper zone involvement. She denied hemoptysis, fevers, chills, cough, chest pain, dyspnea, malaise or weight loss. Routine bloodwork including a complete blood count, complete metabolic panel and tuberculin skin test were unremarkable. A chest CT scan performed 6 months later, showed increased size and number of the previously visualized pulmonary nodules. She continued to be asymptomatic. Five months later, a bronchoscopy with transbronchial biopsies was performed and histopathology revealed an atypical lymphoid infiltrate suspicious for low-grade non-Hodgkin’s lymphoma. A positron emission tomography (PET) CT performed one week later, showed increased multi-focal abnormalities in the right lung, with cavitations in some of the nodules, and significant progression of variable ill-defined nodular opacities in the middle lobe compared to the initial study. A right upper lobe video assisted thorascopic wedge biopsy was performed. Histopathology showed necrotizing granulomatous inflammation, special stains for acid-fast bacilli and fungi were negative. Two weeks after the biopsy, fungal bronchial washings, grew Sporothrix schenckii. Additionally, B cell clonality studies by PCR were negative, thus not supporting a diagnosis of lymphoma. The patient was started on Itraconazole and had significant improvement.

**IMPLICATIONS/DISCUSSION:** Pulmonary infection with Sporothrix schenckii is uncommon; when present it is usually secondary to inhalation or aspiration of conidia in susceptible individuals. Fewer than 100 cases of primary pulmonary sporotrichosis have been reported in the literature. Cases predominantly occur in middle aged, alcoholic males, and those with underlying lung disease. The outcome of pulmonary sporotrichosis is usually poor, often because of delay in diagnosis and severe underlying pulmonary disease. With treatment, prognosis is excellent. While pulmonary sporotrichosis remains a rare infection, its prevalence may be greater than previously recognized. Clinicians should be aware of this
infection in the differential diagnosis of pulmonary granulomatous diseases, especially in hosts who have relevant environmental exposure to the fungus.

OVARIAN METASTASES TO THE MITRAL VALVE PRESENTING AS RECURRENT EMBOLIC STROKES Anne S Kemble 1; Kristi T Lopez 2; Michael H Dang 2; Edward N Shen 2. 1Department of Medicine, University of Hawaii John A. Burns School of Medicine, Honolulu, Hawaii; 2Department of Cardiovascular Surgery, Queen’s Medical Center, Honolulu, Hawaii.

LEARNING OBJECTIVES: 1. Recognize metastases to the mitral valve as a potential cause of embolic stroke. 2. Identify ovarian cancer as a source of metastases to cardiac valves.

CASE INFORMATION: A 77 year-old woman with history of hypertension and dyslipidemia presented with left foot drop and right hand weakness. She was found to have decreased left leg strength and unsteady gait, with a regular rate and no murmurs on cardiac auscultation. MRI of the brain revealed acute bilateral showers of emboli to the cerebellum and cerebral, as well as evidence of a prior embolic stroke in the right occipital lobe, without vascular abnormalities. Subsequent transesophageal echocardiogram identified an 8 mm mobile mass on the atrial side of the anterior mitral valve leaflet, with no evidence of a shunt. The patient remained afebrile throughout admission, with negative blood cultures. She was discharged with empiric antibiotic and anticoagulation therapy, with plans for serial echocardiographic monitoring. Two months later, the patient was readmitted with diarrhea, weight loss, and abdominal pain. On physical exam, an enlarged uterus and pelvic mass were discovered. CT of the abdomen and pelvis showed an 11x12 cm uterine mass, a 2.5x3.3 cm right adnexal mass, and several small liver lesions. Based on suspicion that the recurrent embolic strokes originated from the valvular mass, a lower mini sternotomy was performed prior to gynecologic surgery. Debridement of the mitral valve anterior leaflet identified the mass to be a metastatic papillary adenocarcinoma, immunopositive for cytokeratin-7 and pax-8, with a CA-125 of 935, consistent with an ovarian clear cell carcinoma. The patient’s postoperative course was complicated by acute renal failure and status epilepticus. After prolonged intubation, she underwent tracheostomy and gastrostomy tube placement. The patient demonstrated dramatic improvement in neurologic status after rehabilitation. She was referred to a gynecologic oncology specialist for further management of her stage IV ovarian carcinoma.

IMPLICATIONS/DISCUSSION: Despite increasing recognition of metastatic tumors in the heart, metastases to cardiac valves are rarely encountered, and their risk of embolization is unknown. This case documents the diagnosis of ovarian carcinoma with metastatic spread to the mitral valve that initially presented as embolic strokes. Although metastatic valvular tumors are rare, recognition is important. As presented in this case, these masses can have devastating clinical sequelae, and surgical removal may be required to prevent embolic complications.

HENOCH-SCHÖNLEIN PURPURA ASSOCIATED WITH IGA PLASMA CELL DYSCRASIAS Sumana Devata 1; Parameswaran Hari 1; Kurt Pfeifer 1. 1Medical College of Wisconsin, Milwaukee, Wisconsin.

LEARNING OBJECTIVES: 1. Recognize that Henoch-Schönlein purpura in an adult can be a paraneoplastic manifestation. 2. Review the current hypotheses that may cause IgA plasma cell dyscrasias to present as Henoch-Schönlein purpura.

CASE INFORMATION: A 52-year-old healthy man presented for workup of a monoclonal gamopathy discovered during evaluation for recurrent arthralgias and rash. The rash was described as variably sized, diffusely distributed, raised purpuric lesions. Initial symptoms began at the age of 46, 1–2 months after a severe episode of gastroenteritis during which he had myalgias, fevers, nausea, emesis and bloody diarrhea. These symptoms spontaneously resolved; however, the patient subsequently developed the rash, swelling of his legs, and bilateral wrist and ankle pain. Further evaluation of symptoms and biopsies of the purpuric lesions revealed a leukocytoclastic vasculitis with deposition of IgA and C3 in the dermal papillary blood vessels. Treatment with prednisone provided improvement of symptoms, but steroids were unsuccessfully tapered even with the addition of immunosuppressive agents, including azathioprine and methotrexate. He continued through multiple treatments for a working diagnosis of HSP. Incidentally, he was noted to have a monoclonal IgA protein on serum electrophoresis. Cryoglobulins, hepatitis B and hepatitis C serologies were negative. Bone marrow aspirate and biopsy showed highly dysplastic plasma cells at 10.2%. IgA M protein subtype was entirely from subclass 1. The patient was diagnosed with IgA1-mediated Henoch-Schönlein purpura secondary to an IgA plasma cell dyscrasia classified as smoldering multiple myeloma. Subsequent treatment for neoplastic plasma cell disorder with lenalidomide and dexamethasone for 4 cycles followed by autologous peripheral blood stem cell transplant resulted in complete remission of IgA paraprotein and complete resolution of arthralgias and purpura.

IMPLICATIONS/DISCUSSION: Henoch-Schönlein purpura (HSP) is described as an immune-mediated, small vessel vasculitis associated with immunoglobulin A (IgA) deposition within the walls of involved vessels. HSP is a form of systemic vasculitis common in children with a majority of cases occurring between the ages of 3–15. HSP is much less common in adults, and in such cases is usually secondary to an underlying infectious, inflammatory or neoplastic cause. Typical presenting symptoms include purpura, joint pain, abdominal pain and renal disease, and characteristic pathology shows leukocytoclastic vasculitis and IgA immune complexes in affected organs. Interestingly, HSP is rarely seen in monoclonal IgA plasma cell dyscrasias as a paraneoplastic manifestation. IgA multiple myeloma, specifically IgA1 subtype, has been associated with HSP in a handful of cases. It is hypothesized that decreased sialylation of the hinge region of the IgA molecule may provoke aggregation, deposition and complement activation leading to deposition in organs leading to the development of HSP. Ongoing research suggests that with continued studies, new therapeutic targets may lead to specific biomarkers for disease-specific therapies. In an adult presenting with HSP, IgA multiple myeloma should be suspected.
AN UNEXPECTED PRESENTATION OF BREAST CANCER  
Sumana Devata1; Yee Chung Cheng1; Kurt Pfeifer1; 1Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 7856)

LEARNING OBJECTIVES: 1. Recognize both the common and rare causes of spontaneous tumor lysis syndrome. 2. Identify the metabolic derangements associated with tumor lysis syndrome.

CASE INFORMATION: A 58-year-old woman presented to oncology clinic for workup of a monoclonal gammopathy found during investigation of anemia. She also complained of a 20-pound weight loss, increasing fatigue and lightheadedness. She had refused health-screening evaluations in the past, and her last colonoscopy, pap smear and mammogram were 8–10 years prior to evaluation. Examination revealed right submandibular, left anterior cervical and left axillary lymphadenopathy. Neurological exam was notable for right facial droop and right ptosis. Breast examination revealed a large, firm area on the left upper outer quadrant with skin retraction, dimpling and mild erythema. Laboratory studies revealed hyperkalemia, hyperphosphatemia, hyperuricemia and elevated lactate dehydrogenase. CT of the neck, chest, abdomen and pelvis showed an irregular, speculated left breast mass with foci of hypoattenuation and extensive adjacent left axillary lymphadenopathy. Also detected were multiple neck lymph nodes, splenomegaly, a 5 mm right posterior lung nodule and a 17 mm spherical focus of hypoattenuation in the posterior liver. A pathologic, subacute fracture of the left posterior 5th rib and multiple lytic lesions in the bones were also reported. Her laboratory abnormalities improved with hydration and allopurinol, and bone marrow aspiration and biopsy revealed a bone marrow replaced with metastatic carcinoma consistent with primary breast cancer. Left breast biopsy demonstrated an invasive ductal carcinoma, and brain MRI showed diffuse skeletal metastatic disease and diffuse supratentorial meningeal metastatic disease with focal parenchymal invasion. The patient underwent whole brain, scalp block and sacral radiation therapy. She was started on palliative chemotherapy with paclitaxel, bevacizumab for four cycles with good disease response.

IMPLICATIONS/DISCUSSION: Acute tumor lysis syndrome is a metabolic derangement associated with hyperkalemia, hyperuricemia, hyperphosphatemia, hypocalcaemia and occasionally metabolic acidosis. Spontaneous development of this syndrome is most often seen with bulky hematologic malignancies, such as acute leukemia and lymphoma. Acute tumor lysis syndrome is less frequently seen with initial diagnosis of solid tumors but is well described after chemotherapy or radiation therapy. This causes lysis of tumor cells leading to increased amounts of cellular contents entering the blood stream. A Medline review of tumor lysis syndrome in solid tumors revealed only one prior case of spontaneous acute tumor lysis syndrome with breast cancer. In this report, spontaneous tumor lysis syndrome occurred prior to therapy in a woman with metastatic inflammatory breast cancer and it was suggested that the inflammatory breast carcinoma had a high growth fraction when compared to other breast cancers and accounted for spontaneous tumor lysis. Although spontaneous tumor lysis syndrome is uncommon in breast and other solid organ malignancies prior to treatment, our case demonstrates that it can occur and should therefore be considered during the evaluation of patients with solid tumors and metabolic derangements.

COUGH AND FEVER IN A 28 YEAR-OLD IV DRUG USER  
Monique Carreno 1; Curtis K Andrews1; 1Baystate Medical Center, Springfield, Massachusetts. (Tracking ID # 7894)

LEARNING OBJECTIVES: 1. Recognize that endocarditis may present without classic signs and symptoms. 2. Increase awareness of beta-lactam resistance among enterobacteriaceae species.

CASE INFORMATION: 28 year old male IV drug user presented to ER for evaluation of 3 days of body aches, sweats, nausea and vomiting with a week of productive cough and left-sided posterior pleuritic chest pain. He admitted to daily use of 300 mg of oxycodone and 20-30 bags of heroin intranasally and IV. Last use was four days prior to admission. PE: Vitals: T-100.7, P-95, RR-18, BP-98/64, O2 95% on RA. He appeared thin and pale, was diaphoretic with piloerection. RESP: no tachypnea, notable consolidative findings in the left lower lobe. CV: tachycardic, no murmur, normal pulses. Skin: track marks on the forearms bilaterally, no signs of infection. Laboratory and imaging: WBC 13,000, Hgb 11.5%, normal platelets. Electrolytes, BUN, Cr normal. Urine tox screen positive for opiates. CXR showed left lower lobe opacification consistent with pneumonia. He was started on azithromycin and ceftriaxone for community acquired pneumonia, as well as extended release morphine for active opiate withdrawal and back pain. He showed improvement in cough and dyspnea. On hospital day 5 he spiked fever of 101, had worse dyspnea and WBC of 16,000. Chest x-ray showed a right upper lobe lucency and a persistent lower lobe opacification. Ceftriaxone was stopped and vancomycin was started for possible MRSA pneumonia. A follow-up CT chest showed multiple cavitary lesions throughout bilateral lung fields, and PPD and HIV Ab were both negative. CT-guided aspiration of a left lower lobe lesion grew Enterobacter cloacae. Antibiotics were subsequently changed to meropenem based on culture sensitivities. Repeat exam on day 8 revealed systolic murmur and echocardiogram confirmed tricuspid regurgitation and an 8 mm mobile vegetation of the tricuspid valve. He had resolution of fevers on day 16, and hospital discharge on day 22 in good condition. He was discharged on oral levofloxacin due to active IV drug use.

IMPLICATIONS/DISCUSSION: Enterobacter endocarditis, although not a common cause of endocarditis, has been described previously in the literature. It most commonly occurs in the setting of prosthetic heart valves, though it has also been described in IV drug users. This case demonstrates several key points related to the diagnosis of endocarditis, as well as characteristics of Enterobacter as a pathogen. Acute endocarditis is classically found in the IV drug user and is manifested by predictable signs and symptoms including fever, heart murmur, vascular and embolic phenomenon as well as positive
blood cultures as detailed in the modified Duke Criteria. Our patient presented with fever and pulmonary findings consistent with pneumonia. He did not have a murmur early in his course, and the absence of vascular or embolic phenomena was verified several times. Follow-up imaging studies with findings consistent with septic pulmonary emboli prompted an echocardiogram that verified a tricuspid valve vegetation consistent with acute endocarditis. This case demonstrates the need for a high index of suspicion for endocarditis when the history suggests the diagnosis despite a lack of classic physical examination findings. Our case further demonstrates the phenomenon of beta-lactamase production by enterobacteriaceae. Our patient was started on ceftriaxone on admission for presumed pneumonia. He defervesed after several days, but became febrile and clinically deteriorated on day 5. We presumed that beta-lactamase production led to clinical worsening. It has been well described that the enterobacteriaceae produce several different forms of beta-lactamase, and that ceftriaxone in particular is known to be susceptible to these compounds. It has been recommended to avoid third generation cephalosporins in known Enterobacter infections due to resistance patterns.

**MY HEAD HURTS WHenever I URINATE** Fawad Aslam 1; Muhammad Qayyum2. 1Baylor College of Medicine, Houston, Texas; 2Sheikh Zayed Hospital, Lahore, N/A. (Tracking ID # 7908)

**LEARNING OBJECTIVES:** 1. Recognize that headaches and palpitations with urination are a classic feature of urinary bladder paragangliomas. 2. Manage a patient with urinary bladder paragangliomas.

**CASE INFORMATION:** A 40 year-old-gentleman with no past medical history presented to our clinic with about five years history of severe headaches, dizziness and palpitations while urinating. These symptoms would always occur during urination, although not on a daily basis. His symptoms had led him to decrease his water intake. He denied any other triggering event. He also denied any hematuria, diarrhea, facial flushing, itching or history of hypertension. His family history was unremarkable. On physical examination his vital signs were all within normal limits including a blood pressure of 130/90 mmHg. Rest of the systemic exam was also unremarkable. A blood pressure reading during one of his episodes was recorded at 200/110 mmHg. Routine investigations were normal. An ultrasound showed a lobulated mass (35 X 27 mm) along the left anterolateral wall of the urinary bladder exhibiting vascularity. Computed tomography (CT) scan revealed a lobulated enhancing mass measuring 27 × 21 mm in the left inferolateral wall of the urinary bladder with prominent feeding vessels. At this point, a paraganglioma of the urinary bladder was suspected. 24-hours Urine Vanilyl Mandelic Acid (VMA) level and an I-131-MIBG wholebody scan were inconclusive. Cystoscopy revealed a small pedunculated mass six centimeters below the trigone on the anterior wall. He was started on prazosin and propranolol and then underwent a transurethral resection of the bladdertumor (TURBT). Histopathology demonstrated focal Zellbellian pattern and chromogranin immunoreactive cytoplasmic granules; confirming a paraganglioma.

**IMPLICATIONS/DISCUSSION:** Symptoms of catecholamine-hyper-secretion during micturition is a classical finding associated with urinary bladder paragangliomas. These neoplasms account for less than 0.06% of all bladder tumors, and less than 1% of all paragangliomas. These patients suffer and may remain undiagnosed for years. This case serves to highlight awareness about this very rare but otherwise easily diagnosed and treated condition. Paraganglia are neural crest cell derivatives that extend along the paravertebral axis from the neck to the pelvis. Adrenal chromaffin tumors are referred to as pheochromocytomas while all extra-adrenal forms are called paragangliomas. Signs and symptoms of catecholamine excess include episodic hypertension (64%), headache (26%), sweating (25%), and palpitations (21%). 6 The pathognomonic triad of hypertension, intermittent hematuria and symptom onset with micturition manifests in only 50% of cases. Symptoms occur from many times daily to monthly with each spell usually lasting about 20 minutes. Measurement of 24 hours urinary metanephrines is the screening test of choice with a sensitivity of 87-90% and specificity of 99%. VMA levels are less accurate. The relative superiority of CT versus MRI has not been established for localization. Functional imaging like I-131 or position emission tomography is indicated if the lesion is obscure or suspicious for metastasis. Transurethral resection, partial or total cystectomy is the treatment of choice. Annual follow-up with metanephrines is warranted for there is a 19-50% risk of malignancy. First degree relatives need screening since about 25% of paragangliomas are hereditary.

**A HEARTBREAKING INFECTION** Muneeb Mohammad 1; Junaid Bhutto1. 1Tulane University, New Orleans, Louisiana. (Tracking ID # 7987)

**LEARNING OBJECTIVES:** 1. Recognize the clinical presentation of infective endocarditis. 2. Identify factors determining clinical outcome, particularly ESRD. Understand the diagnostic utility of new onset murmur.

**CASE INFORMATION:** A 29 year-old man presented with three days of worsening fevers, chills, and diaphoresis after a dialysis session. He also reported generalized malaise, decreased appetite, nausea, and vomiting. He had had eight dialysis catheters placed and replaced in the past. The patient had no history of drug use. He was tachycardic and diaphoretic. A new III/V murmur was auscultated over the aortic area, in association with a left ventricular heave. His lungs were clear bilaterally. He had a dialysis catheter in his left femoral region without surrounding erythema or tenderness. No drainage was noted. There were no splinter hemorrhages or peripheral skin lesion. An EKG demonstrated sinus tachycardia, and a chest x-ray was normal. Electrolytes and hematological studies were normal. An echocardiogram revealed severe aortic regurgitation and a large aortic root abscess, with flow through both the aortic valve and abscess cavity. The patient was started on antibiotics and prepped for surgical intervention. Unfortunately, he did not survive the procedure. Post-mortem, blood and abscess cultures were positive for MRSA and Enterococcus faecalis.

**IMPLICATIONS/DISCUSSION:** A new onset heart murmur can be a diagnostic clue for the internist, and dictates further diagnostic evaluation. In our patient, the history of multi-
plediasis catheters put him at risk for bacteremia, and subsequent endocarditis. His clinical presentation satisfied two major and two minor Duke’s criteria for diagnosis, specifically positive blood cultures and echocardiographic findings (as major), and fever and predisposing factor (as minor). Patients on hemodialysis have a high rate of infective endocarditis than the healthy individual. Various organisms can play a role, but S. aureus is seen as the most common culprit. The mortality in hemodialysis patients with endocarditis is high, especially with MRSA Group E + organisms. If the patient also has an abscess from the endocarditis, the mortality increases sharply, because (and despite) the vascular surgery that must be pursued. The outcome without surgery is unacceptable higher. Risk factors for more serious disease include anatomic location (left vs. right), prosthetic vs. native valve, age, and associated comorbidities. Different methods have been used to prevent dialysis catheter infections. Antibiotic locks have been shown to decrease blood stream infection but increase bacterial resistance. This can up the ante in terms of disease lethality. Therefore, the internist has to be vigilant in ensuring that a thorough workup is done before endocarditis is excluded from the differential. With a high suspicion, a transthoracic echocardiogram should be followed up with a transesophageal echocardiogram, even in the absence of positive blood cultures. In acutely ill patients with endocarditis on transthoracic echocardiogram, a transesophageal echocardiogram may be done to evaluate for abscesses. Such measure can often be the difference between life and death in the vulnerable hemodialysis population.

LEARNING OBJECTIVES: 1. Recognize the clinical presentation of disseminated N. gonorrhoeae. 2. Identify the risk factors for disseminated disease. Outline treatment options and therapeutic measures.

CASE INFORMATION: A 25 year-old woman presented with scattered pustular lesions over her body for three days, accompanied by high fevers. These lesions started on her arms and the dorsum of her hands, later spreading to her legs and face. The area surrounding the lesions was tender, erythematous, and edematous. The lesions grew to about two centimeters in size before rupturing. The patient had no history of STDs and was sexually active with only one partner. The patient was initially thought to have folliculitis, but later complained of right knee and elbow arthritis. A pelvic exam was subsequently performed with cervical and blood cultures coming back positive for Neisseria gonorrhoeae.

IMPLICATIONS/DISCUSSION: New rashes are a commonly-encountered complaint for the internist. It is important to note associated signs and symptoms along with a careful history to help delineate a differential. In our patient, herpolyarticular joint pain and fever certainly brought disseminated gonococcal infection (DGCI) to the forefront. Occurring in only 0.5 to 3% of gonorrhea cases, DGCI can easily be missed as a cause of pustular rash or arthritis. It is important to remember that a careful history may be non-revealing for high-risk behavior. Risk factors for DGCI and urogenital gonorrhea include female gender, pregnancy, menses, and terminal component complement deficiencies since submucosal vessels in the endometrium are more exposed to the organism. Classic manifestations include asymmetric migratory arthritis, tenosynovitis, and dermatitis (both pustular and macular). Rarely, endocarditis, perirenalitis, meningitis, or osteomyelitis can develop. Sites for skin changes typically involve the hands, knees, and ankles. It is vital for the clinician to be familiar with the expression of the disease, as blood cultures are typically negative, and other diagnostic tests may also be non-revealing. Current CDC guidelines suggest treatment with Ceftriaxone 1g IM or IV q24h and should be given for 24-48 h after clinical improvement. After discontinuation of IM or IV therapy, Cefixime 400 mg PO BID is recommended for seven days. All partners should be treated, and patients should be screened for co-infection with other STDs, including Chlamydia, Treponemal disease, and HIV. Of note, it is also important to address the psychological impact the diagnosis may have on the patient and his/her relationship with partners. With rashes being a very common complaint encountered in primary care, it is important for the internist to be familiar with not only the usual pathogens (e.g. MRSA), but also infrequent causes.

ADULT EPIGLOTTITS John Moscona 1; John Moscona 1.
1Tulane University, New Orleans, Louisiana. (Tracking ID # 8008)

LEARNING OBJECTIVES: 1. Recognize the clinical presentation of adult epiglottitis. 2. Identify the differential diagnosis of acute upper airway obstruction. 3. Understand the management of adult epiglottitis.

CASE INFORMATION: A 70 year-old man presented with twelve hours of sore throat, cough, and increasing respiratory distress. On exam, he was tachycardic and tachypneic with a fever of 101.5°F. His breathing was labored and stridorous. He had no angioedema. His oropharynx was erythematous without exudate. His anterior neck was tender. Breath sounds were decreased in all lungs fields with wheezing or crackles. The patient was intubated and placed on mechanical ventilation in the intensive care unit. Intubation was difficult due to edema of the oropharynx and epiglottitis. Blood cultures were drawn. Empiric antibiostatic therapy with ceftriaxone and clindamycin was begun. An neck CT revealed extensive edema of the pharyngeal soft tissues from thenopharynx to the true vocal cords including the epiglottis. Blood cultures were positive for Beta-lactamase negative Haemophilus Influenzae one day after admission. He was treated for acute Haemophilus Influenzae epiglottitis with ceftriaxone and dexamethasone. Three days after admission, repeat neck CT displayed moderate improvement of the pharyngeal edema. The patient was extubated on his fifth day of hospitalization without complication. His clinical condition quickly improved, and he was discharged with oral amoxicillin-clavulanate antibiotic therapy. The blood sample received by the Louisiana central laboratory was positive for Haemophilus Influenza type B.

IMPLICATIONS/DISCUSSION: Epiglottitis describes acute inflammation of the epiglottis and surrounding structures. The incidence of childhood epiglottitis has decreased due to the Haemophilus Influenzae type B vaccine, yet the incidence
A RABID PROGRESSION TO DEATH
Reinaldo Quevedo 1;
Junaid Bhutto1. 1Tulane University, New Orleans, Louisiana. (Tracking ID # 8014)

LEARNING OBJECTIVES: 1. Recognize the presentation and natural course of rabies infection. 2. Understand the importance of early treatment in rabies infection. Understand the significant mortality associated with rabies infection.

CASE INFORMATION: A 19-year-old man presented with one day of pain and numbness in his left arm. This was accompanied by left sided facial numbness. The patient reported chest pain, neck pain, nausea, and a dry cough as well. He denied fever, chills, night sweats, or a headache. The patient was a landscaper who had recently arrived from Mexico. The patient had a temperature of 38.4°C, a heart rate of 110 bpm, respirations of 22 breaths/min, and a blood pressure of 165/119 mmHg. He appeared uncomfortable and dyspneic, with tachypnea, a tachycardia, and clear lung sounds bilaterally. Laboratory studies revealed a WBC of 11.9 x 10^3/UL, with lymphocyte predominance. The CSF culture was negative for bacteria, HIV, syphilis, herpes, streptococci species, and anaerobes. The average age for diagnosis is between 42 and 48 years old. Adults most often experience sore throat, while odynophagia, dysphagia, cough, dyspnea, drooling, hoarseness, and stridor are observed more frequently in children. Other physical findings include fever, tachypnea, lymphadenopathy, and tendingness of the anterior neck. The differential diagnosis for upper-airway obstruction includes epiglottitis, pharyngitis, infectious mononucleosis, tonsillitis, peritonsillar abscess, Ludwig angina, laryngitis, angioedema, gastroesophageal reflux disease, tumor, trauma, and inhalation or ingestional injury. Medical therapy begins with broad-spectrum antibiotics to cover gram-positive organisms, Haemophilus influenzae type B, and anaerobes. Although controversial, corticosteroids are often given to reduce swelling. Additionally, determining which patients require airway intervention can be difficult. Stridor, muffled voice, rapid clinical course, diabetes mellitus, visualization of less than half of the posterior vocal folds, and extension of swelling to the arytenoids are factors that have been associated with the need for airway intervention. Although now uncommon in the pediatric setting, epiglottitis should not be overlooked in the differential diagnosis of an adult who presents with symptoms of upper-airway obstruction.

A RABID PROGRESSION TO DEATH
Reinaldo Quevedo 1;
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IMPLICATIONS/DISCUSSION: Rabies is transmitted from rabid animals. In developing countries, a dog bite is usually the source of inoculation. Following an incubation period of 3–6 months, a prodrome occurs in which patients report nonspecific flu-like symptoms for no more than one week. Once the prodrome is complete, the patient enters into one of three symptom phases: 1. Encephalitic: Hydrophobia, aerophobia, pharyngeal spasms, and hyperactivity. 2. Paralytic: Quadraparesis with sphincter involvement, vomiting. 3. Atypical: Neuropathic pain, sensory and motor deficits, cranial nerve palsies, and brainstem signs. Rabies is universally fatal once symptomatic. The key to treatment is an early evidence-based clinical diagnosis. Exposed patients are treated with both immunoglobulin and vaccination. Initially, rabid animals manifest marked behavioral changes becoming overly friendly, aggressive, or fearless. They often engage in excessive licking. Subsequently, the animal becomes extremely excitable, restless, and aggressive, with increased salivation, before progressing to the fatal “paralytic stage.” Animal control should be contacted immediately regarding any potentially rabid animal. Individuals should be evaluated for possible exposure and potential treatment if there was any contact with the animal. The internist rarely deals with animal bites. However, it is important to know the presentation of rabies. More importantly, the internist should know how to proceed in cases of bites from suspicious animals, as there are few other diseases that have a treatment window as silent and important as rabies.

TWO SPECIALTIES ARE WORSE THAN ONE
Adrian Baudy 1;
Brian Payne1. 1Tulane University, New Orleans, Louisiana. (Tracking ID # 8016)

LEARNING OBJECTIVES: 1. Identify the differential diagnosis of acute renal failure in patients with liver disease. 2. Understand the diagnostic criteria for hepatorenal syndrome.

CASE INFORMATION: A 50-year-old man presented with progressively worsening abdominal pain and distention of three weeks duration. He noted associated weight gain, decreased urine output and lower extremity edema. His vital signs were normal. He had a distended abdomen with bilateral flank tenderness, a positive fluid wave, and sparse abdominal and lower extremity palpable purpura. He had 3+ pitting edema up to his sacrum. Laboratory studies revealed a Sodium 132, BUN 63, creatinine 2.6, INR 1.4, Total protein 6, albumin 1.9, T bili 1.0, AST 113, ALT 62, alk phos 144, platelets 49,000. Urine sodium 12, urine creatinine 187, protein/Cr ratio 13. Hep C positive, C3 31, C4 1.5, and Cryoglobulin positive. Urinalysis with large blood and 57 RBCs, >600 protein. Urine Osm 351 and Serum Osm 308

IMPLICATIONS/DISCUSSION: Acute renal failure in patients with liver disease is a problem commonly encountered by general internists. Renal and liver disease often present together, whether from multi-organ failure or result from failure of one or the other independently. Renal failure is often multifactorial, but is normally presents as pre-renal or intrinsically renal failure. Of the pre-renal causes renal hypoperfusion is the central patho-
genetic mechanism. This is seen with iatrogenically with diuretic use. And intrinsically with Hepatorenal syndrome (HRS). With HRS there is an intense intrarenal vasoconstriction in the presence of vasodilatation of systemic and splanchic circulation. Intrinsic renal disease can result from exposure to certain drugs, toxins, or infections. With the latter normally leading to glomerulopathy. In our patient with Hep C, purpura, cryoglobulins, and low sodium, urine osmolality greater than serum osmolality, and proteinuria of 13 grams/day it appears that he has multifactorial cause of renal dysfunction secondary to cryoglobulinemia and HRS. HRS is a form of functional renal failure that often accompanies advanced liver disease. Two patterns of HRS can be identified. Type 1 is characterized by doubling serum creatinine to a level greater than 2.5 in less than 2 weeks. Type 2 is more slowly progressive and chronic. The diagnosis of HRS is one of exclusion and depends mainly on the level of serum creatinine. The diagnostic criteria of HRS has proposed by the International Ascites Club. Only the major criteria are necessary for the diagnosis of HRS, while the minor criteria are supportive.

**HYPERTENSIVE HERESY: A “SALTY” SOLUTION TO A DIAGNOSTIC DILEMMA**

Lauren Doliner 1; Jillian Catalanotti1. 1George Washington University, Washington, District of Columbia. (Tracking ID # 8058)

**LEARNING OBJECTIVES:** 1. Recognize when to test for primary aldosteronism (PA). 2. Interpret initial and confirmatory testing for PA.

**CASE INFORMATION:** A 22 year-old woman with no past medical history and no primary care physician presented to the emergency room with menorrhagia. She was found to have a blood pressure of 155/96 and a hemoglobin of 5. She was transfused 3u PRBC and started on oral contraceptive pills and oral iron. During a gynecology follow-up visit her BP was 163/122 and pelvic US was normal. Her treatment was unchanged and she was referred to Internal Medicine for management of hypertension. The patient had no complaints and denied headaches, vision changes, chest pain and shortness of breath. She denied tobacco, alcohol, and drug use. Family history was notable for hypertension in her mother. BP measured in both arms was 158/104 and 146/101. Her BMI was 19. Physical exam was unremarkable. OCPs were discontinued and one month later her BP was 148/100. Secondary hypertension workup was initiated including TSH, AM cortisol, plasma aldosterone-renin ratio (ARR), UA, and echocardiogram. She was found to have an elevated ARR of 50.2 and normal potassium of 3.6. She was referred to endocrinology, where an IV saline infusion test revealed aldosterone 34.9 ng/dl at the end of infusion. CT scan of the abdomen showed no adrenal masses. She was diagnosed with primary aldosteronism and sent back to Medicine with the note that her PCP could select any hypertensive management. She was treated with spironolactone 25 mg and repeat BP improved to 132/87; potassium remained in normal range.

**IMPLICATIONS/DISCUSSION:** Primary aldosteronism has a prevalence of 5-12% among patients with hypertension. Workup for this secondary cause of hypertension should be initiated in all patients with hypertension and hypokalemia, patients less than 25 years-old with hypertension, patients with resistant hypertension, and patients with an incidental adrenal mass and hypertension. ARR is the initial test, and a ratio greater than 30 has a high sensitivity (90%, negative predictive value 93-99%), however confirmatory tests are needed due to the high rate of false positives, which can occur in renal failure and when using sympatholytic drugs (beta-blockers, clonidine, alpha-methylldopa). False negatives occur with severe dietary salt restriction, pregnancy, hypokalemia, malignant hypertension and when using drugs that stimulate plasma renin activity (diuretics, dihydropyridine calcium channel blockers, ACE-Is and ARBs). After a positive ARR, confirmatory testing is required. The simplest test is the IV saline suppression test, in which 2LNS are infused over 4 hours and aldosterone levels are measured. In PA, control of aldosterone secretion is lost and will not be suppressed in response to excessive salt and water load. A cut-off aldosterone level of 7 ng/dl has a sensitivity of 88% and a specificity of 100%. After diagnosis of PA is confirmed, one must differentiate aldosterone producing adenoma (APA) from bilateral adrenal hyperplasia as the cause. Although adrenal venous sampling (AVS) is the most reliable way to do so, CT scan can be used when AVS is unavailable. Surgery is the curative treatment for APA; if no mass is found on CT, patients are treated medically. Regardless of hypo- or normokalemia, aldosterone receptor agonists (spironolactone, eplerenone) or amiloride are recommended as first-line treatments.

**REFRACTORY CHEST PAIN IN A 36-YEAR-OLD FEMALE**

Danesh Modi 1; Danesh Modi1. 1Temple University Hospital, Philadelphia, Pennsylvania. (Tracking ID # 8084)

**LEARNING OBJECTIVES:** 1. Diagnose and manage variant angina. 2. Recognize potential limitations of medical therapy in treating variant angina and suggest alternative solutions.

**CASE INFORMATION:** A 36-year-old G4P4 African-American female with a past medical history of asthma and a recently diagnosed acute myocardial infarction status post percutaneous coronary intervention, was admitted with a two-day history of substernal chest pain. The pain was described as “sharp,” intermittent, non-radiating, non-pleuritic, and non-reproducible. There were no associated symptoms. Sublingual nitroglycerin provided minimal relief. She recently quit smoking and was not taking contraception. On exam, she was found to be in no acute distress, without JVD or edema, and her cardiopulmonary examination was unremarkable. A chest radiograph revealed mild cardiomegaly. Serial electrocardiograms revealed transient ST-segment elevation in the anterior leads. Urine drug screen, beta-hCG, and TSH were normal. Cardiac biomarkers were elevated. The patient underwent repeat catheterization, which revealed severe vasospasm that resolved with intracoronary nitroglycerin. The patient was diagnosed with variant angina and discharged on calcium channel blockers and nitrates. Unfortunately, within two weeks, the patient was readmitted with chest pain. ECG again revealed transient ST-segment elevations. Fasting lipids were normal but a C-reactive protein was highly elevated. She was started on a statin, magnesium, vitamin supplementation, and increased doses of her anti-ischemic medications. Further
history revealed that her angina was not associated with her menstrual cycle. A hypercoagulable and collagen vascular disease workup was unrevealing. She was admitted three other times in as many months. We were unable to make her entirely chest pain free.

**IMPLICATIONS/DISCUSSION:** Variant angina, also known as Prinzmetal’s angina, is a debilitating and rare disorder. It most commonly affects younger women and is characterized by transient episodes of angina with ST-segment elevation that can lead to severe coronary ischemia, arrhythmia, and cardiomyopathy. With prolonged vasospasm, intracoronary thrombus can occur, which leads to frank myocardial infarction and represents one the diagnostic dilemmas in this case. While the pathogenesis is incompletely understood, endothelial dysfunction, oxidative stress, and the autonomic nervous system are thought to be involved. In addition, some data suggests an association with the menstrual cycle. Substance abuse is a known risk factor. Diagnosis can be made with provocative maneuvers such as hyperventilation or ergonovine administration, but these tests can precipitate refractory vasospasm. Standard medical therapy involves nitrates with calcium channel blockers. In addition, magnesium, vitamins C and E, and statins may favorably affect endothelial dysfunction and oxidative stress. In refractory cases, sympathetic denervation may be indicated.

**SUCCESSFUL TREATMENT OF BLEOMYCIN INDUCED PULMONARY TOXICITY WITH STEROIDS**

Priyanka Ashish Vyas 1; olugbodi akintomi 2; Anthony Donato 3. 1Reading Hospital and Medical Center, Wyomissing, Pennsylvania; 2Reading Hospital and Medical Center, Birdsboro, Pennsylvania. (Tracking ID # 8118)

**LEARNING OBJECTIVES:**
1. Early steroid treatment can prevent progressive lung damage in bleomycin induced lung toxicity.
2. Clear guideline needs to established regarding lung function monitoring during bleomycin treatment.

**CASE INFORMATION:**
A 62-year old female undergoing chemotherapy for non-Hodgkin’s lymphoma presented to emergency care with complaints of gradual worsening of shortness of breath over two days, associated dry cough, chest pain on deep inspiration and a single episode of subjective fever with chills. She had received 5 cycles of chemotherapy with Adriamycin, Bleomycin, Vinblastine and Dacarbazine (ABVD), with last cycle completed 15 days before admission. On presentation, she was afebrile, normotensive but in moderate respiratory distress with oxygen saturation of 85% on room air. Lung examination revealed diffuse bilateral dry crackles. Initial laboratory findings showed white cell counts of 16,100 cells/microliter with 13% bands. CT scan of her thorax showed extensive bilateral mixed interstitial and alveolar infiltrates. Empiric antibiotics were started, and bronchoscopy was performed. Bronchial lavage studies were negative for infection and malignancy. Transbronchial biopsy showed “Diffuse Alveolar Damage.” On third day, she was started on prednisone 60 mg orally daily and antibiotics were discontinued. She responded significantly over next four days. On the day of discharge, her ambulatory oxygen saturation was 95% on room air. She was discharged on one month course of prednisone. Chemotherapy was changed to AVD. Follow up CT thorax after one month showed significant improvement in appearance of the lungs.

**IMPLICATIONS/DISCUSSION:** The major limitation of bleomycin as an antineoplastic agent is life-threatening pulmonary fibrosis, which occurs in up to 10% of patients. Bleomycin is associated with four types of pulmonary toxicity: subacute progressive pulmonary fibrosis, hypersensitivity pneumonitis, organizing pneumonia and acute chest pain syndrome (while rapid infusion). The lung toxicity is associated with age, smoking history, cumulative dose of bleomycin, adjuvant chemotherapy drugs, high fraction of inspired oxygen, radiation therapy, renal insufficiency and adjuvant colony stimulating factor. National Comprehensive Cancer Network (NCCN) guideline recommends baseline pulmonary function test (PFT) before starting bleomycin, but there is no consensus regarding subsequent monitoring with PFT while patient is on bleomycin. Some studies have shown significant pulmonary improvement with early use of steroids. Early detection of bleomycin induced pulmonary toxicity and treatment with steroids can change patient outcome.

**DOBUTAMINE STRESS TEST INDUCED VENTRICULAR TACHYCARDIA**

Priyanka Ashish Vyas 1; Shuchi Gulati 2; Anthony Donato 3. 1Reading Hospital and Medical Center, Wyomissing, Pennsylvania; 2Reading Hospital and Medical Center, Wyomissing, Pennsylvania; 3Reading Hospital and Medical Center, Birdsboro, Pennsylvania. (Tracking ID # 8120)

**LEARNING OBJECTIVES:**
1. Predictive value of Dobutamine stress test induced ventricular tachycardia for coronary artery disease is low.
2. Dobutamine stress echocardiography induced ventricular tachycardia does not have any prognostic significance in patients with normal heart function.

**CASE INFORMATION:**
A 63-year old female underwent Dobutamine stress echocardiogram (DSE) after a single episode of atypical chest pain. She had no prior cardiac disease and had only controlled hypertension as a cardiovascular risk. Baseline EKG was normal, including QT interval. Echocardiogram at rest showed no significant wall motion abnormality. During stress testing following infusion of dobutamine, she developed chest tightness with non-sustained ventricular tachycardia of 16 beats. At peak heart rate, there was no obvious finding suggestive of ischemia. Patient was admitted to risk stratify further for coronary disease. Coronary angiography showed low normal ejection fraction and mild luminal irregularities. Comprehensive electrophysiology study did not elicit inducible arrhythmias. Patient was reassured and discharged home.

**IMPLICATIONS/DISCUSSION:** Cardiac arrhythmias are concerning but uncommon side effects associated with dobutamine stress echocardiography. Ventricular tachycardia occurs in about 0.1 to 0.3 percent of studies. Patients with systolic dysfunction are at increased risk for arrhythmias on dobutamine stress testing. But studies have failed to show any predictive value of dobutamine stress test induced ventricular tachycardia for coronary artery disease. Also, patients with dobutamine stress echocardiography induced ventricular tachycardia have similar long term outcome compared to the patients without arrhythmias.
MY WHITE CELLS ARE EATING MY OTHER CELLS - A CASE OF HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS Diwakar Davar 1; Roy E Smith1. 1University of Pittsburgh Medical Centers, Pittsburgh, Pennsylvania. (Tracking ID # 8178)

LEARNING OBJECTIVES: 1. Recognize the cardinal features that suggest hemophagocytic lymphohistiocytosis. 2. Manage critically ill patients with hemophagocytic lymphohistiocytosis.

CASE INFORMATION: A 47 year old Caucasian male with no past history presented with 4 days of peri-umbilical abdominal pain, nausea and fevers to 102 F. A few days prior to presentation, he and his wife ate at Longhorn Steakhouse and she was unwell at the time of presentation with a diarrheal illness. Travel history was remarkable for a camping trip 1 week prior and a possible tick bite at the time. Found to have progressively increasing transaminitis and direct hyperbilirubinemia. Abdominal imaging revealed borderline splenomegaly. Infectious workup was negative for viral, fungal, Rickettsial and bacterial etiologies. Developed severe shock requiring pressors, disseminated intra-vascular coagulation and progressive hypoxemic respiratory failure requiring intubation. Blood smears showed activated neutrophils with toxic granulations. Ferritin level was greater than 1500 ng/mL and triglyceride level was 345 mg/dL. Bone marrow aspirates revealed hemophagocytic histiocytes. Though there was no evidence of a monoclonal proliferation on flow cytometry or morphological analysis, T-cell gene rearrangement studies were suggestive of a clonal proliferation. Chemotherapy was instituted with dexamethasone and cyclosporine but poorly tolerated with elevations of liver enzymes. Developed extremity gangrene necessitating bilateral below knee amputations. Clinical course stabilized eventually and he was discharged to pursue outpatient chemotherapy.

IMPLICATIONS/DISCUSSION: Hemophagocytic lymphohistiocytosis or the macrophage activation syndrome is a rare condition with potentially fatal consequences. Whilst the incidence is 1 case per 1–2 million children, the incidence in the adult population is unknown. The hallmarks of the condition are hepato-splenomegaly, rash, cytopenias, hyper-triglycerideremia and/or hypofibrinogenemia. Pathognomic hemophagocytes may be found in the bone marrow or more rarely on peripheral blood smears. Given the rarity of the disease and the lack of controlled clinical trials, there are no clear recommendations governing treatment in adults. Despite prompt recognition and treatment, the acute mortality of this condition is near 50%. Several chemotherapeutic protocols have been developed based on studies in children and utilize agents like dexamethasone, etoposide and cyclosporine. Early recognition of this condition is vital and permits prompt institution of therapy.

VERTEBRAL ARTERY DISSECTION: ACUTE STROKE IN A YOUNG PHYSICIAN. Rebecca Karp 1; Jennifer Potter1. 1Beth Israel Deaconess Medical Center, Boston, Massachusetts. (Tracking ID # 8202)

LEARNING OBJECTIVES: 1. To identify vertebral artery dissection as a cause of acute stroke in an otherwise healthy individual. 2. Discuss risk factors, diagnosis, and treatment of vertebral artery dissection.

CASE INFORMATION: A 51-year-old primary care physician with a PMH significant for angioectasia of the small intestine, GERD, and osteopenia experienced transient loss of sight in the left upper visual field followed by an occipital headache while completing a 40-mile bike ride. The headache rapidly improved after a dose of acetaminophen, and she attributed the symptoms to migraine. Later the same morning, the patient developed acute onset vertigo, ataxic gait, and vomiting and was transported to a community hospital. Two hours after symptom onset, she underwent head CT, which was negative for acute pathology. She was prescribed anti-emetics and meclizine, and discharged with a diagnosis of benign positional vertigo. The following morning, the patient continued to experience vertigo, occipital headache, and was unable to walk. She was seen urgently in Neurology Clinic where physical exam was significant for gait ataxia and “veering to the left.” MRI/MRA demonstrated small infarcts involving the right cerebellum, right occipital lobe, and right thalamus; a CTA revealed dissection of the external right vertebral artery. She was admitted to the hospital and started on a heparin drip, aspirin, and a statin. A CT of the chest was negative for right-to-left shunting. The patient denied spinal trauma, though she had recently begun an exercise program that included hyperextension of the neck. On the third hospital day, her symptoms had improved, and she was discharged on aspirin, simvastatin, Lovenox, and Coumadin. She continues to do well and has returned to work full-time.

IMPLICATIONS/DISCUSSION: External vertebral artery dissection (VAD) should always be considered in a patient with acute onset headache, vertigo, and ischemic symptoms. Dissection results from shearing of the arterial intimal wall leading to intramural hematoma formation.[1] When the vessel tears, thrombus forms at the exposed site and can embolize throughout the vertebral artery territory. Ischemic symptoms may also be the consequence of diminished flow within a narrowed arterial lumen, causing reduced blood supply to the brain. External VAD is a common cause of stroke in young patients and is often the result of trauma (i.e. chiropractic maneuvers and whiplash) or pre-existing arteriopathies (i.e. collagen vascular diseases and fibromuscular dysplasia).[2] Diagnosis is made via clinical exam and confirmed with imaging. The gold standard for diagnosing VAD is angiography; however, MRI/MRA and CTA are commonly employed due to their convenience, safety, and accuracy. Treatment of VAD typically involves intravenous heparin with transition to Coumadin for 3–6 months. However, some experts are increasingly recommending anti-platelet therapy alone. A systematic review by Engelter et al. recommended immediate anticoagulation in patients with evidence of frequent microemboli, multiple embolic infarctions, or a free-floating thrombus.[3] Rarely, VAD is treated with endovascular repair, however most patients do well with medical treatment alone. [1] Goayl Manu et. al. “The Diagnosis and Management of Supraaortic Arterial Dissections,” Curr Opin Neurol. 2009. 22:80–89. [2] Thanvi B. et al. “Carotid and Vertebral Artery Dissection Syndromes.” Postgraduate Medical Journal (of the BMJ) 2005; 81: 383–388. [3] Engelter S, Brandt T,Debette S, et al. “Antiplatelets Versus Anticoagulation in Cervical Artery Dissection.” Stroke 2007; 38:2605–2611.
A HIGH THAT COSTS TOO MUCH

LEARNING OBJECTIVES: 1. Recognize the increased myopathy with concomitant use of Statins and CYP3A4 inhibitors. 2. Recognize drug-drug interaction in the differential.

CASE INFORMATION: A 74-year-old woman presented after a fall without loss of consciousness. She had bilateral lower extremity weakness for two days prior to the event. She denied any head trauma, urinary incontinence, muscle pains or changes in urine color. Although she was ambulatory before this, she was unable to walk independently. Her also had hypertension, diabetes mellitus, and dementia. Shewas afebrile, her heart rate was 91 bpm, and her blood pressure was 109/71 mmHg. She was alert and oriented. Herneurological exam was unremarkable. Cardiac, pulmonary and abdominal exams were normal. Her serum creatinine was 1.5 mg/dL (baseline 0.9); aspartate aminotransferase (AST) and alanine aminotransferase (ALT) of 130 U/L and 63 U/L respectively. Her EKG was sinus rhythm. Urinalysis revealed moderate blood but urine microscopy showed no RBCs/HPF. Further evaluation revealed a serum creatine kinase (CK) of 3970 U/L. A month prior, the patient had been started on simvastatin. A week later, she was treated withamoxicillin, clarithromycin, and omeprazole for Helicobacter Pylori.

IMPLICATIONS/DISCUSSION: Medications prescribed have interactions. Although major interactions are well known, some interactions are still being discovered and have not been completely understood. This patient was diagnosed with rhabdomyolysis, and the insult was found to be concomitant use of simvastatin and clarithromycin. While certain associations can be incidental, the Naranjo scaleindicated a causal association was probable. Statins are metabolized in the liver by cytochrome P450 isoenzyme-CYP3A4. Clarithromycin inhibits CYP3A4 and increases serum statin levels, which leads to toxicity. Other inhibitors of CYP3A4 include Erythromycin, Cyclosporine, antifungals, HIV protease inhibitors, Amiodarone, and Verapamil. Rhabdomyolysis is usually caused by trauma, excessive muscle activity, excessive alcohol intake, and medications such as statins. The condition can be lethal when associated with significant electrolyte abnormalities, renal failure, and acidosis. Treatment involves stopping further muscle injury by removing the insult, and hydrating the patient aggressively to establish a constant urine output. However, the use of mannitol for diuresis remains controversial. In this patient, simvastatin was discontinued and she was given intravenous fluids. She recovered well and was discharged. A recent study showed that 25% of patients recently started on a statin also received a CYP3A4 inhibitor within one year. The modern internist has many medications at his/her disposal, increasing the possibility of such drug interactions. The internist has to be vigilant in identifying such interactions.
CASE INFORMATION: A 38-year-old man presented with one week of coffee-ground emesis, three days of dysuria, and a chronic complaint of lower extremity myalgias. The patient also noted a non-tender skin rash that erupted over the past three weeks. He had noted similar rashes over the past year, but they had spontaneously resolved. Vitalsigns were normal. The patient had epigastric tenderness as well as tenderness in the lower quadrants with guarding. He had small, non-blanching nodules on the medial sides of his legs and the extensor surfaces of his arms. The patient had a white blood count of 11.9, potassium of 3.3, creatinine kinase of 274, and a normal AST, ALT, and lipase. Urine culture had an Enterococcus colony of 100,000. Endoscopy showed a duodenal ulcer that was positive for H. pylori. ESR, CRP, RF, IgA and ANA were all within normal range. The patient was found to have a positive hepatitis C antibody, and dermatologic biopsy showed erythema nodosum.

IMPLICATIONS/DISCUSSION: Hepatitis C is an asingle-stranded RNA virus affecting primarily the liver that becomes chronic in more than 80% of adults infected. It is imperative for internists to identify hepatitis early inits clinical course. Recognition of the extra-hepatic manifestations may be important in early detection to decrease the progression to cirrhosis. Hepatitis C has multiple extra-hepatic manifestations; most often autoimmune or lymphoproliferative in nature, that can present on almost any organ system, including the skin, kidneys, brain, pulmonary, cardiovascular, and endocrine. When the virus causes cryoglobulinemia, it forms immune complexes in multiple organs and blood vessels. Erythema nodosum is a dermatological disorder characterized by erythematous plaques and nodules on the extensor surfaces of the extremities. It is a reactive process that can be triggered by many causes, including infections such as hepatitis C, drugs, autoimmune disorders, and malignancies. This hypersensitivity response results from deposition of immune complexes in subcutaneous tissue. The lesions spontaneously appear and regress and can be painful. Most cases of erythema nodosum resolve spontaneously in three to four weeks. Treatment is to address the underlying condition. Our patient had gastrointestinal complaints which could be attributed to his ulcer and urinary complaints which could be explained by his urinary tract infection. The story became more interesting; however, when we noticed erythematous nodules in the setting of a positive hepatitis C antibody. Once the biopsy revealed erythemanodosum, we linked these two issues and realized that the patient had a positive hepatitis C antibody, and dermatologic biopsy showed erythema nodosum.

THICKER THAN BLOOD Marissa Shams 1; Marissa Shams 1. 1Tulane, New Orleans, Louisiana. (Tracking ID # 8233)

LEARNING OBJECTIVES: 1. Recognize the clinical presentation of Hyperviscosity Syndrome. 2. Understand the pathophysiology of Hyperviscosity Syndrome. Learn the treatment options for Hyperviscosity Syndrome.

CASE INFORMATION: A 48-year-old man with a history of hypertension, diabetes and Hepatitis C presented to the Emergency Department after being found disorientated by his friends. He remembered driving to the grocery store at which point he became confused and on his return incurred a minor traffic accident. He “woke up” sitting on the front porch. Recently, he had become frequently forgetful. The patient denied the use of illicit substances. He complained of frequent maroon stools but denied headache, change in vision, chest pain, shortness of breath, nausea, vomiting and diarrhea. He was alert, awake and oriented but frequently confused and unable to answer to questions appropriately. Except for positive hemocult, the physical exam was normal. CT Scan of the head was negative. Laboratory data revealed an anion gap acidosis and protein gap. Ammonia, ethanol, lactate, osmolality and liver function tests were within normal limits. Urine toxicology panel was negative. Protein analysis with Serum Protein Electrophoresis revealed Monoclonal Spike in the gamma region measuring 0.7 g/dl. Serum IgM was measured at 900 mg/dl (normal 40-230 mg/dl). Bone Marrow Biopsy revealed a lymphoplasmacytic lymphoma. Hematology-Oncology was consulted for emergent plasmapheresis. After two rounds of plasmapheresis, the patient clinically improved and was discharged to follow up in hematology-oncology clinic.

IMPLICATIONS/DISCUSSION: Hyperviscosity Syndrome is a clinical entity occurring in 30% of patients with Waldenstrom’s Macroglobulinemia. Waldenstrom’s Macroglobulinemia is a lymphoid neoplasm characterized by a monoclonal lymphoplasmacytic expansion with a serum monoclonal M protein (IgM). The increasing amounts of IgM pentamers bind electrostatically red blood cells causing aggregation and rouleaux formation, thereby increasing the serum viscosity. The syndrome usually occurs at IgM concentrations greater than 3000 mg/dL but can occur at lower concentrations. It is characterized by oronasal bleeding, neurologic symptoms and mucosal hemorrhage; frequently gastrointestinal bleeding. Neurologic symptoms include headache, dizziness, vertigo, nystagmus, ataxia, vision changes or stupor. Ophthalmology exam shows retinal veindragment, flame-hemorrhages or papilledema. Hyperviscosity Syndrome should be suspected in a patient who presents with the triad of neurologic, vision and bleeding abnormalities. Should a patient present with these findings their serum viscosity, serum immunoglobulin should be measured. If an abnormal monoclonal spike is present further immunofixation is required. Normal serum viscosity, in comparison to water, equals 1.4-1.8 cP. In contrast, symptomatic patients present with a serum viscosity greater than 5 cP. Emergent therapy includes hydration with diuresis, plasmapheresis and control of the underlying malignancy. Plasmapheresis dramatically halts the symptoms occurring in hyperviscosity syndrome, as the elevated protein component is removed. Some patients require multiple sessions of plasmapheresis to achieve the treatment goal; a serum viscosity less than 4 cP. Waldenstrom’s Macroglobulinemia is an incurable but indolent disease. Individuals are closely monitored but further monitoring is often required.

A PUNCH IN THE GUT Michael Shoffett 1; Michelle Guidry 1. 1Tulane, New Orleans, Louisiana. (Tracking ID # 8240)

LEARNING OBJECTIVES: 1. Recognize an atypical clinical presentation of acute intestinal ischemia. 2. Appreciate the major significant risk factors for acute intestinal ischemia.
Tailor differential diagnosis for a patient with symptoms of bowel obstruction to the clinical situation.

**CASE INFORMATION:** A 71-year-old man complained of two days of painless abdominal distention, specifically worse over the previous 24 hours. These symptoms occurred during a hospitalization for management of a large right femoral hematoma, which developed following recent coronary angiography to work up new-onset atrial fibrillation and heart failure. The hematoma required repeat catheterization for embolization of the culprit artery, and his anti-coagulation was held. He had been complaining of no bowel movements for the four days following his repeat catheterization. Previously, two enema treatments failed to stimulate a bowel movement. His vitals were: temperature 36.8, blood pressure of 131/94 mmHg, a pulse of 134, respiration rate 22, and O2 sat of 99%. His abdomen was distended and tympanic without tenderness; the remaining examination was normal. His electrolytes at that time were Na 127, K 4.4, Cl 94, and bicarb 24 for an anion gap of 9. Air-fluid levels and diffuse distention of large and small bowel were visualized on abdominal X-rays, and there was no free air at the time. His abdomen was distended and tympanic without tenderness; the remaining examination was normal. His electrolytes at that time were Na 127, K 4.4, Cl 94, and bicarb 24 for an anion gap of 9. Air-fluid levels and diffuse distention of large and small bowel were visualized on abdominal X-rays, and there was no free air present under the diaphragm on decubitus films. There was thickening of the wall of the patient’s hernia and stranding around the wall, concerning for incarceration on computerized tomography with contrast. In the operating room, the patient’s hernia sac was found to be necrotic with necrotic sigmoid colon in the sac. Further exploration revealed necrotic bowel from the proximal descending colon to the distal sigmoid colon in the sac.

**IMPLICATIONS/DISCUSSION:** Constipation is a common complaint confronting the patients of the general internist. Common precipitating factors include opioids and other medications, electrolyte abnormalities, and the bedbound state. Constipation from such causes can progress to impaction of stool in the rectal vault with subsequent large and small bowel obstruction. Obstruction from this cause is commonly amenable to enemas or digital disimpaction. Classically, mesenteric ischemia does not present with an obstructive picture. The hallmark finding is abdominal pain out of proportion to tenderness, and other frequent findings include abdominal distention, nausea and vomiting, diarrhea, and bloody stools. Colonic pseudo-obstruction is a known manifestation of colonic ischemia. This case points out the importance of keeping a differential diagnosis that is broad and one that is inclusive of those etiologies for which your patient is at particular risk, especially those that are potentially life threatening. This patient was at risk for acute intestinal ischemia by virtue of his two recent arterial catheterization procedures and atrial fibrillation with interruption in his anti-coagulation therapy. Other risk factors for acute intestinal ischemia include recent myocardial infarction and valvular heart disease. Prompt diagnosis and management was important, because the patient's ecuca was nine centimeters at the time of surgery and further delays would have placed the patient at risk for perforation and increased likelihood for morbidity and mortality.

**A CONVINCING CASE OF NITROFURANTOIN-INDUCED SYSTEMIC INFLAMMATORY RESPONSE SYNDROME**

**Alison Smith1; Elma LeDoux1. 1Tulane, New Orleans, Louisiana. (Tracking ID # 8243)**

**LEARNING OBJECTIVES:**

1. To present a case of nitrofurantoin-induced systemic inflammatory response (SIRS) with a well-documented onset and resolution of symptoms.

2. To help the internist understand the signs and symptoms associated with nitrofurantoin-induced SIRS in order to provide appropriate medical management given the increased usage of nitrofurantoin.

**CASE INFORMATION:** A 79-year-old woman with history of recurrent urinary tract infections (UTIs) presented with a one-week history of fever, chills, nausea, vomiting, and abdominal discomfort. She was treated three days prior by her PCP for symptoms consistent with a UTI, including dysuria, fever, and nausea. She was treated with nitrofurantoin 100 mg bid. Patient did not recall being prescribed nitrofurantoin for previous UTIs. In the interval time from beginning treatment with nitrofurantoin to presentation three days later with worsening symptoms of infection, the patient’s symptoms of dysuria were completely resolved. Upon physical examination, the patient was febrile and tender to palpation in the right lower quadrant. Her WBC was slightly elevated. Urine analysis revealed few WBCs with no nitrites or leukocyte esterases. Urine culture did not show any growth after two days. Patient was admitted for observation and nitrofurantoin was stopped. In less than 24 hours after admission, her symptoms had improved significantly. She was discharged home a few days later in stable condition.

**IMPLICATIONS/DISCUSSION:** With increasing rates of antibiotic resistance, nitrofurantoin is being used more frequently as a first-line agent for UTIs. Well-documented side effects include: pulmonary and allergic reactions, hepatotoxicity, lupus-like syndrome, and peripheral neuropathies. Therate of associated drug reactions with nitrofurantoin is approximately 9.2%. Nitrofurantoin-induced systemic inflammatory response syndrome (SIRS) was first described by Forster et al. (Am J Med Sci, 2009, 338(4): 338–340). The patient described in this case had a history significant for stage IV bladder cancer and had a radical cystoprostatectomy, ileostomy, and chemotherapy. He had colonization of pan-resistant bacteria in his urine and had many possible sources of infection given his history of frequent hospital admissions. He was repeatedly treated with nitrofurantoin and developed SIRS symptoms, which finally resolved after the cessation of the drug. However, it is difficult to ascertain if his initial reactions were from nitrofurantoin or from an overlying infection. Our case presents a well-documented example of SIRS in which nitrofurantoin is the most likely agent responsible. The patient described here was healthy prior to the use of nitrofurantoin. Her condition deteriorated rapidly with resolution of UTI symptoms after being therapy with nitrofurantoin and she developed SIRS criteria, including fever and an elevated WBC. After ceasing nitrofurantoin therapy, her symptoms resolved, and she returned to her normal state of health. This case, with a clear onset and resolution of symptoms associated with antibiotic use, provides a convincing example of SIRS associated with nitrofurantoin. This problem is of growing concern given the increasing spread of antibiotic resistance for therapeutic agents to treat UTIs in the general population.

**REMEMBERING WERNICKE’S: MAINTAINING A HIGH SUSPICION FOR THIAMINE DEFICIENCY**

Socrates Kakoulides1; Kexuan Wang1; Brett Hymel1; Domnica Fotino1. 1Tulane, New Orleans, Louisiana. (Tracking ID # 8244)

**LEARNING OBJECTIVES:**

1. Recognize the clinical presentation of Wernicke’s encephalopathy (WE)

2. Understand that...
temperic therapy for Wernicke's encephalopathy is essential

**CASE INFORMATION:** A 62 years old African-American man with a questionable history of heavy alcohol use was admitted to the urology service for an incision and drainage of a scrotal abscess. At the time of Incision and Drainage of the pyocoele he received D5 half normal saline, one dose of morphine 2 mg IV, and empiric antibiotic coverage with Vancomycin and Zosyn. The next morning, the patient was found to be combative, tremulous, and not oriented to the situation/place/time. A dose of Ativan was given for suspected alcohol/benzodiazepine withdrawal, however the patient's delirium worsened. Medicine was consulted for acute mental status change. Vitals were 99.6 F, BP 112/70, RR 16, HR 64. 100% O2 saturation on room air. The exam revealed a combative patient who refused interview and physical exam, noted to have an unsteady gait and repeated nearfalls. Initially the patient had been noted to be inappropriate, alert/oriented x4 and ambulating normally. Extraocular muscles were grossly intact. Labs: WBC 9.1 103/ul, Na 138 mmol/L, K 3.9 mmol/L, BUN 7 mg/dL, Creatinine 0.74 mg/dL, glucose 103 mg/dL, magnesium 1.3 mg/dL, calcium 7.8 mg/dL, TSH 1.38UI/mL. EKG was normal sinus rhythm. Acetaminophen level was negative. Urine culture (2 days prior) revealed Klebsiella sensitive to Zosyn. CT head negative for bleed or mass. Our patient was started on IV thiamine and his symptoms improved overnight in mentation, orientation and ambulation. After 2 days IV thiamine with magnesium fortification the patient had returned to baseline and was transitioned to oral thiamine.

**IMPLICATIONS/DISCUSSION:** Patients who hide a heavy alcohol drinking history are uncommon occurrence for the in-house resident and general internist. Wernicke's encephalopathy (WE) is a less common etiology for acute mental status changes, but can lead to serious neurologic morbidity or mortality if missed. It affects many as one fourth of chronic alcoholics admitted to a general hospital. The diagnosis is clinical and is characterized by ocular abnormalities (nystagmus and paralysis of ocular muscles), mental status changes and unsteadiness of gait. This classic triad is seen in only a minority of patients. Ocular abnormalities may occur in one third of patients and as many as a fifth of patients have none of these symptoms at presentation. Accompanying hallucination and behavioral disturbances may mimic acute psychotic disorders. Laboratory confirmation of thiamine deficiency may delay treatment, so empiric IV thiamine is imperative in all patients with suspected alcohol dependence. Magnesium deficiency may exacerbate thiamine deficiency, and magnesium supplementation may reduce a refractory response to thiamine. Ocular abnormalities usually respond to treatment in hours to days, confusion may take days, and vestibular imbalances may take days to weeks to recover. Given the clinical challenges of diagnosing WE, physicians should maintain a high clinical suspicion of thiamine deficiency and consider prompt treatment in patients who present with unbalanced nutrition or suspicion for alcohol abuse.

**MILK-ALKALI Allison Sturtevant 1**; Allison Sturtevant 1. 1Tulane, New Orleans, Louisiana. (Tracking ID # 8251)

**LEARNING OBJECTIVES:** 1. Identify signs and symptoms of hypercalcemia. 2. Establish a differential diagnosis for hypercalcemia. Differentiate the causes of hypercalcemia.

**CASE INFORMATION:** A 45 year-old man presented with a month of depression with suicidal ideation as well as several days of nausea, vomiting, muscle spasms, fatigue and weakness. His exam revealed tachycardia, but was otherwise normal. Labs demonstrated: Sodium 139, potassium 3, chloride 89, bicarb 36, BUN 70, creatinine 1.41, GFR 54, glucose 129, calcium 13.6, magnesium 1.9, and phos 4.9, albumin 3.8, intact PTH CXR: wnl With further discussion, the patient revealed that his mother had hyperparathyroidism, and that he had been taking multiple Rolaid's Tums and Centrum multi vitamins throughout the past several days to help combat his symptoms.

**IMPLICATIONS/DISCUSSION:** Hypercalcemia is frequently encountered by the internist so a good method to determine the cause is necessary. This patient exhibited classic signs of hypercalcemia including: fatigue, muscle aches, depression (groans moans and psych overtones) as well as nausea, vomiting, acute kidney injury and metabolic alkalosis. He also starts off the differential by admitting to rolaid and multivitamin ingestion versus a familial history of hyperparathyroidism. The initial BMP confirms the suspicion of hypercalcemia. Then next step is to check a PTH level. In the setting of hypercalcemia, increased levels of PTH indicate primary or tertiary hyperparathyroidism. Low parathyroid levels are seen in nonparathyroid hypercalcemia such as malignancy, vitamin D excess, milk alkali syndrome, thiazide use, granulomatous disease, and increased bone turnover (Pagets, Addison's, thyrotoxicosis, immobilization and multiple myeloma). History candidishguish milk alkali syndrome (as in this patient) and thiazide use. Then measure parathyroid hormone related peptide elevation indicates malignancy. Elevation of vitamin D metabolites indicates vitamin D excess. ACE levels, vitamin A levels, and protein electrophoresis can be used to distinguish the remaining causes. If milk-alkali syndrome is suspected, hydration and withdrawal of the offending agents will allow for rapid normalization of Calcium levels and resolution of symptoms. Prior to H2 blockers and proton pump inhibitors, ingestion of milk and antacids for relief of indigestion frequently resulted in hypercalcemia due to milk alkali syndrome. Today, 90% of the time the cause is either malignancy or primary hyperparathyroidism, but milk alkali syndrome is making a resurgence due to calcium supplementation to prevent osteoporosis.

**HYPERCOAGULABLE STATE Allison Sturtevant 1**; Allison Sturtevant 1. 1Tulane, New Orleans, Louisiana. (Tracking ID # 8253)

**LEARNING OBJECTIVES:** 1. Identify signs and symptoms of portal vein thrombosis. 2. Know when a hypercoagulable state workup is appropriate.

**CASE INFORMATION:** A 63 year-old woman presented complaining of a five day history of intermittent sharp 10/10 epigastric pain that is worse after eating. Her abdomen was slightly tender to palpation and there was no hepatomegaly, splenomegaly, distension, ascites, or lower extremity edema. She had a history of a cerebrovascular accident two years prior. No history of clotting or miscarriages. A CT of the abdomen revealed an occlusive thrombus of the splenic vein with non occlusive thrombus in the portal vein, short left gastric vein and
superior mesenteric vein. The spleen was moderately enlarged.

**IMPLICATIONS/DISCUSSION:** General internists frequently encounter patients with thrombosis and face the dilemma of when to pursue full hypercoagulability workup. There is not a firm consensus regarding which patients to screen, but patients with identifiable risk factors for thrombosis such as SLE, prolonged periods of inactivity, malignancy, recent surgery, myeloproliferative disorder, heparin-induced thrombocytopenia, preeclampsia should not be screened. Screening should be undertaken in patients if the patient has family history of thromboses in first degree relatives; if the patient is younger than 50; the patient has recurrent thrombosis; a history of warfarin induced skin necrosis or if the patient has unusual or extensive thromboses such as the portal vein (without an identifiable precipitating cause). Once a decision to test for an underlying disorder has been made, it is important to consider which tests can be performed in the acute phase and on anticoagulation. Antiphospholipid antibodies (lupus anticoagulant, anticardiolipin antibody, and anti-B2 glycoprotein), Factor V Leiden, and Prothrombin gene mutation can be screened for in the acute phase prior to starting anticoagulation. Lupus anticoagulant should not be measured after starting heparin therapy or Coumadin. Other testing such as antithrombin deficiency, Factor VIII, Protein C and Protein S should not be measured until after the patient is out of the acute phase (generally 6 months) and off therapy. Age appropriate cancer screening should also be performed. When making the decision to perform testing for hypercoagulable state internists should consider the appropriateness, timing, and the effect a positive test would have on the choice and duration of therapy.

**RAISING THE RED FLAGS** Thomas Turnage 1; TJ Jan 1

**LEARNING OBJECTIVES:** 1. Identify the varying clinical presentations of Parvovirus B19. 2. Understand how to diagnose and treat Parvovirus B19 infection. Identify the differential diagnosis of Acute Renal Failure in the setting of an acute viral illness.

**CASE INFORMATION:** A 48-year-old man was referred from clinic with worsening acute renal failure. He reported nausea without vomiting, but no other symptoms. His creatinine was 8.3 mg/dL (increased from his baseline of 1.4 mg/dL twelve days earlier). He denied a history of kidney disease, but reported being hospitalized two weeks prior for an acute febrile illness with associated arthralgias, nausea with emesis, and diarrhea. During this time, he was treated with IV fluids and doxycycline and discharged. His blood pressure was 195/108 mmHg; the remainder of his vital signs were normal. He was in no acute distress, and his physical examination was normal. The creatinine was 8.3 mg/dL and BUN 99 mg/dL. The remaining electrolytes were normal. A urinalysis showed 2–5 white cells, 1 red cell, 200 mg of protein, and few scattered fine granular casts. The urine drug screen was negative. An ultrasound of the kidneys showed mildly enlarged kidneys without evidence of hydronephrosis, mass, or renal artery stenosis. The HbA1c was 5.9 and spot urine protein-to-creatinine ratio was 2.31. The C3 level was low at 84.3 with a normal C4 level 28.4. ANA was Hc and had a kidney biopsy which showed a severe increase in mesangial matrix and edematous interstitium with fibrosis, tubular atrophy, and occasional inflammatory cells. Electron microscopy showed a thinned basement membrane, effacement of the foot processes, and an absence of deposits. Laboratory records from his hospitalization two weeks earlier revealed a positive Parvovirus B19 IgM (4.31) and IgG (0.12). Based upon these studies, the patient was diagnosed with acute renal failure secondary to parvovirus B19 infection, and underlying diabetic nephropathy.

**LEARNING OBJECTIVES:** It is important for the general internist to recognize Parvovirus B19 infection since this ubiquitous, human-specific DNA virus causes a range of symptom severity depending on the age and health status of the human host. For infected adults, 25% are asymptomatic; 50% will present with fever and myalgia; and 25% will have fever, myalgia, arthralgia, and a macular rash. Immunocompromised individuals (i.e., history of transplants, HIV, and diabetes mellitus), infection can result in a chronic anemia thus requiring IVI therapy. In this subset of patients, the typical rash or arthropathy may be absent. Parvovirus B19 has been implicated in nephritic and nephrotic syndromes. Although there is no specific antiviral treatment for parvovirus B19, transfusions and IVI therapy are useful in the settings of transient aplastic anemia or chronic infection, especially in immunocompromised patients. Active Parvovirus B19 infection is diagnosed in an immunocompetent individual by serologic testing for IgM, and viral DNA can be detected in the blood by PCR in immunocompromised individuals.
at night, or failed medical management. Neurological involvement may manifest with sciatica, pseudoclaudication, bowel or bladder dysfunction, loss of sensation or strength, or gait abnormalities. Psychosocial distress may lead to pain amplification and prolongation or exhibit as pursuit of secondary gain. Our patient had constant lower right back pain radiating to the abdomen. The results of the abdominal CT confirmed and associated red flags raised the likelihood for underlying systemic pathology. Arising from chromaffin cells, catecholamine-secreting tumors may develop anywhere along the neural crest including paraganglia and theadrenal medullas. The presentation varies widely from asymptomatic incidental neoplasm to end-organ damage secondary to elevated catecholamines. The classic presentation includes episodes of hot flashes, diaphoresis, hypertension, chest pain, dizziness, syncope, or dyspnea. Epinephrine, norepinephrine, and dopamine are inappropriately secreted intermittently accounting for the episodic nature of the symptoms. A general rule has been described for pheochromocytomas: 10% familial, 10% bilateral, 10% malignant, 10% extra-adrenal, 10% in children, and 10% incidental. Catecholamine-secreting tumors are rare neoplasms with considerable morbidity and mortality if undiagnosed or untreated. Surgical resection alleviates the symptoms and often reverses the hypertension. Due to the morbidity associated with delayed diagnosis, physicians must be aware of the classic signs and symptoms of pheochromocytomas in addition to screening for potential red flags in the evaluation of back pain.

**DUBIOUS TUBERCULOSIS** Varsha Somasekharan 1; Anna Postolova 1; Cortni Tyson 1; Chad Miller 1. Tulane, New Orleans, Louisiana. (Tracking ID # 8265)

**LEARNING OBJECTIVES:** 1. Recognize the clinical manifestations of extra-pulmonary tuberculosis. 2. Identify a differential diagnosis of growing neck mass in a young patient from a foreign country. Understand the pathophysiology and treatment of tuberculosis versus non-tuberculous scrofula.

**CASE INFORMATION:** A 26-year-old man presented four months of a painful, growing left neck mass with purulent drainage and one week history of a bleeding suprascapular superficial skin lesion with pain. The patient tried topical cream and oral penicillin without improvement. He reported subjective fevers, chills, nausea and a 10-pound weight loss. He denied cough, night sweats, changes in bowel habits, insect bites, recent travel, or sick contacts. He had a recent tooth extraction from the right side of the mouth. He immigrated to the United States two years ago from Guatemala. He had a fever of 100.3. The left neck mass was 3 cm x 3 cm round, mobile, firm around the edges, soft in the center, tender, and hyperpigmented without rubor or calor. The suprascapular wound was 3 cm x 3 cm with irregular borders and scabbing. There was bilateral inguinal lymphadenopathy. His white blood cell count was 6,000. Total protein was 8.6 and albumin was 3.6 with a protein gap of 5.0. Ultrasound revealed a 4-5 cm irregularly shaped fluid collection in the left neck and a 1-2 cm shallow collection deep to the midline with no fistulous tract connecting the two. Computed tomography of the neck revealed bilateral enlarged submandibular lymph nodes measuring 3.5 x 2 cm and 3 x 1 cm. There was lymphadenopathy along both jugular chains; some nodes had necrotic centers. Bilateral lung apices had nodular densities with a small cavitory lesion in the left. Pathology of the neck mass revealed granulomatous inflammation with giant cell reaction. Gram stain, GMS stain, PAS stain, and acid fast bacilli (AFB) stain were negative. Culture was positive for Mycobacterium tuberculosis. Sputum AFB smear was negative; culture was positive for Mycobacterium fortuitum. Blood cultures, RPR, acute hepatitis panel, and HIV tests were negative. The patient was diagnosed with extrapulmonary tuberculosis and discharged home on antituberculous therapy.

**IMPLICATIONS/DISCUSSION:** Fever and abscess are commonly encountered by the general internist. However, the internist must entertain etiologies other than the most common bacterial causes when facing a patient from a foreign country where other infectious agents are endemic. The global prevalence of HIV/AIDS requires considering other etiologies for an abscess as well as early HIV testing. This Guatemalan patient’s initial presentation was concerning for abscess, but other possible diagnoses were malignancy (including lymphoma and head and neck cancers), lymphadenitis, cyst, and Lemierre’s syndrome. The most commonly seen form of extrapulmonary TB is tuberculous lymphadenitis, or scrofula, most commonly in the cervical lymphnodes. Scrofula can be caused by tuberculosis and nontuberculous mycobacteria (NTM). Identifying the etiology is crucial in deciding management. Fortuitous scrofula, surgical treatment alone is associated with high rates of recurrence, fistula formation, and possible hematogenous spread. Anti-tuberculous therapy with multiple drugs is indicated.

**AXIS OF EVIL? WHEN TO WORRY ABOUT LEFT AXIS DEVIATION** Alfred Vichot 1; Alfred Vichot 1. Tulane, New Orleans, Louisiana. (Tracking ID # 8266)

**LEARNING OBJECTIVES:** 1. Identify the differential diagnosis of left axis deviation. 2. Recognize the symptoms and treatment of chronic bifascicular block. Recognize the risk of complete heart block in patients with chronic bifascicular block.

**CASE INFORMATION:** A 68-year-old man presents with 3 weeks of chest pain. The patient reports that it is gradual in onset, not associated with exertion, retrosternal in location, 6/10 on a pain scale, and dashing in quality. The patient is unable to recall duration or frequency of pain. The patient denies skin changes, fevers or chills, cough, shortness of breath, prolonged immobility, orthopnea or lower extremity pain. Family history is unremarkable for early atherosclerotic disease. The patient has smoked 2 cigars per day for fifteen years. The patient isafebrile, his heart rate is in the 70 s and blood pressures in both arms are 140/70. The JVP was elevated. Point of maximal impulse was displaced. Murmurs and gallops are absent. Lungs are clear. Troponin I is less than 0.01. No cardiomegalial widening is noted on chest xray. EKG has sinus rhythm with 1st degree AV block, left axis deviation, left anterior hemiblock and incomplete right bundle branch block. No change is noted when compared with an EKG from 6 years ago. T wave inversion is noted on 2nd EKG 3 hrs later. Mobitz Type I 2nd degree AV block is noted 6 hours after presentation. Echocardiogram is unremarkable. Angiography is notable for only mild,
non obstructive disease at the origin of the left anterior descending artery. Temporary venous pacing was performed during left heart catheterization.

**IMPLICATIONS/DISCUSSION:** Left axis deviation (LAD) is a common EKG finding encountered by the internist. Common causes of LAD are left ventricular hypertrophy, left bundle branch block, left anterior hemiblock, inferior myocardial infarction, an elevated diaphragm, and Wolf-Parkinson White Syndrome. Bifascicular block indicates a blockage of any two of the three fascicles of the ventricular conduction system. The combination of both a right bundle branch block and left anterior hemiblock is a frequent finding on EKGs. Often times, patients are asymptomatic and do not have underlying coronary artery disease. Patients with chronic bifascicular block typically do not require treatment unless they develop second- or third-degree AV block. The risk of progression to complete block in asymptomatic patients with chronic bifascicular block is low.

**THE NILE AIN’T JUST A RIVER**

Neil Shah1; Jana Hambley1; Marcia Glass1. 1Tulane, New Orleans, Louisiana. (Tracking ID # 8270)

**LEARNING OBJECTIVES:** 1. Understand the epidemiology and pathogenesis of West Nile virus. 2. Understand the clinical manifestations of encephalitis. Create a method for the diagnosis of West Nile virus infection.

**CASE INFORMATION:** A 32-year-old man experienced several days of hallucinations and strange behavior. He was brought in by a coworker from an industrial ship that had sailed from India. He had been in bed for the past few days with fever and sweats. The patient appeared anxious, had difficulty answering questions, and was oriented only to place. He was febrile, tachycardic, and tachypneic. He had mild, bilateral ataxia of his upper extremities and an impaired tandem gait but was otherwise normal. The patient had a microcytic anemia, no leukocytosis, a sodium of 128 mmol/L, an AST of 230 units/L, an ALT of 170 units/L, a creatinine kinase of 7100 units/L, and an arterial oxygen of 77 mmHg. Computerized tomography of the brain showed diffuse cortical atrophy without specific lesions. Cerebrospinal fluid had revealed multiple pulmonary emboli. MRI of brain showed diffuse cortical atrophy noted on MRI is a result of a separate chronic disease process that may have predisposed him to more serious symptoms related to the virus. The severity of the disease in this case likely caused him to be bedridden and placed him in a hypercoagulable state causing pulmonary emboli. Treatment for West Nile virus is largely supportive care. Pharmacotherapy with interferon and ribavirin has shown mild efficacy in vitro but has not yet been tested in clinical trials.

**UNCOMMON THINGS BEING COMMON**

Luke Taggart1; Luke Taggart1. 1Tulane, New Orleans, Louisiana. (Tracking ID # 8277)

**LEARNING OBJECTIVES:** 1. Recognize the clinical presentation of Acute Aortic Dissection 2. Understand pathophysiology and classification of Aortic Dissection 3. Understand diagnosis and treatment strategies of Aortic Dissection

**CASE INFORMATION:** A 42-year-old woman presented with a 4-day history of substernal chest pain. Pain occurred suddenly while she was at rest, and was described as a “stabbing” pain radiating to her back and upper abdomen. Deep inspiration worsened the pain and no relieving factors were noted. On the day her pain began, she took one aspirin and was transported by EMS to an outside Emergency Department for evaluation. While there, pain medication slightly improved her pain and a PO analgesic prescription was written until primary care follow-up could be arranged. When symptoms worsened on day 4, she returned for reevaluation. She noted the same location and radiation of pain, which worsened with deep inspiration and emotional stress. Occasionally, it would wake her from sleep and was slightly relieved with hydrocodone. No dyspnea, headache, visual changes, fever, recent illness, trauma, or injury were reported. The patient reported a smoking history of greater than ten years and a remote history of cocaine use, but none in the last 20 years. She was diagnosed with hypertension and Lupus 2 years earlier and had run out of her anti-hypertensive medication 4 days prior to presentation. Blood pressure was 155/121. Oxygen saturation 100% on room air. No elevation of JVP, murmur, or reproducing chest pain was noted. Lungs were clear. Extremities had bounding pedal pulses but no edema. Troponin was not elevated. CT of the chest revealed an ascending aortic aneurysm. Transthoracic echocardiogram revealed an aortic dissection extending from the aortic root to the descending aorta.

**IMPLICATIONS/DISCUSSION:** Typical history of aortic dissection is acute onset severe, tearing or knifelike chest pain, back pain. Risk factors can be identified during the interview such as chronic, uncontrolled hypertension, substance abuse, and family history of dissection which may indicate an underlying connective tissue disorder. Exam may reveal hypertension or hypotension, a pulse deficit, differing blood pressures in the upper extremities, and murmur of aortic insufficiency. Patients who develop Aortic Dissection often have risk factors predisposing them to damage of the intimal layer of the vessel.
Through increased wall stress, changes occur which may include aneurysm formation, ulceration, intramural hematoma, or a tear leading to blood dissecting between the medial and adventitial layers. Infarction of the vasa vasorum is another mechanism leading to increased wall stress on the vessel by intramural hrombosis formation. Complications of the dissection include proximal extension of the false lumen, which can involve the pericardial space causing tamponade, aortic valve compromise leading to acute CHF, and obstruction of other major vessels. Chest X-ray abnormalities are present in 60-90% of cases with definitive evidence of dissection established by using one or a combination of the following imaging modalities: CT, transesophageal echocardiogram, MRI, or angiography. A Stanford Type A dissection (DeBakey Type I, II) is characterized by a dissection of the ascending aorta and is a surgical emergency. Pre-operative medical care includes blood pressure control with beta-blockers and, if needed, IV nitroprusside for vasodilatation. It is important to first achieve adequate beta blockade to avoid reflex tachycardia associated with nitroprusside. Blood pressure control is the mainstay of treatment for a Type B aortic dissection, as surgery is usually not required emergently.

**FATAL S. BOVIS ENDOCARDITIS WITH NO COLON LESION**

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**LEARNING OBJECTIVES:** 1. To review a case of S.bovis endocarditis in a patient with bicuspid aortic valve and a normal colon. 2. Review recommendations regarding bicuspid aortic valves

**CASE INFORMATION:** 47 yr Caucasian male presented with c/o worsening of chronic back pain, anorexia, fatigue, chills and sweats since many months. Past medical history included chronic back pain, liver cirrhosis due to Hepatitis C, Diabetes, mild aortic regurgitation with bicuspid aortic valve. Pt lost his job and insurance and could not afford medical care for sometime, but had recently returned with above symptoms. Pt denied IV DU. Pt was admitted to hospital. Exam showed 3/6 aortic systolic ejection murmur, bilat 2+ pitting edema, left lower back tenderness. He had leukocytosis at 11,000, INR was 1.5, blood culture was positive at day 1 for S.bovis, pansensitive. Pt was started on Ceftriaxone and vancomycin and GI and ID were consulted. MRI back was negative, TTE showed worsening aortic regurgitation but no vegetations. He had persistent bacteremia despite antibiotic therapy. EGD had to be done before TEE due to cirrhosis and risk for portal hypertension. On hosp day 3, pt had severe chest pain, EKG initially showed supraventricular tachycardia with ST-T changes that later became new LBBB with wide QRS and first degree AV block. Troponin progressively increased from 0.6 to 2.0 to 116 He had sudden worsening of chest pain and dyspnea due to flash pulm edema. He became hypotensive, but was stabilized with pressors. EGD showed non bleeding varices, TEE showed diffuse thickening of aortic valve leaflets with abscess. Cardiothoracic surgery was consulted but pt’s general condition worsened. He was made comfort care and died. Autopsy showed large ring abscess with vegetation size 2.5×2.0×1.5 cm blocking coronary ostia and obstructing the blood flow to the heart, causing massive myocardial infarction. Liver showed macronodular cirrhosis with portal hypertension. No colonic lesions were found, that could account for S.bovis endocarditis.

**IMPLICATIONS/DISCUSSION:** S. bovis are gram positive Gr. D Streptococci. S. bovis is sensitive to penicillin, cephalosporin and vancomycin. S.bovis endocarditis is a severe disease because it affects multiple valves, has hemodynamically significant valvular regurgitation and may cause myocardial infiltration. The emergence of heart block on EKG is a red flag indicating abscess and myocardial infiltration. Endocarditis has 30 % mortality. Mortality with S.Bovis bacteremia is high in pts with advanced liver disease. The classic teaching is S.bovis endocarditis is strongly associated with colonic malignancy.Review of literature, shows that Origin of Strep bovis-In West, 60 % cases have colonic lesions, 30 % have hepatic pathology. Association with hepatic pathology was more common in East. In pts with cirrhosis, alteration of hepatic secretions and immunoglobulin may permit transmission of S.Bovis from Intestinal tract to portal system and a compromised reticuloendothelial sytem may contribute to S.Bovis septicemia. Bicuspid aortic valves is the most common congenital heart malformation. It is a frequent cause of native aortic valve infective endocarditis. Bicuspid valves incur high risk of abscess formation and require early valve replacement, mainly due to worsening aortic stenosis. In 2006, ACC/AHA provided guidelines for followup of asymptomatic adults with aortic stenosis, based on valve aperture and flow gradient. In 2008, ACC/AHA recommended echocardiographic screening for first degree relatives of pts with bicuspid aortic valve.This case illustrates detail medical care from primary care clinic to ICU and autopsy. A final point to ponder is if he had non-framented medical care, had been able to get follow up and early help for bicuspid aortic valve, would he have lead a full life?

**PURULENT PERICARDITIS WITH CARDIAC TAMPONADE SECONDARY TO HAEMOPHILUS INFLUENZAE SEROTYPE D**

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**LEARNING OBJECTIVES:** 1. Distinguish healthcare-associated pneumonia from community-acquired pneumonia, in respect to management options. 2. Recognize the need for a high index of suspicion in diagnosing and managing purulent pericarditis

**CASE INFORMATION:** A 56-year old immunocompetent female nurse with a recent diagnosis of left upper lobe pneumonia by CT scan, on azithromycin, returns to the emergency department five days after initial presentation with worsening shortness of breath and severe pleuritic chest pain. She was found to be hypotensive, tachypneic, and hypoxic. Examination revealed bilateral jugular venous distension, pulsus paradoxus, and muffled heart sounds. ECG showed diffuse ST elevations suggestive of acute pericarditis. She was rapidly intubated due to impending respiratory collapse. Transthoracic echocardiogram confirmed cardiac tamponade. She underwent urgent pericardiocentesis. Pericardial fluid cultures were positive for Haemophilus influenzae serotype d.
β-lactamase negative. Moxifloxacin, piperacillin-tazobactam, vancomycin, and single dose of tobramycin were started. Her condition improved and she was discharged on a 14-day regimen of ceftriaxone.

**IMPLICATIONS/DISCUSSION:** Otitis media and respiratory infections are the most common clinical manifestations of Haemophilus influenzae infections. Of the non-Haemophilus influenzae b serotypes, serotype f is the most common in North America. The most common etiology of purulent pericarditis is viral in origin. With the advent of new antibiotic therapy and integration of vaccinations, there has been a shift in the bacterial causative agents. Streptococcus pneumonia and Haemophilus influenzae serotype b have decreased in incidence, while there has been an increase in Staphylococcus aureus. Purulent pericarditis is an uncommon, but potentially fatal condition that can progress to cardiac tamponade in rare cases. In this instance both the pericarditis and resultant tamponade were secondary to direct extension of her pneumonic process. Only three cases of purulent pericarditis due to non-serotype b Haemophilus influenzae have been found in the literature, all of which have occurred in immunocompromised patients: two cases were due to H. influenzae serotype f and the third case was due to non-encapsulated H. influenzae. We are unaware of any prior case of purulent pericarditis with cardiac tamponade due to Haemophilus influenzae serotype d in an immunocompetent adult reported in the literature. This case illustrates the necessity of differentiating community-acquired, healthcare-associated, and hospital-acquired pneumonia. According to the American Thoracic Society Guidelines, healthcare workers would be considered to have healthcare-associated pneumonia and should receive ceftriaxone, a quinolone, ampicillin/sulbactam, or ertapenem as the antibiotic regimen. Whether or not a different initial antibiotic regimen would have prevented the subsequent complications, this case presentation highlights the importance of proper history taking and an understanding of the relevant guidelines to provide optimal patient management.

**LEARNING OBJECTIVES:** 1. Recognize the possibility of lymphadenopathic Kaposi’s sarcoma in the absence of cutaneous lesions. 2. Assess for lymphadenopathy in an otherwise healthy patient.

**CASE INFORMATION:** Patient was a 49-year-old African American male with no past medical history who presented to the emergency room complaining of weakness. He denied any chest pain, shortness of breath, nausea, vomiting, abdominal pain, weight loss or night sweats. On physical exam, he was found to have 3x2cm palpable, firm, non-tender, right axillary lymph node. Rectal exam was Guaiac negative. Skin exam was unremarkable for any erythema, plaques, petechiae or purpura. Cardiovascular, lung and abdominal exam were unremarkable. On admission, laboratory findings were significant for hemoglobin of 6.1 and platelets of 10. Chest X-ray was clear. He underwent an axillary lymph node biopsy which was positive for subcapsular foci of Kaposi’s sarcoma. Subsequently, he was found to be Human Immunodeficiency Virus (HIV) positive with a CD4 count of 58 and he was started on HAART. Throughout the course of his hospital stay, he developed HIV-related thrombotic thrombocytopenic purpura (TTP) which lead to his demise.

**IMPLICATIONS/DISCUSSION:** Kaposi’s sarcoma is a vascular tumor that is particularly prevalent in patients infected with HIV. Skin involvement is characteristic for Kaposi’s sarcoma and extracutaneous spread is common to the oral cavity, gastrointestinal and respiratory tract. AIDS-related Kaposi’s sarcoma often presents with cutaneous lesions usually as one
or several red/purple macules, papules or plaques. This case demonstrates lymphadenopathy as an important physical exam finding in an otherwise healthy male and how early identification of the primary cause can reduce both morbidity and mortality. AIDS-related Kaposi’s sarcoma to the lymph nodes is a rare occurrence and it is even less common in the absence of cutaneous lesions. This case is atypical because there were no cutaneous manifestations at the time of the patient’s presentation or during the hospital stay. The diagnosis of Kaposi’s sarcoma was not discovered until the lymph node biopsy was positive which further lead to a new diagnosis of HIV/AIDS. While the patient was immediately started on HAART therapy to prevent further morbidity associated with AIDS, he succumbed to TTP. Thus, it is important to recognize lymphadenopathy as a diagnostic tool for uncovering a wide range of diseases.

**IT ONLY HURTS WHEN I BREATHE** Heather Echols 1; Heather Echols2. 1Tulane University, New Orleans, Louisiana; 2Tulane University, New Orleans, Louisiana. (Tracking ID # 8716)

**LEARNING OBJECTIVES:** 1. Recognize the clinical presentation of Swyer-James-Macleod syndrome in adults. 2. Understand the pathophysiology of Swyer-James-Macleod syndrome.

**CASE INFORMATION:** A 55 year-old woman presented with two months of progressively worsening dyspnea on exertion, cough productive of yellow sputum and occasional hemoptysis. She has noted edema of the lower extremities. Her lungs were clear to auscultation bilaterally; there was no wheezing or crackles. The JVP was not elevated. There was mild lower extremity edema. The patient had a normal ejection fraction and mild pulmonary hypertension by transthoracic echocardiogram. CT angiogram revealed a hypoplastic right pulmonary artery. The right lung on ventilation perfusion scan had no perfusion, but normal ventilation within the right middle and lower lobes and decreased activity in the right upper lobe. Pulmonary arteriogram revealed complete occlusion of the right main pulmonary artery. These findings were diagnostic of Swyer-James-Macleod syndrome.

**IMPLICATIONS/DISCUSSION:** Dyspnea on exertion is a commonly encountered problem. An approach to determining the cause of dyspnea is to investigate each organ system, while allowing the history and physical to direct us to the appropriate diagnosis. In our patient with dyspnea on exertion, productive cough and occasional hemoptysis, this led us to further investigate the pulmonary system. Through imaging we found ventilation perfusion mismatch and hypoplasia of the right pulmonary artery thus identifying the lungs as the etiology of the patient’s symptoms. Dyspnea on exertion is a common presentation of Swyer-James-Macleod syndrome in adults. Swyer-James-Macleod syndrome is a post-infectious state secondary to bronchiolitis obliterans. It is usually diagnosed in childhood, but asymptomatic individuals may go undiagnosed until adulthood. Inflammation and fibrosis cause narrowing in the bronchioles. The pulmonary capillary bed is secondarily affected, leading to decreased blood flow to the pulmonary arteries, thereby causing decreased arterial development. Given that dyspnea is a common encountered problem, internists must broaden their differential diagnosis to include diseases of childhood that may go undiagnosed, but that present in symptomatic adults.

**UNEXPLAINED FEVERS IN A HIV PATIENT** Cynthia Kay 1; Cynthia Kay2. 1Medical College of Wisconsin, West Allis, Wisconsin. (Tracking ID # 8721)

**LEARNING OBJECTIVES:** 1. Recognize infective endocarditis as part of the differential in patients without known cardiac abnormalities or history of injection drug use. 2. Anticipate endocarditis complications.

**CASE INFORMATION:** A 43-year-old HIV male with a history of non-injection drug use (IDU) presented with fevers for 3 weeks. The patient was in the ED three weeks prior also for fevers. At that time, CXR was negative. He was swabbed for influenza and discharged home with Oseltamivir. Since then, the patient reported continued daily temperatures of 102-103 F. He denied any sick contacts or travel history. Physical exam was unremarkable. Initial laboratory studies were notable for a leukocytosis of 11.6, a positive urine drug screen for cocaine and opiates, and an unremarkable lumbar puncture. A head CT showed subtle areas suspicious for acute infarcts. A source of infection was sought with blood cultures, HIV RNA load, CD4 count, and a multitude of urine and respiratory studies. Temperatures remained consistently elevated but responded to acetaminophen. Infectious disease was consulted and IV vancomycin and piperacillin-tazobactam were started. On Hospital Day 2, the leukocytosis had resolved, and preliminary blood cultures showed gram negative bacilli. Subsequently, a transesophageal echocardiography was performed and revealed mitral valve vegetations, 0.5-0.7 cm in size. By Day 3, the blood culture organism was identified as Haemophilus parainfluenzae, sensitive to ceftriaxone. A PICC was placed, and the patient was discharged home to complete six weeks of IV ceftriaxone. Three months after antibiotic completion, the patient was seen in clinic for complaints of 25 pound weight gain and shortness of breath. He was started on oral furosemide 40 mg daily and was to return for reassessment.

**IMPLICATIONS/DISCUSSION:** Although infective endocarditis (IE) is typically associated with a history of preexisting cardiac lesions or injection drug use, it is important to recognize the diagnosis as part of the fever differential even without such histories. In fact, HIV infection is considered an independent risk factor for IE, especially in those with CD4 counts of less than 200. Additionally, the HACEK group accounts for just 3% of IE but is known to cause native-valve endocarditis in individuals without IDU. The HACEK bacteria normally reside in the oropharynx and are often associated with dental procedures and upper respiratory infections. Disease presentation can include fevers, night sweats, weakness and signs of peripheral embolization. The antibiotic of choice for gram negative endocarditis remains IV ceftriaxone for a minimum of 4 weeks. The recognition and identification of endocarditis is important to not only properly treat it but also to anticipate its numerous complications, such as heart failure. Cardiac complications affect 30-50% of IE patients, with congestive heart failure being the most common cause of death due to IE in the modern era. Its development can vary from an acute initial
presentation to one that is more gradual, sometimes manifesting even after antibiotic completion. Other sequelae of infection consists of embolisms, brain abscess and seizures. Long term survival following endocarditis is lower than that of the general population, with approximately 80% at 5 years and 50% at 10 years. S. aureus infection and association with heart failure, diabetes, embolic events, and large vegetation size also portend a poor prognosis.

PSEUDOPHEOCHROMOCYTOMA: A COMMON PRESENTATION YET UNDER RECOGNIZED DIAGNOSIS
Amy DeGuene 1; Kavita Naik 1; Kurt Pfeifer 1. 1Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 8733)

LEARNING OBJECTIVES: 1. Recognize the criteria for diagnosing pseudopheochromocytoma 2. Distinguish among the common conditions which can cause paroxysmal hypertension
CASE INFORMATION: A 40 year-old woman with a history of hypertension presented with elevated blood pressures and intermittent symptoms of flushing, palpitations, chest pain, and diaphoresis. Initially the patient was normotensive with an unremarkable exam. Several hours later, she was noted to have a blood pressure of 203/104 mmHg and was profusely diaphoretic, tremulous, tachycardic, and expressed a sensation of extreme anxiety. Her face was flushed and warm while her hands and feet were cool and cyanotic. This episode lasted for one hour, after which she returned to her baseline state. Evaluation for a pheochromocytoma was initiated during the paroxysm, showing grossly elevated serum catecholamines. A 24-hour urine collection for metanephrines was also initiated and later found to be within normal limits. Repeat measurements of serum metanephrines and catecholamines were drawn when the patient returned to her baseline state and were also found to be within normal limits. An abdominal CT showed no adrenal lesions, and subsequent PET and MIBG scans were without any evidence of catecholamine-secreting lesions. After exhaustive evaluation, the patient did note that she owned and operated a high stress law firm and that her father was recently diagnosed with a terminal condition to which she had not been coping well. A psychological evaluation was offered but declined. The patient’s symptoms and blood pressure responded well to alpha and beta blockade with intravenous labetalol. A 24-hour urine collection for metanephrines was also initi ated and found to be within normal limits. Repeat measurements of serum metanephrines and catecholamines were drawn when the patient returned to her baseline state and were also found to be within normal limits. An abdominal CT showed no adrenal lesions, and subsequent PET and MIBG scans were without any evidence of catecholamine-secreting lesions. After exhaustive evaluation, the patient did note that she owned and operated a high stress law firm and that her father was recently diagnosed with a terminal condition to which she had not been coping well. A psychological evaluation was offered but declined. The patient’s symptoms and blood pressure responded well to alpha and beta blockade with intravenous labetalol, and she was discharged home with oral labetalol. Based on her failing to meet diagnostic criteria for pheochromocytoma, she was diagnosed with pseudopheochromocytoma.
IMPLICATIONS/DISCUSSION: Pseudopheochromocytoma is a constellation of clinical findings seen in patients with paroxysmal hypertension and negative workup for secondary causes, including pheochromocytoma. Observational symptoms include a paroxysmal nature, association with tachycardia, increase in plasma catecholamines documented during attacks, increase in baseline plasma epinephrine and metanephrines, and response to alpha/beta blockade. The underlying mechanism of sympathetic activation is unclear but appears to involve emotional factors. Diagnosis is considered if the hypertensive episodes are characterized by the following three features; an abrupt elevation of blood pressure (which can be greater than 200/110 mmHg in some patients); equally abrupt onset of distressful physical symptoms, such as headache, chest pain, dizziness, nausea, palpitations, flushing, and diaphoresis; and attacks are not triggered by fear or panic. With elevated plasma catecholamines, a pheochromocytoma needs to be excluded via imaging studies or a clonidine suppression test. If pheochromocytoma is excluded, then the patient would be considered to have pseudopheochromocytoma. Management includes antihypertensive treatment with alpha and beta blockade to control symptoms related to high sympathetic activity. Psychopharmacologic agents can be effective in eliminating paroxysms and restoring a normal quality of life in patients in whom severe or very symptomatic paroxysms recur despite alpha and beta blockade. Finally, psychological interventions are considered the only potential cure for pseudopheochromocytoma, yet this is only effective in those patients that can identify an emotional basis to their symptoms.

DO NO HARM George Bensabat 1; George Bensabat2. 1Tulane University, New Orleans, Louisiana; 2Tulane University, New Orleans, Louisiana. (Tracking ID # 8829)

LEARNING OBJECTIVES: 1. Recognize the complications of glucocorticoid therapy. 2. Identify the clinical presentation of hyper-osmolar non-ketotic syndrome
CASE INFORMATION: A 25 year-old woman presented with five days of blurry vision, generalized weakness, polydipsia and polyuria. She was diagnosed with Systemic Lupus Erythematosus a month prior and was treated with prednisone and hydroxychloroquine. She denied nausea, vomiting, chills or fever. She was treated for PID with ciprofloxacin a month ago. She also has hypertension and previous screening for Diabetes Mellitus (DM) was normal. She was afibrile with a blood pressure of 150/70 and pulse of 99 beats per minute. She had dry mucous membranes. She was tachycardic and had diffuse abdominal tenderness. Laboratory testing revealed a potassium level of 7.3 mEq/L and a serum glucose of 1581 mg/dL with an anion gap of 14. ABG revealed pH of 7.39 and a PCO2 of 50 mmHg. There were no urine or serum ketones. EKG revealed peaked T waves in the lateral leads. The patient was treated with intravenous normal saline, insulin drip, and calcium gluconate. The next day the potassium was 12.9 mEq/L and serum glucose was 129 mg/dL. She was diagnosed with hyperosmolar nonketotic (HONK) hyperglycemia induced by glucocorticoid therapy.
IMPLICATIONS/DISCUSSION: Glucocorticoid induced hyperglycemia is commonly encountered by the general internist. It is welldocumented in diabetics and patients with impaired glucose tolerance and, however, it is rare in patients without DM or impaired glucose tolerance. Although the treatment for steroids induced hyperglycemia is identical to treatment for diabetic hyperglycemia, the course of hyperglycemia is different. In the case of steroids, hyperglycemia usually ends with the cessation of glucocorticoid. Newly started steroids have more effect on glucose metabolism than chronic glucocorticoid use. Our patient will need treatment for hyperglycemia if steroids are tapered and discontinued. The hyperglycemia will also become less pronounced over time if she remains on chronic steroid therapy. Patients presenting with HONK hyperglycemic states are total body potassium depleted. However, some present with an elevated potassium. Hyperosmolality of the serum and lack of insulin causes potassium to shift from within the cells to the serum. This phenomenon occurs when decreased intracellular water causes increased intracellular potassium concentration. This promotes efflux of potassium-
CHEST PAIN FROM A KISSING BUG

Erin Boswell 1; Irene Grundy 2; Natalie Rodden 2; Chayan Chakraborti 2. 1Tulane University, New Orleans, Louisiana; 2Tulane University, New Orleans, Louisiana. (Tracking ID # 8836)

LEARNING OBJECTIVES: 1. Identify the historical clues that would increase the pre-test probability of Chagas in a patient with angina. 2. Recognize clinical circumstance in which Chagas disease should be appropriately included in the differential diagnosis.

CASE INFORMATION: A 59-year-old Hispanic man presented with three days of intermittent substernal chest pain radiating to the left axilla, occurring at rest, and associated with shortness of breath, diaphoresis, and nausea. His past medical history was significant for hypertension. On presentation, the patient’s blood pressure was 170/103 and he was bradycardic; all other vitalsigns were normal. Physical examination including cardiovascular exam was unremarkable. Laboratory studies revealed abnormal complete blood count and basic metabolic panel. Initial cardiac troponins were 0.07-0.08 ng/mL. ECG demonstrated sinus bradycardia, low voltage QRS, left anterior fascicular block, and atrialabnormality. A dobutamine stress echocardiogram showed moderate left ventricular systolic dysfunction (EF of 35%) and segmental wall motion abnormalities. Coronary angiography revealed non-ischemic cardiomyopathy, akinetic left ventricle, and an apical aneurysm. These findings suggested myocarditis, in particular, Chagas disease, which was confirmed with a positive Trypanosoma cruzi IgG.

Further questioning of the patient revealed that he lived until age 40 in an adobe construction house in rural Guatemala. He also complained of difficulty swallowing and nearly daily vomiting.

IMPLICATIONS/DISCUSSION: In 1909, Brazilian physician Carlos Chagas identified an infectious tropical disease caused by the parasite Trypanosoma cruzi, named after his acolyte. Dr. Oswaldo Cruz. Paleoparasitology data suggest Chagashas existed for approximately 9000 years. Transmission occurs via the bite of an infected triatomine insect, or “kissing bug,” endemic to the Americas. Triatomines thrive in low socioeconomic, rural areas of Latin America with poor housing conditions such as mud walls and thatched roofs. Immigration has transformed Chagas into an important public health issue in the U.S. with an estimated 300,000 immigrant cases. Cardiac manifestations of Chagas include biventricular enlargement, thinning of the ventricular walls, damage to the cardiac conduction system and development of apical aneurysms, resulting in symptoms of heart failure, palpitations, syncope, and thromboembolism.

WHEN TUMOR IS THE RUMOR (THE CONVERSE CAN ALSO BE TRUE) Melanie Sheen 1; Melanie Sheen 1. Tulane University, New Orleans, Louisiana. (Tracking ID # 8866)

LEARNING OBJECTIVES: 1. Identify differential diagnosis for lung and breast masses. 2. Identify differential diagnosis for metastatic disease.

CASE INFORMATION: A 78 year-old woman presented with one month of weakness and falls. She had a 50 lb weight loss over the previous year. Previously, she was diagnosed with breast cancer and treated with a lumpectomy, chemotherapy and radiation. She moved to Texas following Hurricane Katrina and was lost to follow-up. She had a 62-pack-year history of smoking. She had decreased strength in both lower extremities. Otherwise, the physical exam was unremarkable. Chest X-Ray was suspicious for two masses in the left lung. Chest CT confirmed two (5x6 cm and 2.3x2.6 cm) masses, and lymph nodes and subpleural nodules in both lung fields. There were multiple nodular densities in the right breast. Ultrasound revealed two lesions in the right breast. Ultrasound guided biopsy revealed moderate to poorly differentiated squamous cell carcinoma with squamous pearl formation, without any evidence of mammary tissue. Tumor cell markers were consistent with a primary pulmonary etiology. Biopsy of the lung mass revealed scattered squamous cells that expressed p63. The patient was diagnosed with primary squamous cell lung carcinoma metastatic to the right breast.

IMPLICATIONS/DISCUSSION: Breast and lung masses are both frequently encountered in internal medicine. Breast cancer is the most commonly diagnosed malignancy in Louisiana women, while lung cancer, on the rise, is the second most prevalent [1]. In patients with a previous history of breast cancer, there is a greater risk for treatment-related second primary carcinoma, especially in patients who receive radiation therapy [2]. The reported patient received radiation therapy as a part of her breast cancer treatment nine years earlier. Additionally, she had a significant smoking history, putting her at a greater increased risk for a second primary malignancy, namely lung cancer [5,6]. In general, metastases to the breast from extramammary sites are rare. Shetty, Ahmed, and Khan discovered only 431 cases of extramammary carcinoma metastatic to the breast over a course of 138 years [3]. Of these cases, lung cancer was the second most likely primary site to metastasize to the breast. Additionally, a
Taiwanese casereport from 2008 reports the incidence of squamous cell carcinoma metastasizing to the breast [4]. When faced with patient with a breast mass, physicians cannot overlook the possibility that the mass could be metastatic from of an extramammary site. Additionally, it is important when evaluating new lesions in breast cancer patients to take into account smoking and treatment history. New primary lesions, and metastases thereof, should be on the differential.

CELIAC CURVEBALL  Jamie Nguyen 1; Cortni Tyson 2, Marcia Glass2. 1Tulane University, New Orleans, Louisiana ; 2Tulane University, New Orleans, Louisiana. (Tracking ID # 8867)

LEARNING OBJECTIVES: 1. Recognize uncommon clinical presentations of vasculitides 2. Identify the differential diagnosis of abdominal pain. Understand the pathophysiology and treatment of vasculitides.

CASE INFORMATION: A 47-year-old woman presented with atwo-day history of lower-back pain and acute onset of abdominal pain, which woke her up the previous night and was associated with an episode of nausea and anemia. She was afebrile with a very elevated blood pressure. Shewas tender to palpation in the epigastric region and left-upper quadrant withno rebound or guarding. The lower-back pain was aggravated by lying down and relieved by sitting. The patient reported a history of hypertension, gastroesophageal re flux, gastric ulcers and gastric-bypass surgery. Review of systems was significant for a one-day episode of gastroenteritis the previous week. CT scan showed stranding and inflammatory changes surrounding the celiac artery with focal dilatation of 8 mm at the trifurcation. A CT angiogram revealed moderate, segmental narrowing of the proximal and mid-celiac artery with distal dilatation. A soft-tissue density surrounded the celiac axis and common hepatic artery and extended to the level of the porta hepatitis. Both studies were suggestive of vasculitis. Laboratories studies were unremarkable on admission. ESR, CRP, C3, C4, ANA, ANCA panel, RPR, cardiolipin antibodies, HIV, and hepatitis serology were all normal. The patient was initiated on a three-day course of pulse steroids with a probably diagnosis of celiac-artery vasculitis. Her abdominal and lower-back pain resolved with treatment, and we discharged her on a steroid.

IMPLICATIONS/DISCUSSION: Abdominal pain is a common problem encountered by the general internist. It is important to have a method in identifying the etiology of pain in order to avoid missing less common diagnoses. One method is to identify each abdominal organ and determine if the problem is secondary to an infectious, ischemic, functional, or traumatic insult. Our patient had inflammatory changes in her celiac artery. These vasculitic changes may have caused pain secondary to ischemic changes in the region. Vasculitides are often a result of immune-mediated infectious causes. Immune-mediated processes can be secondary to immune-complex deposition, anti-neutrophil cytoplasmic antibodies, or anti-endothelial cell antibodies that directly or indirectly induce vascular injury. Infectious vasculitides may be secondary to direct invasion or hematogenous spread. It is important to identify the etiology since steroids and anti-inflammatory agents are used for immune-mediated vasculitides. Diagnosis is based on clinical presentation, serologic markers, biopsy, and imaging. With laboratory results pending, our patient responded to empiric treatment with pulse steroids. Serologic and inflammatory markers indicative of a vasculitis were normal, which speaks against the diagnosis. However, her imaging studies and clinical response to therapy suggested an isolated, celiac-artery vasculitis without systemic involvement. Although uncommon, vasculitides can have various presentations. It is important, therefore, for the internist to recognize this disease as a possibility when faced with common symptoms such as abdominal pain.

THE PAINTED SAILOR: TATTOO-INDUCED VASCULITIS Stacy Lauren Coulthard 1; Walter Downs1. 1Naval Medical Center Portsmouth, Portsmouth, Virginia. (Tracking ID # 8868)

LEARNING OBJECTIVES: 1. Diagnose a rare hypersensitivity vasculitis limited to cutaneous manifestations. 2. Recognize the potential impact on deployment and duty status of an active duty service member as a result of a localized and self-limited hypersensitivity reaction.

CASE INFORMATION: The patient is a 21-year-old active duty male with no significant past medical history who presented to the emergency department complaining of five days of a bilateral lower extremity rash and arthralgias. The patient had undergone tattooing of his right posterior leg 2 weeks prior to presentation with development of a pruritic rash at the site of the tattoo. The rash spread over bilateral legs and thighs despite treatment with antibiotics and oral steroids. Upon presentation, the patient had lower extremity palpable purpura. Laboratory evaluation was significant for leukocytosis (12,300/mcL) without left shift, elevated CRP of 13.1 mg/L, and normal ESR. Other laboratory data were normal including electrolytes, coagulation studies, complement levels, CH50, RF, anti-CCP antibody, ANCA, ANA, anti-Smith, RPR, HIV, viral hepatitis panels, cryoglobulin levels, parvovirus B19, and lyme titer. A wound culture obtained prior to antibiotics showed no growth. Blood cultures obtained at presentation were negative. Due to a clinical suspicion for vasculitis, the patient was started on intravenous steroids. Skin biopsy showed an early leukocytoclastic vasculitis. The patient was diagnosed with a tattoo-induced hypersensitivity vasculitis, treated with oral steroids and colchicine, and placed on limited duty status. After discharge, the patient’s clinical course was complicated by infection of ulcerated wounds with E. coli requiring antibiotic therapy. The patient was also re-admitted several months after initial diagnosis for bilateral lower extremity DVT and pulmonary embolism secondary to immobility. Ultimately, the patient appeared to have a limited clinical response to prednisone and colchicine, and was placed on monthly IVIG therapy (2gm/kg/month) in addition to steroids. There were marked improvements in the rash and clinical symptoms after initiating IVIG treatment.

IMPLICATIONS/DISCUSSION: Available case reports of tattoo-induced vasculitis describe hypersensitivity to brightly colored tattoo ink for up to one year after diagnosis. The long-term treatment often focuses on suppressive therapy until the immune system “auto-desensitizes.” This case features a rare case of cutaneous hypersensitivity vasculitis
after tattooing, which resulted in significant comorbidity, multiple hospitalizations, and duty status restriction of a United States sailor.

WHEN CULTURES FAIL, PCR GETS TO THE HEART OF THE MATTER: THE USE OF PCR IN THE DIAGNOSIS OF CULTURE-NEGATIVE ENDOCARDITIS  Michael Wagner 1; CDR Jeffrey Tjaden 1. 1US NAVY, Portsmouth, Virginia. (Tracking ID # 8889)

LEARNING OBJECTIVES: 1. Recognize available tools for the successful diagnosis of the specific pathogen in culture-negative endocarditis to include PCR of valvular tissue. 2. Summarize recent literature regarding speciation and culture-negative endocarditis.

CASE INFORMATION: The following is a case of an active duty male with culture-negative endocarditis (CNE) found to have Aggregatibacter aphrophilus. The patient is a 53 year old physician who developed progressive fatigue, fevers, night sweats, and headaches shortly after deploying to Iraq. Symptoms did not resolve after conservative measures and continued despite treatment with 5 days of azithromycin for a presumed sinus infection. Weeks later he was found to have persistent fevers, thrombocytopenia, elevated liver associated enzymes, and 20 lb weight loss requiring transfer to Naval Medical Center Portsmouth for further evaluation. Although febrile (103°F) and with markedly elevated C-reactive protein on presentation, initial blood cultures were negative despite extended incubation and terminal subculture. MRI of the brain obtained for persistent retro-orbital headaches and left inferior quadrant hemianopsia revealed multifocal regions of acute ischemia. He was found to have two vegetations on the posterior leaflet of the mitral valve by trans-esophageal echocardiogram. An extensive workup to obtain microbiologic diagnosis to include multiple cultures (bacterial, fungal, mycobacterial) from the blood, urine, CSF, and bone marrow as well as serologic testing for Coxiella burnetii, Brucella species, and Bartonella species was negative. The patient was treated for CNE (possible endocarditis by modified Duke Criteria) with 30 days of gentamicin and subsequent follow-up with serum creatinine 1.27 mg/dL. Repeat renal function.

RENAL INFARCTION IN A COCAINE USER WITH POSITIVE ANCA. Ana Cecilia Ortiz 1; Phuong-Chi Pham 1. 1UCLA-Olive View Medical Center, Sylmar, California. (Tracking ID # 8873)

LEARNING OBJECTIVES: 1. Recognize the myriad of etiologies of renal failure in cocaine users. 2. N/A

CASE INFORMATION: A 52 year-old female, active intranasal cocaine user, with a history of hepatitis C and Staphylococcus aureus endocarditis, presented with multiple purplish to black lesions on her nose tip, fingers, and toes over 2–3 days. On physical exam, she was afebrile, with blood pressure 90/50 mm Hg (her baseline), normal pulse and respiratory rate. Her skin had multiple large necrotic lesions on the nose tip, fingers and toes. Heart had regular rate and rhythm without murmurs. Lungs had a few bibasilar crackles. Abdomen was unremarkable. Extremities had no edema. Laboratory findings were remarkable for blood urea nitrogen 42 mg/dL, creatinine 4.8 mg/dL (baseline of 1) that peaked to 6.2 mg/dL on day 7, creatinine phosphokinase (CPK) 15 U/L. Serologies including cryoglobulins, complements, c-reactive protein, and anti-nuclear antibodies were negative. Perinuclear antineutrophil cytoplasmic antibody (p-ANCA) titer was 100 (normal less than 6). Urinalysis revealed trace proteinuria and numerous muddy brown casts. Transthoracic echocardiogram was negative for vegetations and blood cultures were negative. Nuclear renal scan revealed absence of right renal function. The presence of numerous muddy brown casts suggested an ischemic state, but there was no evidence of systemic hypoperfusion present. The absence of right renal function on renal nuclear scan suggested complete infarction. Although rare, renal infarction has been reported with cocaine use that may or may not lead to adequate functional recovery. This patient was treated supportively with fluid administration; she had good renal recovery at 2-month follow-up with serum creatinine 1.27 mg/dL. Repeat renal scan revealed normal bilateral renal perfusion and elimination. The current case demonstrated a rare renal complication in a cocaine user. Systemic thrombotic complications in cocaine users can lead to diffuse necrotic skin lesions and renal infarction. The concomitant presence of ANCA and necrotic skin lesions may lead clinicians to suspect systemic
LEARNING OBJECTIVES: 1. Recognize hepatic hydrothorax as a cause of cardiopulmonary distress 2. Understand the pathophysiology, diagnosis and management of hepatic hydrothorax Recognize spontaneous bacterial empyema as complication of hepatic hydrothorax

CASE INFORMATION: A 63 year-old man with hepatitis C presented with one week of progressively worsening shortness of breath and increase abdominal girth. He denied cough, chest pain, orthopnea, PND, extremity swelling, sick contacts, abdominal pain, or bleeding. Vitals were temperature 99.1 F, heart rate 140 bpm, blood pressure 93/71 mmHg, respiratory rate 22, SaO2 of 96% on room air. He was in respiratory distress with jugular venous distention noted 3 cm above the clavicle. Breath sounds were absent in the right lung fields. His abdomen was distended with a positive fluid wave. Laboratory studies revealed analbumin of 1.9 gm/dL, platelets of 143 k/mL, and INR 1.5. CXR demonstrated complete opacification of the right hemithorax with a left sided mediastinal shift. Following thoracentesis the patient’s dyspnea improved significantly; studies revealed a transudative fluid that grew Acinetobacter. Aparacentesis was consistent with cirrhosis without spontaneous bacterial peritonitis (SBP).

IMPLICATIONS/DISCUSSION: Hepatic hydrothorax (HH), as significant pleural effusion in a cirrhotic patient without underlying cardiopulmonary disease, is a rare complication of portal hypertension with a prevalence of 5-12%. The leading proposed mechanism is leakage of ascitic fluid viadiaphragmatic defects into the negative pressure intrapleural space during inspiration. Diagnostic work-up includes chest x-ray, thoracentesis to exclude other causes of pleural effusions, CTof the chest to exclude mediastinal, pulmonary, and pleural lesions and abdominal US with Doppler to examine the liver and ascertain the patency of portal and hepatic veins. There are reported cases of HH in the absence of ascites, making it difficult to correlate the relation of cirrhosis with pleural effusions. Treatment is targeted at the underlying disease and usually involves liver transplantation. Medical management includes sodium and fluid restriction, and diuretics. Thoracentesis may be indicated for symptomatic relief; alternatively, TIPS or paracentesis may be considered as abridge to liver transplantation for more than 8 weeks. Developing pericarditis signals impending death. The resolution of pericarditis in most patients after 10 to 14 days of dialysis supports the hypothesis that uremic pericarditis is the result of retention of unidentified toxic metabolites. Another hypothesis is that immunologic injury to pericardium mediates uremic pericarditis because there is an increase of uremic pericarditis during stress. Etiology of dialysis pericarditis isn’t clearly elucidated either. It’s difficult to attribute pericarditis to abolish up of toxic metabolites in hemodialysis patients. Patients respond to a 10-14 day intensification of dialysis. Unstable patients with large pericardial effusion, with demonstrable chamber compromise on echocardiogram should be treated with pericardiectomy, pericardial window, or pericardiostomy and pericardiocentesis as a last resort.
TILTING TOWARDS THE DIAGNOSIS Jason Halperin 1; Jason Halperin1, 2Tulane University, New Orleans, Louisiana. (Tracking ID # 8916)

LEARNING OBJECTIVES: 1. Understand the differential diagnosis of syncope. 2. Recognize the differential diagnosis of vasovagal syncope. Recognize the utility of the tilt table test for diagnostic purposes.

CASE INFORMATION: A 60 year-old woman presented with sudden loss of consciousness. She was conversing with her neighbor when she had a suddenly has blurry vision and passed out. Upon waking, she denied palpitations, chest pain, loss of bowel or bladder control, unilateral weakness or confusion. Her neighbor reported no twitching of extremities, lip smacking, tongue biting or abnormal eye movements. She denied polyuria or diarrhea. She had a history of frequent falls for a year with resultant fractures. Her medications included amlodipine and lisinopril. Her supine heart rate and blood pressure were 82 and 162/87, respectively. While upright, her heart rate and blood pressure were 96 and 109/64, respectively. Her oral mucosa were moist. She had no cardiac murmurs or carotid bruits. Her physical examination, including neurological exam, was normal. Herelectrolytes, cardiac enzymes, hematologic studies and EKG were unremarkable. She had a normal echocardiogram, carotid ultrasound, head CT, MRI/MRA, and EEG. A tilt table test was positive for neurocardiogenic syncope.

IMPLICATIONS/DISCUSSION: Syncope is commonly encountered presentation by the general internist. Neurocardiogenic causes of syncope are commonly overlooked in the elderly, as the focus is on cardiac arrhythmias, valvular disease, stroke or seizure. The use of the test is limited by availability of the test. The prevalence of orthostatic hypotension as a cause of syncope is 12%. The sensitivity of the head-tilt test to diagnose neurocardiogenic syncope is between 32-85% with specificity over 90%. The head-tilt table test mimics orthostatic stress, resulting in maximal venous pooling, central hypovolemia and provocation of vasovagal syncope. Patients with syncope have impaired vasoconstrictive splanchic and skeletal vascular beds, leading to exaggerated left ventricular contraction and sympathetic stimulation. The head-tilt test elicits these hemodynamic and neuroendocrine changes, provoking arterial hypotension and catecholamine surge that precede syncope. Treating neurocardiogenic syncope is difficult. Pharmacologic interventions aim to treat orthostatic hypotension hyperp eripherally vasoconstrictive (midodrine) or increasing the preload. Elderly patients frequently have supine hypertension and orthostatic hypotension and are dependent on non-pharmacologic treatments. Non-pharmacologic intervention include potural training. Physical counter maneuvers such as stooping, squatting, and leg muscle tensing may be helpful. Custom fitted elastic stockings and abdominal binders may help decrease venous pooling. Antihypertensives that cause orthostatic hypotension should be discontinued. Neurocardiogenic syncope is often overlooked in the elderly, as the focus is on morbid causes of syncope. However, as our patient demonstrates, vasovagal syncope can have severe morbidity and should be confirmed with a head-tilt test in apatient without a known cause of orthostatic hypotension.

A TALE OF TWO CHEST PAINS Andrea Germond 1; David Grew 1; Chayan Chakraborti1; 2Tulane University, New Orleans, Louisiana. (Tracking ID # 8920)

LEARNING OBJECTIVES: 1. Demonstrate the diagnostic value of physical exam findings and tests in the evaluation of chest pain. 2. Recognize the methodology of formal Bayesian risk assessment.

CASE INFORMATION: The juxtaposition of two clinical situations may uncover an unexpected teaching point as was the case of two patients with chest pain that prompted a discussion of clinical reasoning and formal risk assessment. The first patient was Ms. S, a 47-year-old female smoker with hypertension. Ms. S’s chest pain occurred after eating breakfast with an intensity of 10/10. The pain was left-sided, sharp, and radiated to her neck. The pain was intermittent with episodes lasting 1–2 minutes. She reported diaphoresis, dyspnea, and palpitations but denied nausea. Her only medication was amiodipine and she took an aspirin after the onset of chest pain. Sublingual nitroglycerin relieved the pain. The second patient was Mr. H, a 52-year-old man with previous history of MI, hypertension, and remote cocaine use. He reported sudden onset “pressure-like,” substernal pain, 10/10 in intensity, with radiation to the neck, and similar in character to his previous MI. It was constant, lasting several hours, and was associated with nausea, diaphoresis, dyspnea, and palpitations. He denied exacerbating factors, but reported immediate relief with nitroglycerin paste. On the surface, the two patients were similar in presentation and the physical exams for both were similarly unremarkable. Basic labs (CMP, CBC, coagulation studies) were normal in both cases. Ms. S’s ECG showed 2 mmdepressions in the inferior leads, while the Mr. H’s ECG showed 3.5 mmdepressions in the lateral precordial leads. Initial cardiac troponin-I was 0.01 ng/mL for Ms. S and 0.05 ng/mL for Mr. H (normal).

IMPLICATIONS/DISCUSSION: The initial pretest probability for CAD for Ms. S was 13% and 59% for Mr. H. On physical exam, both patients were diaphoretic (LR + 9.25), although neither patient had an S3 (LR- 0.88), or crackles (LR- 0.58). The ECG findings (LR + 4.5) and negative troponin-I (LR- 0.10) resulted in an 8% probability of disease for Ms. S. For Mr. H, the ECG findings (LR + 4.5) and troponin-I results (LR + 9.25) yielded a 98% probability of disease. Our initial clinical reasoning to classify Ms. S as lower risk for AMI and Mr. H as higher risk was corroborated by the formal risk assessments. Diagnostic testing further validated these risk assessments: Ms. S’s stress test was negative; Mr. H’s angiography revealed a 75% occlusion in the ostial LAD and he was referred for CABG.

TWO CASES OF SPINAL CORD INFARCTION–A COMPARISON Muhammed Sherid 1; Geetha Selvakumar 1. 2St. Francis Hospital, Evanston, Illinois. (Tracking ID # 8921)

LEARNING OBJECTIVES: 1. To suspect spinal cord infarction in non-aortic surgical settings. 2. To understand the etiology of spinal cord infarction.

CASE INFORMATION: Case 1: A 64 year old man presented with a 2 hour history of severe, sharp circumferential lower chest and back pain, associated with left leg weakness and
numbness. Past medical history was significant for dyslipidemia, hypertension, and infrarenal abdominal aortic aneurysm. His vital signs and general examination were unremarkable. Neurological examination revealed intact cranial nerves. Motor examination revealed a power of 0/5 in all muscle groups of the left lower extremity. Sensations to light touch, pain, vibration and position sensations were normal. He was unable to distinguish between warm and cold temperature sensations from the level of the nipples down to the mid thigh bilaterally. Deep tendon reflexes were absent in the left knee and ankle. Babinski's sign was positive on the left and neutral on the right. Rectal tone was decreased. CT scan showed marked atherosclerotic changes with a protruding thrombus, plaque and atherosclerotic penetrating ulcers with subintimal hematoma in the descending thoracic aorta. An infrarenal AAA unchanged 3.7 x 3.8 cm. MRI brain and spinal cord were unremarkable. A diagnosis of anterior spinal cord infarction was made. His symptoms resolved within 24 h without residual deficits.

**IMPLICATIONS/DISCUSSION:** Spinal cord infarction is a rare disorder. Aortic surgery is the most common etiology, however, other etiologies include atherosclerosis, vasculitis, embolic and thrombotic occlusion, and severe hypotension. The clinical presentation is acute onset of paraparesis or quadriplegia. A therapeutic algorithm exists regarding this condition in the setting of aortic surgery, but no definitive therapy has been shown to be of benefit in other settings.

**ABSTRACT**

I'M NOT CRAZY: I'M REALLY SICK

David Grew 1; Junaid Bhutto 1; Monica Dhand 1

1Tulane University, New Orleans, Louisiana. (Tracking ID # 8924)

**LEARNING OBJECTIVES:** 1. Recognize the clinical presentation of lithium poisoning 2. Identify the differential diagnosis for patients with symptoms of lithium toxicity. Understand the pathophysiology of lithium toxicity.

**CASE INFORMATION:** A 31 year-old woman presented with three-day history of nausea, vomiting, and a ten-pound weight loss. Her past medical history included Hemophilia A and HIV for which he was taking HAART therapy. Three months after initiating emtricitabine and tenofovir therapy, he began experiencing bloody and non-bilious diarrhea and can get dehydrated. The renal mechanism for Lithium absorption is similar to that of sodium. Therefore, the dehydrated patient with acute lithium toxicity can quickly accumulate the drug in the body. The toxicity virtually perpetuates itself unless the patient receives treatment. Prolonged elevation of lithium levels may cause neurological impairment that can manifest as sluggishness, ataxia, tremor and confusion. Severe lithium toxicity is lifethreatening if patients develop seizures, non-convulsive status epilepticus orencephalopathy. Unfortunately, patients taking Lithium may be significantly impaired by their psychiatric condition or by drug toxicity. In such scenarios, they may be unaul to communicate their drug regimen. The internist must be vigilant in screening for lithium toxicity in a patient being treated with Lithium as well as a psychiatric patient who has a poor history or impaired renal function.

**FANCONI INSIPIDUS**

Pavan Thangudu 1; Christie Blanton 1.

1Tulane University, New Orleans, Louisiana. (Tracking ID # 8927)

**LEARNING OBJECTIVES:** 1. Recognize the clinical presentation of Fanconi Syndrome and Diabetes Insipidus 2. Identify the differential diagnosis of Fanconi syndrome and Diabetes insipidus. Understand the pathophysiology of tenofovir induced Fanconi syndrome with Diabetes Insipidus.

**CASE INFORMATION:** A 41 year-old man presented with three weeks of nausea, vomiting, and a ten-pound weight loss. His past medical history included Hemophilia A and HIV for which he was taking HAART therapy. Three months after initiating emtricitabine and tenofovir therapy, he began experiencing polyuria and polydipsia. Hedescribed no additional symptoms. He was acachetic man with dry mucous membranes, temporal wasting, and mild epigastric tenderness. His vital signs were normal, and aside from cachexia, his physical examination was also normal. He had a sodium of 153 mEq/L, potassium 3.5 mEq/L, chloride 123 mEq/L, bicarbonate 18 mEq/L, blood urea nitrogen 16 mg/dl, creatinine 1.5 mg/dl. The amylase and lipase were mildly elevated. The HAART was discontinued at admission, and he was given a bolus of 1 liter of 0.9% saline, and continued on a maintenance intravenous fluids overnight. The sodium increased to 165 mmol/L within 6 hours; creatinine levels remained unchanged. Urine analysis revealed a specific gravity was 1.002, trace proteinuria, 300 glucose and trace hematuria. Microscopic examination of urine was negative for cells or casts. A dDAVP- challenge revealed nephrogenic diabetes insipidus. His sodium returned to normal with dDAVP drip and oral intake of water. His bicarbonate and phosphate were successfully repleted with Neutra-Phos-K.
IMPLICATIONS/DISCUSSION: Fanconi syndrome with nephrogenic diabetes insipidus is a rare complication of tenofovir therapy. In adults, fanconi syndrome is an acquired, proximal tubule dysfunction characterized by normal anion gap metabolic acidosis, glucosuria, amionaciduria, with phosphate and bicarbonate wasting. Etiologies of fanconi syndrome include multiple myeloma, heavy metal intoxications, anti-cancer agents, anti-virals, antibiotics and anticonvulsants. Tenofovir-associated nephrotoxicity seems to occur around 20 weeks after initiation. Diabetes insipidus, a condition also associated with tenofovir use, presents with polyuria and polydypsia, and is stratified into central and nephrogenic. Nephrogenic diabetes insipidus results from an alteration in the sensitivity of aquaporin channel to anti-diuretic hormone. Urine will have a low specific gravity, and when challenged with DDAVP will have no change in urinary output. The mechanism of renal damage is unknown; however, multiple postulates have been suggested. While the exact pathophysiology has not been determined, it is acknowledged that cessation of tenofovir results in resolution of renal dysfunction within 10 weeks. HAART has dramatically improved quantity and quality of life for patients with human immunodeficiency syndrome. With increasing use of tenofovir in HIV management, it is necessary for the hospitalist to be aware of this potential, albeit rare, complications.

"WORKING FOR THE WEAKENED"  Ansley Roche 1; Henry Heifer 1; David Spruill 1. 1Tulane University, New Orleans, Louisiana. (Tracking ID # 8930)

LEARNING OBJECTIVES: 1. Recognize the clinical features, laboratory manifestations and diagnosis of multiple myeloma 2. Understand the treatment options for multiple myeloma

CASE INFORMATION: A 50 year-old woman presented with worsening generalized weakness, fatigue and dyspnea on exertion over the preceding weeks. She had a 30 lb weight loss, recurrent sinus infections, persistent nausea, and episodes of confusion. She denied chest pain, cough, sick contacts, paroxysmal nocturnal dyspnea, orthopnea, or bleeding. The patient was afebrile, the blood pressure was 152/92 mmHg, and the heart rate was 114 bpm. Her conjunctivae were pale but not icteric. She had proximal muscle weakness of her lower extremities. Her hemoglobin was 7.5 gm/dL, ferritin was 182 ng/mL, BUN was 31 mg/dL, and creatinine was 3.7 mg/dL. The calcium was 18.5 mg/dL, total protein was 11.1 gm/dL, albumin was 2.8 gm/dL, and intact PTH was 17 pg/mL. EKG revealed 1st degree AV block. A skeletal survey demonstrated severe osteopenia and many lytic lesions. Serum protein electrophoresis showed an M-spike of 4.1 gm/dL that was IgG kappa by immunofixation, and urine protein electrophoresis showed an IgG kappa monoclonal band as well as free IgG kappa light chains. b2 microglobulin was >20 mg/L. Bone marrow biopsy revealed 35% plasma cells.

IMPLICATIONS/DISCUSSION: Multiple myeloma (MM) is a clonal B-lymphocyte neoplasm of terminally differentiated plasma cells producing monoclonal immunoglobulin. Renal insufficiency, anemia, hypercalcemia, increased total serum protein concentration and bone destruction are common presentations. Appropriate initial screening tests include a serum and urine protein electrophoresis along with immunofixation and a free light chain assay. Further evaluation includes a bone marrow aspiration and metastatic bone survey. The diagnostic criteria includes: an M-protein in the serum and/or urine, greater than 10% plasma cells in the bone marrow, related organ or tissue impairment from the plasma cell proliferation. Poor prognostic risk factors include low performance status, albumin, platelet count, hemoglobin or high b2microglobulin, creatinine, calcium, age, plasma cell labeling index, bone marrow plasma cell percentage. Indications for treatment include: anemia, hypercalcemia, renal insufficiency, lytic bone lesions or severe osteopenia, and extramedullary plasmacytoma. The choice of initial therapy depends on eligibility for stem cell transplantation and risk-stratification. Eligibility for stem cell transplantation is determined by age, performance status, and coexisting comorbidities. Risk-stratification is based on chromosomal studies. With out-of-therapy, symptomatic patients die within a median of six months. Survival increases to approximately two to five years with combination chemotherapy or hematopoietic cell transplantation. With many organ and tissue complications, MM has a variety of clinical presentations, each of which the general internist may encounter on a frequent basis; however, taken in combination, they should heighten the suspicion for this diagnosis.

DAMAGED LUNGS; DERANGED Â€LYTES Ken Harang 1; Junaid Bhuuto 1, 1Tulane University, New Orleans, Louisiana. (Tracking ID # 8967)

LEARNING OBJECTIVES: 1. Recognize the presentation of PJP 2. Recognize SIADH as a cause of isovolemic hyponatremia. Recognize Bactrim as a cause of electrolyte abnormalities.

CASE INFORMATION: A 53-year-old man presented with a four-day history of subjective fevers, productive cough and progressive shortness of breath. He reported pleuritic chest pain. He had a known diagnosis of HIV with a CD4 of 43 cells/mm3. He was noncompliant with his HAART therapy. His temperature was 98.3 F, blood pressure was 174/103 mmHg, breathing rate was 32 breaths/min and his heart rate of 113 bpm. Pulse oximetry revealed oxygen saturation in the upper 80s. He had bronchial breath sounds in bilateral lung fields. The rest of his exam was unremarkable. An ABG on 100% non-rebreather mask revealed a pH of 7.46, PaCO2 of 28 mmHg, and PaO2 of 91.5 mmHg. EKG showed sinus tachycardia. His sodium was 131 mg/dL, potassium was 3.5 mg/dL, bicarbonate was 21 mg/dL and creatinine was 1.0 mg/dL. The WBC was 6.8 cells/mm3 and hemoglobin was 15.0 gm/dL. Uриalysis did not show evidence of infection. Chest X-ray revealed bilateral infiltrates. He has a Lactose Dehydrogenase level of 731 mg/dL. A chest CT revealed extensive bilateral ground glass infiltrates. Due to unavailability of IV Bactrim, he was started on primaquine, intravenous Clindamycin and prednisone for Pneumocystis Jiroveci pneumonia (PJP). A bronchoalveolar lavage confirmed the diagnosis. Thenext day, he was switched to oral Bactrim. His home medications of Hydrochlorothiazide and Lisinopril were restarted. On hospital day three, an ABG revealed a pH of 7.50 and hypoxia. Patient's creatinine increased from 1.1 to 1.7 mg/dL, and there was an anion-gap acidosis. Lactic acid level was elevated. Following fluid challenge, the sodium and potassium were 114 mg/dL and 5.8 mg/dL respectively.
IMPLICATIONS/DISCUSSION: Our patient had an acute hyponatremia and acute kidney injury. Upon review, the information revealed an interesting interplay of the Occam’s Razor with Hickam’s Dictum. Acute hyponatremia can sometimes be secondary to an occult Syndrome of Inappropriate Antidiuretic Hormone. With lung injury, ADH is released and causes an inappropriate retention of free water. In an attempt to correct lactic acidosis, a clinician may induce normal saline. However, in the presence of SIADH, the clinician may inadvertently worsen the hyponatremia. Our patient was simultaneously losing salt from HCTZ therapy. The result was a sharp drop of the sodium. Patients on high dose Bactrim therapy can also experience elevation of creatinine and potassium. Tramethoprim can block the renal tubular potassium secretion. Moreover, high-dose Bactrim can cause greater than expected derangements in creatinine and potassium. Weber believe that the hyponatremia, and the increased creatinine and potassium were due to two separate insults. However, they resulted from treatment of the patient’s FJP. The art of medicine dictates that despite standardized treatments, a patient’s care must be individualized based on their unique presentation.

ETANERCEPT-AN EAGLE TO PROMETHEUS Henry Heffler 1; Marlowe Maylin1, 4Tulane University, New Orleans, Louisiana. (Tracking ID # 8968)

LEARNING OBJECTIVES: 1. Recognize the clinical presentation of acute liver injury. 2. Identify the differential diagnosis for significant elevations in transaminases. Understand the pathophysiology of drug-induced liver injury by TNF-alpha inhibitors.

CASE INFORMATION: A 54-year-old man presented with four weeks of progressive pruritis, diarrhea and jaundice. He denied herbal medications, acetaminophen ingestion, recent travel, alcohol use, intravenous drug use, sexual activity, tattoos, or environmental exposures. Eight weeks prior to presentation, he was started on twice-weekly injections of etanercept for his psoriatic arthritis. He was afebrile and had normal vital signs. He had scleral icterus, cutaneous jaundice and a liver palpated five cm below the costal margin. There were no other signs of chronic liver disease. The total bilirubin was 24 mg/dL, the direct bilirubin was 19 mg/dL, the AST was 2655 U/L, the ALT was 2411 U/L, and the alkaline phosphatase was 214 U/L. The albumin, direct bilirubin was 19 mg/dL, the AST was 2655 U/L, and the alkaline phosphatase was 214 U/L. The albumin, INR were 3 gm/dL and 1.4, respectively. A viral hepatitis panel; EBV, HBSV, CMV IgM; rapid HIV; urinotoxicology; and APAP levels were negative. The ANA and ASMA were normal. An abdominal ultrasound revealed an enlarged liver. A liver biopsy revealed diffuse lobular and portal inflammation with scattered hepatocyte necrosis consistent with drug-induced hepatitis. The etanercept was stopped, and after one week, the total bilirubin was 9.9 mg/dL and AST and ALT were 396 U/L and 830 U/L, respectively.

IMPLICATIONS/DISCUSSION: Jaundice and transaminase elevations are problems frequently encountered by the internist. The acuity of the findings and temporal relation to any exogenous factors is integral in indentifying a potential cause. Elevations of AST/ALT greater than 1000 are typically due to acute and fulminating inflammatory source; elevations in bilirubin are not always present but when present, portend a poor prognosis. The differential diagnosis should include acute infection with viral hepatitis, ingestion of hepatotoxins, thrombosis of the portal vein, shock liver and autoimmune hepatitis. Drug-induced liver injury (DILI) can be classified by mechanism of injury, including direct hepatotoxicity and immune-mediated, butestabilishing the precise diagnosis can be difficult. The key to causality is to exclude other causes of liver injury and to identify a characteristic clinical drug-related signature. Histology can also be useful in confirming the diagnosis. Particular to this case, the lack of illness prior to initiation of the medication, the clinical presentation, the biochemical abnormalities, and the improvement after etanercept was withdrawn are suggestive of DILI, which was confirmed by biopsy. Etanercept is currently FDA approved for psoriatic arthritis, rheumatoid arthritis, juvenile idiopathic arthritis, ankylosing spondylitis and organ transplantation. TNF-alpha inhibitors can cause both direct injury to the liver and an autoimmune hepatitis with or without elevations in autoantibodies. With the use of TNF-alpha inhibitors like to increase in coming year, the general interest must be aware of this important and potentially life-threatening complication.

CALCIUM CONFUSION Kate Hust 1; Marcia Glass1, 4Tulane University, New Orleans, Louisiana. (Tracking ID # 8975)

LEARNING OBJECTIVES: 1. Recognize clinical manifestations of hypercalcemia. 2. Identify the differential diagnosis for hypercalcemia. Understand the mechanisms of hypercalcemia and identify treatment options for hypercalcemia.

CASE INFORMATION: A 50-year-old woman with a history of metastatic breast cancer presented with constipation, fatigue, lower-back pain and difficulty responding to questions. By way of her family, she had had no fevers, night sweats or focal weakness. The family noted a recent increase in urinary frequency, but there was no dysuria or incontinence. The back pain had been present for over a month, but the altered mental status was new within the past two days. Her vital signs, cardiac, pulmonary and abdominal examinations were normal. There were no focal deficits on neurologic examination. There was point-tenderness to palpation of the lower spine, and both lower extremities were painful to palpation. Her CBC and liver enzymes were normal. The serum calcium was 18 mg/dL, and the alkaline phosphatase was 639 IU/L. A bone scan revealed new metastatic lesions to the lower spine. She was treated with simultaneous diuresis/hydration, in addition to bisphosphonate. As her calcium level normalized, her mental status improved to a baseline level of function.

IMPLICATIONS/DISCUSSION: The non-specific complaints of constipation, fatigue, and altered mental status are frequently encountered by the general internist. Though common, the internist should recognize the combination of these symptoms typical of hypercalcemia. Whenserum calcium exceeds 12 mg/dL, generalized symptoms of constipation, polyuria, nausea, vomiting, and fatigue may result. As the calcium continues to rise, changes in sensorium may develop, including dizziness, confusion, lethargy, and coma. Further complications may include cardiac arrhythmias. Ninety percent of hypercalcemia is caused by primary hyperparathyroidism and malignancy. Assessing the parathyroid hormone level is usually the first step in evaluation, though the level of the serum calcium can provide insight into the etiology: calcium levels greater than 15 mg/dL are usually associated with malignancy. Hypercalcemia is rarely the hallmark of an occult tumor, however, and age-appropriate cancer screening usually reveals the etiology. The initial treatment for hypercalcemia is aggressive hydration. Management should also target the underlying disease. When calcium is severely elevated, bisphosphonates are the first-line therapy to inhibit bone
resorption in patients with normal renal function. Zolendronate can be administered rapidly over 15 or fewer minutes, providing a sustained decrease in serum calcium; the maximum effect is noted after 24–48 hours. More immediate therapy can be achieved by using calcitonin. Furosemide and glucocorticoids also have a place in the treatment of certain etiologies of hypercalcemia. Emergent hemodialysis is reserved for severe hypercalcemia in the setting of renal failure. Malignancy is a common chronic health condition, and understanding how to manage hypercalcemia is important for internists to effectively alleviate symptoms and prevent potentially fatal complications.

DON’T FORGET TO TAP INTO ALL YOUR RESOURCES: INVESTIGATION INTO THE ETIOLOGY OF PLEURAL AND PERICARDIAL EFFUSIONS IN A PATIENT WITH CONNECTIVE TISSUE DISEASE

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LEARNING OBJECTIVES: 1. Determine the etiology of simultaneous pleural and pericardial effusion as infectious versus rheumatologic. 2. Treat pleural and pericardial effusions associated with rheumatologic disorders.

CASE INFORMATION: A 51 year old female with a history of pulmonary sarcoidosis, Sjögren’s syndrome, asthma, prior splenectomy, and coronary artery disease presents with one month of worsening shortness of breath. CT angiogram of the chest showed no evidence of pulmonary embolism or pneumonia, but did reveal small bilateral pleural effusions noted on previous CXRs. Thoracentesis was deferred due to small size and chronicity of effusions, and patient body habitus. Blood cultures grew Salmonella enteritidis and a ten day course of ciprofloxacin was initiated. The patient’s respiratory status improved prior to discharge. The patient was readmitted within 48 hours with fever to 102.4, worsening shortness of breath, pleuritic chest pain, and a new leukocytosis of 13.8. CT showed an interval increase in the left-sided pleural effusion. CT-guided thoracentesis revealed 450 mL of yellow serous pleural fluid with 4600 WBCs (100% neutrophils), 2900 RBCs, LDH 1284 (serum LDH 199), total protein 5.8 (serum total protein 7.0), glucose 2, and 1.76, consistent with an exudative effusion. Repeat CXR following drainage showed no new pleural effusion. There was a sustained decrease in serum calcium; the maximum effect is noted after 24–48 hours. More immediate therapy can be achieved by using calcitonin. Furosemide and glucocorticoids also have a place in the treatment of certain etiologies of hypercalcemia. Emergent hemodialysis is reserved for severe hypercalcemia in the setting of renal failure. Malignancy is a common chronic health condition, and understanding how to manage hypercalcemia is important for internists to effectively alleviate symptoms and prevent potentially fatal complications.

CLINICAL VIGNETTES

SLE-ASSOCIATED TRANSVERSE MYELITIS INVOLVING C5-T11 LEADING TO PARAPLEGIA

Neda Shafraghi 1; Ramy Hanna 1; Rachel Mory 1; 1UCLA-Olive View Program, Sylmar, California. (Tracking ID # 9094)

LEARNING OBJECTIVES: 1. Recognize Transverse Myelitis as part of the differential diagnosis of Systemic Lupus Erythematosus-associated neurological sequelae. 2. Recognize the clinical features of Transverse Myelitis.

CASE INFORMATION: Systemic Lupus Erythematosus (SLE) has many clinical presentations, due to its ability to affect all organ systems in a variety of ways. Neurological involvement is common and is one of the diagnostic criteria for SLE, but is usually manifest as CNS vasculitis ("lupus cerebritis"). We present a case of a rare but well-described neurological manifestation of SLE, Transverse Myelitis (TM). We present the case of a male patient who initially complained of bilateral hand arthritis, then subsequently presented with weakness of the right lower extremity, progressing to paraplegia and urinary retention. Physical examination was notable for the following: hypotonia of bilateral lower extremities, right lower extremity strength significantly less than left lower extremity, decreased sensation bilateral lower extremities, lower extremity reflexes 1+, and upgoing bilateral Babinski. The patient had no signs or symptoms of altered mental status, seizures, or any other neurological findings concerning for CNS vasculitis. A lumbar puncture was done which showed CSF protein 168, WBC 33 with a differential of 76% lymphocytes, and negative cultures. His MRI demonstrated inflammation in the cervical and thoracic spine, and the patient was diagnosed with Transverse Myelitis from C5-T11. It was at this time that the potential underlying cause was investigated, and the patient was diagnosed with SLE based on the arthritis findings, neurological involvement, positive ANA (1:2560), hematological abnormalities, and positive anti-phospholipid antibody. He recovered most of his neurological function after treatment with high dose steroids and cyclophosphamide.

IMPLICATIONS/DISCUSSION: SLE has several classic presenting features including arthritis, malar and discoid rashes, oral ulcers, serositis, hemolytic anemia, thrombocytopenia, renal failure, and cerebritis. There are other less well appreciated manifestations of SLE.
and of other rheumatological/autoimmune diseases. One rare but
documented sign of SLE is demyelinating plaques in the CNS that can
often be mistaken for Multiple Sclerosis plaques. Sjögren’s syndrome,
Neuromyelitis Optica (Devic’s syndrome), and other rheumatological
conditions have also been observed to cause demyelinating plaques in
the CNS. These conditions can also cause TM. TM involves an
inflammatory lesion that transects one or more levels of the spinal
cord, often causing loss of neurological (motor and sensory) function
below that level. The reported incidence of TM in SLE and associated
diseases is 1000-fold that of the general population. TM has also been
associated with standard childhood vaccines such as the Measles-
Mumps-Rubella vaccine, possibly via induction of an auto-immune
response. The treatment of TM in SLE is generally directed at
suppressing inflammation, with corticosteroids and other immunomono-
dulators such as cyclophosphamide.

AN INTERESTING CASE OF ADULT STILL’S DISEASE Caroline T.
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LEARNING OBJECTIVES: 1. Recognize the signs and symptoms of
Adult Still’s Disease. 2. Diagnose and treat Adult Still’s Disease.

CASE INFORMATION: One week prior to admission, a 51-year-old
previously healthy Hispanic woman noticed a pink, diffuse, non-tender,
and minimally pruritic rash on her abdomen. Over 24 hours, the rash
spread bilaterally to her arms and legs, disappearing and returning.
Simultaneously, she developed joint pain in her right knee and both
wrists, fever, nausea, non-bloody vomiting, and a lip lesion. Five days
after initial symptoms she began to have non-bloody, watery diarrheal.
Review of systems was significant for low-grade headaches, posterior
neck and shoulder tenderness, and a one-day history of
bilateral earache and sore throat. She denied medications, recent
travel, or sick contacts. Significant findings on physical exam
included fevers to 40°C, crusted lip lesions, a pink, diffuse,
macularpapular rash on her trunk and lower extremities to the level of
the knees bilaterally, a small left axillary lymph node, effusion of the
right knee, left hand stiffness, and tenderness of the cervical
spine and bilateral wrists. Neurological exam was normal. Abdominal
ultrasound showed enlarged liver (19 cm) and borderline enlarged
spleen (12.2 cm); EKG and ECHO were normal. Laboratory findings
included: WBC 12.8 with 87.5 PMNs, ESR 127, CRP 408, LDH 385,
AST 66, ALT 57, RF 11, and negative ANA. An extensive work-up,
including rickettsial, Lyme, parovirus, and HIV serology, RPR, ASO
titer, and cultures of throat, blood, urine, CSF, and stool, yielded no
signs of acute infection. The patient continued to have fever and
persistent daily rash despite broad-spectrum antibiotic coverage. The
ferritin level returned >8000 ng/dl. With infectious and neoplastic
cultures, nodular cavitary lesions on chest CT, and clinical suspicion are
ruled out. Methylprednisolone 60 mg IV q 12 hours was
initiated. The patient’s fevers resolved and the rash and arthralgias
improved within 24 hours.

IMPLICATIONS/DISCUSSION: Adult Still’s disease (ASD) is an inflam-
matory disorder characterized by daily fevers, arthritis, and an
evanescent rash. While etiology is unknown, infectious triggers and
genetic factors have been proposed. Annual incidence is estimated at
0.16 cases/100,000 persons, with equal distribution between sexes and
a mean age of presentation of 38 years. The Yamaguchi Criteria, the
most sensitive criteria (94%) in patients with a definite diagnosis of ASD,
are most commonly used. These include having five features with at
least two of them being major. Major features include 1. fever of 39 C or
greater lasting at least one week 2. arthralgias or arthritis lasting
2 weeks or longer 3. nonpruritic macular or maculopapular skin rash
salmon-colored in appearance usually over trunk or extremities during
febrile episodes and 4. leukocytosis (10,000/microL or greater) with at
least 80 percent granulocytes. Minor features include 1. sore throat 2.
lymphadenopathy 3. hepatomegaly or splenomegaly 4. abnormal liver
function studies, particularly aspartate, alanine aminotransferase, and
LDH and 5. negative ANA and RF. As ASD can masquerade as numerous
diseases; the differential diagnosis is broad including infectious,
autoimmune, and hematologic etiologies and malignancy. Consider
ASD in patients with compatible symptoms with a ferritin above
3000 ng/ml in the absence of a bacterial or viral infection. While our
patient met the Yamaguchi Criteria, this case was unusual in that the
rash and fever persisted (i.e., was not fleeting) until steroids were
administered. Treatment includes NSAIDS, glucocorticoids, biologic
agents, and DMARDs. Given symptom severity in our patient, gluco-
corticoids were used from the onset. The functional status of patients
with ASD is generally good.

NOT A SIMPLE PIMPLE Lawrence Huan 1; Anjali Niyogi1. 1 Tulane
University, New Orleans, Louisiana. (Tracking ID # 9123)

LEARNING OBJECTIVES: 1. Describe the presentation and treatment
of septic pulmonary emboli (SPE). 2. Highlight the increasing virulence of
community-associated methicillin-resistant Staphylococcus Aureus
(MRSA).

CASE INFORMATION: A 21-year old man presented with a one-day
fever of 39°C, sharp, left-sided non-radiating pleuritic chest pain, exacerbated
by deep inspiration and relieved by palpation. He also complained of a
dry cough, fever, and night sweats for one day. He denied recent illnesses, but
reported extra and intranasal acnewith copious purulent discharge. He
denies drug use. Handed any recent exposure to a healthcare facility. His
vitals were 100.6°F, 103 bpm, respirations of 24 and 141/86 mmHg. He
had no external nares with underlying erythema; internal nares were normal. Theremained of the exam was unremarkable.
Laboratories revealed a white blood cell count of 17,000/μL with 54%
segmented neutrophils and 15% bands. Chest CT angiogram revealed
eight cavitorypulmonary nodules throughout the lungs (largest
2.6 cm). Sputum AFB, HIV, ANC, and ACE were negative. Blood
cultures grew methicillin-resistant Staphylococcus Aureus (MRSA), and
MRSA nasal swabs were positive. TEE was negative for endocarditis and maxillofacial CThowsed no deep tissue involvement.
He was treated with intravenous vancomycin for presumed endocarditis with
septic pulmonary emboli (SPE).

IMPLICATIONS/DISCUSSION: Typical symptoms of SPE are fever,
cough, and arthralgias. Elevated markers of infection, positive blood
cultures, nodular cavitory lesions on chest CT, and clinical suspicion are
sufficient to investigate for SPE. Prompt antibiotic treatment should
be initiated. Echocardiography is required to rule out endocarditis. The
standard treatment of MRSA SPE is vancomycin for 4–6 weeks.
Recently, reduced vancomycin susceptibility organisms have been
encountered and therapies involving linezolid, daptomycin, or cotrimox-
azole have shown efficacy. It has been noted that patients with SPE
originating from focal infections other than endocarditis may do
reasonably well with early treatment. However, with MRSA endocarditis,
thermality rate may be greater than 50%. Community-associated
MRSA infections typically present as soft-tissue or skin infections, and
less commonly as the virulence of community-associated MRSA increases,
internists in the inpatient and outpatient settings must recognize the
potential presentations and complications of this organism to quickly
diagnosis and treat to minimize further complications.
CONTRACEPTIVE COUNSELING IN THE PERIMENOPAUSAL WOMAN
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LEARNING OBJECTIVES: 1. To recognize the importance of reviewing sexual histories and providing contraceptive counseling as part of the clinical management of perimenopausal women. 2. None

CASE INFORMATION: A 52-year-old female with one year of irregular menses presents to clinic asking for a pregnancy test. She and her husband had unprotected intercourse three weeks ago. Her last menstrual period was approximately three months ago. She describes symptoms similar to those that she experienced in her prior pregnancies, including bilateral breast swelling and food cravings. She confides that if she is pregnant, she would like to terminate the pregnancy. Her physical exam is unremarkable except for a mildly enlarged uterus, which is firm and mobile. Pertinent laboratory results include a negative urine human chorionic gonadotropin. Obtaining other laboratory tests was deferred due to the likelihood of perimenopause as the cause of her oligomenorrhea. Similar to many other women, she was having intercourse without contraception due to the misconception that she would not be able to become pregnant in the perimenopausal time period. After discussing contraceptive options with the patient, she elected to use barrier contraception.

IMPLICATIONS/DISCUSSION: Over a third of all pregnancies are unintended in women aged 40 years and older, a higher percentage than that observed in women aged 30–39 years. One likely reason for this disparity in unintended pregnancy rates is the common misconception in perimenopausal women that they are no longer fertile once they develop irregular menses. In one study of women older than age 40 years with an unintended pregnancy, 56% terminated the pregnancy. For these reasons, taking a sexual history and providing contraceptive counseling when appropriate is an important part of caring for the perimenopausal woman. In this vignette, our patient had the misconception that her irregular menses would prevent her from becoming pregnant. This same misconception has been documented in other studies of perimenopausal women. As general internists, we need to counsel our perimenopausal patients regarding their fertility and contraceptive options. For optimal contraceptive counseling, we need to be knowledgeable of contraceptive options in women with and without medical comorbidities, as well as the benefits of various contraceptive agents for treating perimenopausal symptoms. In our clinical management of perimenopausal patients, we must address sexual histories and proactively provide appropriate contraceptive counseling in order to reduce the disparate rate of unwanted pregnancies in this population.

A RARE CASE OF INFERIOR VENA CAVA SARCOMA PRESENTING AS ACUTE FULMINANT BUDD-CHIARI SYNDROME
Muhammed Sherid 1; Geetha Selvakumar 1. 1St.Francis Hospital, Evanston, Illinois. (Tracking ID # 9141)

LEARNING OBJECTIVES: 1. To suspect the uncommon, when the clinical picture is perplexing. 2. To understand that IVC sarcoma can present as Budd-Chiari syndrome

CASE INFORMATION: A 91 year old male presented with a six hour history of mild, dull, constant epigastric abdominal pain without radiation. He did not have fever, nausea, vomiting, or changes in bowel movements. He had a swelling in his left scrotum for 2 months for which he did not seek medical attention. Three weeks prior to admission, the patient was diagnosed with left lower extremity DVT in another hospital and was started on warfarin. Past medical history was also significant for end stage renal disease due to polycystic kidney disease. On physical examination, he was pale, afebrile, tachycardic and hypotensive. He was drowsy but arousable and was oriented to person only. Abdomen was soft with normal bowel sounds and tender hepatomegaly which was palpable for 3 cm below the right costal margin. There was no guarding, rebound tenderness or rigidity. There was a large left scrotal swelling with no palpable masses. He had bilateral pitting pedal edema. Laboratory examination was significant for markedly elevated aminotransferases at AST 1817 and ALT 631. Alkaline phosphatase was 232, bilirubin 1.6, INR 3.3, albumin 3.3 and ammonia 180. CT scan of the abdomen and pelvis showed a large hypodensity within the inferior vena cava extending into the right atrium. The hepatic and portal veins were patent. Liver was enlarged measuring 20 cm without any masses. The patient’s condition deteriorated rapidly due to worsening liver function. His transaminases and INR continued to rise despite medical management. His family declined any invasive procedures. He became comatose and died on the fourth day of hospitalization. Autopsy showed distention of the inferior vena cava along its entire length by a gray-tan mass and thrombus which extended into the right atrium. The mass was a poorly differentiated sarcoma composed of malignant spindle-fusiform cells and large anaplastic cells; it arose in the intimal layer of the cava and protruded into the lumen.

IMPLICATIONS/DISCUSSION: Sarcomas of the inferior vena cava are rare, usually presenting as a mass or deep vein thrombosis. They may manifest rarely as an acute form of Budd-Chiari syndrome from hepatic venous occlusion. The treatment is surgical resection; however, because of the extension of the sarcoma to the right atrium and the patient’s advance age, surgery was not feasible. To the best of our knowledge, this is the first case of an inferior vena cava sarcoma presenting as acute Budd-Chiari syndrome.

AEROCOCCUS URINAE ENDOCARDITIS
Muhammed Sherid 1; Geetha Selvakumar 2. 1St.Francis Hospital, Evanston, Illinois; 2St.Francis, Evanston, Illinois. (Tracking ID # 9143)

LEARNING OBJECTIVES: 1. To suspect endocarditis in new onset stroke and fever. 2. To understand that Aerococcus urinaceus is highly implicated as a causative agent of endocarditis in the presence of bacteremia

CASE INFORMATION: A 65 year old male presented with a 12 hour history of right-sided weakness with slurred speech and several days history of fever. There was no history of recent travel or sick contacts. There was no history of cough, shortness of breath, headache or loss of consciousness. Past medical history was significant for left sided stroke 2 years ago with no residual defects. On physical examination, his blood pressure was 157/79, pulse 121, temperature 101.6 F, oxygen saturation 96% on room air. He was pale and anicteric. There was no jugular venous distension or lymphadenopathy. His head and neck examination was unremarkable. His chest was clear to auscultation. There was a 2/6 systolic murmur in the base of the heart without any radiation. The abdomen was soft, non tender and did not reveal any organomegaly. His neurological exam was significant for right sided hemiparesis. His cranial nerves were intact. He did not have any pedal edema and there was no skin rash. His labs showed an elevated white blood cell count at 14.2, platelet 560, Hb 9.6 and Hct 28.5. His comprehensive metabolic panel was within normal limits. A CT scan of the head was unremarkable following which an MRI of the brain was done which showed acute ischemic changes along the medul
Cortex of the left frontal lobe. A chest x-ray was unremarkable. His urinalysis showed pyuria. He was started on broad spectrum antibiotics. Urine culture grew mixed gram positive bacteria indicative of possible contamination. His blood culture grew Aerococcus urinae. A transesophageal echocardiogram was done which showed large vegetations noted on the mitral valve accompanied by severe mitral regurgitation and a smaller vegetation on the tricuspid valve. The antibiotics were changed to ampicillin and gentamycin after the organism was identified. However, despite therapy his condition deteriorated and the patient expired approximately 2 weeks after admission.

**IMPLICATIONS/DISCUSSION:** Aerococcus urinae is a gram positive alpha hemolytic coccus that grows in pairs and clusters. This organism is commonly misidentified as streptococcus or enterococcus. It commonly causes UTI, but has also been frequently incriminated in cases of endocarditis. This organism is associated with a high mortality when isolated from patients with endocarditis. A retrospective study of endocarditis caused by A.urinae showed that 9 out of 13 patients died. Review of literature shows that A.urinae is usually treated with penicillins or vancomycin with gentamycin.

**WEBER-CHRISTIAN PANNICULITIS INDUCED BY PHENTERMINE**
Muhammed Sherid 1; Geetha Selvakumar2. 1St.Francis Hospital, Evanston, Illinois. (Tracking ID # 9144)

**LEARNING OBJECTIVES:** 1. To use the adverse drug reaction assessment nomogram in the appropriate clinical settings 2. To suspect Phentermine as a cause of panniculitis

**CASE INFORMATION:** A 24 year old Hispanic female presented with a 2 month history of three skin lesions, one located to the right of the umbilicus, another on the right thigh and a third on the left flank area. The lesions were painful and erythematous. For a period of 1 week prior to admission, she was complaining of fever, fatigue, myalgia, arthralgia, and generalized pruritus without any appearance of new rashes. She denied cough, sore throat, abdominal pain, diarrhea, or urinary symptoms. There was no history of recent travel or camping. There was no significant past medical history except for obesity for which she was prescribed phentermine 2 weeks before the commencement of her symptoms. On physical examination, she was febrile with T=102 F and her other vitals were normal. Weight was 210 lbs (no recent change in weight), and BMI was 31. Examination of skin showed three indurated, tender erythematous plaques located on the right side of the umbilicus, right thigh and left flank measuring 10x10cm, 10x15cm, and 2x2 cm respectively. The remainder of the examination was unremarkable. Laboratory studies showed a normal CBC and BMP. Aminotransferases and alkaline phosphatase were mildly elevated. Amylase and lipase were normal. ESR and CRP were elevated at 41 and 5.7 respectively. A chest X-ray was unremarkable. Serology of CMV, EBV, HCV, HBV, HAV, HIV, Lyme disease, Q fever, parvovirus, leptospirosis and syphilis were negative. ANA, RF and ANCA were negative. A skin biopsy was performed which showed superficial and deep lymphoplasmacytic perivascular inflammation extending into the subcutis. These histopathological findings are consistent with panniculitis. Due to the temporal relationship between the commencement of Phentermine and the onset of her symptoms and in the light of absence of other common causes of panniculitis, a diagnosis of phentermine-induced panniculitis was made.

**IMPLICATIONS/DISCUSSION:** Weber-Christian panniculitis is an infiltrative inflammatory disease occurring in adipose tissue that occurs usually in young females. It presents as tender erythematous rash, located over the extremities, abdominal areas, breasts, face and buttocks. It is often associated with constitutional symptoms, such as fever, arthralgias, and myalgias. It may be idopathic or associated with other disease, such as connective tissue diseases, pancreatic processes, alpha-1 antitrypsin, and physical causes like cold. There is no reported case of phentermine induced Weber-Christine panniculitis in the literature to the best of our knowledge.

**PASTEURELLA MULTOCIDA CAUSING COMPARTMENT SYNDROME**
Muhammed Sherid 1; Geetha Selvakumar2. 1St.Francis Hospital, Evanston, Illinois. (Tracking ID # 9146)

**LEARNING OBJECTIVES:** 1. To suspect compartment syndrome caused by unusual organisms 2. To recognize that timely intervention is essential in the management of compartment syndrome

**CASE INFORMATION:** A 41 year old female presented twelve hours after a cat bite in her right forearm with severe pain, erythema and warmth in cat bite site, associated with fever and chills. She also complained of numbness in her fingers in the right hand without any weakness. It was a stray cat which was picked up by her the day before. She did not have significant past medical history. On physical examination, her vital signs were normal except for a temperature of 101 F. General examination was unremarkable. Her right forearm was erythematous, warm, tender and swollen circumferentially. Two puncture wounds with purulent discharge were identified in the anterior aspect near the wrist. The compartment pressures measured by needle manometry were 64 mmHg and 47 mmHg in the anterior and posterior aspects of the right forearm respectively. Repeat readings were consistently elevated in the same range. Since a compartment pressure above 30 mmHg requires decompression, a fasciotomy was done. Wound culture grew pasteurella multocida which was susceptible to ampicillin/sulbactam. The patient was already started on the same antibiotic. Laboratory studies were remarkable for leukocytosis at 29.5 K/mm Cu. Erythrocyte sedimentation rate and CRP were elevated at 55 and 19.4 respectively. An X-ray of the right forearm and hand showed soft tissue swelling without any bone destruction or subcutaneous emphysema. Patient’s condition improved uneventfully during hospitalization and was followed up as an outpatient. She underwent plastic reconstructive surgery for the closure of the fasciotomy wound after completion of the course of antibiotics.

**IMPLICATIONS/DISCUSSION:** Pasteurella multocida is Gram-negative coccobacillus. It is isolated up to 75% of cat bite wounds. In addition to causing infection in the bite site, it can spread deep to cause septic arthritis, osteomyelitis, and tenosynovitis. It can also cause pneumonia and upper respiratory infection in humans without a history of animal bites or scratches. Serious invasive infections such as meningitis, intraabdominal infection, ocular infection, acute suppurative thyroiditis, urinary tract infection, and endocarditis have been reported. However, there is no case report of compartment syndrome from pasteurella multocida to the best of our knowledge.

**LUBIPROSTONE INDUCED ISCHEMIC COLITIS**
Muhammed Sherid 1; Geetha Selvakumar2. 1St.Francis Hospital, Evanston, Illinois. 2St. Francis, Evanston, Illinois. (Tracking ID # 9149)

**LEARNING OBJECTIVES:** 1. To look for uncommon causes of ischemic colitis in the appropriate clinical setting 2. To recognize that ischemic colitis can be a rare side effect of Lubiprostone

**CASE INFORMATION:** A 54 year old female presented with a 2 hour history of nausea, non bloody, non bilious vomiting for several times
associated with crampy generalized abdominal pain which was located more in the epigastric area. She did not have any bowel movements for three days prior to her arrival. In the ED she had 1 bowel movement with hard stools followed by 6 watery, bloody stools. Past medical history was significant for DM, hypertension, hypercholesterolemia, hypothyroidism and chronic constipation. On admission her vital signs were essentially normal. Physical examination revealed a soft abdomen with mild epigastric and left upper quadrant tenderness. There was no distension, guarding, rebound tenderness or organomegaly. The remainder of the physical exam was unremarkable. Laboratory studies were unremarkable including urine toxicology and stool studies. A CT Scan of the abdomen revealed thickening of the colonic wall of the transverse colon and portions of the descending colon near the splenic flexure. A colonoscopy showed inflammatory changes in the colon between 30–40 cm from the anal verge consistent with ischemic colitis. Histopathology was consistent with ischemic colitis. A diagnosis of ischemic colitis was made. To elucidate the etiology, we took a detailed history. She did not have any decrease in BP either before or during admission which rules out hypotension as a cause of ischemic colitis. As far medications, over the counters, and herbals, she stated that she was taking Lubiprostone for a period of two months for chronic constipation. At that time, she was started on 24 mcg of Lubiprostone, but several hours after taking the drug, she developed nausea, vomiting and abdominal pain with bloody diarrhea which lasted for a couple of days. She did not undergo any investigations, but her dose of Lubiprostone was changed to 8mcg daily as needed. As for this time, she took 3 pills of 8 mcg (24 mcg) 24 h prior to her symptoms.

IMPLICATIONS/DISCUSSION: Lubiprostone is prostaglandin E1 derivative which activates type-2 chloride channels (CLC-2) and consequently increases fluid secretion into the intestinal lumen. It has been approved for chronic constipation and irritable bowel syndrome. It is well known to cause nausea, vomiting, watery diarrhea, abdominal pain and distention, but to the best of our knowledge, this is the second reported case in the literature for ischemic colitis caused by Lubiprostone. This temporal relationship between the recurrence of symptoms and the rechallenging of the drug, confirms the diagnosis in the light of absence of other causes of ischemic colitis. The actual mechanism is unclear, but could be due to the vasoconstriction effect of Lubiprostone in high doses.

GIAN T LAMINATED BLADDER STONE Muhammed Sherid 1; Geetha Selvakumar2. 1St.Francis Hospital, Evanston, Illinois ;2St.Francis, Evanston, Illinois. (Tracking ID # 9150)

LEARNING OBJECTIVES: 1. To understand the pathogenesis and clinical manifestations of bladder stones 2. To recognize this uncommon disorder in the appropriate clinical settings

CASE INFORMATION: A 75 year old man presented with a history of urinary frequency, urgency and suprapubic abdominal discomfort for duration of one month. The patient had severe suprapubic abdominal pain and fecal incontinence while urinating for 2 weeks prior to admission. The fecal incontinence occurred while urinating in both the sitting and standing positions. He was treated with 2 courses of antibiotics without improvement. Past medical history is significant for removal of bladder stones two times, 13 and 10 years ago (the size of stone was more than 5 cm both the times). He was diagnosed with benign prostatic hypertrophy three years ago. Social history: He is from Belize in Central America and works as a teacher. No family history of kidney or bladder stones. On physical examination, he was afebrile with normal vital signs. Cardiopulmonary examination was unremarkable. Abdomen was soft. A firm mass was palpated in the suprapubic area associated with mild tenderness. He also had tenderness in the right costovertebral angle. Rectal exam revealed normal sphincter tone; prostate was enlarged with no nodules or masses. An attempt at urethral catheterization failed. Laboratory studies showed hematuria and pyuria with positive nitrite and leukocyte esterase. Urine culture grew Escherichia Coli. Complete blood count and comprehensive metabolic panel were unremarkable except for mild elevation of creatinine. CT scan of the abdomen and pelvis showed a large radiopaque laminated bladder stone measuring 8 x 7 x 6 cm. Bilateral hydronephrosis was noted as well. Patient underwent an open cystolithotomy with removal of the bladder stone which weighed one kilogram. The analysis showed uric acid 80% and calcium oxalate 20%. After surgery, his symptoms, bilateral hydronephrosis, and acute renal failure all resolved. The patient had an uneventful hospital course and was advised to increase his oral fluid intake and get 6 monthly ultrasound examinations.

IMPLICATIONS/DISCUSSION: Bladder stones occur in adult men in the vast majority of cases. They are usually secondary to bladder outlet obstruction. However, in some patients they originate from the upper urinary tract and migrate into the bladder where they grow after additional deposition of crystals. The incidence of bladder stones has been declining in developed countries while it still remains common in developing countries. The majority of these stones are composed of uric acid. Calcium oxalate, phosphate and struvite stones are next in frequency.

SYNCOPE AS A PRESENTING FEATURE OF ANGIOSARCOMA OF THE COLON! Muhammed Sherid 1; Geetha Selvakumar2. 1St.Francis Hospital, Evanston, Illinois ;2St.Francis, Evanston, Illinois. (Tracking ID # 9151)

LEARNING OBJECTIVES: 1. To consider the unusual etiology for the common medical problem 2. To understand that angiosarcoma of the colon presents usually with advanced stages

CASE INFORMATION: A 69 year old female presented with 2 episodes of syncope within 1 week. The patient lost consciousness while she tried to get up from chair on the day of admission and one week prior to the admission. The symptoms associated with lightheadedness and blurred vision before loss of consciousness. There was a history of intermittent crampy diffuse abdominal pain for 3 week duration, associated with nausea, intermittent emesis, and watery diarrhea with 4–5 bowel movements daily. There was a history of loss of appetite and weight loss of 17 pounds over past 2 months. Her past medical history was significant for DM, hypertension, and diffuse vasculopathy. On physical examination, She was pale, with no orthostatic hypotension. Cardio-pulmonary exam was unremarkable. Abdomen was soft, nontender, and nondistended; bowel sounds was normal, no organomegaly, or palpable masses. Neurological exam revealed intact cranial nerves, normal muscle strength and sensation. There were mild involuntary movements in the right upper extremity. She had dysmetria on finger-to-nose testing in the right upper extremity but no significant dysmetria on the left. Laboratory studies revealed microcytic hypochromic anemia with Hb of 7.8 g/dl. Comprehensive metabolic panel were unremarkable. CT of the head showed multiple high attenuation lesions in both cerebral hemispheres and right cerebellum of 6-18 mm with extensive surrounding edema. CT chest, abdomen, and pelvis demonstrated several tiny nodules in the base of both lungs, in addition to a 2.4 cm soft tissue mass in left adrenal gland. Colonoscopy was done which showed a red fold in the ascending colon with several biopsies were
taken. CT-guided biopsy from left adrenal mass was performed on the same day.

**IMPLICATIONS/DISCUSSION:** Pathology from both sites revealed the same tumor which was poorly differentiated angiosarcoma. Immunohistochemical studies were positive for Vimentin, CD-117, CD31, CD34, and factor VIII; the findings that supported the diagnosis. Of note, CD-117 was strongly positive; a finding which suggested the tumor may be responsive to therapy with Imatinib. The diagnosis of angiosarcoma of the colon with metastases was made. In addition to the blood transfusion and dexamethazone, she received cranial irradiation and chemotherapy. On follow up, she is still alive after 4 months from the first presentation. Angiosarcoma of the colon is a very rare malignancy with only a few cases reported in the literature. It presents as abdominal pain, rectal bleeding, or anemia. It is an aggressive tumor with distant metastasis at the time of presentation in most of reported cases. The primary treatment is surgery if feasible with adjuvant chemoradiotherapy. The prognosis based on reported cases is very poor with mortality rate of 62% within one year in a review of 12 cases.

**CYST-TICK SWELLING OF THE KNEE.** Papa Kar , Subhashis Mitra. 1Marshall Clinic, Marshall, Wisconsin ; 2Detroit Medical Center/ Wayne State University, Detroit, Michigan. *(Tracking ID # 9152)*

**LEARNING OBJECTIVES:** 1. Recognize that musculoskeletal manifestation of Lyme, presenting as ruptured popliteal cyst, though rare should be considered in an endemic region. 2. Diagnose and treat soft tissue abscesses associated with Lyme disease.

**CASE INFORMATION:** A 51 year-old Caucasian male, with no significant past medical history presented with 7-day history of progressively increasing swelling over his right calf. He also reported redness in the region and pain on ambulation. The patient recalled pain and swelling of the right calf after trying to kick start a motorcycle 7-months ago which subsided with rest and elevation. The patient, a resident of central Wisconsin, has had tick bites in the past but denied any skin rash, fatigue or fever. He was afebrile with pulse of 90 beats per minute and blood pressure 143/84 mm of Hg. Physical examination revealed erythematous right calf with tenderness and a positive Homan’s sign with mild effusion of right knee joint. Laboratory studies revealed elevated inflammatory markers with CRP of 24.4 mg/dl. Right lower extremity Doppler ultrasound showed no evidence of deep venous thrombosis, however did reveal a popliteal cyst with fluid leaking into the proximal calf. A magnetic resonance scan revealed a large Baker’s cyst with multiple septae with fluid dissecting into the gastrocnemius muscle causing significant compression. An ultrasound guided aspirate was cloudy, with total white blood cell count of 52,800 with 90% neutrophils. Gram stain and cultures from the fluid were negative. With concerns for a calf abscess and the risk of developing compartment syndrome, an open incision and drainage with debridement of the abscess was performed after 24 hours. The fluid from the Baker’s cyst was sent for Lyme polymerase chain reaction (PCR), which was positive. Lyme enzyme linked immunosorbentassay was reactive. Further confirmation was obtained by positive Western Blot analysis. Tissue obtained at surgery from the right medial calf was also positive for Lyme PCR. The patient was started on intravenous Ceftriaxone, which was switched to oral doxycycline upon discharge to complete a course of 3 months. The patient was closely followed-up in clinic and continues to do well.

**IMPLICATIONS/DISCUSSION:** Lyme disease caused by the spirochete, Borelia burgdorferi, was first described in 1977 among patients with arthritis, living near Lyme, Connecticut. *Ixodes scapularis* (deer ticks) are responsible for transmission to humans. A popliteal or Baker’s cyst is a synovial fluid-filled mass, commonly located in the posterosomedical aspect of the knee and considered to be due to accumulation of fluid in the gastrocnemius-semimembranosus bursa. Prevalence of popliteal cyst increases with age and commonly caused by noninfectious knee effusions. Various microorganisms have been reported to cause infected popliteal cyst, including *Staphylococcus aureus, Aspergillus fumigatus, Mycobacterium tuberculosis, Candida albicans* among others. However, Lyme disease presenting as a popliteal cyst in adults has rarely been reported. The diagnosis of popliteal cysts can be established with an ultrasound of popliteal fossa, and is useful in distinguishing ruptured popliteal cyst from thrombus. However, MRI allows better evaluation of cyst rupture, hemorrhagic transformation or accompanying pyomyositis. Aspirate from the cyst should be sent for gram stain and bacterial culture along with acid-fast and fungal staining and culture. In endemic areas testing for Lyme PCR should be considered in appropriate clinic setting. Tissue obtained at surgery could also be sent for Lyme PCR as in our patient. Lyme popliteal cyst indicates disseminated infection and requires initial treatment with intravenous ceftriaxone. Surgical treatment may be necessary in some cases of ruptured cysts. In conclusion, we present a case of Lyme arthritis presenting with dissection of popliteal cyst and calf abscess, requiring surgical treatment. Lyme PCR was positive both from the synovial fluid and calf muscle. Arthritis is a common presentation of Lyme disease in the United States and should be considered as a possible cause of popliteal cyst especially in patients living in endemic areas.

**HYPNATOMERIA - COMMON BUT TRICKY TO TREAT.** Tulsi Sharma ; pearl dy ; arnold moses. 1SUNY Upstate Medical University, Liverpool, New York ; 2SUNY Upstate Medical University, Syracuse, New York. *(Tracking ID # 9153)*

**LEARNING OBJECTIVES:** 1. Hyponatremia is a common medical problem but can be challenging in the presence of an associated endocrine disorder. The initial evaluation of hyponatremia should include - a chemistry panel, serum and urine osmolality, and urine sodium level. 2. Adrenal insufficiency is an important cause of hyponatremia in patients with diabetes insipidus who have been well controlled on desmopressin. Steroid replacement in this setting may cause rapid diuresis with a rapid rise in the sodium level.

**CASE INFORMATION:** This 21-year-old female with DI was well controlled and nornatremic on DDAVP. She presented to an outside facility with nausea, vomiting and serum sodium of 127 meq/L, this normalized with normal saline(NS) and her usual outpatient DDAVP dose over 2 days. Her symptoms recurred a week later and she returned to the ER and her sodium was 120 meq/L. The sodium level however decreased to 119 in 3 days despite NS! DDAVP was discontinued and hypertonic saline was initiated. Why did the sodium go down despite therapy? Adrenal insufficiency was suspected and treated with intravenous hydrocortisone. Serum sodium rose to 132 in 10 hours. She became increasingly lethargic, nonverbal and developed a blank affect. She was transferred to Upstate University Hospital. Her sodium at transfer was up to 157 there, a rise of 38 meq/L in 18 hours. During this period, there was no record of urine volume or osmolality and she had not received any DDAVP. She had multiple episodes of seizures, became unresponsive and had to be intubated. MRI suggested extrapontine osmotic demyelination.Endocrine consult was obtained. Considering the hyponatremia with hypotonic urine (osmolality 80mosm/kg) DDAVP was restarted. Serum sodium, urine volume and osmolality were closely monitored. She was treated with hydrocortisone, anti-
epileptics and NS. Urine osmolality normalized, serum sodium was slowly brought down to 140 in 48 hours and maintained thereafter. Her clinical status however failed to improve despite the correction of hyponatremia. She was then given intravenous immunoglobulin (IVIG) for 5 days and her motor functions improved dramatically, followed by speech and cognition. Even though she had tremendous clinical improvement, repeat MRI showed worsening of the brain lesions.

**IMPLICATIONS/DISCUSSION:** 1. Hyponatremia is one of the most common electrolyte disturbances that physicians deal with in both the inpatient and the outpatient setting. The initial evaluation of hyponatremia should include at least 4 lab values - a chemistry panel, serum osmolality, urine osmolality, and urine sodium concentration. In patients in whom the diagnosis is not apparent after the above initial evaluation, measurement of the serum uric acid and urea concentrations, the fractional excretion of sodium, and adrenal and thyroid function tests may be helpful. 2. Adrenal insufficiency should be strongly considered when hyponatremia develops in a patient with DI who was previously in good control. Repletion with corticosteroids should be done cautiously as it can lead to a rapid diuresis of hypotonic urine. This can cause a rapid rise in serum sodium concentration predisposing the patient to risk of myelinolysis. 3. IVIG therapy may accelerate recovery of Osmotic demyelination syndrome (ODS) based on data from a few case reports. Effect is possibly caused by the reduction of myelinotoxic substances, antemyelin antibodies, and the promotion of remyelination. 4. MRI changes in ODS may be delayed and MRI severity is not prognostic of clinical outcome. 5. Prognosis of ODS is not uniformly bad. Significant improvement may occur with aggressive supportive therapy as in our patient; however, prevention is obviously better than cure.

**IS GENERALIZED LYMPHADENOPATHY PART OF THE PRESENTATION OF WEGENER’S GRANULOMATOSIS?**

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**LEARNING OBJECTIVES:** 1. To understand the myriad presentations of rare disorders. 2. To consider Wegener’s granulomatosis as one of the differential diagnoses in the setting of generalized lymphadenopathy

**CASE INFORMATION:** A 32 year old Caucasian female presented with a several day history of lightheadedness, dizziness and blurry vision. Further history revealed that she noticed a painful rash in her shins three months ago which lasted for three weeks. She had episodes of polycarticular joint pain associated with swelling and stiffness for a year. She also had a two year history of recurrent sinuitis and left otitis with hearing loss. Midface and nasal erythema were present as well. She had malaise, loss of appetite and had lost thirty pounds over a period of six months. There was no history of fever, night sweats, cough, chest pain or shortness of breath. On examination, she had orthostatic hypotension. She was pale and had saddle nose deformity. Tenderness was present over the left cheek and forehead. Left tympanic membrane was perforated with purulent discharge. A striking finding in the examination was soft tender generalized lymphadenopathy in the cervical, axillary, epitrochlear and inguinal regions. No organomegaly was appreciated. Small joints of hands and feet, wrists, elbows and ankles were swollen and tender. No rash was noted. Laboratory studies showed mild leukocytosis, Hb of 6.8 with microcytic hypochromic picture, platelets 943 and albumin 2.6. Urinalysis was normal. HIV, syphilis and hepatitis serologies were negative. ANA multipan was negative. p-ANCA was negative. c-ANCA tested positive with a titer of 1/320. CT scan revealed pan sinusitis and two cavitary lesions in the right upper
lone. Nasal biopsy showed mucosal ulceration with acute and chronic inflammation with granulation tissue formation, neutrophilic micro-abscesses and focal necrosis. Lymph node biopsy revealed benign reactive follicular hyperplasia. A diagnosis of Wegener's granulomatosis was made and she was started on steroids and cyclophosphamide. During follow up, her symptoms had subsided and lymphadenopathy resolved.

**IMPLICATIONS/DISCUSSION:** Wegener's granulomatosis is a vasculitis disease with positive ANCA. The usual organs involved are upper and lower airways, and kidneys but any other organ systems may become involved including joints, eyes, skin, nervous system, and less commonly, the gastrointestinal tract, heart, lower genitourinary tract, parotid glands, thyroid, liver, or breast. In X-Ray, hilar adenopathy can be seen, but peripheral lymphadenopathy is not described in literature. The importance of this case is to consider Wegener's granulomatosis as one of the differential diagnoses in generalized lymphadenopathy.

**A NEAR FATAL FLIGHT** Tulsi Sharma 1; Pankaj Mehta 2; Lisa Kaufmann 3. 1SUNY Upstate Medical University, Liverpool, New York; 2SUNY Upstate Medical University, Syracuse, New York; 3SUNY Upstate Medical University, Syracuse, New York. (Tracking ID # 9157)

**LEARNING OBJECTIVES:** 1. The diagnosis of hyperviscosity syndrome requires a high index of suspicion in patients with unexplained coma/ altered mental status or unexplained shortness of breath, especially in those with an underlying hematologic disorder. 2. Sometimes we miss a very obvious finding by attributing symptoms and signs in a patient to a previously made diagnosis. This case is a classic example of delayed diagnosis because of premature diagnostic closure or anchoring heuristics.

**CASE INFORMATION:** Introduction: Air travel can be challenging, especially with an ongoing health condition. Some passengers may need special precautions, particularly on a long haul flight. Case: This 67-year-old male presented with vomiting, fever and episodes of confusion. His past history included hypertension, chronic kidney disease (CKD) and lower gastrointestinal bleed 2 years ago, when he was found to have adenocarcinoma in a colonic polyp. One year later he had acute lower back pain, MRI showed possible “metastatic” lesions in the lumbosacral spine thought to be from colon cancer. Surgery was advised then, which he refused! He was given the prognosis of a few months. His current symptoms of fever and confusion started on a transatlantic flight while he was returning from Europe after a vacation. He had no neck signs but labs revealed acute worsening of his CKD with hematocrit of 18. He was started on broad spectrum antibiotics and received blood transfusion in the ER. Within a few hours of hospitalization patient developed chest pain with EKG changes - ST depression and rising troponin! What caused his NSTEMI was a dilemma. Bloodwork revealed a large globulin gap of 11 and an elevated serum viscosity. A workup was initiated for monoclonal gammopathies. Patient underwent an urgent plasmapheresis. He improved over the next 2 days and his confusion resolved. The patient outlived his diagnosis of “metastatic colon cancer” but the diagnosis of myeloma was delayed. SPEP, UPEP, bone survey, bone marrow biopsy confirmed multiple myeloma. Patient was found to have multiple lytic lesions in his spine, skull and long bones. The episodes of confusion were possibly related to hyperviscosity. The patient may have worsened from the associated dehydration from vomiting, fever, his long flight and finally blood transfusion.

**IMPLICATIONS/DISCUSSION:** Hyperviscosity syndrome (HVS) refers to the clinical sequelae of increased blood viscosity. Hypogammaglobulinemia increases serum viscosity and is the most common cause of hyperviscosity syndrome. The reasons for elevated viscosity are increased protein content and large molecular size, abnormal polymerization, and abnormal shape of immunoglobulin molecules. Blood transfusion in these patients and can suddenly raise the blood viscosity and if required blood should be given very slowly. The most common complications of hyperviscosity syndrome include spontaneous mucocutaneous bleeding, neurologic and pulmonary symptoms and retinopathy. The sludging may lead to segmental dilatation of retinal veins and retinal hemorrhages - “sausage-like” hemorrhagic retinal veins are pathognomonic. Cardiopulmonary symptoms such as shortness of breath, hypoxemia, acute respiratory failure, and hypotension also result from this sludging of blood and decreased microvascular circulation. Acute myocardial infarction is an extremely rare complication with only a few case reports in literature. Prompt recognition and expeditious treatment is imperative in preventing deterioration. Aggressive fluid resuscitation and plasmapheresis are recommended, especially in patients with neurological, visual and other life-threatening manifestations. Cognitive psychologists refer to shortcuts in reasoning as “heuristics.” Anchoring heuristics lead physicians to stick with initial impressions or diagnosis that the patient carries. Doing so is far easier than integrating the sensitivity and specificity of every new finding encountered. However, the anchoring heuristic is fallible because it conflicts with the scientific principle of checking for disconfirming evidence. This can be a double-edged sword as evidenced by this case of delayed diagnosis. And of course a near fatal flight!

**EPIPLIOIC APPENDAGITIS AS A CAUSE OF ABDOMINAL PAIN** Muhammed Sherid 1; Geetha Selvakumar 2. 1St. Francis Hospital, Evanston, Illinois; 2St. Francis, Evanston, Illinois. (Tracking ID # 9158)

**LEARNING OBJECTIVES:** 1. To consider epiploic appendagitis in the differential diagnosis in the acute abdominal pain. 2. To understand the management of this self-limited condition

**CASE INFORMATION:** A 78 year female presented with a four day history of left sided abdominal pain (lower quadrant and left flank pain). The pain was dull in nature, moderate in severity without any radiation. Pain was constant, exaggerated with local pressure and food. The pain was not relieved by defecation or change in position. It was associated with nausea but no vomiting, no change in bowel movements. No fever, loss of appetite, or urinary symptoms. Her past medical history was significant for hypertension, and atrial fibrillation. She has past surgical history of appendectomy, cholecystectomy, and hysterectomy. Her medications include verapamil, Lipitor, amlodipine, HCTZ, and warfarin. On physical examination revealed normal blood pressure and temperature with irregular heart rate of 69. Cardiopulmonary examination was unremarkable. Her abdomen was soft, nondistended, there was tenderness in left lower quadrant without guarding and rebound pain. Skin and extremities were unremarkable. Laboratory studies were normal including complete blood cells, comprehensive metabolic panel, amylase, lipase, and urinalysis. CT of the abdomen and pelvis revealed induration and ring-like fat density with rim enhancement in the pericolonic fat of the proximal descending colon which represents epiploic appendagitis. Colonic wall was normal with no evidence of acute diverticulitis. The diagnosis of epiploic appendagitis was made. Her pain was controlled by opiates without any further investigations. Her symptoms resolved within 10 days.

**IMPLICATIONS/DISCUSSION:** Epiploic appendagitis is triggered by torsion with ischemia and pain in one or more of the approximately 100 epiploic (or omental) appendages that arise from the serosal surface of the colon. These appendages are oriented in two rows and are composed...
of adipose tissue and a vascular stalk, 0.5-5 cm in length. Epiploic appendagitis was diagnosed in the past only during exploratory laparotomy for acute abdomen; however with wide use of CT for abdominal pain, this is now more frequently diagnosed, often without the need for surgery. Risk factors are obesity, hernia, and physical inactivity. It is important to make the diagnosis so as to avoid unnecessary surgery. The treatment is symptomatic management with pain control.

ASYMPTOMATIC AXIAL OSTEOSELCROSIS IN A PATIENT WITH HISTORY OF BRAIN TUMOR AND EXCESSIVE VITAMIN D USE

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LEARNING OBJECTIVES: 1. Recognize a potential complication of vitamin D therapy 2. 1. Demonstrate radiographic work-up of incidental sclerotic bone findings on dual-energy X-ray absorptiometry (DEXA) scan

CASE INFORMATION: A 58-year-old female was referred to Rheumatology for a diagnosis of prednisone-dependent polymyalgia rheumatica (PMR). The patient was diagnosed with PMR a year prior and had been unable to discontinue prednisone. Her past medical history was significant for a brain tumor 13 years prior treated with surgery and radiation, in addition to migraines and chronic low back pain. A DEXA scan was ordered given her steroid regime, postmenopausal status, and radiation, in addition to migraines and chronic low back pain. A DEXA scan was ordered given her steroid regime, postmenopausal status, and age. This study revealed very high T scores (ranging from 4.8-7.2 in the right femur and from 2-5.9 in the left femur) and an abnormal, sclerotic L1 vertebra. A follow-up lumbar spine series revealed widespread sclerotic changes of the axial skeleton concerning for late-onset osteopetrosis (Albers-Schonberg Disease) or widely disseminated osseous metastatic disease. A subsequent bone scan showed multifocal abnormal uptake suggestive of metastatic disease. At this time, the patient’s alkaline phosphatase was 134 U/L (normal 40–150 U/L) and her 25-OH Vitamin D was 20.8 ng/mL (normal 32–60 ng/mL). Given the patient’s diffuse bone findings, normal laboratory data and symptoms of only minor low back pain, diffuse metastatic disease seemed unlikely but could not be ruled out. Review of previous records revealed a bone scan for oncologic follow-up several years prior that showed very similar findings. It was determined through discussion with the patient’s primary care physician that she had taken multiple dietary supplements, including high-dose Vitamin D, in the years surrounding her brain tumor treatment. Upon these discoveries, further radiographic and oncologic work-up was suspended and treatment of her presenting condition of polymyalgia rheumatica continued.

IMPLICATIONS/DISCUSSION: This patient presented with alarming radiographic bone findings but was asymptomatic. She did have a significant oncologic history, but asymptomatic diffuse metastasis from a brain tumor 13 years prior was considered an exceedingly remote possibility. Similarly, Albers-Schonberg disease is exceedingly rare with a prevalence estimated at 1 in 20,000 (1). It was known to the treating team that the patient had extensively used dietary supplements for several years but was not presently taking them. It is possible to connect her previous high-dose Vitamin D use to her current bone findings (2). There is no other plausible alternative explanation for her diffuse radiographic findings given her dramatic lack of symptoms and the stability of those bone findings over time. Vitamin D use has become commonplace among patients, both by prescription and self-administration. Therefore, clinicians must recognize potential complications of vitamin D. References: 1. Stark Z, Savarirayan R. Osteopetrosis. Orphanet J Rare Dis. 2009;4:5.2. Dewind LT. Hypervitaminosis D with osteosclerosis. Arch Dis Child. 1961 Aug;36:373–80.
CURIous CASE OF HEMIDiAPHRAGmatic PARALYSIS SECONDARY TO HERpES ZOSTER

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LEARNING OBJECTIVES: 1. Recognize motor manifestations of herpes zoster. 2. Diagnose hemidiaphragmatic paralysis

CASE INFORMATION: An 81-year-old man with a remote history of 45 pack-years of tobacco abuse but no known history of cardiac or pulmonary disease presented with a one month history of shortness of breath that worsened over the past three days. He was afebrile, tachycardic, normotensive, with a respiratory rate of 22 and an oxygen saturation of 85% on room air that improved to 95% with 3 L NC. His pulmonary examination revealed absent breath sounds at the right lung base with otherwise good air movement. Skin examination revealed two asymptomatic erythematous macules: a 1-inch diameter lesion on his right anterior chest and a half-inch diameter lesion on his right shoulder. Musculoskeletal examination revealed full strength of his upper extremities bilaterally. Laboratory data were significant for an elevated D-dimer. Studies included an EKG that revealed sinus tachycardia, an unremarkable lower extremity ultrasound, a chest x-ray that was remarkable for an elevated right hemidiaphragm, and a CTPA that showed volume loss in the right lower lobe but was otherwise unremarkable. During the hospitalization, the rash remained painless, but progressed to cover the right C5-T1 dermatome and small vesicles developed. Tzanck smear showed multi-nucleated giant cells and viral cultures grew VZV. Sniff test showed paradoxical movement of the right hemidiaphragm. EMG revealed complete paralysis of the right hemidiaphragm with full function on the left. MRI of the C-spine and T-spine did not demonstrate any mass or compression of the phrenic nerve. The patient was treated with valacyclovir and discharged to a rehabilitation facility for a month, after which he returned home on oxygen.

IMPLICATIONS/DISCUSSION: Herpes zoster is a very common condition afflicting as many as 1 million people a year and typically causes sensory deficits. Occasionally this disease can cause motor paralysis and very rarely it can affect the phrenic nerve causing hemidiaphragmatic paralysis. Although herpes zoster is very common, diaphragmatic paralysis is a rare complication that has only been documented in 23 cases, 18 of which are in English literature. Most patients presented with dyspnea (16/18). Over a quarter of patients (5/18) had weakness in the corresponding extremity. Almost a third of the patients recovered (4/13) with the process ranging from 6 months to years, a less optimistic prognosis than other herpes associated paralyses. Interestingly, some patients had improvement of extremity weakness without resolution of diaphragmatic paralysis, which is thought to be due in part to the remarkable length of the phrenic nerve and the slow rate of nerve regeneration. This rare case of hemidiaphragmatic paralysis secondary to herpes zoster serves as a reminder that although neurological deficits are typically sensory, motor deficits are also possible. The true incidence of this phenomenon is unknown since asymptomatic cases may go undiagnosed.

THE INHIBITOR WITHIN

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LEARNING OBJECTIVES: 1. Recognize mild elevations in partial thromboplastin time as potentially being secondary to acquired factor VIII inhibitor. 2. Diagnosing and treating acquired factor VIII inhibitor to prevent massive bleeding.

CASE INFORMATION: A71-year-old gentleman with no significant past medical history presented with new-onset dizziness. He was noted to have profound anemia with hemoglobin 5.8 g/dL mildly elevated partial thromboplastin time (PTT), and an abdominal CT that revealed an infrarenal abdominal aortic aneurysm (AAA) measuring 3.5 x 4.3 cm and a retroperitoneal hematoma. It was initially thought that the aneurysm may have caused the retroperitoneal hematoma. He underwent emergent surgery for repair of the AAA and drainage of the retroperitoneal hematoma. After the surgery the hemoglobin continued to trend downward with minimal response to packed red blood cell (PRBC) transfusions. His coagulation profile was then re-evaluated and showed a consistent elevation of his aPTT, ranging between 35–40. Prothrombin time, platelet count and fibrinogen remained normal. Repeat abdominal CT found recurrence of his retroperitoneal hematoma and a scrotal hematoma. He underwent surgical evacuation of his scrotal hematoma and retroperitoneal hematoma, but postoperatively continued to respond poorly to transfusions. Plasma mixing studies were performed and revealed no correction of PTT after mixing with normal plasma. Further testing revealed markedly diminished factor VIII activity and a factor VIII inhibitor level of 37 Bethesda units. He was initially treated with recombinant activated factor VII and activated prothrombin complex concentrates (aPCC), and also started on methylprednisolone, intravenous gammaglobulin (IVIG), and rituximab weekly. After 48 hours of these therapies, the patient no longer required PRBC transfusions and subsequently, his factor VIII activity increased from APCC was then discontinued after 4 days, and methylprednisolone and recombinant activated factor VII were also tapered off.

IMPLICATIONS/DISCUSSION: Acquired factor VIII inhibitor, also known as acquired hemophilia A, is a rare bleeding disorder secondary to autoantibodies directed against coagulation factor VIII. Unlike congenital hemophilia which is characterized by hemarthroses, acquired hemophilia usually presents with soft tissue bleeding. The incidence is 14.7 per million/year in patients over 85 years old. Although uncommon, it is associated with high rates of morbidity and mortality secondary to severe bleeds in 90% of affected patients. The mortality rate ranges from 8% to 22%. The most common conditions associated with development of factor VIII inhibitor are rheumatologic diseases, malignancy, pregnancy and drug reactions, but the majority of cases are idiopathic in origin. Diagnosis is usually by detection of a mildly prolonged aPTT which cannot be corrected with mixing equal volumes of the patient’s plasma and normal plasma, also called a mixing study, or with withholding phospholipid (ruling out antiphospholipid antibodies). Confirmation is done through identification of reduced factor VIII activity and evidence of factor VIII inhibitor (using the Bethesda assay). Treatment with factor VIII concentrates is ineffective; instead plasmapheresis or bypassing agents, such as recombinant activated factor VII and aPCC, are used to rapidly reverse bleeding. Up to one-third of cases, especially those associated with pregnancy and drug reactions, spontaneously remit within 1–2 years. However, the clear risks of bleeding and the unknown recurrence potential have led to guidelines promoting glucocorticoids, rituximab, IVIG, and other immunosuppressants to hasten elimination of the autoantibody and possibly reduce the risk of recurrence.

A RHEUM WITH EFFU-SION

Rebecca Vasquez 1; Jeffrey Percak 1. 1Tulane University, New Orleans, Louisiana. (Tracking ID # 91969)

LEARNING OBJECTIVES: 1. Identify systemic manifestations of rheumatoid arthritis. 2. Identify lab studies that help confirm the
diagnosis of rheumatoid lung disease. Discuss treatment of RA with systemic symptoms.

**CASE INFORMATION:** A 29-year-old woman presented with four days of pleuritic chest pain. She had no fever, cough, PE risk factors, or trauma. Review of systems was notable for chronic joint pain in her hands. T=97.6, BP=127/87, HR=96, RR=18, SpO2=100% RA. The patient was alert, oriented, and breathing comfortably. Heart sounds were normal. Lung examination revealed diminished breath sounds at the left base, with dullness to percussion but no egophony or fremitus. The remainder of the exam was normal except for swelling and warmth in the MCPs and PIPs of both hands. CMP, CBC, CXR were all normal. RF level was 160.3 IU/ml. A CXR showed a left-sided pleural effusion with air fluid level, and CT chest confirmed a left lower hydro-/pneumothorax with bilateral pulmonary nodules. Pleural fluid analysis showed >13,000 WBCs, 42,000 RBCs, total protein 5.9 g/dl (serum protein 7.6 g/dl), glucose 4 mg/dl, and LDH 2674 U/L. Fluid gram stain, AFB, and culture were all negative.

**IMPLICATIONS/DISCUSSION:** Rheumatoid arthritis (RA) is a chronic systemic inflammatory disease frequently encountered by the internist. Systemic manifestations of the disease are variable; extra-articular manifestations of rheumatoid arthritis occur most often in seropositive patients and include subcutaneous nodules, pleural effusion, pericarditis, lymphadenopathy, splenomegaly with leukopenia, and vasculitis. Pleural effusions are the most common manifestations of RA in the chest, are more common in older men, among those with + RF titers, and those with rheumatoid nodules. Patients with RA and a suspected rheumatoid pleural effusion (RPE) should undergo diagnostic thoracentesis to confirm an exudative effusion and to exclude other etiologies. Examination of the pleural fluid typically reveals protein level >3.0 g/dL, LDH > 700 IU/L, low glucose (especially if Elevated fluid cholesterol >65 mg/dL) suggests formation of rheumatoid sterile empyema. It is important to exclude superimposed infective empyema. Cytology may show elongated and giant multinucleated macrophages in a necrotic background of debris. Many uncomplicated RPE resolve spontaneously. For others, thoracentesis may be sufficient treatment. Systemic corticosteroid administration and pleural cavity corticosteroid irrigation may be useful for recurrent or chronic RPE. Pleurodesis and decortication in RPE should be reserved for refractory effusions and fibrothorax. Cytokine blockade therapy may play a role in the future.

**LEARNING OBJECTIVES: 1. Create a differential diagnosis for TTP. 2. Recognize SLE and Antiphospholipid Antibody syndrome as causes of TTP.** Recognize that vasculitic and thrombotic strokes can present similarly. Understand the utility of MRI, MRA and MRV in differentiating vasculitic vs. thrombotic strokes.

**CASE INFORMATION:** A 47-yr-old woman presented with 4 days of progressive confusion, abnormal speech, and difficulty performing routine work. She abjured easy bruising. She was afebrile, heart rate was 93 bpm, and blood pressure was 168/78 mmHg. She exhibited circumlocution, perseveration, difficulty naming objects, and could not comprehend complex directions. Her strength, sensation, reflexes, and coordination were normal. She had diffuse petechial rash and purpura located on her upper and lower extremities. Her platelet count was 7,000 cells/mm3 and hemoglobin was 8.6 g/dl. She had a creatinine of 1.7 (baseline of 1.0). The peripheral smear had schistocytes and helmet cells. The LDH was 988u/l. MRI of the brain confirmed acute ischemic insults within left parietallobe and right occipital lobe. The ADAMTS 13 activity was low and the ADAMTS 13 inhibitor was elevated. She reported history of multiple spontaneous abortions. She had positive ANA, dsDNA, anti-Ro and anti-La antibodies. The dilute Russel Viper venom was prolonged. Anti-cardiolipin, scleroderma, anti-phospholipidase and beta-2 glycoprotein antibodies were negative. Further investigation revealed MTHFR gene mutation. She was started on high dose IV steroids and plasma exchange for treatment of Thrombotic Thrombocytopenic Purpura. The plasmapheresis was discontinued when platelets reached 150,000/cmm with clinical improvement.

**IMPLICATIONS/DISCUSSION:** TTP can have many different presentations. The co-presentation of SLE and TTP has been documented and presents a diagnostic challenge. Many of the features of the classic TTP pentad such as CNS abnormalities, hemolytic anemia, and thrombocytopenia are shared with SLE. Though ADAMTS13 antibody assay can distinguish TTP from SLE, suspected TTP is treated empirically. Given the unique situation, the treatment was tailored to the patient’s short-term and can be used in the long-term needs. Plasmapheresis, steroids and antplatelet treatment were started for immediate treatment of the TTP and SLE vasculitis. The patient’s neurologic symptoms improved after treatment. Follow-up imaging suggested both microvascular and thrombotic processes were contributing to CNS pathologic changes. Given her improvement, the patient was not started on lifelong anticoagulation until the isolated positive DRV test was repeated three months later. Therefore, we managed to treat the TTP and SLE simultaneously. The internist was usually the first physician to encounter an evolving TTP. Early recognition of the disease is imperative for patient survival. TTP, SLE, and APA can all cause CNS abnormalities. TTP and SLE co-existence requires both PLEX and immunosuppression in the acute presentation. Unique to this case is balancing anticoagulation for APA syndrome versus the risk of bleeding during this episode and subsequent TTP crises.

**CENTRAL RETINAL ARTERY OCCLUSION AS AN INITIAL MANIFESTATION OF WEGENER’S GRANULOMATOSIS**

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**LEARNING OBJECTIVES:** 1. Recognize that Wegener’s granulomatosis can initially present with central retinal artery occlusion. 2. Recognize that such presentation may predict a poor prognosis of the Wegener’s granulomatosis.

**CASE INFORMATION:** A 49-year-old Caucasian male truck driver with a 32-pack-year smoking history noticed sudden loss of vision in his right eye while on the road approximately 3 hours prior to presentation. In the Emergency Room, the patient was determined to have an acute central retinal artery occlusion and anterior chamber paracentesis was performed. Admission chest X-ray revealed bilateral peripheral lung nodules. On further questioning, he reported productive cough with occasional blood streaks, shortness of breath, fever, chills, severe fatigue, hot flashes, night sweats, and 26 pounds of weight loss over three to four weeks. Outpatient antibiotic treatment did not resolve the symptoms. Family history was noteworthy for sudden loss of vision in his father. The patient was afebrile at presentation. Eye exam revealed absence of light perception and reaction to light in the right pupil. There was severe attenuation of the arterial vessels with nonmoving boxcar ring noted. Breath sounds were diminished bilaterally. His lab tests were remarkable for normocytic anemia (Hb 11.2 g/dL), elevated sedimentation rate (105), C-reactive protein (>16), and positive rheumatoid factor. Computed tomography (CT) scan of the chest showed...
multiple nodules in the lungs. Some of them were cavitary. CT-guided fine needle biopsy of a necrotic nodule demonstrated necrotizing granulomatous inflammation. C-ANCA was positive at 1:160 and proteinase-3 exceeded 100. The patient was evaluated by rheumatology and started on prednisone and Cytoxan. About a month later, he developed increasing shortness of breath, dry cough, loss of appetite, and generalized malaise. He was noted to have extensive bilateral pulmonary infiltrates; serum creatinine had increased from 0.7 to 9.1. He was hospitalized and treated with pulse steroids and intravenous Cytoxan. He required hemodialysis and plasmapheresis thrice each. However, rapidly progressive cardio-respiratory failure led to his demise within 5 days.

**IMPLICATIONS/DISCUSSION:** Wegener’s granulomatosis (WG) is a systemic vasculitis characterized by necrotizing granulomatous inflammation of the respiratory tract and lungs, glomerulonephritis, and vasculitis at multiple sites. The ocular involvement usually includes uveitis and inflammation of the conjunctiva, sclera, and cornea (1). Seventeen cases of central retinal artery occlusion (CRAO) due to Wegener granulomatosis have been reported (2). Ocular presentation may be seen with or without systemic manifestations of WG. In one study, 6.3% of the patients presented with ocular symptoms as initial manifestation (3). However, none of them was reported as CRAO. High doses of steroids and cyclophosphamide appear to be effective for therapy of CRAO secondary to Wegener’s granulomatosis. Patients with WG have neutrophils expressing PR3 on their surface. Once activated by ligation between PR3 and the c-ANCAs, the neutrophils produce respiratory burst and release proteolytic enzymes that cause the necrotizing granulomatous inflammation. In this patient, the high level of proteinase-3 may account for his severe course with CRAO and rapidly progressive pulmonary-renal dysfunction. Initial presentation of CRAO in Wegener’s granulomatosis is very rare. This phenomenon may predict an abysmal prognosis.1. Pakrou N, Selva D, Leibovitch I. Wegener’s granulomatosis: Ophthalmic manifestations and management. Semin Arthritis Rheum 2006; 35:284–92. 2. S. Morell-Dubois, T. QuÃ©mÃ©neur, F. Bourdon, M. Lambert, V. Queyrel, D. Launay, E. Hachulla, P. Labalette, P.-Y. Hatron Central retinal artery occlusion in Wegener’s granulomatosis La Revue de mÃ©decine interne 28 (2007) 33–37. 3. Harper SL, Letko E, Samson CM, Zafirakis P, Sangvavan V, Nguyen Q. Uy H, Baltatzis S, Foster CS. Wegener’s granulomatosis: the relationship between ocular and systemic disease. J Rheumatol. 2001 May;28(5):1025–32.

**Rhabdomyolysis: A Result of Azithromycin Monotherapy**

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**LEARNING OBJECTIVES:** 1. Recognize rhabdomyolysis as a potential side effect of macrolides. 2. Diagnose and manage rhabdomyolysis caused my medications. Understand the pathophysiology of rhabdomyolysis caused by medications.

**CASE INFORMATION:** A 32-year-old man with hypertension presented with dark urine and muscle pain. Three days prior to admission, he presented with fever, cough, and headache and was diagnosed with community-acquired pneumonia. He was prescribed azithromycin 500mg and Tylenol # 3. Two days later the patient began experiencing diffuse muscle pain and darkened urine. Hededned any strenuous exercise, traumatic injury, cocaine or IV drug abuse, or ingestion of any other prescription or herbal medications. On admission, he had diffuse muscle tenderness and tea-colored urine. He was afebrile, and the remainder of the exam was non-revealing. Significant labs included aspartate transferase (AST) of 1143U/L (normal: 5–35 U/L), alanine transferase (ALT) of 236 (normal: 7–40), and creatinine kinase (CK) of >25,000 (normal: 38–175). Urine showed large blood but no red bloodcells. Serum acetonaminophen was undetectable. Urine drug screen was positive for opiates, consistent with Tylenol # 3 ingestion. The workup for infectious hepatitis and HIV were negative. Thyroid-stimulating hormone was 2. The patient was diagnosed with rhabdomyolysis and treated with fluids and pain control. His CK, AST, and ALT gradually decreased. His muscle tenderness abated, and his urine gradually lightened. Given the temporal relationship, it was thought that azithromycin was the likely culprit and was discontinued.

**IMPLICATIONS/DISCUSSION:** Rhabdomyolysis simulates the clinical and laboratory syndrome secondary to the release of toxic substances, particularly myoglobin, from dying myocytes. 1 Although true diagnostic criteria exist, a serum CK level greater than 5 times the upper limit of normal is often used for the diagnosis. 2 The presentation involves muscle weakness or tenderness and myoglobinuria. Complications include acute renal failure, compartment syndrome, hyperkalemia, hypocalcemia, and osmogalopathy. 3 The etiologies of rhabdomyolysis include trauma, muscle hypoxia, infections, temperature alterations, congenital enzymatic deficiencies, and toxins or drugs. Both illicit drugs and prescription drugs are known causes of rhabdomyolysis. When hydroxymethylglutaryl-Coenzyme A reductase inhibitors (statins) are administered with macrolide antibiotics such as atorvastatin and eritromycin, rhabdomyolysis may result secondary to statins’ inhibition of CYP450 3A4, causing increased plasma levels ofstatins. 2 In 2009 Brener et al. reported the first case of rhabdomyolysis secondary to clarithromycin monotherapy, which was thought to result from clarithromycin’s inhibition of CYP450 3A4. Azithromycin, a newer azolomacrolide, is unique in that it causes little to no inhibition of CYP450 3A4. Without enzymatic inhibition, there have been several reports of rhabdomyolysissresulting from the concomitant use of statins and azithromycin. It’s been postulated that azithromycin can alter membrane transporters, such as P-glycoprotein, which influences the metabolism of statins. 4 To our knowledge, there have been no case reports of rhabdomyolysis induced by azithromycin monotherapy as of Oct 2010. Other causes of rhabdomyolysis such as temperature alterations, trauma, exercise, metabolic causes, and illicit drugs were excluded. The temporal relationship between our patient’s symptoms and the onset of therapy with azithromycin make azithromycin the likely cause of rhabdomyolysis.

**CASE OF SYMPTOMATIC HYPERCALCEMIA SECONDARY TO PRIMARY HYPERPARATHYROIDISM**

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**LEARNING OBJECTIVES:** 1. Recognize symptoms of hypercalcemia and initiate the proper diagnostic workup. 2. Manage symptomatic hypercalcemia, including when to refer for parathyroidectomy.

**CASE INFORMATION:** An 85 year old female with hypertension, degenerative joint disease, prior compression fractures and recently diagnosed depression presented to the ED with back pain and altered mental status. She fell 3 weeks ago at home after feeling lightheaded, but did not lose consciousness or hit her head. Her back pain was initially attributed to a muscle strain, but had not improved with conservative management. The pain was central, stabbing and 10/10 in severity. She complained of slow mentation, inability to articulate her thoughts, and sleepiness. She denied focal neurologic deficits. She endorsed new bladder incontinence, decreased appetite, and polydipsia.
Her medications included metoprolol, amiodipine, hydrochlorothiazide, lisinopril, aspirin, venlafaxine, ibuprofen, and a multivitamin. There was no family history of renal stones, calcium problems or neck surgeries. Plain films of her spine showed an acute compression fracture at T12. Labs revealed a calcium of 16.0 mg/dL. Additional labs showed an elevated PTH at 261 pg/mL, an elevated 24-hour urinary calcium/creatinine ratio, normal TSH, and normal Vitamin D levels. She was treated with IV fluids, IV bisphosphonate and subcutaneous calcitonin. Her mentation improved, and calcium levels fell to 9.7 mg/dL over the next 5 days. A DEXA-scan showed demineralization of the spine, but normal bone density at the hip. A Sestamibi scan revealed persistent focal activity in the left upper pole suggestive of a parathyroid adenoma. She underwent outpatient parathyroidectomy with removal of a large left upper parathyroid gland, resulting in a drop in the PTH from 295 to 129. Removal of the right lower and left lower parathyroid glands resulted in a PTH of 15. Pathology revealed hyperplasia of all three glands. She has done well post-op and has resumed her active lifestyle.

**IMPLICATIONS/DISCUSSION:** Hypercalcemia is often asymptomatic, especially if the calcium level is

**BEYOND THE USUAL INFILTRATE: LEGIONELLA PNEUMOPHILA CAUSING MULTIORGAN SYSTEM FAILURE**

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**LEARNING OBJECTIVES:** 1. Recognize that Legionellosis can cause severe sepsis with multiorgan system failure. 2. Recognize that Legionella pneumonia can cause cavitary lung lesion in an immunocompetent host.

**CASE INFORMATION:** A 30 year-old previously healthy male arrived by ambulance after he was found lying in urine and feces at home. He had reported chills and dry cough 2 days prior. At presentation he was febrile, tachycardic, tachypneic, hypoxic, and delirious, with diffuse abdominal tenderness and normal bowel sounds. Laboratory data revealed leukocytosis, severe metabolic acidosis, elevated lactate, acute kidney injury with creatinine of 6.9 mg/dL, elevated creatine kinase, lactate, transaminases and bilirubin. Urine analysis was positive for albumin, glucose, large blood and few red cells. Arterial blood gases on room air were pH 7.43, PaCO2 18, PaO2 68 mmHg. Admission APACHE II score was 22. A chest Xray showed dense infiltrates in lingula and left lower lobe; computed tomography confirmed the x-ray findings and revealed a cavitary lesion in the right upper lobe as well as scattered parenchymal nodules in both lungs. There was no evidence of infective endocarditis on echocardiography. He was intubated and admitted to intensive care. Treatment was started for severe sepsis, community acquired pneumonia, possible aspiration, and meningitis with empiric antibiotics vancomycin, ceftriaxone and azithromycin. The following studies were non-diagnostic: HIV screen, viral hepatitis panel, blood, urine and sputum cultures, influenza A and B screens, and cerebrospinal fluid analysis. Subsequent laboratory data revealed elevated amylase, lipase, lactate dehydrogenase, and myoglobin; a diagnosis of acute pancreatitis with rhabdomyolysis was made. The patient worsened clinically, and drotrecogin alpha was started on day 2. Urine for Legionella antigen was positive, and the antibiotics above were replaced with levofloxacin. The patient had worsening pancreatitis, rhabdomyolysis, disseminated intravascular coagulation, acute respiratory distress syndrome, and acute renal failure requiring renal replacement therapy, but improved later so that he was discharged home on the 23rd day.

**IMPLICATIONS/DISCUSSION:** Published case reports document isolation of Legionella pneumophila from 13 different extrathoracic organs - including liver, spleen, lymph nodes, kidney and blood - often in the absence of pneumonia. In our patient it caused multisystem organ failure manifesting as pneumonia with acute respiratory failure, acute pancreatitis, acute kidney injury, rhabdomyolysis, leukopenia, disseminated intravascular coagulation and confusion. This can be attributed to dissemination of bacteria or legionella toxin release, or cytokine release and effector cell-induced inflammation. In the multiple case report descriptions in the literature, Legionella causes cavitary lung lesions only in immunocompromised hosts. To our knowledge, no other cases of cavitation in an immunocompetent host have been reported.

**NEW PARTNERS AND PARESTHESIAS: EVALUATION OF NEW NEUROLOGIC SYMPTOMS AFTER TREATMENT FOR A SEXUALLY TRANSMITTED INFECTION**

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**LEARNING OBJECTIVES:** 1. Explain common symptoms of transverse myelitis and their correlation with spinal cord anatomy. 2. Describe the appropriate primary care evaluation of transverse myelitis.

**CASE INFORMATION:** A 48-year-old healthy woman presented for evaluation of painful vulvar rash, malaise, and fevers present for 1 week. Social history was notable for new sexual partner. Remainder of history was unremarkable. Physical exam revealed erythematous, tender vulvar ulcers. Empiric treatment for primary genital HSV was initiated with acyclovir. HSV serologies were sent and returned negative. One week later, the patient presented with complaint of numbness in her genitals and buttocks, a sensation of weakness and “pins and needles” in her feet, difficulty initiating urination, and constipation. Neurologic exam was significant for a sluggish right ankle jerk. MRI of the spine with and without contrast revealed posterior spine enhancement at the T11-T12 level, consistent with transverse myelitis. CSF analysis showed 14 white blood cells, 97% lymphocytes, normal glucose and normal protein. CMV, EBV and HSV PCR were all negative. Repeat serologies for HSV-2 were positive 4 weeks later. The patient was managed conservatively with antivirals and physical therapy. Her symptoms resolved after three months.

**IMPLICATIONS/DISCUSSION:** Acute transverse myelitis should be suspected with complaints of motor weakness, sensory abnormalities referable to the spinal cord, and bowel or bladder dysfunction. Symptoms often progress in hours to days. Perceived sensory abnormalities can signal mild or early disease without clear deficits on exam. Transverse myelitis is a focal inflammatory disorder of the spinal cord that leads to sensory, autonomic, and/or motor dysfunction in a bilateral, though not necessarily symmetric distribution. Deficits are a result of damage to the spinthalamic tracts, pyramidal tracts, posterior columns and anterior funiculi at one or more adjacent levels of the cord. It is most often an autoimmune phenomenon after an infection or vaccination, or a direct infection. Secondary causes, such as underlying systemic autoimmune disease, or an acquired chronic demyelinating disease like multiple sclerosis or neuromyelitis optica, must be considered. Diagnosis is made with demonstration of spinal cord inflammation, either with CSF pleocytosis (typically lymphocytic) or elevated IgG index, or an MRI revealing a typical gadolinium-enhancing cord lesion. In our case, it is unclear whether she had a post-infectious immune reaction, or direct infection of the spinal cord with HSV-2. HSV is a rare cause of transverse myelitis. The most common post-infectious triggers are upper-respiratory tract infections or gastroenteritis. Viral
infection is rarely the cause. Treatment is not well defined, but may include anti-viral agents like acyclovir, corticosteroids, and/or physical therapy. Prognosis is highly variable; idiopathic cases tend to resolve within 3 months, whereas attacks associated with secondary causes are more likely to have significant residual deficits. When patients present with complaints that could be due to transverse myelitis, spinal MRI, lumbar puncture, and neurology consultation are key options for primary care evaluation.

**THE PROOF IS IN THE SMOKE: ACUTE RESPIRATORY DISTRESS SYNDROME IN MALARIA**

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**LEARNING OBJECTIVES:** 1. ARDS in malaria has been described and it is associated with a high mortality rate. This clinical vignette helps recognize the manifestation of ARDS as a complication of P. vivax/P. falciparum malaria. 2. It also stresses on the importance of malarial prophylaxis to pts travelling to endemic areas even well seasoned travelers.

**CASE INFORMATION:** 37 year old previously healthy female who had lived in the United States for 18 years presented with 3–4 days of fevers, chills, sweats. She visits India annually, and returned 3 weeks prior to presentation. She took no antimalarial prophylaxis. She became increasingly hypoxic requiring intubation. ABG: PaO2 of 65 on 100% FiO2, PEEP 12; chest radiograph: diffuse bilateral airspace opacity, consistent with ARDS. She was extubated after 22 days. Initial blood smears showed P. falciparum. Repeat blood smear: P. vivax 1% parasitemia. She was treated with chloroquine, Doxycycline and Primaquine. Her illness was complicated by septic shock, UTIs, DVTs, bacterial pneumonias, rectus sheath hematoma. Patient was ultimately able to be discharged to a nursing home after 30 days

**IMPLICATIONS/DISCUSSION:** Malaria remains a significant public health problem globally with more than two billion people exposed to the risk of contracting malaria. Respiratory complications of Malaria can be very fatal. 11% case fatality has been reported with P.vivax infection compared to 33-75% in P. falciparum infection. ARDS has been well described as a complication of P. falciparum infection. The pathogenesis of ARDS is not fully understood especially in P. vivax infection. Lung injury in P. falciparum infection relates to an increase in capillary permeability in the pulmonary vasculature and is associated with large numbers of inflammatory cells. Mechanisms for lung injury include cytokine-induced damage or direct effects of sequestration of parasitized erythrocytes. There have been a total of 20 case reports of P. vivax as a cause for ARDS. P.vivax ARDS usually occurs after initiation of therapy in P. vivax infections and in most cases after clearance of parasitemia thus this may be a post-treatment inflammatory response. Patients with malarial ARDS are managed in an intensive care unit with attention paid to hemodynamic stabilization. Frequently require mechanical ventilation, have coexistent bacterial sepsis. ARDS in malaria is a disease with a high mortality. Use of prophylaxis, early diagnosis, institution of specific antimalarial treatment and assisted ventilation can be life saving

**A CASE OF PEMPHIGUS VULGARIS- A DIAGNOSTIC DILEMMA**

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**LEARNING OBJECTIVES:** 1. Recognizing the clinical features of Pemphigus vulgaris to avoid misdiagnosis in its earliest stage. 2. Using histology for accurate diagnoses & knowing the aims of treatment and follow up to achieve complete remission.

**CASE INFORMATION:** A 27 year old male presented to the ER with complaints of two and a half month history of painful oral lesions and macroglossia. Patient noted that the lesions were very painful and caused considerable discomfort affecting normal oral function. He had been treated with Penicillin for possible Streptococcus pharyngitis and subsequently with nystatin mouthwash for possible candidiasis with which the lesions did not resolve. No history of fever, cough, ocular, vascular, neurological symptoms. No arthralgias, or genital lesions. Personal and family histories not significant. Patient is a non smoker. On intraoral examination ulcers were noted on the cheek, soft palate, ventral surface of the tongue, posterior pharyngeal wall, tonsils which bled on peeling it off. No skin lesions were seen on extra oral examination. Autoimmune workup, HIV, fungal, viral cultures, respiratory cultures were all negative. Laryngoscopy done showed a supraglottic ulcer. Diagnosis of pemphigus vulgaris was made after evaluating the biopsy samples. Histological findings showed squamous mucosa with suprabasal cleft formation, detached fragments of relatively unremarkable squamous epithelium, few small clusters of detached squamous epithelium with reactive nuclear changes & in addition, chronic inflammation of the lamina propria. The overall histologic findings were consistent with pemphigus vulgaris. Direct Immunofluorescence demonstrated IgG and C3 in the intercellular regions of the epithelium with negative staining along the basement membrane zone. The patient was referred to dermatology & was started on a taper dose of prednisone with the intention of starting an immunosuppressant at the end of 4 week taper. Patient is currently been followed by dermatology for treatment.

**IMPLICATIONS/DISCUSSION:** Pemphigus vulgaris is an autoimmune blistering disease with antibodies directed against cadherin-type epithelial cell adhesion molecules, desmoglein 3 in particular. This interferes with the intercellular cement that holds epidermal cells together & results in intraepidermal blister formation. Pemphigus vulgaris has a strong genetic background with ethnic groups like Ashkenazi Jews & those of Mediterranean origin being liable. It may be associated with other autoimmune disorders such as rheumatoid arthritis, myasthenia gravis, lupus erythematosus or pernicious anaemia & drugs such as penicillamine & captopril. Any part of the oral mucosa may be affected, although sites of trauma like the buccal mucosa, gingiva & palate are affected. Oral lesions are initially vesiculobullous, but they readily rupture to form ulcers which are initially red but as infection supervenes, they develop a yellowish slough & heal slowly but rarely with scarring. Gingival lesions comprise severe desquamative gingivitis where bullae have ruptured to leave flaps of peeling tissue with red erosions or deep ulcerative craters mainly on the attached gingivae. Open denuded areas become infected. Lesions do not resolve without therapy & heal with postinflammatory hyperpigmentation resolving within 1–2 years & do not leave scarring. Diagnosis is made by biopsy of the lesions, histologically showing intraepithelial acantholysis without disruption of the basement membrane. DIF will show deposits of IgG between epidermal cells. Differential diagnosis include herpes simplex virus, aphthae, lichen planus, erythema multiforme. The aim of treatment is to induce disease remissions followed by a period of maintenance. Steroids are the primary drugs used in combination with immunosuppressive therapy. Long term follow up is the rule. Some patients require years to life long suppressive therapy with a minority of patients achieving complete remission after initial treatment.
LEARNING OBJECTIVES: 1. Demonstrate an atypical presentation of the extraintestinal manifestations of inflammatory bowel disease. 2. Review the neurologic complications of IBD.

CASE INFORMATION: A 44-year-old Caucasian female with a ten-year history of stable Crohn’s disease presented with diarrhea and headache. She reported 8-10 bloody bowel movements per day associated with debilitating abdominal pain and significant weight loss. In addition, she reported a bifrontal generalized headache described as “the worst headache of her life.” Exam revealed conjunctival pallor, dry mucus membranes, generalized abdominal tenderness and no neurological deficits. Labs were significant for hemoglobin of 6.6, albumin of 2.1, ESR of 88, and CRP of 17. Colonoscopy demonstrated extensive colonic transmural inflammation. She was given blood transfusions, TPN, steroids and mercaptopurine with symptomatic improvement in her pain and diarrhea. Through this, the patient’s headache persisted and even worsened with bowel movements. Given its association with bowel movements, the headaches were considered Valsalva-induced headaches. After no relief with symptomatic treatment, a CT angiogram demonstrated multiple areas of focal narrowing in the posterior and anterior circulations consistent with intracranial vasculitis. She was diagnosed with vasculitis related to her active Crohn’s disease. She was continued on a long taper of steroids and started on infliximab. Ultimately, both her headache and diarrhea improved.

IMPLICATIONS/DISCUSSION: Crohn’s disease is an inflammatory disease that affects the gastrointestinal tract. Extraintestinal manifestations of Crohn’s can occur and predominantly yield rheumatologic, ophthalmologic, dermatologic and hepatobiliary syndromes. Less commonly, Crohn’s patients will develop pulmonary, cardiac, or neurologic involvement. Headache is often a nonspecific symptom. In a patient with Crohn’s disease, headache can have a complex differential. Case reports have described migraines in patients with active Crohn’s disease and resolution of symptoms with adequate therapy. Valsalva-induced headache, a subset of cluster headache, can occur with bowel movements and alleviated with indomethacin. Lastly, although uncommon, Crohn’s disease-related vasculitis can occur. The neurologic sequelae of Crohn’s disease include vasculitis, neuropathy, and even stroke. The mechanism of these findings involves immunologic pathophysiology. Vasculitis and many other neurologic sequelae seem to correlate strongly with disease activity as opposed to other extraintestinal manifestations that have a more independent course. Treatment usually requires a multi-drug therapy and intricate management for maintenance therapy. The extraintestinal manifestations of Crohn’s disease may seem vast to the clinician and debilitating to the patient. Nonspecific symptoms such as headache can sometimes indicate the extent and severity of the underlying disease. Physicians need to be aware of the myriad of extraintestinal manifestations of this common disease.

CHRONIC CONSTRICTIVE PERICARDITIS IN ASSOCIATION WITH END-STAGE RENAL DISEASE. Roman Leonid Kleynberg 1; Michael Rotblatt2. 1Olive View - UCLA Medical Center, Sylmar, California; 2UCLA - Olive View Medical Center, Sylmar, California. (Tracking ID # 9243)

LEARNING OBJECTIVES: 1. Distinguish and differentiate the clinical features of chronic constrictive pericarditis from other forms of heart disease. 2. Manage and treat the presentation of chronic constrictive pericarditis based on its underlying etiology.

CASE INFORMATION: A 63-year-old Armenian man with a history of hypertension, end-stage renal disease on hemodialysis, presented with massive ascites, dyspnea and hypotension. He has had ESRD over the past three years, most likely secondary to anti-hypertensive medication non-compliance. His social history included a 1 pack-year of tobacco smoking, no alcohol or recreational drug use. On physical exam, his vitals were stable with a blood pressure of 80-90 s/30-40 s, he had decreased breath sounds on the left side, decreased heart sounds, some crackles diffusely, and 2+ pitting edema diffusely over the lower extremities. Over the past few months he had developed massive ascites, and a through workup was undertaken to discover the underlying cause of his symptoms which included intrarhepatic pressure measurements, cholecystectomy, appendectomy, liver biopsy, and a peritoneal biopsy. In the hospital he was dialyzed aggressively and received multiple paracenteses (the first of which drained 6 liters of greenish fluid). An echocardiogram showed normal left ventricular systolic function, EF 55%, dilated left and right atrium, and evidence of pressure and volume overload over the right ventricle (right ventricular hypertrophy). A CT scan showed pericardial thickening and bilateral pleural effusions. A left and right heart catheterization demonstrated a thick peel around the heart, ejection fraction of 55%, PAP of 30 mm Hg, LVES pressure of 30–35 mm Hg, and also equalization of pressures on both the right and left side of the heart. Following the diagnosis of CCP, a partial pericardiectomy was performed; however, the patient did not improve and a salvage total pericardiectomy soon followed. No specific etiology for CCP was found after numerous histopathological, serological and bacteriological studies. The patient developed complications from the total pericardiectomy including septic shock, and shortly thereafter expired following a terminal extubation.

IMPLICATIONS/DISCUSSION: The most common cause of constrictive pericarditis (up to 45–55% of cases) is idiopathic or viral in etiology. The most common identifiable causes include postcardiac surgery (37%), pericarditis (16-20%) and mediastinal radiation (9%). Other recognized but less common causes include connective tissue disorders (such as RA and SLE), malignancies, and local trauma. Tuberculosis was once recognized as the most common cause of constrictive pericarditis and continues to be a major problem in the developing world. Constrictive pericarditis is a rare disorder that manifests predominantly as right heart failure, and, in severe cases, systemic hypertension and circulatory collapse. The diagnosis can often be a challenge to diagnose. Some common clinical features include edema, ascites, raised jugular venous pressure, pleural effusion, and hepatomegaly, all commonly found with right-heart strain. On imaging, constrictive pericarditis may be differentiated from other forms of heart failure such as restrictive cardiomyopathy by the presentation of thickened pericardium on computed tomography and magnetic resonance imaging. Echocardiography may validate the presence of small ventricular dimensions with preserved systolic function, and dilated atria, all findings present in our patient. Abrupt termination of diastolic filling may show a characteristic ‘septal bounce.’ Cardiac catheterization studies allow for definitive confirmation. Clinically, late diastolic filling is inhibited by the rigid pericardium; it is restricted as the intracardiac volume reaches the limit set by the noncompliant pericardium. This acts in general to reduce total cardiac output. Uncharacteristically, in our case, cardiac output was preserved, at least in part, most likely due to the high end diastolic filling pressure or LVESD (measured to be equal on both the right and left ventricle at 30 mm Hg).

UNSUSPECTED BUT COMMON DIAGNOSIS: SUBACUTE ONSET OF FEVERS, LYMPHADENOPATHY AND ATAXIA IN A 75-YEAR-OLD. Patrick Hemming 1; Patrick Hemming2. 1Johns Hopkins Department of Medicine Division of General Internal Medicine, Baltimore, Maryland. (Tracking ID # 9246)
LEARNING OBJECTIVES: 1. Recognize that sexually transmitted infections are an important and potentially overlooked cause of serious illness in elderly patients. 2. Recognize that life-saving treatments in elderly patients may have significant toxicity and require extensive monitoring on the part of clinicians.

CASE INFORMATION: The patient is a 75 year old man with a past medical history of prostate cancer (resected in 1993), Printzmetal's angina, hypertension and hyperlipidemia. Several months prior to admission, he had chest pains, and lymphadenopathy. 6 weeks prior to admission, he began to have headaches and weight loss then drenching night sweats, fever, cough and gait disturbance with weakness and falls to the left side. He had evaluation initially for the lymphadenopathy with a lymph node biopsy that showed a monoclonal gammapathy. The chest pain was diagnosed as esophageal spasm. He is a long term smoker without any significant alcohol or illicit drug use. Pt is married, retired from work as a clergyman. On exam, he had slow responses to questions, occasional tangential speech, but was redirectable. He had difficulty with rapidly alternating movements involving the left arm and left leg. A Brain MRI showed multiple ring-enhancing lesions. An esophageal biopsy showed diffuse candidiasis. A biopsy of painful foot lesions showed Kaposis Sarcoma. The patient was diagnosed with AIDS, a CD4 count of 10 and viral load of 750000. He had a prolonged treatment with HAART and antiparasitic medications for Toxoplasmosis. His hospital and rehabilitation stays lasted more than 3 months and were complicated with episodes of renal failure, infectious colitis, delerium and disabling tremors.

IMPLICATIONS/DISCUSSION: This case highlights the increasingly ubiquitous status of HIV among patients of all ages. Although the patient likely contracted the virus from a male sexual encounter, this history was not volunteered until after the diagnosis was made. The perceived typical risk factors are not always reliable when HIV is in the differential diagnosis. New neurologic symptoms, such as the gait disturbance and falling experienced by this patient has broad differential diagnosis. Although metastatic disease is the most likely cause of new brain lesions in an elderly man with prior prostate cancer, it is essential to consider other potentially treatable conditions. This patient suffered several AIDS-related sequelae: CNS Toxoplasmosis, esophageal candidiasis with esophageal strictures, Kaposis Sarcoma, and possible AIDS dementia. Additionally, he had complications from therapy, including medication-induced renal failure, Clostridium difficile diarrhea, delerium and disability.

LYMPHOMAS CAN “CRY WOLF” TOO RAMYA EMBAR SHRINIVASAN 1; AUSTIN G. TURNER 2; Mukta Panda 1. 1University of Tennessee College of Medicine Chattanooga, Chattanooga, Tennessee; 2UT Health Science Center, Memphis, Tennessee. (Tracking ID # 92448)

LEARNING OBJECTIVES: 1. Discuss the clinical relevance of positive serological tests in a patient with splenic marginal zone lymphoma (SMZL). 2. Review clinical features of splenic marginal zone lymphoma

CASE INFORMATION: A 55 year-old female presented to an outlying facility with a two-month history of tiredness, increasing shortness of breath and pleuritic left upper quadrant pain. Physical examination was remarkable for pallor and splenomegaly. Computed tomography confirmed splenomegaly, hence she was referred to our hospital for further management. She was anemic with hemoglobin of 9.5 g/dL and hematocrit of 28.1%; she also had lymphocytosis of 44%, elevated total bilirubin of 2.1 mg/dL and indirect bilirubin of 1.3 mg/dL, elevated LDH of 374 units/L, and decreased haptoglobin.

IMPLICATIONS/DISCUSSION: SMZL is a rare disorder, comprising less than 2% of lymphoid neoplasms, but it may account for most cases of the otherwise unclassifiable chronic lymphoid leukemias that are CD5 negative. Most patients are over 50 and there is an equal sex incidence. It involves the spleen, the splenic hilar lymph nodes and bone marrow. Lymph nodes are not typically involved. Clinicians are often concerned about the susceptibility of lymphoma patients to infections because of their immunocompromised status. The false-positive rate of RPR is found to be 10.8% in general and appears to be higher in patients with lymphoproliferative disorders that produce antibodies. Although the reason for this finding is not known, a possible explanation would be the occurrence of non-specific binding; lymphoma cells produce antibodies that are structurally similar to the antibodies produced against syphilis infection and can thus cause a false-positive RPR test. Direct Coombs positivity can be explained by antibodies released due to lymphoma cell breakdown binding to the surfaces of red blood cells, causing hemolysis. CONCLUSION: It would be prudent for a primary care physician to pursue confirmatory testing in patients with lymphomas and positive RPR tests to determine their true significance, establish a diagnosis and to avoid unnecessary treatment.

SARCIOIDOSIS AND CRYPTOCOCCAL INFECTION: A RARE CLINICAL ASSOCIATION Asha Shah 1; Ula Abed-Alwahab 2; Sophia Hussen 2; Carlos Franco-Paredes 2; Anna Kho 1. 1Emory University Department of Internal Medicine, Atlanta, Georgia; 2Emory University Department of Infectious Disease, Atlanta, Georgia. (Tracking ID # 92525)

LEARNING OBJECTIVES: 1. Diagnose disseminated cryptococcal infection in a non-HIV patient with sarcoidosis. 2. Recognize that sarcoidosis, with or without prior steroid therapy, predisposes to cryptococcal infection due to deficient cell-mediated immunity.

CASE INFORMATION: A 42-year old African-American woman presented to the hospital with a 1 week history of nasal congestion, sore throat, and fever 38.8 C. Over 12 hours, she developed acute headache, photophobia, and neck stiffness. Review of systems was positive for a history of 6 month history of 50 pound weight loss and generalized weakness. Past medical history was significant for a recent diagnosis of sarcoidosis 4 months prior but she was not taking any medication for this condition. She was married and worked as a phlebotomist. She denied any sick contacts, recent travel, or substance abuse. On admission, the patient appeared acutely ill. Exam was remarkable for neck rigidity, photophobia, positive Brudzinski’s sign, hepatomegaly, and splenomegaly. Lumbar puncture was significant for an opening pressure of 30 cm H2O, and a positive CSF cryptococcal antigen titer >1:512. Blood and CSF fungal culture grew Cryptococcus neoformans. Chest x-ray showed a right scapular lytic lesion measuring 5.7 cm x 4.8 cm. Biopsy of this lesion revealed 8 cc of brown purulent fluid that was culture positive for Cryptococcus neoformans. She was diagnosed with disseminated cryptococcal infection. Further workup was supportive of sarcoidosis as the underlying cause of the patient’s immunosuppression. Chest CT revealed diffuse small pulmonary nodules as well as mediastinal and bilateral hilar lymphadenopathy. Biopsy of a mediastinal lymph node showed few epithelioid noncaseating granulomas. Laboratory workup was notable for a calcium of 12.2 mg /dL, ACE 167 U/L, and albumin 2.6 gm/dL. Infectious studies were negative for HIV, Hepatitis B, Hepatitis C, and tuberculosis. Workup for malignancy was negative. The patient improved with induction treatment with IV amphotericin B and oral flucytosine for 4 weeks, along with serial lumbar punctures. Repeat CSF fungal culture was negative at 4 weeks, and the patient was discharged home on oral fluconazole 400 mg daily for 10 weeks.
IMPLICATIONS/DISCUSSION: Disseminated cryptococcal infection presents most often in HIV-positive patients. However, it may also occur in other causes of immunodeficiency that primarily affect T cell function, including cancer, transplant-related immunosuppression, and chemotherapy. Sarcoidosis is a rare cause of disseminated cryptococcal infection. Sarcoidosis, with or without prior steroid therapy, predisposes to cryptococcal infection due to deficient cell-mediated immunity via sequestration of CD4 cells in sarcoid granulomas, anergy and reversal of the CD4:CD8 ratio. Over 48 cases of cryptococcal infection in sarcoid have been reported. It commonly manifests as meningitis (42%), osteomyelitis (38%), soft tissue abscess (25%), pneumonia (10%), and disseminated disease (8%).

In a case series of patients with cryptococcal osteomyelitis, 10 out of 40 patients had concomitant sarcoidosis. Conversely, a review of 793 sarcoid patients showed only 0.4% developed cryptococcal disease, and all of these patients were receiving immunosuppressive therapy. This case is unusual in that the patient had a new diagnosis of sarcoid and was not on any immunosuppressive therapy. Mortality may be as high as 33%, even with therapy, in these patients. Early identification and treatment of disseminated cryptococcal infection in sarcoid patients is vital. In conclusion, clinicians should maintain a high index of suspicion for the potential for cryptococcal infection in patients with sarcoidosis.

INTRANEURAL HEMORRHAGE OF THE SCIATIC NERVE IN A PATIENT ON CHRONIC ANTICOAGULATION: Irina Khrenova, Jose F Echaï, Vinay Shah, Henry Ford Hospital, Detroit, Michigan. (Tracking ID # 9238)

LEARNING OBJECTIVES: 1. In the following report we present a rare case of intrasciatic nerve hemorrhage, in order to contribute to the recognition of peripheral hemorrhagic neuropathy as a complication of chronic anticoagulation. 2. From this case we intend to provide objective information about the management and prognosis of intrasciatic nerve hemorrhage in the setting of chronic anticoagulation.

CASE INFORMATION: A 65-year-old man presented to our hospital complaining of left hip and thigh pain. He was on chronic anticoagulation with warfarin for a bioprosthetic mitral valve, had atrial fibrillation and systolic heart failure. Three days before admission the patient attempted to get up from a sofa, slipped and almost fell. Afterwards, severe sharp stabbing pain in the left hip and hamstring area along with muscle weakness limiting ambulation developed. Physical exam revealed tenderness and swelling in the gluteal area and posterior thigh without erythema or warmth. Neurological assessment showed predominantly distal decreased muscle strength and decreased sensation on posterior and medial aspects of the left thigh, posterior aspect of left leg and on the dorsum and sole of left foot. Computed tomography (CT) of the lumbar sacral spine showed mild spinal canal stenosis. Laboratory examination was significant for hemoglobin of 15.1 g/dL, Creatinine of 2.4 mg/dL, baseline 1.5 mg/dL and INR of 8.17. Warfarin was stopped and oral vitamin K given. Lumbar MRI did not show evidence of lumbar radiculopathy. Ultrasound did not show hematomas. Given persistent pain and neurological deficit, a CT of the left side showed abnormal enlargement and hyperattenuation of the left sciatic nerve with significant adjacent fat stranding, suggestive of hemorrhage. Magnetic resonance imaging confirmed the findings of diffuse intraneuronal sciatic nerve hemorrhage tracking along the entire course of the left sciatic nerve within the left thigh. Neurosurgery was consulted and recommended physical therapy without surgical intervention. Cardiology consulted for management of anticoagulation and recommended resuming warfarin 1 week after discharge since neurological function was stable. At 1-month follow up with neurosurgery, patient recovered proximal muscle strength but still had residual distal weakness. Anticoagulation was continued with target INR of 2.5.

IMPLICATIONS/DISCUSSION: Peripheral neuropathy of the proximal lower extremity secondary to bleeding has been associated with hemophilia, anticoagulation therapy, trauma, hip surgery and bleeding, arteriosclerotic aneurysmal disease of the aorta and iliac vessels. While compression is the most common etiology for hemorrhagic neuropathy, actual hematoma formation beneath the epineurium is very rare. We found only one case report describing intraneural blood accumulation that was similar to our patient’s pathology. As opposed to extraneural hematoma, in the formation of an intraneural hematoma the blood fails to disperse and dissipate along the subepineurial space following the initial hemorrhage. The initial hematoma may increase in size with repeated episodes of trauma. Regarding treatment, it seems logical that early intervention and decompression of the nerve would prevent further damage. Although good functional results were shown with early recognition and prompt decompression of a hematoma, one animal model showed that early removal of extraneural hematoma improved functional recovery, however evacuation of an intraneural hematoma did not. We can conclude that intraneural hemorrhagic neuropathy is a rare and poorly understood clinical entity and that, in our case, early recognition and treatment of coagulopathy along with conservative non-surgical approach resulted in gradual function recovery.

ELEVATED ST WITHOUT MYOCARDIAL INFARCTION! Bassel OBAID, Jennifer Whitley, Mukta Panda. University of Tennessee College of Medicine Chattanooga, Chattanooga, Tennessee. (Tracking ID # 9262)

LEARNING OBJECTIVES: 1. Discuss a case of acute myocarditis initially treated as pneumonia 2. Highlight the crucial role of ECG in resolution of a diagnostic dilemma

CASE INFORMATION: A 28-year-old Caucasian male presented with a four-day history of gradual-onset shortness of breath, dry cough and myalgias, as well as two days of subjective fever, chills, nausea with generalized abdominal discomfort, vomiting and diarrhea. He denied chest pain, skin rash, sick contacts, tick bite or travel history. He had pneumonia several times as a child but had received all vaccines appropriate for his age. He did not use tobacco, ethanol or illicit drugs. On physical examination, he was alert, oriented, and well-built but mildly dehydrated; temperature was 98 F, BP 90/55 mmHg, pulse 65/min and respiration rate 22/min with oxygen saturation of 82% on ambient air and 93% on 50% Venturi Mask. No jugular venous distension was noted; he had regular rate and rhythm without murmurs or gallops on heart auscultation, and peripheral pulses were normal. Bibasilar fine lung crackles and dullness were appreciated. He had no leg edema; examination of the abdomen and all other systems were normal. His hemogram included 15000 white cells/mL, 83% neutrophils; lymphocyte, eosinophil, platelet counts and hematocrit were normal. Electrolytes were normal. He had prerenal azotemia; he refused arterial puncture. Chest Xray showed bibasilar consolidation. Blood cultures were obtained and he was treated initially for pneumonia with azithromycin and ceftiraxone. After one liter of normal saline fast and a second at 150 mL/hr, his dyspnea, hypoxia and crackles worsened. An electrocardiogram showed ST elevation suggestive of anterosetal infarction. Tropion I was 48 ng/mL; creatine kinase and creatine kinase type II were elevated. A stat echocardiogram showed an ejection fraction (EF) of 40% but no pericardial effusion, vegetations or valvular dysfunction. Normal saline was stopped; emergent cardiac
angiography showed an EF of 15% without coronary artery disease, and an intra-aortic balloon pump was placed. Blood cultures were negative at five days.

**IMPLICATIONS/DISCUSSION:** Myocarditis is inflammation of the heart muscle that may be identified by clinical or histopathologic criteria. Clinical manifestations vary greatly from asymptomatic changes on an electrocardiogram to fulminant congestive heart failure, arrhythmias, heart block, or a syndrome resembling acute myocardial infarction. Most often, myocarditis results from viral infections and less commonly, from other pathogens, toxic or hypersensitivity drug reactions, giant-cell myocarditis, or sarcoidosis. The prognosis and treatment of myocarditis vary according to the cause, and clinical and hemodynamic data usually provide guidance as to when referral to a specialist for endomyocardial biopsy is indicated. However, biopsy is used infrequently because of perceived risks and the lack of a widely accepted and sensitive histologic standard. Dilated cardiomyopathy is the major long-term sequela of myocarditis. Treating the heart failure syndrome and complications (arrhythmias, for example) is the mainstay of treatment of acute myocarditis; cause-specific treatment may also be appropriate.

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**RARE CASE OF TEMOZOLAMIDE ASSOCIATED APLASTIC ANEMIA**

Sumana Nagreddy 1; Sumana Nagreddy 1; Susmitha Nimmagadda 2; Naresh Bellam3. 1UAB, Montgomery, Alabama; 2UAB, Birmingham, Alabama. (Tracking ID # 92666)

**LEARNING OBJECTIVES:** 1. Diagnosis of a rare case of aplastic anemia after Temozolomide therapy. 2. Understand the importance of monitoring blood counts during Temozolomide therapy.

**CASE INFORMATION:** A 71 year old white female presented to the hospital with the complaints of progressive headache, left sided weakness, dysphagia and slurred speech. MRI Brain revealed multifocal lesions in the medial right cerebral hemisphere extending into corpus callosum. CT scan of chest, abdomen and pelvis were unremarkable. A diagnostic brain biopsy confirmed the diagnosis of glioblastoma multiforme (GBM). Patient was initiated on concomitant radiotherapy (RT) and temozolomide (TMZ) at the dose of 75 mg/m2/day for 42 days to be followed by maintenance temozolomide. Prior to initiation of therapy, her WBC was 7200/dL, hemoglobin was 11.6 g/dL and platelets were 228,000/dl. She completed a total of 32 chemotherapy and 21 radiation treatments with no major adverse effects. However, her platelet counts dropped from 228,000 to 50,000/dl, and further treatment was held. She progressively became pancytopenic despite discontinuation of therapy and was admitted for transfusion support. On admission she had WBC of 1,000/dL, hemoglobin of 10.6 g/dL and platelets of 10,000/dL. No sustained significant improvement was noted after aggressive transfusion and G-CSF support. A bone marrow biopsy showed pancytopenia with aplastic marrow and normal cytogenetics. There was no evidence of metastatic tumor or myelodysplasia. Hospital course was complicated by neutropenic fever requiring broad spectrum antibiotics. Her performance status continued to decline and was persistently pancytopenic even after 4 weeks off therapy. Repeat MRI showed unchanged multifocal glioblastoma multiforme with post radiation changes. She was transferred to palliative care where she subsequently passed away.

**IMPLICATIONS/DISCUSSION:** Aplastic anemia is a rare hematopoietic stem cell disorder resulting in pancytopenia and hypocellular bone marrow. It may be classified as congenital, acquired and idiopathic. Exposure to viruses (EBV, CMV), drugs (chloramphenicol, sulfonamides) and chemicals (benzene) may trigger aberrant immune response causing aplastic anemia. TMZ hematological side effects are generally mild to moderate, but can rarely cause aplastic anemia. Grade 3 and 4 hematotoxicity noted only in 7% of patients receiving concomitant TMZ and RT. (In EORTC/NCIC landmark trial by Stupp et al 2005). Very few cases (~5) are reported in the literature of patients developing aplastic anemia associated with TMZ. The case presented illustrates the fatal outcome of TMZ associated aplastic anemia and that physicians should be aware of rare complications associated with TMZ treatment in GBM.

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**MYCOPLASMA MYOCARDITIS: AN UNCOMMON COMPLICATION OF A COMMON INFECTION**

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**LEARNING OBJECTIVES:** 1. Recognize Mycoplasma pneumoniae as an uncommon cause of myocarditis and treat empirically if clinical suspicion is high. 2. NONE

**CASE INFORMATION:** A 68 year-old man presented with one week of productive cough and low grade fevers. He had progressively increasing dyspnea, but denied chest pain, orthopnea, or lower extremity swelling. Physical exam was remarkable for tachypnea, diffuse wheezing, and a 3 liter oxygen requirement. The heart rate, blood pressure, and remainder of the cardiac exam were normal. EKG showed 1.5 mm ST elevations in leads II, III, avF, and V4-V6. White blood cell count was 12.9, brain natriuretic peptide was 4461, and cardiac markers were elevated (CK-MB 31.7 and Troponin T 1.51). Cardiac catheterization revealed clean coronary arteries and a pulmonary capillary wedge pressure of 14. Cardiac MRI showed left ventricular dysfunction (ejection fraction 37%) and radiological findings consistent with myocarditis: regional myocardial edema, elevated global enhancement ratio, and multiple areas of subepicardial delayed enhancement. A presumptive diagnosis of viral myocarditis was made. Diuresis was initiated for volume-overload management, but the patient’s symptoms persisted. On hospital day 3, a chest-x ray showed diffuse nodular opacities concerning for multifocal pneumonia. Vancomycin and cefepime were started empirically for hospital-acquired pneumonia. On hospital day 5, the oxygen requirement increased to 5 liters. Chest CT showed diffuse bronchial wall thickening with scattered tree in bud opacities bilaterally consistent with multifocal pneumonia. The clinical combination of atypical pneumonia and myocarditis raised suspicion for mycoplasma, and azithromycin was added. Over the next few days, the patient’s pulmonary symptoms improved with full resolution of his oxygen requirement and wheezing. Additional work-up was negative including a viral respiratory panel, sputum cultures, anti-nuclear antibody, lyne, HIV, and hepatitis panel. Nasopharyngeal swab for Mycoplasma pneumoniae PCR was eventually positive.

**IMPLICATIONS/DISCUSSION:** Mycoplasma pneumoniae (M. pneumoniae) is the most common cause of atypical pneumonia and accounts for 7-20% of community acquired pneumonia. Cardiac complications associated with M. pneumoniae are uncommon. M.pneumoniae often presents with nonproductive cough, upper respiratory symptoms, and fevers. We reviewed the literature and found 23 cases of Mycoplasma-associated carditis since 1979 (6 myocarditis, 15 pericarditis, and 2 myopericarditis). In our case, the diagnosis of M. pneumoniae myocarditis is established based on regional ST elevations on EKG, elevated cardiac markers indicating myocardial injury, ventricular dysfunction, and diagnostic MRI findings in a patient with positive M. pneumoniae PCR. The diagnosis of M.pneumoniae can be difficult to establish definitively given the fastidious nature of the organism and the delay in culture and serologic data. Consequently, physicians may fail to
consider the possibility of mycoplasma-associated myocarditis, which may lead to further complications. Mycoplasma should be considered in patients presenting with respiratory symptoms and carditis. Empiric therapy should be initiated without awaiting further diagnostic confirmation if clinical suspicion is high.

**POLYOMA BK VIRUS INDUCED HEMORRHAGIC CYSTITIS IN A RENAL TRANSPLANT RECIPIENT—A RARE OCCURRENCE**

Geetha Selvakumar 1; Ayesha Salahuddin 1; Meghana Gopal 1; Tanvi Twari 1; Haritha Bellam 1; Meenu Singh 1; Muhammed Sherid 2; Habib Dakkak 1; Nael Gharbi 1; Shazel Gharbi 1; Mhd. Wisam Baqdunes 1; Harvey Friedman 1. 1Saint Francis Hospital, Evanston, Illinois; 2St. Francis Hospital, Evanston, Illinois. (Tracking ID # 9269)

**LEARNING OBJECTIVES:**

1. To understand the management of polyoma virus induced infections in renal transplant recipients.

2. To learn that the definitive therapy of polyoma BK viral infection in renal transplant recipients is the reduction of immunosuppressive therapy.

**CASE INFORMATION:**

Our patient is a twenty one year old Hispanic female who presented with passing blood clots in the urine on and off for a month. The frequency of passing blood clots had increased for two weeks. She also complained of lower abdominal pain, dysuria and low grade fevers. She had received a renal transplant six months ago due to the deterioration of her kidney function. She did not know about the etiology of her renal disease. Her medications include trimethoprim sulfamethoxazole, amiodipine, carvedilol, aspirin, mycophenolate mofetil, sirolimus, and prednisone. On admission her vital signs were stable and the physical examination was unremarkable except for the presence of beau’s lines in her fingernails. Her pertinent labs include a WBC of 8.4, hemoglobin of 15.9, sodium of 138, potassium of 4.5, BUN of 14, creatinine of 0.94 and a GFR of >60. Urinalysis was positive for protein of 300, trace glucose, many bacteria, WBC of 26 and an RBC of >182. Urine culture and blood culture were negative. CT scan of the abdomen showed transplanted kidney in the left side of the pelvis with perinephric induration, induration throughout the pelvis and cystitis. CMV and polyoma BK virus serologies were sent and the patient was started on ciprofloxacin for the empiric treatment of UTI. An infectious disease consult was obtained and the patient was discharged on the third hospital day after clinical improvement. On the first week after her discharge the CMV titer came back negative and on the tenth day the polyoma BK viral serology was positive for >33116216 copies. The patient was notified of the results and was advised to consult her transplant physician for reduction in the dose of immunosuppressive drugs.

**IMPLICATIONS/DISCUSSION:** Polyoma BK virus infection should be suspected in renal transplant recipients. Serial urinalysis for the detection of viral inclusion bodies called decovy cells can be used for the early detection of this condition. The definitive diagnosis is made by biopsy which shows tubulointerstitial nephritis and typical viral cytopathic changes. No specific antiviral therapy is available and the definitive treatment is reduction of immunosuppressive therapy.

**TROPICAL MIGRATORY POLYARTHRITIS AND FEVER IN A RETURNED TRAVELER: THE CASE OF CHIKUNGUNYA AND THE TOGA VIRIDAE-RELATED ILLNESSES**

Anna Acosta 1; Carlos Franco-Paredes 2; Kimberly Manning 2; Nell Winawer 2. 1Emory Internal Medicine Residency, Atlanta, Georgia; 2Emory Department of Medicine, Atlanta, Georgia. (Tracking ID # 9274)

**LEARNING OBJECTIVES:**

1. To understand the spectrum of diseases which constitute chronic pulmonary aspergillosis.

2. To understand the management of chronic pulmonary aspergillosis based on the presence or absence of alarm symptoms in any given patient.

**CASE INFORMATION:**

Our patient is a seventy three year old Indian male who presented to the pulmonologist’s office because of cough productive of muddy sputum which occurred predominantly during the winter season for two years. He also had intermittent scant hemoptysis. He denied any shortness of breath, fever or weight loss. He was able to carry out his normal day to day activities without any difficulty. His past medical history was significant for tuberculosis thirty years ago which was treated with three drugs for a period of one year. He had also undergone right upper lobectomy for the same. He underwent a coronary artery bypass grafting fifteen years ago. He was a non smoker, but had history of tobacco chewing which he had quit many years ago. He denied any history of alcohol intake. His medications include losartan and hydrochlorothiazide, atorvastatin, aspirin and nifedipine. On examination, his vital signs were normal with an oxygen saturation of 97 percent in room air. He did not have any cyanosis or clubbing. Auscultation of the lungs revealed whispering pectoriloquy and egophony in the right upper lung field. No crackles or wheezes were heard. The rest of the physical examination was essentially unremarkable. Lab tests showed a normal complete blood count and a basic metabolic panel. C reactive protein level was 0.27.

CT scan of the chest revealed a cavitary lesion with a fungus ball and loss of lung volume on the right side with associated fibrosis and bronchiectatic changes. Sputum for AFB, fungus and bacterial culture were all negative. Antibodies were positive for Aspergillus fumigatus. Since the patient had only minimal hemoptysis and due to the absence of any other disabling symptoms, it was decided that his exacerbations would be treated with antibiotics and antifungal therapy was deferred.

**IMPLICATIONS/DISCUSSION:** Management of chronic pulmonary aspergillosis can be a challenge due to the presence of extensive radiological changes. But, treatment in any given patient should be based on the presence of disabling symptoms like hemoptysis, weight loss and shortness of breath and the progression of disease as evidenced by radiological and serological tests. Conservative management should be considered in the absence of the above criteria. Itraconazole and voriconazole are the preferred agents when therapy is required.
sies of malaria, typhoid, and dengue fever were entertained. Further work-up including stool studies, blood cultures, and malaria smears were negative. Dengue and salmonella typhi serologies were sent, and she was treated with anti-pyretics, fluid resuscitation, and empiric antibiotics for infectious diarrhea. She was intermittently febrile during her hospital course, but her diarrhea and myalgias improved. After a week, she developed the sudden onset of a severe migratory polyarthralgias. Dengue and typhoid serologies returned negative. Serology for chikungunya virus (ELISA, Centers for Disease Control and Prevention) was reactive at a high-titer. She was diagnosed with Chikungunya fever. The patient was treated with aggressive anti-inflammatory therapy including NSAIDs and low dose corticosteroids with gradual improvement in symptoms.

**IMPLICATIONS/DISCUSSION:** Chikungunya fever is caused by infection with the chikungunya virus, a member of the togavirus family. Transmitted by a mosquito vector, specifically Aedes aegypti and Aedes albopictus, it is endemic to Africa and Asia. Recently, cases have been noted in Europe, imported by travelers from endemic regions. Typically, infected patients present with fever, rash, and arthralgias. Distinct from dengue fever, this acute period is followed by a severe migratory polyarthritids which can be disabling. The course of this can be quite prolonged, often lasting weeks. Diagnosis is typically through serologic studies, although viral culture and RT-PCR have also been utilized. Another togavirus, Mayaro virus, is endemic to Brazil and can cause similar symptoms to Chikungunya fever. Both infections present with a dengue-like illness and a severe migratory polyarthritis. Given both are in the togavirus family, it is possible that antibodies for these two viruses could cross-react, yielding false-positive results. Therefore, our case may represent spread of Chikungunya and would be the first reported endemic case of the virus in South America. Or this case may in fact be a case of Mayaro virus infection with a false-positive chikungunya serology. The relative unavailability of diagnostic testing in non-endemic areas makes the diagnosis of togavirus-related infections difficult. Even when testing is available, distinguishing between the causative togavirus agents may be complicated. Further investigation is needed into the accuracy of these tests. Due to globalization of trade and travel, tropical infections are increasingly seen in non-endemic areas. Clinicians need to consider the diagnosis of the togavirus-related illnesses in travelers with fever and polyarthritids.

**ACUTE INTERMITTENT PORPHYRIA IN AN ADOPTED PATIENT**
April Barbour 1; Elizabeth Gray 1. 1George Washington University, Washington, District of Columbia. (Tracking ID # 9275)

**LEARNING OBJECTIVES:** 1. Recognize Acute Intermittent Porphyria as a rare cause of recurrent abdominal pain 2. Assess the importance of broadening a differential to prevent redundancy in medical testing

**CASE INFORMATION:** A 42 year old woman with a history of hyperlipidemia presents to the urgent care center for evaluation of exacerbating abdominal discomfort. The pain began approximately 3 days prior and had increased in intensity over that time period. Her symptoms were continuous and diffuse throughout her abdomen. She had associated nausea with vomiting. She denied aggravating or remitting factors. She had no hematemesis, melena, or hematochezia. She was referred to the local emergency department (ED) for possible surgical abdomen. Physical examination, including a pelvic examination, was nonlocal. Labwork was unremarkable, including urinalysis, liver function testing, amylase and lipase, blood counts, and electrolytes. A CT scan demonstrated no evidence for acute intra-abdominal/pelvic pathology. Pain resolved with the administration of dilaudid and patient was discharged from the ED with follow up care. At follow up, the patient noted that she continued to experience episode abdominal discomfort, though lasting for shorter duration her previous episode. The pain was similar in intensity to labor pains and occurred in paroxysmal attacks without identifiable precipitating causes. Upon questioning, she related a history of similar recurrent attacks of nausea, vomiting, constipation, and/or abdominal pain. She had one previous documented visit to the ED for similar symptoms several years prior. Family history of was unknown as the patient was adopted Testing was done to evaluate for precipitating causes, including a urine porphobilinogen (PBG) which was found to be elevated at two times the upper limit of normal. Patient was sent to gastroenterology for further management and placed on a high carbohydrate diet and daily cimetidine therapy for prevention of recurrent pain. She has done well with prophylactic therapy.

**IMPLICATIONS/DISCUSSION:** Acute intermittent porphyria (AIP) is a rare condition characterized by intense generalized abdominal discomfort. The incidence of AIP is thought to be less than 200,000 persons annually in the United States, ranking it among the conditions studied at the Offices of Rare Diseases at the National Institutes of Health. The diagnosis of AIP is often a challenge due to both its infrequency of presentation as well as its troublesome symptoms. This case illustrates the value in broadening a differential when initial workup is negative and healthcare resources are utilized in a redundant manner (e.g. multiple CT scans for abdominal discomfort). Although the underlying condition is rare, it is of particular importance in a patient in whom family history was not readily available. Recognition of this syndrome in patients with recurrent abdominal pain can lead to decreased morbidity and mortality, particularly in the reduction of unnecessary medical testing.

**THE UNCOMMON DIAGNOSIS OF DISSEMINATED CRYPTOCoccus NEOFORMANS IN AN IMMUNOCOMPETENT PATIENT**
Abdulla Damhuri 1; Eileen Hennrikus 1; Shilpa Sawardekar 1. 1Penn State, Hershey Medical Center, Hershey, Pennsylvania. (Tracking ID # 9281)

**LEARNING OBJECTIVES:** 1. Recognize that Disseminated Cryptococcus neoformans can occur in immunocompetent patients 2. Consider Cryptococcus neoformans in the differential of an extensive multifocal pneumonia.

**CASE INFORMATION:** A 61-year-old Caucasian female was admitted with a chief complaint of generalized weakness and lightheadedness. Her past medical history was significant for end stage renal disease necessitating chronic hemodialysis, well-controlled type II Diabetes Mellitus, and recent surgical repair of a gastrocutaneous fistula that was a secondary complication from prior gastric bypass surgery. She denied recent avian or other animal exposure. Vital signs on admission: temperature of 34.9 C°, BP 105/64 mmHg, HR 81 beats/min, RR 26 breaths/min, and room air oxygen saturation 93%. Physical examination was significant for dullness to percussion in R lung base, no murmurs or gallops on cardiovascular exam, nonfocal neurologic exam and palpable purpuric lesions with necrotic centers on the lower extremity pretilial regions bilaterally. Laboratory studies revealed leukocytosis of 14.5 k/uL, with a differential of 14.1 neutrophils, 0.1 lymphocytes, and 0.0 eosinophils. Lactate Dehydrogenase was 910 U/L (normal Imaging of the brain showed no intracranial lesions. Blood cryptococcus antigen was positive with a titer >1:8192 and blood cultures grew cryptococcus neoformans. Pleural aspirate was exudative with fungal elements visualized on smear although fluid culture remained negative. CSF was weakly positive for cryptococcus titer. Amphotericin B was added to her antibiotic regimen. Shortly thereafter she became septic and developed disseminated intravascular coagulation which led to her death.
IMPLICATIONS/DISCUSSION: Although Cryptococcus neoformans is a ubiquitous yeast, the most important risk factor for symptomatic disease is suppressed cell-mediated immunity. While Cryptococcus is a well-known complication in immune-compromised patients, this case highlights the need for internists to also consider this disease in immune-competent patients once more common pathogens are ruled out. Cryptococcal infection begins with inhalation of the organism and pulmonary invasion, followed by hemogenous dissemination most often to the CNS, but also to skin, bone, joints and the genitourinary tract. Immunocompetent individuals usually clear the pulmonary infection spontaneously and asymptptomatically. Our patient presented with disseminated cryptococcosis with definite pulmonary and possible CNS and skin involvement. Given its neurotropic properties and virulence factors, it is imperative that patients with pulmonary cryptococcosis undergo a thorough CNS evaluation and receive immediate intervention with intravenous anti-fungal agents. Failure to do so can lead to fatal consequences as illustrated by this case.

PATIENT DEVELOPED SYMPTOMS AND SIGNS OF SYSTEMIC LUPUS ERYTHEMATOSUS (SLE) AFTER THREE YEARS OF PERSISTENT NEUTROPENIA. Anthi Katsoulis 1; Dianne Zalewski 1. UPMC Shadyside, Pittsburgh, Pennsylvania. (Tracking ID # 9339)

LEARNING OBJECTIVES: 1. Diagnosing leukopenia in patients with SLE is common. However, recognising SLE in patients with hematologic cytopenias as a first sign without any other clinical manifestations is difficult. Diagnosis requires clinical and serologic criteria. 2. Recognising the different mechanisms of neutropenia in patients with SLE does not change the management. Leukopenia rarely needs treatment with an exception of severe neutropenia (absolute neutrophils)

CASE INFORMATION: A 46-year-old African American female with no past medical history presented to the clinic to establish care. A complete physical examination was normal and blood work revealed white blood cells (WBC) of 2.8 with absolute neutrophil count of 1600. Three years previous to this she had a similar white blood cell count. Five months later she developed the onset of acute symmetric joint pain. She had noted morning stiffness at least an hour, swelling, and pain worst in the hands, wrists, knees, and ankles. She had also noticed a rash on her left foot with a sensory abnormality (tingling and tightness sensation). Three years ago she experienced a similar episode and a complete rheumatological work up was negative except for positive SS-A antibody. Her exam revealed synovitis noted in multiple joints, including the wrists, metacarpophalangeal, proximal interphalangeal joints. There were also 0.3 cm non-blanchable, purpuric papules on the left dorsal foot. Serologies included an ANA of 1:1280 in a homogenous pattern, anti-citrullinated protein antibodies elevated at 74 and rheumatoid factor elevated at 26. Numerous other antibodies were positive for lupus including SS-A, SS-B, double-stranded DNA, antiphospholipid and low complement levels. Her WBC was 2.0 with absolute neutrophil count of 800. Skin biopsy revealed changes diagnostic of leukocytoclastic vasculitis and electromyography was normal. Patient was diagnosed with SLE and started on steroids and a course of methotrexate and plaquenil. She had great improvement in her joint pain and stiffness and the erythematous rash on her foot. The leukopenia resolved with treatment of the SLE.

IMPLICATIONS/DISCUSSION: Patients with SLE frequently develop abnormalities in one or more of the three blood cell lines. Leukopenia is common and usually mirrors disease activity. However, neutropenia is an uncommon relevant finding in patients with SLE. Neutropenia in patients with SLE can result from immune mechanisms, bone marrow dysfunction, or hypersplenism. Accelerated apoptosis of neutrophils and their precursors is an important mechanism for neutropenia in systemic lupus erythematosus. Data have implicated binding of antibody to the surface of neutrophils, followed by fixation of complement, and removal from the systemic circulation. The specific antibody anti-Ro (or SSA) is associated with granulocytopenia by this mechanism described.

THE FORGOTTEN HEPATIC HYPOXOZOITE. Amy DeGueme 1; Zubin Lathara 1; Nilay Kumar 1. Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 9407)

LEARNING OBJECTIVES: 1. Illustrate the various lifecycles of Malaria species and how these can affect diagnosis and treatment goals 2. Recognize the importance of obtaining a thorough social history to find potential environmental exposures

CASE INFORMATION: A 17 year old Hispanic male presented with fevers, chills, headache, vomiting and myalgias for 2 weeks with a waxing and waning pattern. The patient had migrated from Honduras about 18 months ago but had no international travel since then. Patient’s fevers were episodic, high grade with chills and associated with diffuse myalgias. On initial presentation he had a fever of 102.7 degree Fahrenheit and was tachycardic with a heart rate of 130 bpm. Physical exam revealed a well-nourished male with scleral icterus and moderate splenomegaly. Preliminary laboratory results showed mild anemia with a hemolytic picture, indirect hyperbilirubinemia and thrombocytopenia. Patient continued to have episodic, high-spiking fevers that subsided completely during the interval period. Further examination with a peripheral smear confirmed the diagnosis of a malarial parasitic infection. Based on the peripheral smear and his place of origin, the parasite was identified as Plasmodium vivax. He was treated initially with chloroquine followed by primaquine for fourteen days to completely eliminate the hepatic phase of the parasite. He responded well to medical management and was discharged home in three days with complete resolution of his presenting symptoms.

IMPLICATIONS/DISCUSSION: As international travel increases, we will be seeing increasing cases of diseases that are exotic to the United States. Malaria is a protozoal infection which is highly endemic in tropical climates, affecting 350–500 million people around the world each year. It is still one of the leading causes of mortality in the developing and third world nations. Although malaria is an acute infectious process with an incubation period ranging from 2–4 weeks, this case depicts a prolonged dormant phase of the disease with reactivation after many months. Understanding the lifecycle and pathophysiology of these exotic diseases is the key to diagnosis and successful treatment. Malarial relapses can occur in P.vivax and P.vivax because of reactivation of the hypnozoite phase in the lifecycle of the parasite that lie dormant in the liver. Treatment of malaria is guided by the particular species and the resistance pattern in the endemic region. Early detection and adequate treatment of the disease is essential in preventing relapses. In addition to recognizing the signs and symptoms of tropical infectious diseases, this case demonstrates the importance of obtaining a travel history in all patients; as potential sources for rare infectious diseases can be uncovered.

THROMBOCYTOPENIA AS AN EXTRACARDIAC FEATURE OF ATRIAL MYXOMA. Mohammad Wisam Bagdunes 1; Muhammed Sherid 2; Habib Dakkak 3; Geetha Selvakumar 3; Nael Gharbi 4. St Francis Hospital, Evanston, Illinois; St Francis Hospital, Evanston, Illinois; St Francis Hospital, Evanston, Illinois; St Francis Hospital, Chicago, Illinois. (Tracking ID # 9408)
LEARNING OBJECTIVES: 1. To look for atrial myxoma in a patient with a new onset atrial fibrillation and unexplained extracardiac manifestations. 2. To recognize that thrombocytopenia is a possible extracardiac feature of atrial myxoma.

CASE INFORMATION: A 54 year old morbidly obese woman was admitted to the hospital for further evaluation of left atrial mass detected by transthoracic echocardiogram after a new onset of atrial fibrillation. Patient denied any symptoms on presentation except easy bruising, frequent epistaxis and a remote history of severe vaginal bleeding. She has past medical history of uncomplicated laparoscopic gastric bypass and depression for which she was taking venlafaxine. On physical examination, vital signs were unremarkable except irregular pulse of 95 bpm. HEENT: no jaundice, pallor, JVD or lymphadenopathy. Heart exam revealed irregularly irregular rhythm, normal S1, S2, no additional sounds, rubs, gallops or murmurs. Abdomen was soft, nontender without organomegaly. Extremities and skin exam was unremarkable with no purpura, bruise or ecchymosis. Laboratory studies including complete blood count and comprehensive metabolic panel revealed low platelet counts of 91 k. Transesophageal echocardiogram showed left atrial mass originating from the septum consistent with myxoma. Work up for thrombocytopenia revealed prolonged bleeding time, elevated D-dimer of 5.3, and positive ANA. Other laboratory tests were unremarkable including peripheral smear, LDH, Haptoglobin, heparin/platelet antibodies, antiphospholipid antibodies, platelet aggregation studies, VWF antigen, serum Immunofixation, SPEP, and immunoglobulins panel. Patient underwent left atrial mass resection and the pathology confirmed the diagnosis of left atrial myxoma. The bone marrow biopsy was deferred to post operation but surprisingly, the platelets count went back to the normal range(160 k) within a few days(4 days) of surgery. This rise in platelet counts after the resection of myxoma strongly suggests that atrial myxoma is the potential etiology of thrombocytopenia in our patient in the light of the absence of other etiologies.

IMPLICATIONS/DISCUSSION: Atrial myxomas are the most common primary heart tumors. Symptoms range from nonspecific and constitutional (fever, weight loss, arthralgias, and Raynaud phenomenon) to systemic embolization and sudden cardiac death. In about 20% of cases, myxoma may be asymptomatic and discovered as an incidental finding. In addition to thrombocytopenia reported in the literature, several other hematologic features have been reported including leukocytosis, anemia, high erythrocyte sedimentation rate, positive antiphospholipid antibodies and elevated gamma globulin levels. Myxomas have been demonstrated to produce numerous growth factors and cytokines, including vascular endothelial growth factor, resulting in angiogenesis and tumor growth and an increased expression of the inflammatory cytokine, interleukin-6 which explain these systemic symptoms. Because of nonspecific symptoms, early diagnosis may be a challenge. Echocardiography is the diagnostic procedure of choice although TEE, CT, MRI can be used. Most atrial myxomas are benign and can be removed by surgical resection.

RECOGNIZING THE OBVIOUS: WHEN FILLING TO THE TOP IS STILL NOT ENOUGH  Jessica Karp 1; Yelena Averbukh2. 1 Albert Einstein College of Medicine, Bronx, New York; 2 Montefiore Medical Center, Bronx, New York. (Tracking ID # 9416)

LEARNING OBJECTIVES: 1. To interpret an elevated INR test result in the setting of polycythemia. 2. To recognize when it is appropriate to order an adjusted coagulation study laboratory test.

CASE INFORMATION: A 67 year old man with polycythemia vera was admitted for management of elevated hematocrit (Hct). The patient denied chest pain, headache, paresthesias, easy bruisability, episaxis or melena. He reported red eyes and generalized pruritis. He had a history of coronary artery disease and peptic ulcer disease status-post upper GI bleed. He was not taking anti-coagulation therapy. On exam he had injected conjunctiva, no splenomegaly, no purpura. On admission his Hct was 64% and rechecked INR was elevated at 2.6. He had normal liver function tests. Investigation of his elevated INR with mixing studies demonstrated a correction of clotting times, ruling out the presence of coagulation factor inhibitors; quantification of factor VII was normal, making vitamin K deficiency an unlikely cause of elevated INR. With repeated phlebotomy, the patient’s Hct decreased to 59% with INR decreasing to 1.7. and with Hct decreasing even further to 54% his INR normalized to 1.2. Based on research of the literature on the technique and interpretation of coagulation tests, it was concluded that the patient’s high Hct was responsible for causing a spuriously elevated INR. This same principle is the cause for the well known problem of an under-filled coagulation study test tube in which an improperly low amount of blood and plasma in the tube may result in over anticoagulation. Similarly, with increased Hct and a relatively decreased amount of plasma in the test tube, over anticoagulation and falsely elevated INR may result.

IMPLICATIONS/DISCUSSION: Increased INR is frequently encountered in clinical practice. The usual first step is to re-check an abnormal INR and, if it remains elevated, investigate the patient’s diet, history of liver disease and medication list. Next, mixing studies and factor level quantifications evaluate for coagulation factor inhibitors and deficiencies. But in the work up for elevated INR, one must consider the technique of the test itself. INR values are obtained from whole blood added to a tube containing a fixed amount of citrate as anticoagulant. In a polycythemic patient, defined as Hct >48% in women and >52% in men, the red blood cell mass (RCM) is greater than in a non-polycythemic patient. Because of this increase in RCM in the polycythemic patient’s blood sample, there is less plasma in the test tube, and less than the anticipated amount of coagulation factors for the pre-measured amount of citrate anticoagulant. Thus, the volume of citrate anticoagulant needs to be decreased proportionately for patients with high Hct, otherwise clotting times may be artificially prolonged due to over-anticoagulation of the sample. Although this laboratory-based abnormality is mentioned in current clinical databases, high Hct is not a commonly considered cause of abnormal coagulation test results by a general practitioner. There are laboratory algorithms to correct the amount of anticoagulant when there is increased Hct, but the clinician must recognize the need for and request these corrected studies. Thus, with increased Hct and elevated INR in the absence of alternative explanations, the abnormal ratio of citrate anticoagulant to the patient’s plasma volume should be considered as a cause for abnormally prolonged coagulation studies. Prompt request for the specialized coagulation testing protocol can help medical practitioners avoid unnecessary testing and can decrease patients’ testing-related anxiety.

A COMMON CANCER; AN UNCOMMON ENTITY  KANISHKA CHAKRABORTY 1; ANIL TUMKUR 2; DEEALINA DAS 3; DEVAPRIYAN JAISHANKAR2. 1 EAST TENNESSEE STATE UNIVERSITY; MEDICAL ONCOLOGY, JOHNSON CITY, Tennessee; 2ETSU, JOHNSON CITY, Tennessee; 3ETSU MEDICAL ONCOLOGY, JOHNSON CITY, Tennessee. (Tracking ID # 9457)

LEARNING OBJECTIVES: 1. Recognize a relatively rare but aggressive histological entity known as Metaplastic breast cancer, quite distinct in
terms of prognosis and available management options. 2. Recognize differentiating features of Metaplastic breast cancer including hormone receptor and her2/neu negativity: presence of epithelial, sarcomatoid, primary squamous and mixed adeno-squamous features on histopathology.

**CASE INFORMATION:** Breast cancer is the most common female cancer in America. Breast malignancies in general arise from epithelial elements and thus are called carcinomas. There are two major types; in-situ carcinoma and invasive (infiltrating) carcinoma (1). Invasive ductal, invasive lobular and ductal/lobular are common histological subtypes of invasive breast cancer. Other subtypes like Tubular, Mucinous, Medullary. Metaplastic and Adenoid cystic carcinoma comprise less than five percent of invasive carcinomas (1). We are going to present one of these relatively less explored clinical entities know as Biphasic Metaplastic breast cancer with mixed epithelial and sarcomatoid elements. An 82 year old lady presented with c/o a rapidly growing lump in her left breast. Medical history was significant for a right mastectomy for invasive carcinoma in the remote past, Parkinson’s disease and significant dystaxia. Physical examination showed an easily palpable mass in the upper-outer quadrant of the left breast. Mammogram revealed suspicious calcifications and an Ultrasound confirmed the mass. Core biopsy was consistent with ER/PR and Her2/Neu negative metaplastic carcinoma of the breast. She underwent a modified radical mastectomy and had 3 of 10 lymph nodes positive on axillary dissection (despite two sentinel lymph nodes being negative). Pathology revealed a single focus of Nottingham grade III invasive carcinoma measuring 3 cm, along with areas of spindle cell architecture admixed with areas of osteoid matrix and poorly differentiated intervening pleomorphic hyperchromatic cells in a heterologous neo-plasm. Immunohistochemistry was positive for Vimentin (positive in mesenchymal tumors) and p63 (positive in invasive epithelial carcinoma) but negative for cytokeratin AE1/AE3. Final staging was Stage IIB (T2N1M0). Given her age, performance status and paucity of data regarding the benefit of chemotherapy in metastatic carcinoma she was treated with adjuvant radiation.

**IMPLICATIONS/DISCUSSION:** Metaplastic breast cancer has been recognized as a distinct pathological entity in recent years. It consists of combinations of poorly differentiated ductal adenocarcinoma, mesenchymal and other epithelial components. The term denotes tumors with mixed Epithelial and Sarcomatoid components as well as primary squamous, or mixed adeno-squamous carcinomas. Sarcomatoid cases are classified as Monophasic (spindle cell only) or Biphasic (mixed spindle cell-epithelial) (2). Fewer T1 tumors, possibly less nodal involvement (some case series report increased nodal involvement) (2), hormone receptor negativity and higher tumor grade are significant differentiating factors between metaplastic breast cancer and infiltrating ductal carcinoma. The knowledge regarding overall prognosis and treatment options related to this tumor is evolving. The general perception is patients with metaplastic breast cancer do poorly compared to other invasive breast cancers as all subtypes of metaplastic carcinoma display aggressive biological behavior as evidenced by high p53 and Ki-67 index (2). No specific chemotherapy regimen has proven to be effective and endocrine treatment is noted to be redundant. But further studies will be needed to assess the role of surgery, adjuvant chemotherapy, radiotherapy and newer treatment options to improve overall and disease free survival. 1. Schnitt, SJ, Guidi, AJ. Pathology of invasive breast cancer. In: Diseases of the Breast, Harris, JR, Lippman, ME, Morrow, M, Osborne, CK, (Eds), 3 rd ed, Lippincott, Williams and Wilkins, Philadelphia 2004. p.393. 2. Tse, GM, Tan, PH, Putti, TC, Lui, PCW, Chaiwun, B, Law, BKB. Metaplastic carcinoma of the breast: a clinicopathological review. J Clin Path 2006; 59: 1079–83.

**A FIDDLY CASE OF RASH AND NEUTROPENIA** Naveed Hasan 1; Maha Dawood 1; Fatme Alam 1. 1SUNY Upstate Medical University, Syracuse, New York. (Tracking ID # 9593)
LEARNING OBJECTIVES: 1. Recognize the clinical features of Levamisole-induced pseudovasculitis. The emergence of retiform purpura with unexplained neutropenia in a cocaine abuser should prompt consideration of Levamisole as the offending agent. 2. Distinguish the immunological responses of Levamisole-induced pseudovasculitis from Wegener’s Granulomatosis (WG); they mimic strongly, discernment of which is imperative to correct decision making.

CASE INFORMATION: A 44 year old white woman with history of Hepatitis C, cycler neutropenia and polysubstance abuse was transferred from an outlying facility for evaluation of rapidly progressive skin rash of one week duration. The rash started off as a sunburn sensation and later developed into purplish, necrotic and painful skin lesions. There was no history of sinus, lung or kidney disease or symptoms. She admitted to cocaine use about 1 week ago when someone tampered her drink with cocaine. Examination revealed seven discrete, tender, blackish purple stellate skin lesions, predominantly on extremities and breast. The largest lesion measured 14 x 12 centimeters. The rash had both hemorrhagic and bulous components, well-demarcated borders with surrounding erythema. Joint exam was normal. Laboratory values were significant for neutropenic nadir of 0.02 x 10^9/L; positive atypical anti-neutrophilic cytoplasmic antibody (ANCA) directed against protease 3 (PR3) and positive anti-cardiolipin IgM and Hepatitis C Virus antibodies. Anti-nuclear antibody (ANA) and cryoglobulin were negative. C4 was low and C3 was normal. Partial thromboplastin time was elevated. Urine toxology was positive for cocaine, cannabis and opiates. Diagnosis of vasculitis was entertained and she was started on steroids with no improvement after 3 days. Bone marrow was hypercellular with maturation arrest at the promyeloctye-myelocyte stage and no signs of leukemia/lymphoma. Skin biopsy showed hemorrhage, full thickness necrosis and multiple fibrin thrombi filling small blood vessels in the dermis. Multidisciplinary review of the case and literature concluded that it is a pseudo-vasculitis secondary to cocaine adulterated with Levamisole. Steroids were withdrawn and patient improved over the next few days.

IMPLICATIONS/DISCUSSION: According to Drug Enforcement Agency report in 2009, levamisole was found in 69% of seized cocaine. This antihelminthic agent is banned for human use due to multitude of adverse effects including agranulocytosis and pupura. Levamisole is metabolized to aminorex in racehorses which has high abuse potential because of its amphetamine-like pharmacological activity. Another hypothesis is that it augments response to Acetylcholine at Nicotinic channel; and in some animal models, the animals seemed ‘happier’ suggesting a role of dopamine. ANCA directed against PR3 has been a pretty consistent feature, tricking the physicians to treat as vasculitis. One small case series has shown positive anti-cardiolipin antibodies in these subjects. Both genetic predisposition (Like HLA B27 positivity) and acquired states like Hepatitis C may define which population develops the retiform purpura. Cocaine adulteration with Levamisole is a medical and social challenge. Physician awareness is vital to differentiate this reversible illness from WG. The diagnosis should be entertained in all suspected WG cases presenting with agranulocytosis and positive cocaine. A urine Levamisole assay should be sent preferably within 48 hours. Cessation of exposure usually causes complete reversal of the symptoms, as was true in our case.

BILATERAL TENSION PNEUMOTHORACES DURING APNEA TESTING

Naveed Hasan 1; David M Landsberg 2. 1 SUNY Upstate Medical University, Syracuse, New York; 2 Crouse Hospital, Syracuse, New York.

LEARNING OBJECTIVES: 1. Recognize that apnea testing (AT) for diagnosis of brain death is not a benign procedure. While it is frequently performed in Intensive Care Units, it may be associated with life threatening complications like tension pneumothorax. 2. Assess the pre-requisites of AT carefully. Pay close attention to the diameters of endotracheal tube (ETT) and oxygen tubing (used for pre-oxygenation); if the latter is not freely flowing within ETT, a snug fit may result in tension pneumothorax.

CASE INFORMATION: A 57 year old woman with past medical history of hypertension, morbid obesity, fibromyalgia and hypothyroidism was brought to the hospital unresponsive and intubated. Initial neuroimaging was consistent with global anoxia revealing bilaterally symmetrical basal ganglia and occipital infaracts apparently secondary to fenfluram overdose. She progressively deteriorated over the following 12 hours until brainstem reflexes were absent. American Academy of Neurology pre-requisites for apnea testing were met including euvoolemia, core temperature >36.5 degrees and normotension. Formal AT was initiated. The patient was removed from ventilator and a 12 French oxygen catheter was placed at the level of the carina within the lumen of a 7.0 millimeter ETT. After 4 minutes of observed apnea, hypotension and desaturation ensued followed by obvious subcutaneous air in the thorax and head necessitating termination of AT. Chest X-ray confirmed bilateral tension pneumothoraces and subcutaneous emphysema treated with emergent thoracostomy. Cerebral blood flow testing performed immediately after thoracostomy confirmed brain death.

IMPLICATIONS/DISCUSSION: Tension pneumothorax is an extremely rare complication encountered during AT. Predictors for its development should be identified to limit potential life threatening complications. Wijdicks et al reviewed 228 cases of AT and no pneumothoraces were described. Saposnik et al identified pre-existing acidosis as a risk factor for developing complications from AT. The patient described here had normal hemodynamic and acid-base status prior to AT. Review of the AT in this case revealed that the oxygen tubing was not moving freely within the smaller lumen ETT (7 millimeters) nor was gas noted to be venting from the ETT. We suspect that a snug fit between oxygen tubing and ETT did not allow sufficient venting of oxygen flow in this case precipitating the pneumothoraces.

ETT luminal diameter, oxygen tubing outer diameter and depth of placement should be shown careful attention in AT. Vigilance with respect to presence of adequate residual ETT lumen to allow ventilation with oxygen flow rates set at physiologic minute volumes, and preferably, review and standardization of these parameters by prospective studies will lessen the risk of pneumothoraces during AT.

AN OLD TRICK FROM THE GREAT IMITATOR Marcus Anthony Urey 1;
Stephen Harder 2. 1UTSW Internal Medicine Residency, Dallas, Texas; 2UTSW, Dallas, Texas.

LEARNING OBJECTIVES: 1. Recognize the epidemiologic reemergence of chronic syphilis infection 2. Identify visceral symptoms as an early manifestation of neurosyphilis.

CASE INFORMATION: A 53 year-old woman presented with six months of episodic abdominal pain. She described an electric-like mid-epigastric pain associated with emesis and thirty pound weight loss over six months. The symptom occurred every one to three weeks without relation to eating, lasted four hours, and dissipated without intervention. No alleviating or aggravating factors were identified and the patient denied hematemesis or bleeding per rectum. Prior work-up including abdominal imaging, esophagogastroduodenoscopy, and colonoscopy were negative. Laproscopic cholecystectomy for cholelithiasis did not relieve...
endometrial biopsy showed gram-positive bacterial elements consistent with actinomyces and severe endometritis. The patient was started on ceftriaxone, trimethoprim-sulfamethoxazole, and minocycline as at that time histopathologic diagnosis was not finalized. Unfortunately the patient was declining IUD removal initially and, after one visit with an outpatient infectious diseases specialist, was subsequently lost to follow-up.

**IMPLICATIONS/DISCUSSION:** Actinomyces are gram-positive, anaerobic, slow-growing organisms that can cause a myriad of infections. It is a normal colonizer of the mouth, gastrointestinal tract, and vagina. Mucosal disruption is required for infection. The most common presentation is facial abscess in relation to trauma; however, virtually any organ can be involved. The species most commonly implicated in human infection is *A. israeili*. Diagnosis can be made based on biopsies of the lesions with proper microbiologic handling, but often results from histopathologic diagnosis following resection. A higher index of suspicion could potentially prevent unnecessary surgical resections. It is widely recognized that intrauterine devices (IUDs) are associated with pelvic infection due to Actinomyces. The incidence is difficult to estimate but rare. The risk increases the longer the IUD is present. The most common manifestation of IUD-related actinomyoccosis is endometritis. However, hematogenous spread can result in disseminated infection. Disseminated infection can appear as multiple masses in virtually any organ system, mimicking malignancy. For facial abscess, 4 weeks of oral penicillin is typically effective. For disseminated disease, 3 weeks of IV penicillin followed by 6–12 months of oral penicillin is recommended. In cases of IUD-associated actinomyoccosis, the device should be removed.

**LEXAPRO AND IMITREX: CONCERNING SEROTONIN EFFECTS**

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**LEARNING OBJECTIVES:** 1. Review the epidemiology of serotonin syndrome. 2. Recognize the presentation and management of the clinical manifestations of serotonin syndrome.

**CASE INFORMATION:** A 25-year-old female patient with a past medical history significant for migraine headaches and depression for which she takes escitalopram, presented to urgent care clinic with increased anxiety. The symptoms began one-week prior with several episodes of feeling dizzy. She described symptoms of vertigo, that the room was spinning. Concerned for the development of migraines, she started increasing the frequency of her sumatriptan. She stated she was anxious, easily startled and crying more frequently. Over time, she noted she was continuously flushed independent of her emotional state. As her symptoms persisted, she took her prescribed clonazepam in addition to sumatriptan and escitalopram with no improvement. Her vital signs in clinic were significant for blood pressure 156/98, temperature 100.1°F and pulse of 116. Her physical exam was notable for a flushed, anxious tearful young lady with a mild resting tremor, and hyperreflexia noted at the brachioradialis, biceps and patella bilaterally. She was referred to the emergency department for evaluation and was admitted to the general medicine floors for supportive care of serotonin syndrome. She was treated with ciprofloxacin and lorazepam and discharged the following day. As an outpatient, her escitalopram was restarted and her sumatriptan was permanently discontinued in favor of topiramate for management of her migraines.

**IMPLICATIONS/DISCUSSION:** Classically, serotonin syndrome is the triad of mental status changes, autonomic hyperactivity and neuromuscular abnormalities. In reality it presents as an increasingly common spectrum of clinical findings. The rising incidence is likely...
due to the increasing use of serotonergic agents. Over 48,000 exposures were identified in 2004, of which 8,187 resulted in major outcomes most of which were from co-ingestions of serotonergic agents. The true incidence of serotonin syndrome is thought to be under-represented from missed recognition due to its protein manifestations. One study reported that over 85% of physicians were unaware of serotonin syndrome. The diagnosis of serotonin syndrome is a clinical one, making a thorough history and physical vital. Mental status changes include anxiety, agitated delirium, restlessness, disorientation and easy startling. Abnormalities in vital signs include tachycardia, hypertension and hyperthermia. Common physical exam findings are mydriasis, hyperactive bowel sounds, diaphoresis, hyperreflexia, normal skin color and clonus often in the lower extremities. The most accurate diagnostic criteria is the Hunter Toxicity Criteria Decision Rules which states that a patient must have taken a serotonergic agent and have one of the following exam findings: spontaneous clonus, inductive clonus plus agitation or diaphoresis, ocular clonus plus agitation or diaphoresis, tremor and hyperreflexia, hyperreflexia, or a temperature above 100.4 F plus ocular or inductive clonus. Management of serotonin syndrome involves the removal of the precipitating drugs, supportive care, the control of agitation with benzodiazepines, the administration of serotonin agonists such as cymbalta, and the control of hyperthermia and autonomic instability. Many cases resolve within 24 hours. When symptoms persist, more aggressive therapy is required including sedation, neuromuscular paralysis and orotracheal intubation.

**ABSTRACTS**

**S418**

**LEARNING OBJECTIVES:**
1. Recognize Waldenström macroglobuline-ma as a cause of acute renal failure. 2. Discuss physician non-acceptance of public health insurance (Medicaid) as a barrier to health care access and continuity of care.

**CASE INFORMATION:** A 35 year-old otherwise healthy woman presented to an outside hospital with malaise, myalgias, and anorexia. She took no medications, had no allergies, and family and social histories were unrevealing. Vital signs on admission were notable for blood pressure 145/92, but were otherwise normal. Physical exam was unremarkable, with no peri-orbital or lower extremity edema. Lab studies on admission were significant for creatinine 3.9 mg/dL, and urinalysis with specific gravity 1.010, trace blood, and 300 mg/dL protein. Spot urine protein-to-creatinine ratio was 14.8. FENa was 5.23%. Further work-up revealed ESR of 122, normal C3 and C4, and negative ANA and ASO titters. After her creatinine failed to improve, renal biopsy was performed; preliminary results were consistent with post-streptococcal glomerulonephritis and the patient was discharged from the hospital with creatinine stable at 3.0-3.2 mg/dL. Planned follow-up did not occur because the nephrologists did not accept her public insurance. One month later she saw a new nephrologist; at that time, the final biopsy read was obtained and was consistent with acute interstitial nephritis. Her creatinine failed to improve after a course of oral steroids and repeat renal biopsy was performed. This second biopsy confirmed interstitial nephritis, and was remarkable for tubular casts, indicating a possible underlying hemolytic disorder. SLEP and UPEP with immunofixation revealed an M spike of 0.5 g/dL, with an elevated serum IgM of 1059 mg/dL and elevated urine free kappa light chains at 64851 mg/L. She was referred to hematology. Bone marrow biopsy revealed a hypercellular marrow with an IgM kappa-restricted lymphoplasmacytic population comprising 50% of the total cellularity, expressing CD19 and CD20. Unfortunately, this hematologist also did not accept her insurance, so she transferred care to a second hematologist who diagnosed her with Waldenström macroglobulinemia and started treatment with bortezomib and rituximab.

**IMPLICATIONS/DISCUSSION:** Waldenström macroglobulinemia (WM) is a rare disorder, with 1400 new cases diagnosed in the US every year. The median age at diagnosis is 64 years; 60% of patients are male and less than 1% of patients are under the age of 40. WM is defined as a lymphoplasmacytic infiltrate in the bone marrow with a resultant IgM monoclonal gammapathy in the blood. It was first described as a syndrome of oronasal bleeding, severe anemia, hypofibrinogenemia, lymphadenopathy, lymphoid infiltrate of the bone marrow and hyper-viscosity. Clinical manifestations of WM are due to tumor infiltration of the bone marrow, circulating IgM and deposition of IgM in tissues. Renal insufficiency is unusual, despite IgM deposition in the glomerular basement membrane and infiltration of the renal parenchyma by neoplastic cells. Kidney biopsies from patients with WM and renal insufficiency show both glomerular and interstitial abnormalities. Characteristic pathological findings include hyaline intracapillary deposits of IgM and lymphoid infiltration of the interstitial tissues. Neoplastic infiltration of the interstitium is seen in over 50% of patients with WM and renal insufficiency. Nonspecific proteinuria is common, but the nephrotic syndrome is rare and the degree of proteinuria does not correlate with the degree or presence of IgM deposition in the glomerulus. WM should be considered on the differential diagnosis of acute renal failure in all patients; it is important to check SPEP and UPEP in all persistent renal failure patients, regardless of age. According to the Center for Studying Health System Change, as of 2008, almost half of all physicians either did not accept (28%) or limited acceptance of new Medicaid beneficiaries. Main reasons cited were low fees (84%) and administrative burden (70%). Despite having insurance, access to care remains difficult for patients with Medicaid. The effect of temporary increases in reimbursement outlined in the health care reform bill remains to be seen.

**A CURIOUS CASE OF CONTAGIOUS COAGULATION** Cassandra Kovach 1; Meaghan Lynch 1; Michael Paasche-Orlow1. 1Boston University School of Medicine, Boston, Massachusetts. (Tracking ID # 99991)

**LEARNING OBJECTIVES:** 1. Identify the biphasic course of parvovirus B19 infection. 2. Recognize the risk of aplastic crisis and thromboembolism in patients with hemoglobinopathies and acute parvovirus B19 infection.

**CASE INFORMATION:** A 24-year-old man with HbSC disease presented with low back pain consistent with his previous vaso-occlusive crises. His sister and nephew were concurrently admitted with similar symptoms. One week prior to admission, the patient had subjective ferver and cough with green sputum, which had resolved. He was afibrile with stable vital signs and SaO2 100% on room air. Physical exam was unremarkable. Labs revealed WBC count 15,500 cells/mm3, Hct 21.3% (baseline 26%), and reticulocyte count 0.6%. Urine and blood cultures were negative. Parvovirus B19 antibodies were ordered. The patient’s hospital course was complicated by persistently low reticulo- cyte count and decreasing Hct, requiring 3 units PRBCs. On hospital day 2, he became febrile and required 6 L of oxygen to maintain his SaO2. Work up was positive for multiple pulmonary emboli (PE) and anticoagulation was initiated. His respiratory and pain symptoms progressively resolved, and he was discharged on hospital day 5. The patient’s sister and nephew had similar clinical courses, including
bilateral PEs. Two days after his discharge, the patient was readmitted for uncontrolled pain, severe bilateral leg weakness, and arthralgias. His hip flexor strength was 3/5 bilaterally, and he required a walker to ambulate. Evaluation of his weakness revealed negative RPR and HIV titers and a normal B12 level. Parvovirus B19 IgM titer from his first admission returned elevated. Hip and lumbar MRIs showed no acute processes. He received several additional blood transfusions, pain management, and daily physical therapy, and improved over 11 days. His reticulocyte count gradually increased to 13% before returning to baseline. The patient was discharged able to ambulate with crutches and minimal pain.

**IMPLICATIONS/DISCUSSION:** Parvovirus B19 typically has a biphasic symptom course. The first phase occurs 7–10 days after exposure, coincides with viremia, and involves a mild prodrome of flu-like symptoms. Approximately 2 weeks after viral exposure, IgM and IgG antibodies appear. In children these antibodies coincide with the characteristic “slapped-cheek” rash known as Erythema Infectiosum, or Fifth’s Disease, and in adults these coincide with a rash and/or arthralgias, which are mediated by immune complex deposition. Our patient experienced this biphasic symptom course, the first phase presenting as URI symptoms prior to his vaso-occlusive crisis and the second phase presenting as debilitating arthralgias when he was readmitted. In patients with hemoglobinopathies, transient aplastic crisis is a well-established third manifestation of Parvovirus B19; indeed, virtually all transient aplastic crises in patients with sickle cell disease are due to B19 infection. Our patient was admitted to the hospital at approximately the same time as his sister and nephew, who also have HbSC disease and were also diagnosed with Parvovirus B19 infection. All three of these patients suffered temporary aplastic crises and bilateral PEs during their hospitalizations. Patients with HbSC or HbSS are at an increased risk for thrombotic events compared to healthy individuals, and patients with HbSC are at an even higher risk than those with HbSS. It appears that B19 infection can exacerbate this risk. B19 infection can occasionally mimic transient rheumatologic disorders and rarely a transient antiphospholipid syndrome.

**A CASE OF HISTAMINE FISH POISONING** Ben John Wilson 1, William Ghalii 2, 1Resident, Internal Medicine, University of Calgary, Calgary, Alberta; 2Department of Medicine, University of Calgary, Calgary, Alberta. (Tracking ID # 10042)

**LEARNING OBJECTIVES:** 1. Recognize the clinical features of histamine fish toxicity. 2. Diagnose histamine fish toxicity.

**CASE INFORMATION:** A 25-year-old woman was sent to the emergency department (ED), via emergency medical services (EMS), after presenting to a walk-in clinic with a 1 hour history of a suspected anaphylactoid reaction. Her past medical history was remarkable for asthma, allergic rhinitis, and eczema. Her illness began within 10 minutes of eating a tuna sandwich made with a can of solid white tuna. Immediately upon finishing the tuna, she noticed a burning sensation in her tongue and face which then spread to her neck and torso. She then developed an erythematous, pruritic, papular rash, dyspnea, and wheeze. The patient’s roommate had a similar, though less severe syndrome not requiring medical attention, after eating a small portion from the same can of tuna. In the ED, she had a heart rate of 150 bpm, blood pressure of 139/83 mmHg, respiratory rate of 26 breaths/minute, and her oxygen saturation was 100% on a non-rebreather mask. She had an erythematous, papular rash over her face, neck, and torso, decreased breath sounds bilaterally with expiratory wheeze, and increased work of breathing. Her laboratory and radiographic investigations were largely unremarkable. Her syndrome was initially treated with a total of 3 intramuscular (IM) doses of 0.3 mg 1:1000 IM epinephrine in the walk-in clinic and with EMS prior to arriving in the ED. In addition, she also received normal saline, 125 mg of IV methylprednisolone, IV ranitidine, multiple 25 mg doses of IV diphenhydramine, nebulized salbutamol, and acetaminophen. Given her unique presentation and its clear association with the ingestion of tuna, the emergency physician consulted internal medicine to assist in the diagnosis and further management of possible scombroid poisoning.
IMPLICATIONS/DISCUSSION: Histamine fish poisoning, also known as scombroid poisoning, is a histamine toxicity syndrome that results from eating specific types of spoiled fish. Histamine fish poisoning classically manifests within minutes of ingesting spoiled fish. It begins with a burning tongue, sometimes a “peppery” or metallic taste to the fish is described. Progressive flushing of the face, neck, and torso with a characteristic “throbbing” headache also occurs soon after ingestion. Anxiety, nausea, tachycardia, palpitations, anxiety, and abdominal pain are also common features. Almost invariably, histamine toxicity follows a benign, self-limited course. For histamine fish poisoning to occur, 3 factors must be present. The ingested fish must be rich in histidine, which is typically the case with dark-fleshed fishes. Secondly, colonizing bacteria must contain histidine decarboxylase, the enzyme necessary to convert histidine into histamine. Lastly, at some point after the catch, the fish must have been exposed to relatively warm temperatures to permit bacterial replication and histidine metabolism, ultimately leading to critical histamine levels. Histamine fish poisoning is a clinical diagnosis that may be confirmed with laboratory testing. A highly probable diagnosis can be made based on the characteristic syndrome occurring in close proximity to fish ingestion. Plasma histamine levels and tissue histamine levels from suspect fish have been proposed to aid diagnosis. Treatment is supportive, consisting of H1 and H2 receptor antagonists. In the present case, the syndrome resolved within 24 hours and the patient was discharged home from the ED. The Public Officer of Health was informed and arranged for 3 of the patient’s remaining, unopened cans to be analyzed for tissue histamine levels. Levels came back within normal limits implying that the affected fish was isolated to the one particular can.

ASYSTOLE INDUCED BY INTRACEREBRAL MASS EFFECT Ann R Garment 1; Irina Sobol 1. 1New York Presbyterian Hospital - Weill Cornell Medical College, New York, New York . (Tracking ID # 10057)

LEARNING OBJECTIVES: 1. To discuss the broad differential diagnosis of asystolic cardiac arrest. 2. To recognize pertinent findings that suggest a neurogenic etiology of asystole.

CASE INFORMATION: A 53-year-old man with no past medical history presented to the hospital after a syncopal event. The evening of admission he felt “cool and clammy” during dinner and subsequently had an episode of syncope without any associated palpitations, chest pain or shortness of breath. Witnesses reported that he was unconscious for 30 seconds without seizure-like movements, incontinence or subsequent confusion. In the emergency department while on cardiac monitor he again syncopized. Telemetry showed sinus bradycardia preceding an 18-second pause without P-waves or escape beats, followed by several junctional beats before conversion to normal sinus rhythm. His physical examination was unremarkable, his labs demonstrated normal electrolytes, negative troponins, negative lyme titers and a normal angiotensin converting enzyme level, and his ECG showed normal sinus rhythm. He was admitted to the cardiac intensive care unit to have an emergent transvenous pacing wire placed. A subsequent transthoracic echocardiogram showed an ejection fraction of 70%, normal valves and no wall motion abnormalities. Though the etiology of his syncopal events was not yet elucidated, a permanent pacemaker was deemed appropriate and was placed without complication on hospital day two. On hospital day three he developed a new-onset, severe headache. A head CAT scan was performed, which showed a 3.8 x 4.0 x 3.1 cm, calcified, enhancing mass in the right fronto-temporal region with surrounding vasogenic edema, mass effect on the lateral ventricles and mild subfalcine herniation. On hospital day four, the patient was taken to the operating room for resection of the mass, which was found to be a benign meningioma on pathology. The patient was discharged on hospital day eight without any neurological sequelae. He was scheduled to follow up with his new cardiologist regarding whether or not to ultimately remove the pacemaker if it was no longer deemed necessary.

IMPLICATIONS/DISCUSSION: When a patient experiences sinus arrest and asystole, one must consider a relatively broad differential, including myocardial infarction, electrolyte abnormalities, conduction system degeneration (from age, lyme, sarcoidosis or amyloidosis), or increased vagal tone. Complete cessation of cardiac electrical activity on telemetry, without any p-waves or escape beats, further supports vagal tone as culprit. Case reports of vagal tone causing profound symptomatic bradycardia or cardiac arrest have included carotid hypersensitivity syndrome, REM sleep, straining with defecation, and exercise (presumably a vasovagal phenomenon). Reports of intracerebral masses causing asystole almost always describe secondary seizure activity as the phenomenon ultimately effecting asystole rather than an intrinsic property of the mass itself, though one veterinary journal reported a canine meningioma that was theoretically directly interfering with the vagal nerve based on its location. However, in the patient presented above, his tumor was causing enough mass effect to induce herniation on head CAT scan, and there was no clinical evidence of seizure activity. Therefore, this may in fact be the first reported case of an intracerebral tumor causing mass effect that subsequently induced sufficient vagal tone to precipitate complete asystole.

A CASE OF WEIGHT GAIN IN A PATIENT WITH HUMAN IMMUNODEFICIENCY VIRUS Yunie Kim 1; Peter Hunt 2; Edgar Pierluissi 3. 1University of California, San Francisco. Department of Internal Medicine, San Francisco, California ; 2University of California, San Francisco. Positive Health Program, San Francisco, California ; 3University of California, San Francisco. Division of Geriatrics, San Francisco, California. (Tracking ID # 10062)

LEARNING OBJECTIVES: 1. Recognize that ritonavir can increase the risk of iatrogenic Cushing’s syndrome in patients on inhaled corticosteroids. 2. Explore a type of systems error that can cause iatrogenesis.

CASE INFORMATION: The patient is a 48-year-old man with HIV (last CD4 count =207, viral load IMPLICATIONS/DISCUSSION: Inhaled corticosteroids are absorbed through both the lung and gastrointestinal tract. Fluticasone is a potent inhaled corticosteroid metabolized by P450 CYP3A4 and has been shown to suppress the hypothalamic-pituitary axis. Itraconazole and ritonavir, two inhibitors of CYP3A4, have been implicated in iatrogenic Cushing’s syndrome and/or adrenal insufficiency by decreasing inhaled corticosteroid metabolism in case reports. There are even some more recent case reports implicating intra-articular and epidural steroids in iatrogenic Cushing’s syndrome in patients on ritonavir. The diagnosis of ritonavir and fluorinated corticosteroid inhaler associated Cushing’s syndrome has been delayed in some cases due to attribution of weight gain to lipodystrophy from ART. In this case, though the primary care provider was aware of a potential drug interaction and attempted to discontinue the fluticasone, a pharmacy error led to its continued dispensation. The frequent usage of fluticasone in this patient led to a marked iatrogenic Cushing’s syndrome and adrenal insufficiency. Health care providers should be aware of the increased risk of drug interactions in patients on ritonavir given its potent inhibition of CYP3A4. This case also serves as a reminder to maintain a low threshold to directly verify medications with a pharmacy to ensure accuracy and safety. Systems errors such as dispensation of discontinued medications and erroneous instructions can occur despite attention by both health care providers and pharmacists.
**LEARNING OBJECTIVES:**

1. Recognize the emerging phenomenon of opioid induced neurotoxicity in patients who are receiving opioids for cancer related pain.
2. Understand how to evaluate suspected opioid induced neurotoxicity, and how to manage patients with this disorder.

**CASE INFORMATION:**

A 57 year old man with prostate cancer presented with low back pain. He was tender to palpation over the lower back and right femur but neurologically intact. Hydromorphone patient controlled analgesia (PCA) was started at a bolus dose of 0.4 mg intravenously (IV) with a lockout of 10 minutes and no basal rate (0.4/10/0). MRI revealed diffuse bony metastases throughout the thoracic and lumbar spine and a pathologic right femoral neck fracture. PCA was titrated to 14/10/9 over the next 3 days. He underwent radiation to his spine and right total hip replacement with improvement in pain, but remained on the same PCA settings until 6 days later, when his PCA was titrated to 20/10/9 because of worsening pain. The following day, the patient complained of muscle spasms and confusion. On exam, he was alert but delirious, experiencing visual hallucinations and 16 beats of myoclonus per minute in his upper extremities. Basic chemistry panel and complete blood count were normal. A diagnosis of opioid induced neurotoxicity was made. PCA was stopped for 90 minutes, then restarted with a bolus only at 50% of prior dose and no basal dose (10/10/0). Lorazepam was scheduled for myoclonus. His symptoms resolved within 48 hours.

**IMPLICATIONS/DISCUSSION:**

Ongoing clinician education has resulted in an appropriate increase in opioid use to manage cancer related pain and dyspnea. This changing pattern in opioid utilization has led to enhanced symptom control in cancer, but has also led to the emergence of opioid induced neurotoxicity. The incidence of opioid induced neurotoxicity is unknown. Neuroexcitatory effects of opioids may be seen in all patients on opioids, but comorbid conditions, including renal failure, can precipitate opioid induced neurotoxicity. Effects are likely caused by the 3-glucuronide opioid metabolites, which have no analgesic effect and can accumulate rapidly. Myoclonus is usually the presenting symptom of opioid induced neurotoxicity and if missed can progress to hyperalgesia, allodynia, delirium, and tonic-clonic seizures. If clinicians are unaware of opioid induced neurotoxicity, they may mistakenly treat hyperalgesia with higher opioid doses and facilitate the progression of opioid induced neurotoxicity. Evaluation includes blood work to look for renal dysfunction, physical exam to assess hydration status, and a thorough chart review of opioid dosages and dose changes. Clinical management entails treatment of exacerbating factors. If pain remains controlled, dose reduction of the opioid may be necessary along with initiation of a benzodiazepine to reduce myoclonus and raise the seizure threshold. If pain is uncontrolled, opioid rotation to a structurally dissimilar opioid at 25-50% of the morphine equivalent dose may be necessary. Naloxone does not treat opioid induced neurotoxicity, and should not be used.

**MORE THAN MEETS THE EYE: RETINAL TOXOPLASMOSIS IN A PATIENT ON CHRONIC STEROIDS**

Darcy Wooten "Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 10068)

**LEARNING OBJECTIVES:**

1. Review the differential diagnosis and initial work-up for anterior uveitis and neuroretinitis.
2. Diagnose and treat ocular toxoplasmosis.

**CASE INFORMATION:**

A 79 year-old man with a history of untreated latent TB presented with 6 weeks of blurry vision in his left eye. Five months earlier he was diagnosed with renal sarcoidosis at another hospital after presenting with renal failure. There, he was found to have granulomatous interstitial nephritis on renal biopsy and diffuse thoracic and abdominal lymphadenopathy on CT scan. High-dose prednisone was started with improvement in renal function. Three months later he noted blurry vision and superior visual field loss in his left eye. An ophthalmologist diagnosed ocular sarcoidosis and increased his prednisone to 80 mg daily. His vision continued to deteriorate and he was admitted to our hospital for expedited evaluation. Review of systems was otherwise negative. His exam showed an afferent pupillary defect, superior visual field deficit, anterior uveitis and neuroretinitis on the left. The remainder of his exam was unremarkable. His CBC, electrolytes, LFTs, and ESR were within normal limits. His creatinine was stable at 2.0. Lab tests for HIV, Bartonella, Syphilis, Cryptococcus, Coccidioides, CMV, and ANCA were negative. A repeat CT scan showed resolution of the lymphadenopathy, and no pulmonary abnormalities were seen. A brain MRI was unremarkable. Toxoplasma serologies were markedly elevated and a vitreous aspirate PCR assay confirmed the diagnosis of retinal toxoplasmosis. The patient was started on sulfadiazine, pyrimethamine, and leucovorin and his prednisone was tapered. His vision remains poor and is not expected to improve.

**IMPLICATIONS/DISCUSSION:**

The differential diagnosis for anterior uveitis and neuroretinitis includes infections, systemic inflammatory diseases and masquerading syndromes. The preliminary evaluation includes a detailed history, thorough review systems, basic laboratory tests, and a chest x-ray. With a recent diagnosis of renal sarcoid, our patient’s visual symptoms were initially attributed to ocular sarcoidosis however alternative diagnoses were pursued when his vision worsened on a higher dose of prednisone. Ocular TB, although rare in the U.S., was considered because of the patient’s untreated latent TB in conjunction with prolonged steroid use. The lack of respiratory symptoms or pulmonary findings on imaging however, helped eliminate this possibility. Ocular toxoplasmosis, the ultimate diagnosis in this case, is caused by the intracellular parasite Toxoplasma gondii and accounts for 15-17% of all cases of uveitis and 25% of neuroretinitis in the U.S.; it is the most common cause of anterior uveitis worldwide. Usually a self-limited disease in immunocompetent patients, there is substantial variation in the severity and duration of active episodes. Whether corticosteroids contribute to active disease is unclear but several case reports have documented a potential association. A high index of suspicion along with the combination of serology, fundoscopy, and vitreous sampling for evidence of Toxoplasma gondii are critical in making the diagnosis. Treatment consists of sulfadiazine and pyrimethamine with leucovorin to prevent pancytopenia.

**PANCREATITIS DUE TO HYPERTRIGLYCERIDEMIA**

Jennifer Hsieh 1; Cindy Sadikot2. 1Montefiore Medical Center, Bronx, New York; 2Montefiore Medical Center, New York, New York. (Tracking ID # 10074)

**LEARNING OBJECTIVES:**

1. Recognize that hypertriglyceridemia is an uncommon cause of pancreatitis.
2. Review the risk factors, pathophysiology, and treatment of hypertriglyceridemic pancreatitis

**CASE INFORMATION:**

Chief complaint: 51 year old male with uncontrolled Type 2 diabetes mellitus, obesity, hypertriglyceridemia, and a prior episode of pancreatitis presents with epigastric pain for 1 day. History of present illness: His pain was epigastric, severe, and constant, with occasional radiation to the right and left upper abdominal quadrants. The pain was worse with movement and deep inspiration. He had occasional nausea, decreased appetite but denied...
vomiting, changes in bowel movements, or changes in skin color. Review of symptoms: He denied shortness of breath, fever, and chest pain. He denied alcohol ingestion, illicit drugs or any medications. Physical Exam: Vital signs: T 99.4 F, BP 136/87, HR 85, RR 16, FS 377. His exam was notable for an obese, distended abdomen; epigastric, RUQ and LUQ tenderness; no rebound or guarding; no hepatomegaly. No xanthomas, scleral icterus or jaundice. Laboratory data: WBC 14.2, Amlyase 205 U/L, Lipase 423 U/L, LDH 224 mg/dL, Triglycerides 10,840 mg/dL, EtOH 10 mg/dL. Total protein 5.4 g/dL, Albumin 3.6 g/dL, Total bilirubin 0.5 mg/dL, Direct Bilirubin 0.0 mg/dL, Alkaline phosphatase 65 U/L, SGOT 21 U/L, SGPT 68 U/L. Computed tomography of the abdomen and pelvis: Gallbladder is nonhydropic without gallstones. There is no intra or extraluminal biliary ductal dilatation. Mild diffuse enlargement of head and neck of pancreas with small peripancreatic ascites consistent with acute pancreatitis. No fluid collections or evidence of necrosis. Hospital course: The patient was admitted with a diagnosis of pancreatitis due to hypertriglyceridemia. The patient was treated supportively with intravenous fluids, subcutaneous heparin, kept NPO, and started on an insulin infusion. Within 24 hours of starting insulin, the patient’s triglyceride level decreased by ~50%, to 6,115 mg/dL. He was later started on gemfibrozil. Within a week, his symptoms improved and his triglyceride level was 583 mg/dL on the day of discharge.

**IMPlications/Discussion:** Acute pancreatitis is a reversible inflammatory process that is most commonly due to excessive alcoholic use or gallstones. Hypertriglyceridemia (HTG) is the third most common cause of pancreatitis, but causes only 1-4% of cases. HTG is usually asymptomatic until triglycerides (TG) are greater than 1,000 mg/dL, at which point the risk of pancreatitis increases. Primary causes of HTG include genetic defects leading to abnormal TG metabolism such as types I, IV, and V hyperlipoproteinemia. Secondary or acquired HTG is due to a high fat diet, obesity, diabetes, hypothyroidism, or medications such as estrogen, thiazide diuretics, propofol, and protease inhibitors. The typical presentation of hypertriglyceridemic pancreatitis (HTGP) is a patient with a history of dyslipidemia and the presence of an additional factor. One theory to explain the mechanism for HTGP is that pancreatic lipase hydrolyzes excess triglycerides, causing free fatty acids to accumulate in the pancreas and injure acinar cells. Another theory suggests that elevated chylomicrons in pancreatic capillaries causes hyperviscosity, producing ischemia and inflammation. The main goal in treating HTGP is to decrease the serum TG level and prevent further inflammation. There are no official guidelines regarding HTGP therapy but insulin and heparin decrease TG levels by increasing the activation and release of lipoprotein lipase respectively. Lipoprotein lipase is produced by muscle endothelial cells and breaks down TG into free fatty acids and glycerol. Heparin use is controversial as it also increases hepatic degradation of lipoprotein lipase which may result in rebound accumulation of chylomicrons. Plasmapheresis directly removes chylomicrons, but is expensive and not readily available. Lipid lowering drugs prevent further episodes.

**NOT JUST ANOTHER CASE OF ACUTE PERICARDITIS**

Karen Ann Clarke 1; Karen Ann Clarke 1; Emory University, Newnan, Georgia. (Tracking ID # 100773)

**Learning Objectives:** 1. Recognize that acute pericarditis can be precipitated by cardiac diagnostic and interventional procedures. 2. Identify the differential diagnosis of chest pain in patients who have undergone a recent percutaneous coronary intervention.

**Case Information:** A 60 year-old white female with a history of coronary artery disease presented with a two day history of dyspnea, and pleuritic chest pain. The chest pain varied in its intensity, and it increased with deep inspiration. She denied radiation of the chest pain, diaphoresis, nausea, vomiting, or coughing, but she did report subjective fevers and chills. Three weeks ago, she was admitted to the hospital with a different type of chest pain, and ultimately had a percutaneous coronary intervention to her right coronary artery. She was discharged home on aspirin and Plavix. Her initial vital signs were T=97.1, heart rate=71, blood pressure=107/77, respiratory rate=20, and room air O2 saturation=98%. The physical examination was normal, with the exception of pain when pressure was applied to the mid-sternum. The patient had three negative sets of cardiac enzymes, and her electrocardiogram was normal. Her WBC count was 17.1, CRP was 26.2 (mg/dL), and ESR was 53 (mm/hr). Since her D-Dimer was mildly elevated, the patient went for a chest CT angiogram, which showed no pulmonary embolus, but it did reveal a new (that is, compared with three weeks ago), “sizeable pericardial effusion.” Her transthoracic echocardiogram showed a small-to-moderate sized pericardial effusion, without echocardiographic findings of increased intrapericardial pressure.

**Implications/Discussion:** Acute pericarditis is a diagnosis that is commonly encountered by hospitalists. Patients must have at least two of the four following criteria to be diagnosed with pericarditis: pericardial effusion, chest pain, abnormal electrocardiogram (with diffuse ST elevation or PR depression), and a pericardial friction rub. Although in many instances the etiology of the acute pericarditis is idiopathic, there are multiple known causes, including infections, neoplasms, metabolic disorders, vasculitis, connective tissue diseases, and trauma. Trauma can be either direct or indirect. Indirect trauma includes a blunt injury to the chest. Examples of direct trauma include a penetrating chest injury or cardiac surgery. Although not commonly considered, direct trauma can also occur during a percutaneous coronary intervention, and lead to acute pericarditis. The development of acute pericarditis after such interventions has been reported only infrequently in case reports. The treatment of acute pericarditis due to a percutaneous coronary intervention is the same as the treatment of other types of pericarditis. As is true for most cases of acute pericarditis, in less than one week, this patient’s symptoms responded well to the use of Indocin and Colchicine. While it is very important to first exclude acute coronary syndrome due to in-stent restenosis as a cause of chest pain in a patient who has recently undergone a coronary intervention, acute pericarditis should also be included in the differential diagnosis.

**SEIZURES OR SYNCOPE: WHEN COPD IS NOT JUST COPD**

Kai Huang 1; Carl J Fichtenbaum 1; Jean M Elting1, 1University of Cincinnati Department of Internal Medicine, Cincinnati, Ohio. (Tracking ID # 10084)

**Learning Objectives:** 1. Describe the challenges of diagnosing pulmonary arterial hypertension particularly in persons with Chronic Obstructive Lung Disease. 2. Identify the utility of echocardiogram as a screening tool for pulmonary hypertension.

**Case Information:** A 61 year old gentleman with long history of cigarette smoking presented with progressive dyspnea and presumed seizure disorder. He had a 10 year history of dyspnea and was diagnosed with COPD five years ago by another physician. Following a colon resection for diverticulitis 3 years ago, he began supplemental oxygen and was now requiring 5 liters per nasal cannula. He was also being treated for lower extremity edema with intermittent diuretics. For the past 3 years, he noted episodes of loss of consciousness often associated with bending over. These episodes had increased in frequency 1 month prior to presentation and were now associated with chest pressure. They were thought to be seizures and he had been receiving Keppra for the
last year with no change in frequency of these episodes. Prior evaluation included pulmonary function tests that initially showed moderate obstruction, air trapping and decreased DLCO. Later review actually showed results more consistent with restrictive defect with air trapping. An echocardiogram revealed LVEF of 50% and a markedly dilated RV, elevated mean PA pressure. Right heart catheterization was notable for severely elevated pulmonary artery pressures (76/38 mmHg; mean-50 mmHg), LVEDP of 15. After a thorough evaluation, the patient was diagnosed with idiopathic PAH and associated right heart failure. Keppra was discontinued. Patient eventually was started on sildenafil, bosentan, treprostinil, transtracheal and nasal canula O2. Subsequently patient developed a rare factor VIII inhibitor with pulmonary hemorrhage, pseudomonal pneumonia and septic shock. He died <12 months after diagnosis of PAH.

**IMPLICATIONS/DISCUSSION:** This case illustrates the diagnostic challenges of pulmonary arterial hypertension. Because the onset of this condition is usually insidious, a delay in diagnosis is common. The interval from onset of symptoms to diagnosis is often greater than 2 years. Syncope occurs in ~30% of patients with PAH. Syncope indicates advanced disease and is a poor prognostic sign. This case also illustrates the concept of disproportionate pulmonary hypertension. Pulmonary hypertension when associated with other diseases, such as COPD, is typically mild with the underlying disease as the main determinant of symptoms and outcome. When the severity of PAH exceeds what would be expected on basis of the associated diseases such as COPD, other etiologies should be considered. A complete evaluation and a formal hemodynamic assessment with right heart catheterization are necessary to fully assess this condition. Echocardiogram is a simple screening tool that guides clinicians in determining when right heart catheterization is appropriate.

**DRUG REACTION WITH EOSINOPHILIA AND SYSTEMIC SYMPTOMS (DRESS)** Michael James Gilchrist 1, Britni Hebert 1. 1 UNC School of Medicine, Chapel Hill, North Carolina. (Tracking ID # 10112)

**LEARNING OBJECTIVES:** 1. Recognize and treat Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) in a patient with fevers, rash, leukocytosis with peripheral eosinophilia, and abnormal liver function tests. 2. Identify medications commonly prescribed in the outpatient setting that are associated with the development of DRESS.

**CASE INFORMATION:** 79 year old female with a PMH of NIDDM, gout, HTN, and history of Schwannoma s/p transnasal resection in 2007, admitted to an academic Hospitalist service with rash, fevers and profound weakness. The patient stated that her symptoms had progressed over the last 7-10 days. She had been evaluated by her primary care physician several weeks prior and was prescribed allopurinol for treatment of her gout. On the day of her hospital admission, patient had a presyncopal event while using the bathroom at her home. Physical exam was significant for a temperature of 39.8, patient appeared diaphoretic. Abdomen was soft and non-tender with no palpable hepatosplenomegaly. Skin exam notable for a morbilliform erythematous papular eruption involving her trunk and proximal extremities. Distal extremities were affected to a lesser degree. WBC count elevated at 13.5 with peripheral eosinophilia. Total bilirubin 1.4, AST 133, ALT 194, alk phos 267, and GGT 320. Urinalysis was normal. Blood and urine cultures showed no growth. EKG, chest x-ray was normal. Right upper quadrant ultrasound showed probable gallstones but no evidence of choledocholiths or hepatic masses. MRI/MRA of her brain was normal. Given her diffuse papular skin eruption, fevers, elevated liver function tests, peripheral eosinophilia, and recent initiation of allopurinol, we diagnosed the patient with DRESS. By date of discharge, patient continued to have intermittent fevers but her rash was resolving. She was prescribed cetirizine 10 mg by mouth once daily, flucinamide 0.05% twice daily to affected areas, and wet wraps with 2 tablespoons of salt in 1 quart of water twice daily for symptomatic relief. She was seen in follow-up within the next week and reported that her symptoms continued to improve. Two months after her hospitalization, patient reported all of her symptoms had resolved.

**IMPLICATIONS/DISCUSSION:** Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) was first coined in 1996 and is used to describe a severe, idiosyncratic hypersensitivity reaction to a medication. The etiology is unknown, although an association with HHV 6 reactivation and abnormal hepatic metabolism has been implicated. Most commonly, DRESS develops 3-8 weeks after initiation of the offending medication but can develop as soon as 3 days. The most commonly associated medications associated with the development of DRESS are anticonvulsants (particularly phenytoin), allopurinol, minocycline, sulfasalazine, and abacavir. Patients typically present to medical care with high grade fevers, rash (urticaria, maculopapules, vesicles, bullae, pustules, chelitis, erythroderma, or purpura), and lymphadenopathy. As with this patient, an infectious etiology is often initially suspected and must be evaluated prior to diagnosing DRESS. Hepatic involvement occurs in up to 80% of cases and has been reported to necessitate transplantation. Acute renal failure requiring long-term hemodialysis has been reported. Pulmonary, cardiomuscular, and pancreatic involvement have also been described. A significant peripheral eosinophilia is typically noted. Skin biopsy typically shows dermal edema and superficial perivascular inflammation. In retrospective studies, mortality has been estimated to be 10%. Prompt recognition of the syndrome and discontinuation of the offending medication is vital. The treatment for this condition varies from corticosteroids (oral or IV) to H2 blockers and topical steroids as in this patient. Immunosuppressive agents such as cyclosporin and intravenous immunoglobulin (IVIG) have also been used for refractory cases. As with this patient, the majority have complete resolution of their symptoms after discontinuation of the offending medication.

**CARDIAC MANIFESTATION OF SHEEHAN’S SYNDROME** Waqas Qureshi 1, Fatima Khalid 1. 1 Henry Ford Health Systems, Detroit, Michigan. (Tracking ID # 10141)

**LEARNING OBJECTIVES:** 1. To understand that the classical Beck’s triad of low arterial blood pressure, jugular venous distention, and distant, muffled heart sounds is usually absent in conditions that cause chronic peripheral effusion. 2. To recognize the importance of taking detailed history about gynecological and obstetric conditions from women, especially in the post partum period presenting to internal medicine clinic.

**CASE INFORMATION:** A 32-year-old African-American lady presented to the clinic with a 2-week history of “cold extremities”. This was associated with generalized weakness & fatigue over the past 2 months and shortness of breathness on walking “two blocks” for the last week. She has no known comorbidities. On further questioning, it was found that she had her first child about 3-4 months ago and the post partum course was complicated by retained placenta and bleeding, which required 2 units of PRBCs. She could not nurse her child because she “never” had milk for her child. She did not follow up with her doctor because of her financial conditions. On examination, she appeared pale but was not in any respiratory distress. Her blood pressure on presentation was 98/82 mmHg and pulse was 91. Pulsus paradoxus was positive. JVP was mildly elevated to 9 cm of water above angle of Louis. Peripheral pulses were weak. Capillary refill was normal but her hands and feet were cold. Heart sounds were not muffled. Lungs were
clear. Skin was dry and she had trace pedal edema. EKG showed low voltage complexes. CXR showed bottle shaped heart with cardiomegaly. An echocardiogram was done which showed tamponade physiology with collapse of right atrium and ventricle during diastole. Fluid was mostly located in the posterior region of pericardium. IV fluids were given & pericardiocentesis was performed. Further Investigations revealed HB 10.1 mg/dL, WBC count 6700 (70% PMN). ESR was 28. TSH was 0.5 ml/L, serum free T4 0.1 ng/dL, serum free T3 0.7 pg/mL, serum FSH 4.8 IU/L, serum LH 2.2 IU/L, serum cortisol (8 am) 4.1 mcg/dL. Pericardial fluid studies showed protein 3.7 mg/dL, glucose 50 mg/dL, cell count 46/ml mostly lymphocytes. Cytology, Gram and AFB staining, culture, PCR for mycobacterium, cholesterol crystals, ANA, & RA factor were negative. MRI brain showed partially atrophied pituitary gland.

**IMPLICATIONS/DISCUSSION:** This case reinforces the need to consider Sheehan’s syndrome in patients who had post partum bleeding with subsequent failure to lactate. A few cases of Sheehan’s syndrome presenting as cardiac tamponade have been reported earlier. Although, these cases were reported in developing countries. This is the first case reported in a developed country where post partum care is very aggressive. Unfortunately, due to recent financial situation of the country, women health has suffered and has led to delay in seeking health care in some individuals as in our case. Cardiac tamponade is a rare presentation from the hypothryoidism since the central hypothyroidism caused by Sheehan’s syndrome is usually mild. The rapidity of the collection of fluid determines the symptoms. In chronic conditions causing pericardial effusion, the classical Beck’s triad is not seen. In such cases, cardiac tamponade mimics heart failure and can present with dyspnea, orthopnea, lower extremity edema and tender hepatomegaly. On the other hand, the presence of low levels of cortisol also increases the chances of development of low pressure tamponade. As in our case, the JVP was slightly but not markedly elevated due to relative hypovolemia from hypocortisolism. Pulsus paradoxus might be absent and arterial pressure might be normal in such cases. The replacement of steroid hormones is important in such patients with central hypothyroidism since starting levothyroxine prior to steroid supplementation might precipitate adrenal crisis. The dose of levothyroxine should be up-titrated slowly as it may precipitate cholesterol crystals causing pericarditis. Our lady was treated with stress doses of hydrocortisone and small doses of levothyroxine initially. A repeat echocardiogram prior to discharge did not show any reaccumulation of fluid. Levothyroxine was up titrated while monitoring thyroid function tests in the clinic. The patient improved remarkably. Patient is still being followed.

**LEARNING OBJECTIVES:** 1. To recognized that Dieulafoy’s lesion is an unusual cause of gastrointestinal bleeding with the most common location being the stomach. 2. To be aware that Cases of upper Glbleeding in which no definitive bleedingsource is found on routine locationbeing the stomach. 3. To understand the potential for Dieulafoy’s lesion to mimic other gastrointestinal conditions such as ulceration.

**CASE INFORMATION:** A 75 year old women presented for a routine annual breast check. Clinical breast examination was normal. Screening mammogram revealed pleomorphic appearing microcalcifications in a segmental distribution in the right lateral breast. The patient was recalled for magnification views which showed multiple groups of somewhat worrisome calcifications in the upper outer right breast and a stereotactic biopsy was recommended. This was done and revealed ADH with associated calcifications. With these findings an excisional biopsy was recommended and performed. The pathology report was: “Ductal carcinoma in situ intermediate nuclear grade with associated calcifications involving an ill-defined area over 3.2×1.8×1.5 cm. All surgical resection margins are negative for tumor (minimum tumor free margins, 0.5 cm).” The tumor was estrogen receptor and progesterone receptor positive. Radiation therapy to the breast was recommended, which the patient pursued locally. With a previous history of pulmonary embolism she was not felt to be a candidate for adjuvant hormonal therapy with Tamoxifen.

**IMPLICATIONS/DISCUSSION:** The accuracy of stereotactic CNB of suspicious breast lesions has been well established for benign and malignant disease, greatly reducing the need for surgical excisional biopsy. There are however a number of lesions which, when detected on CNB – ultrasound guided or stereotactic biopsy – cause diagnostic uncertainty and therefore require surgical excision. These, so called high risk breast lesions, are lesions which may coexist with a breast malignancy, or lie on a spectrum of pathological entities which are difficult to distinguish from malignant lesions. These high risk lesions include ADH, atypical lobular hyperplasia (ALH), lobular carcinoma in situ (LCIS), papillary lesions, flat epithelial atypia, mucocoele like lesions and complex sclerosing lesions/radial scars. ADH is the most common and least controversial for management of these high risk breast lesions. Rates of ADH on CNBs have been reported to range between 1%-9% in different series. ADH is characterized by a proliferation of uniform epithelial cells with monomorphic round nuclei filling part of the involved duct. ADH shares some of the cytologic and architectural features of low-grade ductal carcinoma in situ. When faced with the diagnosis of ADH on a CNB pathology report the responsible internist is obliged to interpret and counsel the patient in regard to the following: 1) ADH noted on CNB requires surgical excision since ADH can coexist with a breast malignancy. The rate of carcinoma found in subsequent excisions has been reported to range between 11%-69% in different series. 2) If a malignancy is excluded on excisional biopsy there is an increased risk of subsequent development of breast cancer (relative risk 3.7 to 5.3). The Gail breast cancer risk assessment tool incorporates atypical proliferative disease into a risk calculation and can be used to identify women with ADH who are appropriate candidates for breast cancer chemoprevention.

**IMPLICATIONS OF ATYPICAL DUCTAL HYPERPLASIA ON CORE NEEDLE BREAST BIOPSY** Dietlind L. Wahner-Roedler 1; Marilyn J. Morton 1; Carol A. Reynolds1. 1Mayo Clinic, Rochester, Minnesota. *(Tracking ID # 10170)*

**LEARNING OBJECTIVES:** 1. To familiarize the General Internist with the diagnosis and management of patients with atypical ductal hyperplasia (ADH) detected on core needle biopsy (CNB) specimens of the breast. 2. None

**CASE INFORMATION:** A 75 year old women presented for a routine annual breast check. Clinical breast examination was normal. Screening mammogram revealed pleomorphic appearing microcalcifications in a segmental distribution in the right lateral breast. The patient was recalled for magnification views which showed multiple groups of somewhat worrisome calcifications in the upper outer right breast and a stereotactic biopsy was recommended. This was done and revealed ADH with associated calcifications. With these findings an excisional biopsy was recommended and performed. The pathology report was: “Ductal carcinoma in situ intermediate nuclear grade with associated calcifications involving an ill-defined area over 3.2×1.8×1.5 cm. All surgical resection margins are negative for tumor (minimum tumor free margins, 0.5 cm).” The tumor was estrogen receptor and progesterone receptor positive. Radiation therapy to the breast was recommended, which the patient pursued locally. With a previous history of pulmonary embolism she was not felt to be a candidate for adjuvant hormonal therapy with Tamoxifen.

**IMPLICATIONS/DISCUSSION:** The accuracy of stereotactic CNB of suspicious breast lesions has been well established for benign and malignant disease, greatly reducing the need for surgical excisional biopsy. There are however a number of lesions which, when detected on CNB – ultrasound guided or stereotactic biopsy – cause diagnostic uncertainty and therefore require surgical excision. These, so called high risk breast lesions, are lesions which may coexist with a breast malignancy, or lie on a spectrum of pathological entities which are difficult to distinguish from malignant lesions. These high risk lesions include ADH, atypical lobular hyperplasia (ALH), lobular carcinoma in situ (LCIS), papillary lesions, flat epithelial atypia, mucocoele like lesions and complex sclerosing lesions/radial scars. ADH is the most common and least controversial for management of these high risk breast lesions. Rates of ADH on CNBs have been reported to range between 1%-9% in different series. ADH is characterized by a proliferation of uniform epithelial cells with monomorphic round nuclei filling part of the involved duct. ADH shares some of the cytologic and architectural features of low-grade ductal carcinoma in situ. When faced with the diagnosis of ADH on a CNB pathology report the responsible internist is obliged to interpret and counsel the patient in regard to the following: 1) ADH noted on CNB requires surgical excision since ADH can coexist with a breast malignancy. The rate of carcinoma found in subsequent excisions has been reported to range between 11%-69% in different series. 2) If a malignancy is excluded on excisional biopsy there is an increased risk of subsequent development of breast cancer (relative risk 3.7 to 5.3). The Gail breast cancer risk assessment tool incorporates atypical proliferative disease into a risk calculation and can be used to identify women with ADH who are appropriate candidates for breast cancer chemoprevention.

**IT HAS NOTHING TO OFFER BUT BLOOD” – A CASE OF DIEULAFOY’S LESION** Jewel Ahmed 1; Nazrul Islam Chowdhury 2; Harvey Richey 2; Abdul Thanoon4. 1TTUHSC,Amarillo, Amarillo, Texas ; 2Texas Tech University Health Science Center, Amarillo, Texas ; 3TUhs Amarillo, Amarillo, Texas ; 4Amarillo Diagnostic, Amarillo, Texas. *(Tracking ID # 10307)*

**LEARNING OBJECTIVES:** 1. To recognized that Dieulafoy’s lesion is an unusual cause of gastrointestinal bleeding with the most common location being the stomach. 2. To be aware that Cases of upper Glbleeding in which no definitive bleedingsource is found on routine investigations are particularly suspicious for Dieulafoy’s lesion.

**CASE INFORMATION:** 74 year-old Hispanic female came to ER with non specific weakness for three days, which started after an episode of non bloody diarrhea. Since then she had been feeling very weak and dizzy. She was dry, tachycardic and her BP was in low normal side with orthostatic drop. Her hemoglobin dropped from 14.1 to 9 gm/dland stool guiac test positive; other work up for anemia was negative. BUN 199 and creatinine 0.51, with normal electrolytes; INR 4.4 with no other abnormal LFT. CT scan was negative for bleeding in the abdomen, retroperitoneum or chest. GI bleeding scan with 28 mCi of 99 m technetiumpertechnetate tagged with patient’s red blood cells was positive. She was appropriately resuscitated with IV fluid and then admitted to
ICU with frequent follow-up of hemoglobin and hematocrit. Gastroenterologist was consulted; however they did not recommend any EGD at that moment. After 2 days, patient was moved to regular floor as her general condition including hemoglobin was improved; five days later she developed hematemesis; EGD was done which showed there was a Dieulafoy’s lesion with fresh blood surrounding the lesion in the body of the stomach. An EndoClip was placed around the lesion. Then epinephrine 1: 10,000 of a total 4 ml was injected at the base of the lesion with blanching of the mucosa. Esophagus, rest of the stomach and duodenum were normal.

**IMPLICATIONS/DISCUSSION:** Approximately 75-95% of the Dieulafoy’s Lesions (DLs) are found within 6 cm of the gastro-esophageal junction predominantly on the lesser curvature, which is possibly related to the peculiar vascular anatomy of the stomach in this region. Extragastric DLs are uncommon but can be found in Duodenum, Esophagus, Jejunum, Colon and Rectum. The pathology of the lesion is essentially the same throughout the gastrointestinal tract and it is caused by an abnormally large caliber persistent tortuous submucosal artery. DL is an inherently difficult lesion to diagnose and should be considered during evaluation of any patient with unexplained recurrent, massive GI bleeding. History of NSAID intake, acid peptic disease or alcohol abuse is usually absent. 1.

The diagnosis at initial endoscopy in earlier reports was in only half the cases. In recent series the identification at initial endoscopic examination has been in more than 90% of cases. Therapeutic endoscopy has evolved as the modality of choice for the initial treatment of DLs. 2. Adrenaline injection has been used as sole therapy or in combination with other endoscopic modalities. The other endoscopic hemostatic techniques apart from adrenaline injection include bipolarar mandropolar endoscopy, heater probe, laser photocoagulation, injection sclerotherapy, hemoclip and endoscopic band ligation. 3. We are presenting a case who came with unexplained upper GI bleeding and whose initial endoscopy was not able to find out any particular pathology. On subsequent clinical situation and repeat EGD was finally able to pick up the lesion and was successfully treated with endoscopic clip along with adrenaline injection.

**UNKNOWN FACE IN A KNOWN PLACE- A CASE OF CAPNOCYTO- PHAGA SEPSIS** Chowdhury Nazrul 1; Jewel Ahmed 1; Randy Stewart 2; Roger D Smalligan 3. 1TTUHSC, Amarillo, Amarillo, Texas; 2VA, Amarillo, Amarillo, Texas; 3Texas Tech Univ HSC, Amarillo, Texas. (Tracking ID # 10318)

**LEARNING OBJECTIVES:** 1. To recognize the reasons for extreme BUN/Cr ratios in the setting of renal failure. 2. To recognize when certain ratio of elevated AST to ALT can point to extrahepatic pathology and to consider the diagnosis of rhabdomyolysis based on laboratory values in the elderly patient unable to provide medical history.

**CASE INFORMATION:** An 83 year old male presents with altered mental status and is unable to provide any medical history. On exam the patient is oriented to self only and otherwise is non-coherent. He is noted to move all of his extremities, but unable to ambulate due to severe ataxia. Musculoskeletal examination did not reveal any extensive bruising. Laboratory findings were significant for blood urea nitrogen (BUN)/creatinine (Cr) of 93/1.9, with a ratio of 49:1 and liver function tests revealing AST/ALT of 524/110, with a ratio of 4.7:1. Total and direct bilirubin, alkaline phosphatase, and hemoglobin/hematocrit were within normal limits. A urine toxicology and alcohol screen were negative. Computed tomography of the abdomen demonstrated fatty infiltration of the liver without evidence of cirrhotic changes. Computed tomography of the head without contrast revealed no acute hemorrhage, mass, or shift. With aggressive hydration the patient’s renal and liver laboratory abnormalities normalized within a few days. This normalization was associated with an improvement in mental status to patient’s baseline. Critical appraisal of initial laboratory findings led to consideration of rhabdomyolysis as the etiology of extreme ratio of BUN to Cr and AST to ALT. Retrospective evaluation of CPK levels on initial blood
sample collected demonstrated a level of 14,969 and the diagnosis of rhabdomyolysis was confirmed.

**IMPLICATIONS/DISCUSSION:** In a patient with altered mental status who is unable to provide a history, the diagnostic approach depends on the physical exam, laboratory data, and imaging. Renal failure signified by elevated BUN and creatinine is further evaluated by the patient’s volume status, urine electrolytes, and ability to urinate. While a BUN to Cr ratio of 20:1 represents prerenal azotemia and decreased renal clearance, ratios in excess of this value suggest an alternative source such as tissue destruction, including GI bleeding, severe hemolysis, or rhabdomyolysis. With stable hemoglobin levels, rhabdomyolysis is the most likely explanation. The ratio of AST to ALT also reveals the presence of rhabdomyolysis. An AST:ALT ratio of 2:1 is suggestive of alcoholic hepatitis. When this ratio surpasses 3:1 and peak AST levels are greater than 300, however, extrahepatic pathology more likely explains transaminase elevation. AST is released with destruction of hepatocytes, skeletal and heart muscle, erythrocytes, kidney, and brain. ALT is specifically released with hepatocyte destruction, but is also found in skeletal and heart muscle, and renal tissue. Rhabdomyolysis releases greater quantities of AST relative to ALT, but this ratio decreases over time as AST is cleared more rapidly than ALT by the kidneys. In the absence of evidence for synthetic liver dysfunction, an AST to ALT ratio greater than 3:1, and a peak AST level of greater than 300, elevations of AST and ALT are best explained by the presence of rhabdomyolysis. The definitive diagnosis of rhabdomyolysis is made by measurement of creatinine phosphokinase (CPK). The treatment consists of aggressive intravenous hydration to prevent pigment induced nephropathy. In elderly patients at risk for falls and prolonged immobility the possibility of rhabdomyolysis should be considered when medical history cannot be clarified and laboratory evidence supports the presence of extreme BUN to Cr and AST to ALT ratios.

**PHOSPHATURIC MESENCHYMAL TUMOR: THE DIAGNOSTIC CHALLENGE OF PARANEOPLASTIC LYtic LESIONS**

Bryan Romero; Anthony Donato. 1The Reading Hospital and Medical Center, West Reading, Pennsylvania; 2The Reading Hospital and Medical Center, West Reading, Pennsylvania; 3The Reading Hospital and Medical Center, West Reading, Pennsylvania. (Tracking ID # 10404)

**LEARNING OBJECTIVES:** 1. Strongyloides stercoralis is an endemic problem in much of the developing world. An intact immune system can keep symptoms limited to itching and non-specific gastrointestinal complaints for years. 2. A short bout of immunosuppression can produce a hyperinfection syndrome that can be rapidly fatal.

**CASE INFORMATION:** 72-year old male born in Puerto Rico who immigrated to the United States 40 years ago was admitted to the hospital for recurrent S. pneumoniae pneumonia and bacteremia following his 6th cycle of R-CHOP for an aggressive non-Hodgkins lymphoma. Past medical history included chronic idiopathic eosinophilia with several negative stool ova and parasite exams. His hospital course was complicated by abdominal pain and diarrhea with a steadily rising white blood cell count of up to 60,000 with significant worsening of his eosinophilia. Clostridium difficile toxin testing was repeatedly negative. CT imaging confirmed pneumonia with pleural effusion and pancolitis with stable abdominal lymphadenopathy. Stool analysis identified Strongyloides stercoralis. He was started on Ivermectin for disseminated strongyloides involving the colon, lungs and pleura. WBC trended down to 20,000 but eosinophilia peaked at 88%. He made significant improvement and was discharged home to complete the course of Ivermectin. Outpatient monitoring of his CBC with diff continues to show decline of parameters toward normal. Follow up stool analyses for Strongyloides stercoralis have been negative.

**IMPLICATIONS/DISCUSSION:** Strongyloides stercoralis has the ability to complete its entire lifecycle within a human host, allowing it to produce very heavy parasite burden. A history of residence in an endemic region, even if remote, should raise the suspicion for this infection. Recurrent larval migration within the lungs, small and large and bowels could mimic or cause recurrent pneumonia, duodenitis and colitis respectively. Patients who have had an immunosuppressive event are more prone to disseminated infection with multiorgan dysfunction and may present with features of sepsis with or without shock.
PHYSICIAN HEAL THYSELF: THORACIC SCHWANNOMA IN A PHYSICIAN 1Akintomi Olugbodi; 2Akintomi Olugbodi; Richard Alweiss. 1TRHMC, Reading, Pennsylvania. (Tracking ID # 10470)

LEARNING OBJECTIVES: 1. Distinguishing different causes of nerve sheath tumors 2. Reviewing appropriate evaluation of suspected nerve sheath tumors

CASE INFORMATION: A 37-year old internist presented with four months of progressive bilateral lower extremity paresthesias, weakness and “clumsy” gait. Patient described ascending numbness and tingling sensations in his right leg with similar sensory changes between the first and second left toes. He reported several falls. No bladder or bowel dysfunction, back pain, vertigo, or hearing impairment. No personal or family history of neurological disease. Patient did not drink or smoke. He had no café-au-lait spots, axillary or groin freckles, or subcutaneous nodules. Neurologic examination revealed normal cranial-nerve functions and upper extremities. He had right-sided drop foot, 3+ knee reflexes and bilateral ankle clonus. There was decreased sensation to touch in the feet. MRI of the entire spine revealed severe compromise of the spinal cord due to mass effect from a large extramedullary mass at T7-T8 level. There was foraminal narrowing on the left. Patient underwent T6-8 decompressive hemilaminectomy with resection of left T7 tumor and fusion with an uneventful post-operative course. Pathological examination indicated a benign intradural extramedullary schwannoma.

IMPLICATIONS/DISCUSSION: Schwannomas are benign nerve sheath tumors (NSTs) generally confined to the intradural extramedullary spinal space, as was found in this patient. Though 65 % of NSTs are schwannomas, it can be clinically challenging distinguishing them from malignant NSTs and neurofibromatosis types 1 and 2 (NF1 and NF 2) which also cause NSTs. Pathologic examination is usually the arbiter. Malignant NSTs grow rapidly and carry a worse prognosis. The 1987 National Institute of Health criteria for diagnosis of NF1 and NF2 were important in clinically ruling out neurofibromatosis in this patient. There were no café-au-lait spots, Lisch nodules, skin fold freckling, bone dysplasia or family history of NF. Due to their benign nature, clinical manifestations of spinal schwannomas are due to mass effects at the level of the spinal cord involved. Classical manifestations are back pain, sensory, motor, bowel and bladder dysfunction. Notably, the patient had no back pain or sphincteric abnormalities. Complete surgical resection is potentially curative; malignant transformation of an untreated schwannoma is rare. In conclusion, most nerve sheath tumors are due to benign schwannoma but pathologic examination is imperative to distinguish from other potential causes. Treatment of spinal schwannomas is surgical resection.

A DEADLY INFECTION IN A PATIENT WITH CHRONIC LYMPHOCITIC LEUKEMIA NEVER EXPOSED TO CHEMOTHERAPY 1Karen Olarte; 2Wadah Chaera; 3Haythem Ali. 1Henry Ford Hospital, Detroit, Michigan. (Tracking ID # 10538)

LEARNING OBJECTIVES: 1. Recognize that major infections in patients with chronic lymphocytic leukemia (CLL) increase with active treatment, but also CLL in itself is a state of cellular and humoral immunosuppression that can predispose to serious infections 2. Distinguish patients with CLL with central nervous system (CNS) manifestations consistent with Progressive Multifocal Leukoencephalopathy (PML) from CNS tumor infiltration can be challenging, in these cases brain biopsy is crucial

CASE INFORMATION: A 69-year-old female with history of CLL (Rai stage 0) diagnosed 4 years prior and who never required treatment, presented to the emergency department with one week of headache described as a global heaviness. Neurologic exam was unremarkable and head non contrast computed tomography (CT) was within normal limits. She is treated with good response to analgesics. Two weeks later she presented to her primary care physician for follow up, stating that she has been dropping things and has been feeling clumsy. Physical exam revealed a scanning speech, saccadic eye movements, mild finger to nose dysmetria, bilateral dysdiadochokinesia without past pointing and an ataxic gait. Given these findings the patient was hospitalized; a brain magnetic resonance imaging (MRI) revealed nearly symmetric high signal intensity in T2 and FLAIR involving both middle cerebellar peduncles. Blood tests were unremarkable except for baseline lymphocytosis. CSF analysis showed normal biochemistry, 39 WBC with 95% lymphocytes, suggestive of a viral infection. CSF viral culture and CSF PCR for JC virus, HSV and CMV DNA, were all negative. Blood and CSF flow cytometry showed monoclonal B lymphocytes, antigen profile: CD19+, CD5+, CD23-, CD45+, and kappa+, which was identical for both. CSF cytology was negative. Given that no definite diagnosis could be made, the patient underwent a stereotactic biopsy of the right cerebellar peduncular lesion which was conclusive for PML.

IMPLICATIONS/DISCUSSION: The natural history of CLL is extremely variable, with survival times that range from 2 to 20 years. The prevalence of PML is 0.07 % among patients with hematologic malignancies. The median survival of patients with PML without HIV infection is only 3 months. With the use of newer chemotherapeutic agents like nucleoside analogs and monoclonal antibodies, mainly rituximab, more cases of PML are being described. No data exists in the literature on the number of patients with hematologic malignancies who developed PML and were never exposed to chemotherapy agents. We describe this case of a patient with PML who was never exposed to chemotherapy and had a negative CSF PCR for JC virus. We should be aware that infections in these patients account for up to 50 % of all deaths and although most of these patients were exposed to chemotherapeutic agents, CLL in itself is a state of cellular immunosuppression with quantitative and qualitative defects in immune effector cells that can predispose patients to serious infections such as PML. The sensitivity of CSF PCR for JC virus in this population is probably lower. Brain biopsy consequently will aid in determining the definite diagnosis.

A CASE OF VARICELLA IN AN IMMUNOCOMPETENT ADULT Mark Golden; Jessica Chen. 1UCSD Medical Center, San Diego, California; 2UCSD Medical Center, Escondido, California. (Tracking ID # 10548)

LEARNING OBJECTIVES: 1. Recognize that diagnosis of acute varicella infection in adults should focus on presenting symptoms and signs, such as fever and characteristic rash, since seroconversion is often delayed. 2. Recognize the importance of high clinical suspicion and prompt empiric treatment of adult varicella, given the significant morbidity and mortality affects individuals face, as well as the public health concerns the disease poses.

CASE INFORMATION: Varicella, also known as chicken pox, is caused by varicella-zoster virus (VZV), and is a common childhood infection. It rarely occurs in individuals beyond adolescence. Here, we present a case of adult VZV infection. A 35-year-old man with no significant past medical history presented to primary care clinic complaining of a red, itchy rash that began on his face and neck, and quickly spread to his back, chest, and arms over the preceding 24 hours. He had felt feverish over the same time. Otherwise, he noted only mild, dry cough. He took no medications and denied allergies. He denied toxic habits and had not been sexually active since separating from his wife four years prior. The patient was living with his four children, the youngest of whom (age 7)
Varicella serologies were repeated, and both IgG and IgM were positive. Subsequently, he returned with dramatic improvement in his rash.

**IMPLICATIONS/DISCUSSION:** Varicella is primarily a disease of childhood, with approximately 90% of cases occurring before age 10. In adults, varicella is associated with immunocompromised state, and generally causes greater morbidity and mortality. While childhood infection is most commonly complicated by secondary skin infection with Group A Streptococcus, the most common complication in adults is varicella pneumonia. In this case, the patient was likely exposed to an infected student at his child's school. He presented early in his course, and standard-dose acyclovir cleared the infection. Serologies were chosen for their greater sensitivity over culture, given the patient's limited ability to pay for work-up. Yet, even serologies were not positive initially. Other important concerns in this case relate to public health. Fortunately, the patient had had no exposure to pregnant women, so it is unlikely any fetus was placed at risk for congenital varicella. Though sadly, the patient was lost to follow up, serologies were never redrawn. Thus, long-term immunity was not confirmed. This is of particular public health concern since the patient works in a restaurant.

**SUPERIOR VENA CAVA (SVC) SYNDROME AS AN INITIAL PRESENTATION OF MALIGNANCY**

Amy Soni 1; Annie Im1. 1UPMC, Pittsburgh, Pennsylvania. (Tracking ID # 10553)

**LEARNING OBJECTIVES:**
1. Recognize the clinical presentation of SVC syndrome in a patient with no known history of malignancy
2. Initiate appropriate treatment of SVC syndrome and recognize the rare indications for emergent intervention

**CASE INFORMATION:** A 76 year old male with a history of obstructive sleep apnea, hypertension, and a one hundred fifty pack year smoking history presented with progressive face and neck swelling for ten days prior to admission, along with plethora of the face, chest and back, and cyanosis of his ears and nose. One month prior to admission, the patient experienced chest discomfort, and a workup for ischemic heart disease was negative. Ten days prior to admission, he developed face and neck swelling and presented to the emergency department. His symptoms were attributed to an allergic reaction to a new anti-hypertensive medication, and he was treated with prednisone, diphenhydramine, and famotidine with minimal improvement. He had progressive facial swelling, plethora, and cyanosis and presented to another emergency department ten days later. Exam was remarkable for the above-mentioned physical findings, in addition to visualization of collateral vessels at chest and back. His vital signs were within normal limits, and he did not have any respiratory or neurologic findings. CT chest revealed a 5.5 cm lung mass in the right paratracheal region and encasement of the superior vena cava, which was compressed to 3 mm in diameter. Venogram was performed due to concern for thrombus, and this revealed severe stenosis at the right brachiocephalic vein. A stent was placed to this area. Immediately after the procedure, the patient noticed relief of swelling and normalization of skin color, with continued improvement during the ensuing hours. Radiation or chemotherapy were not initiated due to absence of tissue diagnosis. Subsequent biopsy of the lung mass revealed squamous cell carcinoma of the lung. PET-CT showed a positive contralateral lymph node in addition to the known mass involving the SVC, consistent with stage III B disease. The patient will be treated with chemotherapy and radiation.

**IMPLICATIONS/DISCUSSION:** SVC syndrome can be a complication of underlying malignancy, most commonly non-small cell lung cancer (50%), small-cell lung cancer (22%), lymphoma (12%) and metastatic disease (9%). Malignancy is the cause of SVC syndrome in 90% of cases. Clinical presentation is due to signs and symptoms of increased venous pressure in the upper body, most commonly facial edema (82%), arm edema (46%), distended neck veins (63%), distended chest/collateral veins (53%), facial plethora (20%), dyspnea (54%), cough (54%), and hoarseness (17%). Although visually striking, edema of the upper body and plethora are of little consequence. Severe or life-threatening effects are rare, but include laryngeal compromise and cerebral edema. Diagnosis is based on clinical presentation supported with radiologic studies, most commonly CT with contrast. Venography can be used to detect thrombus or for stent placement. The goals of treatment are to 1) relieve the symptoms of obstruction and 2) treat the underlying malignancy. Emergent treatment with placement of SVC stent is indicated in the presence of cerebral edema, decreased cardiac output, laryngeal edema, or thrombus. Stent placement can provide rapid relief of symptoms and decrease risk of relapse. Radiation, chemotherapy, or combination therapy are used in most cases of SVC syndrome and are rarely urgently indicated. In addition, specific diagnosis of the malignancy is required prior to initiating these therapies, as radiosensitivity and efficacy of chemotherapy can vary. In lung cancer, the use of chemotherapy, radiation, or combination therapy, all have similar efficacy in relief of symptoms and similar rates of relapse and survival. Overall, the presence of SVC syndrome does not significantly impact survival in patients with malignancy. In this patient, the recognition of the signs and symptoms of SVC syndrome led to the subsequent diagnosis of lung cancer.

**FACTOR VILE IDEN PRESENTING WITH SMALL VESSEL ISCHEMIC COLITIS**

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**LEARNING OBJECTIVES:**
1. Recognize clinical manifestations of small vessel ischemic colitis. 2. Diagnose and manage ischemic colitis due to a hypercoagulable state.

**CASE INFORMATION:** A 42 year old man presented with intermittent crampy left lower quadrant (LLQ) abdominal pain, tenesmus, pencil-thin stools alternating with bloody diarrhea, and fevers for 6 months. He had lost 56 lbs and felt fatigued. A colonoscopy 3 months earlier showed colitis of descending and sigmoid colon without pseudomembranes, and negative biopsy for granulomas or vasculitis. Empiric treatment with 5-ASA and metronidazole failed. Aside from thyroid hormone replacement, he took no medications. He had no toxic habits and his family history was unremarkable. Examination vitals were BP 134/97, HR 65. Tmax of 100.3, BMI XX. He preferred to lay still, with exquisite tenderness at the LLQ accompanied by localized guarding. Stool guaiac was positive and there was mild dependent edema. Laboratory testing was significant for CRP 24 and ESR 60. Celiac panel testing and ANCA studies were negative. Stool cultures and ova and parasite examinations were negative as was clostridium difficile testing. CT angiography showed mural thickening of the descending and rectosigmoid colon with
infiltration of the mesenteric fat but no vessel thrombosis, although inferior mesenteric vein (IMV) could not be visualized. Colonoscopy revealed multiple descending and sigmoid colonic strictures and ulcers that microscopically displayed focal hyperplasia of the lamina propria and inflamed granulation tissue. A complete workup for hypercoagulable states was done, and genetic testing revealed a Factor V Leiden homozygous mutation. Antibiotics resulted in only transient improvement in symptoms and patient underwent a left-sided hemicolectomy. Pathologic examination of the specimen revealed colonic transmural necrosis with perforation, and fat necrosis of pericolic adipose tissue. Marked inflammation was associated with hemorrhagic changes thrombosis of submucosal and subserosal vessels. Patient is currently doing well on anticoagulation with warfarin.

**IMPLICATIONS/DISCUSSION:** Factor V Leiden (FVL) is an autosomal dominant mutation that can lead to a hypercoagulable state through activated protein C resistance. 3-7% of the general population is heterozygous, while 0.06 to 0.25% is homozygous. Heterozygocity increases the risk of venous thrombosis around 5 fold, while homozygocity can increase the risk 20-30 fold. Most cases of thrombosis occur in patients in their twenties. To our knowledge this is the first report of ischemic colitis presenting as the initial thrombotic event that led to diagnosis of homozygous FVL mutation. There are two case reports of heterozygous FVL mutation presenting with ischemic colitis, one in a 24 year old woman and another in a 73 year old man. Two small studies assessed the prevalence of hereditary thrombotic risk factors in patients with ischemic colitis, with one study finding that 22% of 36 patients with colon ischemia had FVL heterozygous mutation, while in another study one out of 18 patients did. Our patient had small mesenteric vessel thrombosis (MVT), similar to the 73 year old patient with FVL heterozygous mutation, suggesting that MVT associated with FVL may not be readily detectable by CT angiography. In addition, our patient’s thrombosis was in the distribution of the IMV, with superior mesenteric vein (SMV) patent. According to literature, mesenteric venous thrombosis accounts for 5 to 15 percent of all mesenteric ischemic events and usually involves the superior mesenteric vein. The involvement of IMV rather than SMV likely made the prompt diagnosis difficult, as IMV drains a much smaller section of the GI tract than SMV, leading to less severe symptoms. Nonspecific findings on colonoscopy and the lack of identifiable risk factors for ischemic colitis in this patient undoubtedly contributed to the 6 month delay in his diagnosis. Clinicians should consider studies for hypercoagulable states in patients with ischemic colitis so as not to miss this important and treatable condition.

**SUSPECTED DEFECT OF NUCLEAR FACTOR KAPPA B REGULATION IN A YOUNG ADULT WITH RECURRENT INVASIVE BACTERIAL AND FUNGAL INFECTIONS** Nida Razvi 1; Pooja Jhaveri 1; Nada Elmagbouli 1; Eileen Hennrikus 1. 1Penn State, Hershey Medical Center, Hershey, Pennsylvania. (Tracking ID # 10562)

**LEARNING OBJECTIVES:** 1. Recognize the relationship between Ectodermal Dysplasia and Immune deficiency syndrome 2. Recognize an immune deficiency syndrome due to Nuclear Factor Kappa B (NFkB) gene mutation.

**CASE INFORMATION:** A 21 year old male with no history of intravenous drug use and a known history of Ectodermal Dysplasia (ED) diagnosed by hypodontia as a child, initially presented with a pectoralis hematoma from a football injury. He subsequently developed staphylococcus wound infection which, despite adequate medical treatment, progressed to clavicular osteomyelitis. In spite of aggressive medical and surgical measures he developed Acinetobacter and Staphylococcus bacteremia leading to pulmonary septic emboli and cavitary lesions. During the course of his treatment, he developed recurrent bacteremia with Enterococcus faecalis, Klebsiella, Stenotrophomonas maltophilia, Pseudomonas and candida with tricuspid endocarditis. An immune deficiency work up was undertaken. His prior infectious history included a retrohythargy reflux abscess in adolescence and pneumonia as a child. His HIV profile was negative. A neutrophil oxidative burst was normal. He had elevated IgM, showed adequate response to lymphocyte proliferation assays and had normal lymphocyte subsets. Thus far he has normal vaccine response to Streptococcus Pneumoniae, mumps, rubela and tetanus. He tested negative for the IKKβ gene mutation—one of many associated with immune deficiency in patients with ED.

**IMPLICATIONS/DISCUSSION:** Ectodermal Dysplasia (ED) is associated with immune deficiency syndromes affecting both innate and humoral immunity. A set of mutations involve the NFkB gene – a transcription modulator associated with both immune deficiency and ED. Patients are susceptible to severe bacterial infections as in our case. Although our patient is still under investigation, identifying the specific mutation responsible for his immune deficiency is a daunting task as there are numerous possible hypomorphisms. The mutation could exist in any protein in the family of proteins related to NFkB or its essential modulator. This accounts for the wide variation in disease presentation. This patient is unusual in that he presented much later in life, as most present during childhood. For our patient, this suspected deficiency meant foregoing surgical intervention due to the high risk of infectious complications. He was started on an extended course of antibiotic and antifungal treatment. To date, his tricuspid valve vegetation has resolved. Further immunologic workup is planned for the patient and his family to further clarify any immune disorders.

**RECURRENT RHABDOMYOLYSIS, PERSISTENT DERMATITIS, NEW ONSET DIABETES MELLITUS I AND ANGOIMMUNOBLASTIC T-CELL LYMPHOMA AS MANIFESTATIONS OF HUMAN T CELL LYMPHOTROPIC (HTLV) VIRUS** Ilhia Beshir 1; Aman Garisa 1; Barbara Sewerin 1; Eileen Hennrikus 1; Aman Garisa 1; Barbara Sewerin 1; Eileen Hennrikus 1. 1Penn State, Hershey Medical Center, Hershey, Pennsylvania. (Tracking ID # 10565)

**LEARNING OBJECTIVES:** 1. Recognize that Human T-cell lymphotropic retrovirus (HTLV-1/11) can present as a myriad of clinical manifestations, including malignancy, neurologic, autoimmune and opportunistic infectious disease. 2. Recognize that Human T-cell lymphotropic retrovirus (HTLV-1/11) may cause latent infection with intermittent episodes of acute disease, chronic infection but disease free, or persistent infection with slow progression to symptomatic disease.

**CASE INFORMATION:** A 53-year old married Nigerian man, with no history of intravenous drug use, presented with acute fatigue for 3 days. He felt his legs were “frozen” with excruciating pain and inability to walk. Two years prior, the patient was hospitalized with rash and rhabdomyolysis. His creatine phosphokinase (CPK) exceeded 1 million units/L. Skin biopsy revealed nonspecific dermatitis. One year ago he presented to the hospital in diabetic ketoacidosis and newly diagnosed diabetes mellitus I. His exam at this presentation revealed a thin man with 2–4 cm lymphadenopathy in the submandibular, supra/infraclavicular, axillary, and inguinal areas. No hepatosplenomegaly. The skin of all extremities, back and scalp was extremely tender to touch and diffusely involved with lesions ranging from hypo-hyperpigmented macules and erythematous papules, plaques, exudative ulcerations, and pustules. Lab work revealed WBC = 15.8 k/uL, 85% neutrophils, 9% lymphs and 6% monocytes. CK = 2,390 unit/L, LDH = 2,767 IU/L, and myoglobin =
9.649 ng/mL. Elevated complement levels of CH50=102, C4=84 and C3=185. Chest/abdomen CT-scan-extensive lymphoedema. Elevated percentages of T-lymphocytes: CD3=90% and CD4 + 71%. Positive HTLV I/II antibody by enzyme-linked immunosorbent assay (ELISA) . An inguinal lymph node dissection revealed angioimmunoblastic T-cell lymphoma(AITL). A scalp biopsy from the ulcer also confirmed the diagnosis. He developed candida septicemia which was successfully treated. He received a first dose of chemotherapy, which could not be completed as his course was complicated by CMV viremia, respiratory failure, renal failure, pseudomonas otitis media, pulmonary embolism and death. Post-mortem, a remaining blood sample was sent for HTLV Western Blot confirmation testing. However, it returned uninterpretable due to high nonspecific background. No further blood was available for PCR testing.

**IMPLICATIONS/DISCUSSION:** 20 million people worldwide are sero-positive for Human T-lymphotrophic retrovirus HTLV-I/II, but only about 5% of infected persons suffer from clinical disease. Clinical manifestations of HTLV infection include myelopathy, infiltrative skin disorders, autoimmune disorders, Adult T Cell leukemia/lymphoma, and increased susceptibility to opportunistic infections. The latency period from HTLV infection to clinical disease can be 30-50 years. It is likely that our patient acquired the infection in childhood, and clinical disease first presented as a progressive eczematous rash and autoimmune mediated polymyositis presenting as rhabdomyolysis, and diabetes mellitus I presenting as DKA. Once he developed lymphoproliferative disease, his clinical course rapidly deteriorated due to opportunistic infections.

**LEARNING OBJECTIVES:** 1. Recognize airborne anticholinergics as a cause of acute anisocoria. 2. Demonstrate the importance of a properly fitted BiPAP mask.

**CASE INFORMATION:** A 58 year old woman with severe obesity, obstructive sleep apnea, congestive heart failure, and mental retardation was admitted to the intensive care unit for hypoxic respiratory failure. She was confused and lethargic, and had marked pitting lower extremity edema extending to her lower abdomen. She was diagnosed with obesity hypoventilation syndrome, and echocardiogram revealed an associated pulmonary hypertension with severe right-sided congestive heart failure. BiPAP and intravenous diuretics were initiated. On the fourth hospital day, the patient acutely developed anisocoria with a sluggish right pupil dilated to 7 mm and a fully reactive 4 mm left pupil. The patient could not effectively communicate at this time, but her mental status was slowly improving and had not worsened since onset of anisocoria. She suffered no head or eye trauma, started no new medications, and was on no anticoagulation besides standard DVT prophylaxis. Physical exam was notable for intact cranial nerves, strength, sensation, and reflexes, although further examination was limited. Laboratory studies were only significant for a developing contracction alkalosis due to aggressive diuresis. A non-contrast head CT revealed no bleeding or masses. The patient had been using a BiPAP mask for respiratory support. Notably, she received an anticholinergic breathing treatment less than one hour prior to detection of the anisocoria. The anticholinergic treatments were immediately discontinued. Progressive improvement in right pupil size and reactivity was noted over the next 24 hours, with complete resolution by 48 hours.

**IMPLICATIONS/DISCUSSION:** Anisocoria, defined as a variation in pupil diameter greater than 0.5 mm, has a broad differential diagnosis including pharmacologic mydriasis, tonic pupil, open-angle glaucoma, Horner’s syndrome, and third nerve paralysis. This case of anisocoria...
was likely caused by an anticholinergic tracking from an improperly fitted mask to the patient’s right eye. Anticholinergics, such as ipratropium and tiotropium, cause mydriasis by antagonizing the parasympathetic muscarinic acetylcholine receptors of the sphincter pupillae. A trial of pilocarpine eye drops may have spared the need for neurologic imaging.

There were several features unique to this patient that may have contributed to the occurrence of this event. First, the patient’s body habitus may have led to a poor initial mask fit. Second, the large volume of diuresis in the setting of initial generalized edema may have altered her facial contours, further affecting mask fit.

This case demonstrates the importance of understanding the differential diagnosis of anisocoria. Not all cases of acute anisocoria are caused by intracranial hemorrhage, mass effect, third nerve palsy, or iris damage due to acute glaucoma. While it is certainly prudent to rule out emergent conditions, benign etiologies should also be sought to provide an explanation and spare excess work-up. Additionally, emphasis should be placed on properly fitted masks. Not only does a poor fit affect respiratory support, it also can cause inhaled medications to spuriously enter the eye.

CASE REPORT Chikal Patel 1; Harsha Vyas2. 1Medical Group of Mitchell County, Camilla, Georgia; 2Lewis Hall Singletary Oncology Center, Thomasville, Georgia. (Tracking ID # 10589)

LEARNING OBJECTIVES: 1. Recognize that a high index of suspicion may be required to detect a subtle presentation of a common disease. 2. Diagnose a disease process promptly by being thorough.

CASE INFORMATION: A 66 year old African American male presented in August 2010 with a history of productive cough and dyspnea on exertion since 5 weeks. Review of systems was unremarkable. Patient was febrile with tachycardia but normoten
tive. He was admitted and started on Levaquin for pneumonia. Laboratory evaluation demonstrated a microcytic anemia (Hgb 10.1), mildly elevated serum creatinine and hypokalemia. Anemia work-up was initiated. Patient was discharged on ferrous sulfate while results were still pending. As part of his anemia work-up, a serum protein electrophoresis and urine protein electrophoresis with immunofixa
tion were ordered. Both studies revealed the presence of monoclonal spike in the gamma region consistent with light chains. The kappa free light chains and kappa/lambda ratio were found to be highly elevated at 2.37 mg/L (reference range: 3.3-19.4 mg/L) and at 338.6 (reference range: 0.3-1.7) respectively. Measurement of quan
titative immunoglobulins noted a highly elevated IgG fraction with reciprocal suppression of IgA and IgM. Subsequent bone marrow aspiration and biopsy showed an increase in the number of plasma cells, representing approximately 15% of the marrow nucleated cells. Flow cytometric analysis revealed an abnormal population of CD20+/CD19+ clonal B cells having immunophenotype features of atypical plasma cells with bright CD38 and aberrant expression of CD56. Skeletal survey showed numerous variable sized lytic lesions throughout the osseous structures, especially the spine and pelvis. Some of the lesions were fairly destructive and extended through the cortex of the vertebral bodies. Presumptive diagnosis of multiple myeloma was confirmed with the combination of laboratory, pathologic, and radiographic findings. At the time of this report, the patient has completed one cycle of Velcade, Revlimid, and dexamethasone and is awaiting an evaluation for autologous stem cell transplant.

IMPLICATIONS/DISCUSSION: Multiple myeloma (MM) is characterized by the neoplastic proliferation of a single clone of plasma cells producing a monoclonal immunoglobulin. This clone of plasma cells proliferates in the bone marrow and often results in extensive skeletal destruction with osteolytic lesions, osteopenia, and/or pathologic fractures. The diagnosis of MM is often suspected because of one, or more, of the following clinical presentations: Bone pain, anemia, elevated serum creatinine or serum protein, fatigue, and hypercalcemia. This case highlights the difference a primary care physician can make by recognizing a disease process promptly based on subtle laboratory data. It is important to evaluate patients suspected of having MM in a timely fashion since a major delay in diagnosis has been associated with a negative impact on the disease course.

NOT JUST ANOTHER VIRAL SYNDROME Sana Sultana Gafoor 1; Kurt Pfeifer2. 1Medical College of Wisconsin, Wauwatosa, Wisconsin; 2Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 10591)

LEARNING OBJECTIVES: 1. Recognizing radiographic patterns that differentiate Multiple Sclerosis (MS) from Acute disseminated encephalomyelitis (ADEM) in light of similar clinical presentations. 2. Distinguish clinical features that differentiate Multiple Sclerosis (MS) from Acute disseminated encephalomyelitis (ADEM).

CASE INFORMATION: A 23 year-old woman with no significant past medical problems presented with persistent fevers, neck pain, and back pain for three weeks. She had been evaluated at an outside hospital two weeks prior to the current presentation and was treated for aseptic meningitis based on inconclusive imaging and cerebrospinal fluid (CSF) analysis. Her associated symptoms included
dheadache, vomiting, lower extremity weakness, and blurry vision in the left eye. Pertinent physical exam findings were pain with cervical flexion, bilateral lower extremity weakness, and central visual field defect of the left eye. Her laboratory evaluation revealed leukocytosis, antinuclear antibody negative, rheumatoid factor positive, and elevated serum levels of lipase, antistreptolysin-O titer, and C-reactive protein. The initial evaluation of the patient included repeat lumbar puncture and MRI imaging of the brain and spine, as well as restarting empiric therapy for meningitis. Brain MRI showed new areas of supratentorial white matter signal intensities and bilateral optic nerve enhancement. Spinal MRI demonstrated subarachnoid hyperintense enhancement. Leptome
genital enhancement. CSF findings were significant for high opening pressure, lymphocytic pleocytosis, low glucose, and high protein but negative oligoclonal bands. Intravenous corticosteroids were initiated given her visual symptoms. As the hospital course progressed, the only other significant laboratory findings were the positive IgG and IgM Mycoplasma serologies. Given the patient’s improvement with steroids, MRI findings, and the otherwise negative infectious work-up, she was given the working diagnosis of ADEM. A course of systemic corticosteroids, azithromycin, and ciprofloxacin were completed and the patient made a full recovery.

IMPLICATIONS/DISCUSSION: ADEM typically presents with an acute onset of focal neurological signs within days to weeks of an initial non-specific viral illness or vaccination. It usually follows a monophasic course, and this allows ADEM to be differentiated from multiple sclerosis (MS). However, recently reported adult cases have demonstrated multiphasic presentations and consequently there has been increased reliance on MRI for diagnosis. The radiographic patterns are generally multifocal asymmetric lesions that mainly involve the supratentorial white matter. Key differentiating factors between ADEM and MS are- atypical clinical symptoms of MS, absence of oligoclonal bands in CSF, and eventual gray matter involvement. Successful management strategies include corticos
teroids, plasma exchange, and intravenous immunoglobulin. Outcome of ADEM is generally favorable in the pediatric population but mortality levels in adults can be high, especially in patients requiring ICU admission or presenting with multiphasic forms.
HEMOLYSIS-ASSOCIATED PULMONARY HYPERTENSION
Kristal Carthan 1; Kurt Pfeifer2. 1Medical College of Wisconsin Affiliated Hospitals, Milwaukee, Wisconsin ; 2Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 10603)

LEARNING OBJECTIVES: 1. Recognize hemolysis-associated pulmonary hypertension as a distinct clinical syndrome associated with sickle cell disease that may be resistant to standard therapy and confers a higher risk of death. 2. Discuss pathogenesis of hemolysis-associated pulmonary hypertension and highlight the paucity of potential therapies.

CASE INFORMATION: A 28-year-old gentleman with a medical history of asthma and pneumonia 6 months prior presented with worsening shortness of breath, productive cough and fevers. The days prior to admission, he noted dark colored urine and yellowing of his eyes, which he stated happened frequently when he had a “cold.” His physical examination was normal except for scleral icterus and hypochromia. Chest radiograph showed a right-sided pleural effusion without evidence of infiltrate and chest CT revealed several gallstones and multiple acute pulmonary emboli (PE) in the segmental and subsegmental branches without evidence of deep venous thrombosis (DVT). Laboratory evaluation showed elevations in direct and total bilirubin and positive Mycoplasma IgM serology. He was subsequently admitted to the intensive care unit (ICU) for hypoxic respiratory failure. He was initially started on antibiotics for suspected community-acquired pneumonia versus acute chest syndrome. Evaluation for common hypercoagulability disorders was negative with the exception of hemoglobin electrophoresis, which revealed both sickle cell trait and beta thalassemia. Transthoracic echocardiogram showed severe right ventricular enlargement and estimated pulmonary artery systolic pressures of 103 mmHg indicating acute decompensation of chronic pulmonary hypertension (PHT) as his right ventricle was able to compensate for such a high pulmonary arterial pressure without hemodynamic compromise. He completed a course of antibiotics, and his PE was treated with dalteparin transitioned to warfarin. At discharge he was referred to sickle cell and pulmonary hypertension clinics for long-term follow-up.

IMPLICATIONS/DISCUSSION: Sickle cell disease (SCD) is one of the most common genetic hematologic disorders in the world. Pulmonary hypertension (PHT) diagnosed by Doppler echocardiography is observed in most forms of chronic hemolytic anemias and has been reported with increasing frequency in patients with sickle cell disease (SCD). The prevalence of PHT in patients with SCD is 20-40%, and the presence of PHT often leads to heart failure and is associated with an increased risk of death regardless of the severity. SCD patients with PHT have increased endothelial dysfunction, coagulation activation and inflammation compared with patients without PHT. Furthermore, patients with thalasssemia and sickle cell trait also have intravascular hemolysis which results in the release of hemoglobin into the plasma. Plasma hemoglobin can then scavenge nitric oxide and catalyze the formation of reactive oxygen and nitrogen species, which leads to acute and chronic pulmonary vascular constriction. Further studies evaluating the contribution of coagulation-activation and inflammation to the pathogenesis of PHT in SCD are needed as therapies specific to this disease entity are lacking.

HIDDEN IN THE CUT
Samuel Evan Cohen 1; Michelle Cleeves 1; Nicole Sirotin1. 1Montefiore Medical Center, Bronx, New York. (Tracking ID # 10604)

LEARNING OBJECTIVES: 1. Discuss and review the presentation of Cocaine-induced Pseudovasculitis (CIP). 2. Highlight the possible role of the anti-helminthic agent Levamisole as the cause of CIP.

CASE INFORMATION: A 59 year-old woman with a history of Diabetes Mellitus and Hypertension presented with a skin rash. Three weeks prior, she had been diagnosed with cellulitis and prescribed antibiotics. The rash, however, had continued to spread. The patient’s vital signs and non-dermatological exam were normal. Examination of her skin demonstrated multiple 1-8 cm shallow violaceous ulcers with surrounding erythema and scattered, overlying serosanguinous bullae on both arms as well as her chest, face and right ear lobe. The lesions were painful to light touch. Serum creatinine was stable at 0.9 mg/dL, liver enzymes were normal. Hgb 11.0 g/dL, WBC 8.8 k/uL, ESR 40, and CRP was normal. A panel of rheumatological tests was notable for a positive anti-MPO, anti-RNP, and ANA detectable at a 1:40 titer, but negative anti-Sm, anti-Ro, anti-La, anti-CCP, anti-DNA, ASLO and normal levels of C3, C4, RF, and cryoglobulins. Additionally, a viral-hepatitis screen and HIV ELISA were negative. A urine toxicology screen was positive for cocaine. A skin biopsy from her left upper arm revealed a small-vessel vasculitis with thromboses. Based on the serological panel, the urine toxicology, and the biopsy results, the patient was diagnosed with Cocaine-induced Pseudovasculitis. One week later, no new lesions had developed. Subsequently, she was lost to follow-up.

IMPLICATIONS/DISCUSSION: Cocaine-induced Pseudovasculitis (CIP) is a disease entity that presents with clinical and laboratory characteristics of vasculitis. CIP typically presents with purpura, ulcers, and/or confluent wheals distributed on the face, scalp, trunk, and extremities that appear following cocaine use. Toxicologic evaluation is positive for cocaine, and while several different ANCA serologies may be present, the autoantibodies most commonly detected are anti-MPO (a-c-ANCA) and anti-RP30 (p-ANCA). In one study, ANCA was detected in 56% of all cocaine users. This serological positivity often confounds a conclusive diagnosis of CIP. Pathology is most commonly a leukocytoclastic infiltrate and thromboses of small vessels. Other histopathological findings which are characteristic of other vasculitides such as giant cells, micro-abscesses, and granulomas are absent in CIP. The treatment for CIP is cessation of cocaine use and immunosuppression is not an effective therapy. There is growing evidence that CIP is not caused by cocaine itself, but by Levamisole, the anti-helminthic agent that is used as an additive in a process known as “cutting” that increases the volume of the final cocaine product. The use of Levamisole as an additive has become increasingly popular that increases the volume of the final cocaine product. The use of Levamisole as an additive has become increasingly popular that increases the volume of the final cocaine product. The use of Levamisole as an additive has become increasingly popular; it was detected in 70% of cocaine confiscated at the U.S. border in 2009. Histopathology of skin biopsies from children who developed a rash following administration of Levamisole revealed thrombotic vasculitis, leukocytoclastic vasculitis, and vascular occlusion; the same findings present in CIP. In Levamisole-induced vasculitis, skin lesions resolve in 2 to 3 weeks upon cessation of the medication. In 2008, 14.7% of Americans aged 12 or older reported having used cocaine at least once. The high prevalence of cocaine use in the general population underscores the importance of recognizing that Cocaine-induced Pseudovasculitis may mimic a vasculitis that presents with skin lesions.

IMMATURE TERATOMA OF THE TRACHEA: A TUMOR OF MONSTROUS CONSEQUENCE
Alicia Diaz-Kiun 1; Steven Gamalski 1; Javier Munoz 1; Ira Wollner2. 1Henry Ford Health System, Detroit, Michigan. (Tracking ID # 10611)

LEARNING OBJECTIVES: 1. Recognize immature teratoma of tracheal primary as an exceptional diagnosis scarcely reported in current medical literature. 2. Manage immature teratoma of the trachea with combined-modality therapy, including innovative chemotherapeutic regimens.
CASE INFORMATION: A 28-year-old male presented with progressively worsening dyspnea and stridor over a two-week period. Computed Tomography (CT) of the neck showed a 4×3.2 cm lobulated cystic mass at the right tracheoesophageal groove with severe subglottic stenosis. He underwent rigid bronchoscopy with laser ablation and mechanical debulking of a ninety-percent-obstructive proximal tracheal mass. Pathology revealed immature teratoma. Within one month, the tumor recurred his airway, necessitating partial cricotracheal resection, stenting, and tracheostomy. Further CT imaging revealed multiple bilateral pulmonary metastatic foci. He underwent four cycles of etoposide, ifosfamide, cisplatin (VIP) chemotherapy with near resolution of his metastatic lesions and normalization of tumor markers. Right upper and lower lobe wedge resections were performed to remove residual radiographically apparent disease. The patient tolerated combination therapy well and is currently disease-free, while undergoing continued surveillance to assess for clinical, biochemical, or radiographical evidence of disease recurrence.

IMPLICATIONS/DISCUSSION: Immature teratoma is a rare nonseminomatous germ cell tumor, classically represented in pediatric literature, but unusually may occur in adults. Timely diagnosis and intervention are crucial to providing affected patients with the best chance at surviving this potentially devastating disease. Limited data exists to guide treatment in such unique cases. While the standard of care remains combined-modality therapy, including surgical resection and systemic chemotherapy, innovative chemotherapeutic regimens have been suggested as alternatives to standard first-line therapy. This case of immature teratoma of tracheal origin highlights a unique presentation and novel treatment of an exceptionally rare disease. Extragonadal teratomata may arise in adults, but typically as retroperitoneal or mediastinal masses. These aggressive tumors may exhibit locally destructive effects and a proclivity for early widespread metastases. To our knowledge, this is the first such case reported in an adult. These tumors may prove even more destructive when involving the main airway, requiring aggressive primary surgical intervention as a life-saving measure. Furthermore, the propensity for distant metastases makes systemic chemotherapy an integral component of treatment. While the standard of care remains combined-modality therapy, including systemic chemotherapy and surgical resection of residual disease, treatment must be tailored to suit each patient. Novel chemotherapeutic regimens have been proposed as alternatives to standard first-line therapy, with comparable outcomes suggested in clinical trials. In this case, a regimen historically reserved for salvage therapy, VIP, was utilized in place of standard bleomycin, etoposide, cisplatin (BEP) to avoid bleomycin-related pulmonary toxicity. This case emphasizes how a multidisciplinary and patient-centered approach to treating a rare and potentially devastating disease can yield a satisfactory result.

HEMORRHAGIC STROKE: THE INITIAL PRESENTATION OF WEGENER’S GRANULOMATOSIS!!! Triston B.B.J. Smith 1; Debi Yang 2; Elliot Smith 1; Samuel Baroody1. 1Allegheny General Hospital, Pittsburgh, Pennsylvania; 2Allegheny General hospital, Pittsburgh, Pennsylvania. (Tracking ID # 10616)

LEARNING OBJECTIVES: 1. To describe an uncommon initial presentation of Wegener’s Granulomatosis. 2. To describe the neurologic manifestations of Wegener’s Granulomatosis.

CASE INFORMATION: A 56 year old caucasian male with no past medical history and no known vascular risk factors was admitted with a left basal ganglia stroke. The etiology was not identified and he was subsequently discharged to a rehabilitation facility. Three weeks later he was readmitted with progressively worsening shortness of breath, orthopnea, tea colored urine present since last discharge, and a purpuric rash on both lower extremities. An initial chest x-ray was concerning for pulmonary edema but an echocardiogram revealed an EF of 60% with normal LV size and function. CT chest showed diffuse bilateral groundglass opacification associated with focal areas of nodular consolidation. Of note, the patient’s creatinine had increased to 3.9 from 3.84 on last discharge and his Hb had dropped from 13.5 to 9.9 g/dl. A vasculitic evaluation was therefore initiated. The patient had C-ANCA titers of 1:320 and elevated PR-3 ABS of 29.2 u/ml. Bronchoscopy demonstrated massive alveolar hemorrhage, and kidney biopsy showed pauci immune crescent glomerulonephritis all consistent with Wegener Granulomatosis. The patient was treated with plasmapheresis,cytocxan and prednisone with resolution of his symptoms. I hindsight it was concluded that patients initial admission for CVA most likely represented the initial presentation of this disorder since no other etiology was identified.
IMPLICATIONS/DISCUSSION: Wegener’s Granulomatosis (WG) is a disorder characterized by multisystem necrotizing vasculitis primarily involving the upper and lower respiratory tract and kidneys. However it can affect any organ, including the central nervous system. We present a patient with WG whose initial manifestation was hemorrhagic stroke of the basal ganglia. Neurologic involvement in WG has been established with approximately 50% of patients experiencing neurologic manifestations at some time during its course. Mononeuritis multiplex and cranial neuropathies are frequently seen. However, histologic or radiographically confirmed vasculitis of the CNS in WG is extremely rare. Three patterns of CNS involvement have been identified: contiguous invasion from paranasal granulomas, remote granulomatous lesions and vasculitis. Drachman observed that 9% of patients with WG experienced CVAs. These included ICH (3%), SAH (2%), cerebral arterial thrombosis (3%) and venous thrombosis (1%). Most of these patients developed CVAs while on immunosuppressive therapy. Nishino et al reported neurological manifestations in 324 consecutive cases of WG. Only two case reports were identified: one with intracerebral hemorrhage as the presenting manifestation of WG and another with vasculitic features in our patient. This is quite similar to the other reported cases since the small size of vessels (50–300 mc) typically involved in WG is below the sensitivity of routine angiography. Conclusion: Vasculitic disorders like WG should be included in the differential diagnosis of CVAs especially when an obvious etiology is not identified.

MULTIPLE MYELOMA AS A RARE CAUSE OF ATYPICAL CHEST PAIN Maryam Sharifi 1; Javier Munoz 2; Vijayalakshmi Donthireddy 3.

IMPLICATIONS/DISCUSSION: Plasma cell dyscrasias are a group of conditions characterized by malignant proliferation of a single clone of plasma cells. Solitary plasmacytoma is most frequently found in the bone although it receives the name of extramedullary plasmacytoma when it involves only soft tissues instead of bone. SPB is a relatively uncommon hematologic malignancy that usually arises from the axial skeleton followed by the long bones of the extremities. The prognosis is dictated by the risk of progression to multiple myeloma. A normal bone marrow is one of the criteria that must be met to make the diagnosis of solitary plasmacytoma of the bone. In the case of our patient, a diagnosis of MM is more appropriate as his bone marrow showed more than 10 percent clonal plasma cells. Complete physical exam should be a fundamental part of the evaluation of a patient with atypical chest pain. Plasma cell dyscrasias should be called to mind when facing bone lesions even if present in unusual locations.

LEARNING OBJECTIVES: 1. Recognize the clinical manifestations of thyrotropic periodic paralysis (TPP). 2. Recognize how anchoring, confirmation bias, and premature closure can lead to a delay in the diagnosis of uncommon diseases. In this case, confounding history led to the initial diagnosis of the more commonly encountered Guillain-Barre Syndrome.

CASE INFORMATION: A 24-year-old Samoan man with no significant past medical history presented to his local emergency department with ascending paralysis for one day. He reported having an upper respiratory tract infection for the prior two weeks, as well as diarrhea. The night prior to admission, he noticed cramping pain in his lower extremities. The next morning, he developed paralysis in his lower extremities that progressed to his upper extremities. On presentation, his pulse was 112 bpm. Strength was 2/5 in hip flexors, 3/5 in dorsiflexors, 4/5 in deltoids, and 5/5 in triceps and grip. DTRs were absent diffusely. Labs were notable for a potassium of 1.9 mmol/L and magnesium of 1.2 mg/dL. Cerebrospinal fluid analysis revealed no wbc, 15 rbc, glucose of 68 mg/dL, and protein of 27 mg/dL. Because the patient’s paralysis did not improve immediately after repletion of potassium and magnesium, a Neurology consult was obtained. Given the patient’s history of antecedent diarrhea and upper respiratory tract infection, as well as the findings of ascending weakness and areflexia, IVIG was administered for suspected Guillain-Barre Syndrome (GBS). By the next morning, his strength was greatly improved. The rapidity of his clinical improvement put the diagnosis of GBS into question. On further history, the patient reported a 20–30 lb weight loss over the prior few months, which he attributed to increased exercise and decreased food intake. He denied palpitations, hair or skin changes, but he endorsed a slight hand tremor. He reported eating a meal of pancakes, french fries, and ice cream the evening prior to his paralysis. Thyroid function tests were ordered, revealing a TSH < 0.008 mIU/L and free T4 of 2.37 ng/dL. A diagnosis of thyrotropic periodic paralysis (TPP) was made. The patient was started on propranolol and methimazole, with a plan for later thyroid ablation. In the meantime, the patient was instructed to avoid strenuous exercise and high carbohydrate meals.

IMPLICATIONS/DISCUSSION: This case provides teaching on TPP and also demonstrates the significance of cognitive errors. As seen here, TPP and GBS can have similar clinical presentations. Both diseases involve symmetric muscle weakness, usually ascending, as well as depressed deep tendon reflexes. Both can have tachycardia upon presentation.

THE PERILS OF PREMATURE CLOSURE: THYROTOXIC PERIODIC PARALYSIS TREATED INITIALLY AS GUILLAIN-BARRE SYNDROME Katelyn Gamson 1; Lori Cooper 2; David Jacobson 3. 1. California Pacific Medical Center, San Francisco, California. (Tracking ID # 10692)

CASE INFORMATION: A 24-year-old male with hypertension and diabetes presented with atypical chest pain to his primary care physician. Physical exam was felt to be normal at that point and cardiac work-up was negative. A mid-sternal mass rapidly grew over the next couple of months with worsening bouts of atypical chest pain that prompted him to the emergency room. Physical exam revealed a firm, tender, non-mobile, mid-sternal mass. Computed tomography of the chest revealed a 7 cm manubrium mass. Fine needle aspiration of the mass was reported as plasmacytoma. Skeletal bone survey confirmed a single lytic lesion on the sternum. Labs showed normal hemoglobin, beta-2 microglobulin, albumin, creatinine and serum calcium. Serum and urine protein electrophoresis revealed free kappa light chains present in the gamma region. Bone marrow biopsy showed 12% plasma cells confirming the diagnosis of symptomatic MM Durie-Salmon stage 1A. Cytogenetic studies were compatible with a complex karyotype including deletion of chromosome 13. The patient received radiotherapy to the manubrium and was treated with bortezomib, thalidomide and prednisone. Consideration for autologous stem cell transplantation will be given due to his excellent performance status despite of his age.
GBS is usually provoked by antecedent upper respiratory or gastrointestinal infection, both of which were suggested by our patient’s history. TPP can also be provoked by infection, but it is more often precipitated by exercise, stress, or a high carbohydrate meal. This patient’s diarrhea could have at least partially explained his hypokalemia, thus confounding the diagnosis. The patient had no family or personal history of thyroid disease, and on physical exam he did not have stigmata of thyrotoxicosis aside from tachycardia and a fine hand tremor. GBS usually takes at least a month to begin its recovery, while episodes of TPP only last hours to days. While TPP is uncommon in the United States, 2% of Asians with thyrotoxicosis have TPP. TPP may be unfamiliar to practitioners in Western countries, but the diagnosis should be suspected in patients presenting with acute lower extremity weakness and hypokalemia. In this case, there were multiple cognitive errors that led to an initial missed diagnosis and unnecessary treatment. There was an element of premature closure and anchoring to the initial diagnosis of GBS, leading physicians not to consider a broader differential diagnosis. Confirmation bias also played a role, leading providers to focus on the data that fit a diagnosis of GBS (ascending weakness, antecedent upper respiratory tract infection, areflexia) and to rationalize away contradictory data (normal protein in the cerebral spinal fluid, hypokalemia). As seen in this case, it is important to be aware of our own cognitive shortcuts in decision-making that can lead to diagnostic errors, and to re-examine the diagnostic thinking process.

SPORT SUPPLEMENTS: ARE THEY SAFE? A CASE OF RHABDOMYOLYSIS AND ATRIAL FIBRILLATION IN A 28 YEAR OLD MAN
Nadir Khir 1; Pieter Cohen2. 1Cambridge Health Alliance, Cambridge, Massachusetts; 2Cambridge Hospital / Cambridge Health Alliance, Cambridge, Massachusetts. (Tracking ID # 10730)

LEARNING OBJECTIVES: 1. Many adults in the United States take one or more dietary supplement. It is important to obtain a detailed history including use of dietary supplements in patients presenting with Rhabdomyolysis and cardiac arrhythmias. 2. To recognize that, unlike drugs, which must be approved by the FDA (Food and Drug Administration) before they can be marketed, dietary supplements do not require premarket review or approval by the FDA.

CASE INFORMATION: A 28-year-old male student and college security guard with no significant past medical history presented to his primary care physician after two episodes of tea-colored urine. He denied fevers, chills, abdominal pain, nausea, vomiting, dysuria or frequency. He also denied any recent substance use, trauma, travel, or personal history of renal stones. His home medications were cetirizine and diphenhydramine for seasonal allergies; last time used were two weeks prior to presentation. He had normal vitals except for elevated blood pressure 147/90. Physical exam showed a soft, non tender abdomen. Laboratory data showed Aspartate Aminotransferase (AST) 1184 and Alanine Transaminase (ALT) 430. Total creatine kinase (CK) >41,000. Urine Myoglobin 194. TSH 0.83. Creatinine 1.1. He was started on intravenous fluids and admitted to hospital for supportive management. Upon further questioning, he endorsed lifting weights 4 days prior to presentation after a long period of not exercising. He also used for the first time an unspecified amount of sports supplement powder called NO shotgun. He reported muscle pains and fatigue on the days after working out and then noticed the tea colored urine. He was asked to bring a sample of the product. It is labeled to contain protein, caffeine and vitamins. During his 5-day hospital stay, he had an episode of palpitations. His EKG showed atrial fibrillation that was spontaneously converted on its own. Echocardiogram showed mild bileaflet mitral prolapse, mild LVH, and ejection fraction of 70%.

Otherwise, he felt well and his TCK, ALT, AST trended slowly to normal with hydration.

IMPLICATIONS/DISCUSSION: This case illustrates the potential for cardiac arrhythmia and rhabdomyolysis with use of performance enhancing substances and the value of a complete history. Many athletes and weight lifting trainees are not aware that performance enhancing substances are not fully regulated by FDA. Although exercise is a known risk factor for rhabdomyolysis, performance enhancing substances, especially creatine, could worsen it by absorbing water in to the cells, promote cells swelling and growth or rupture; or by simply motivating the person to exercise harder. There will always be confusion about whether the primary ingredient or an adulterant in these products caused the adverse effect but a possible link can not be ignored.

TALE OF A “FORGOTTEN DISEASE” Priyanka Vashisht 1; Bryan Krajicek2. 1Creighton University Medical Centre, Omaha, Nebraska; 2Creighton University Medical Centre, Omaha, Nebraska. (Tracking ID # 10743)

LEARNING OBJECTIVES: 1. Recognize signs and symptoms suggestive of a patient with complicated pharyngitis. 2. Identify the diagnostic features of Lemierre’s syndrome, a rare but serious complication of upper respiratory infections (URIs).

CASE INFORMATION: A 25-year-old previously healthy male was admitted to the hospital with a 7-day history of high-grade fevers with rigors, sore throat with dysphagia and a nonproductive cough. He was a college student and denied smoking, alcohol or illicit drug abuse. He refused sexual activity for several months and reported no sick contacts.

On examination the patient was febrile, appeared toxic but normotensive. Oxygen saturation was 91% on room air. Bilateral cervical lymphadenopathy was present. Pharyngeal exam showed bilateral tonsillar erythema with left tonsillar enlargement. Laboratory studies revealed leukocytosis of 22,600, predominant neutrophilia with bandemia, platelet count 53,000, and sedimentation rate of 40 mm/hr. Chemistries included sodium of 131 and bilirubin 4.6. The heterophile antibody test was positive. An initial diagnosis of infectious mononucleosis was made and the patient was started on intravenous steroids. On the second day of hospitalization, he was noted to be more tachypneic and tachycardic. A PE-protocol chest CT showed a large right hydropneumothorax and multiple peripheral round opacities in the left lung, one with cavitation. The patient underwent video-assisted decortication which revealed purulent pleural fluid and was admitted to the ICU postoperatively. A clinical diagnosis of Lemierre’s syndrome was suspected and neck ultrasound performed but reported negative. Given a high index of suspicion, a neck CT scan was done which revealed large left peritonsillar fluid collection and tonsillar microabscesses. A transthoracic echocardiogram was negative for vegetations. The peritonsillar abscess was incised and drained and the patient was started on intravenous ampicillin/sulbactam and clindamycin. His pleural fluid cultures grew Fusobacterium necrophorum, confirming Lemierre’s syndrome. His symptoms improved and he was discharged home on oral clindamycin for 4 weeks with subsequent complete recovery.

IMPLICATIONS/DISCUSSION: Lemierre’s syndrome involves septic thrombophlebitis of the internal jugular vein, secondary to oropharyngeal infection and frequently complicated by metastatic infections. Recognition is of vital importance as although rare, it is the most serious medical complication of common URIs. While described as the “forgotten disease” in the past, re-emergence of Lemierre’s syndrome has been suggested resulting from reduced antibiotic prescribing for pharyngitis.
The feasibility of a clinical diagnosis and its therapeutic and prognostic implications amplifies the importance of awareness of this rare clinical syndrome. Patients with Lemierre’s frequently present with pharyngitis, fever, and pulmonary symptoms. Given a broad differential diagnosis, the clinician must have a high index of suspicion and recognize suggestive diagnostic clues. A neutrophil-predominant leukocytosis makes a viral pharyngitis less likely. Pulmonary symptoms are less common with mononucleosis and in a toxic appearing patient, should suggest completion of a chest x-ray. Chest x-ray or CT appearance of multiple peripheral infiltrates with or without cavitation may suggest pneumonia or endocarditis with septic emboli, but in the context of pharyngitis, should prompt consideration of Lemierre’s syndrome.

Additional tests can help confirm the diagnosis. While ultrasound has limitations, CT has improved sensitivity and can better localize abscesses requiring drainage. A positive heterophile antibody test may represent a false-positive or a preceding Epstein-Barr viral infection, both of which have been described. An initial viral or bacterial oropharyngeal infection may cause altered host defense mechanisms allowing commensal bacteria to become invasive. Bloodstream or oropharyngeal infection may cause altered host defense mechanisms allowing commensal bacteria to become invasive. Bloodstream or meta-
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A CASE OF MISDIAGNOSIS: STRONGYLOIDES INFECTION

Anjali Dhurandhar 1; Richard Miranda 1. 1University of Colorado Denver, Denver, Colorado. (Tracking ID # 10744)

LEARNING OBJECTIVES: 1. Assess a patient with eosinophilia and recognize what is an appropriate evaluation. 2. Recognize the importance of identifying Strongyloides infection as a cause of eosinophilia.

CASE INFORMATION: This is a 42 year-old female who presented with non-bloody diarrhea and abdominal cramping. Vital signs were stable, but stool was positive for occult blood. The patient was prescribed ciprofloxacin 500 mg twice daily to cover for pathogenic bacteria. Diarrhea resolved. Six weeks later, she presented with a two week history of loose stools, bloating and weight loss. WBC was 13.9 with eosinophil count of 2.73. Clostridium difficile toxin A by EIA was positive. The patient was treated with metronidazole 500 mg three times daily for 14 days. The patient’s symptoms persisted and repeat Clostridium difficile toxin was negative. WBC remained elevated and eosinophil count continued to rise. Stool studies were repeated three times including culture, ova & parasites and Clostridium difficile toxin which were all negative. Stool was positive for fecal WBC and repeatedly positive for blood. The patient continued to lose weight (> 10% of original body weight). WBC peaked at 17.5, with marked eosinophilia 5.75 (32.9%). The patient was referred for EGD and colonoscopy, but biopsies from the duodenum and colon did not demonstrate any eosinophils, larvae or worms. However, the patient was started on budesonide for possible eosinophilic enteritis and had resolution of diarrhea. Absolute eosinophil count also declined, but was still elevated at 2.17. Therefore, the patient was referred to an infectious disease specialist who found a positive Strongyloides antibody at 1.74 (<1.0 normal). The patient was prescribed ivermectin for two days and then two weeks later, was prescribed additional course of ivermectin for two days due to persistent symptoms. The patient responded well to this second treatment and her eosinophil count declined and has remained at zero.

IMPLICATIONS/DISCUSSION: Eosinophilia almost always indicates underlying pathology and requires a thorough evaluation. Studies have shown that U.S. providers often overlook Strongyloides in the work up of asymptomatic eosinophilia and may have inadequate knowledge of helminth infections. Though not a common infection in the U.S., Strongyloides is endemic in Southeastern U.S. and has a high prevalence rate amongst those who have resided in endemic areas such as veterans and certain immigrant populations. Patients may be infected for decades and may be asymptomatic or have nonspecific symptoms. Untreated chronic infections may lead to significant morbidity and mortality as the patient ages and receives treatments for other illnesses, particularly corticosteroids. These patients may develop the hyperinfection syndrome that can result in bacterial sepsis and death. Strongyloides is the leading cause of helminth deaths in the U.S. Therefore, considering Strongyloides in the differential diagnosis of a patient with eosinophilia, nonspecific abdominal complaints, new-onset wheezing and/or skin lesions is of critical importance. Diagnosing Strongyloides with routine stool studies has poor sensitivity due to irregular larval excretion. Serological testing has higher sensitivity than direct methods and is an appropriate screening tool for individuals from endemic areas and in the workup of eosinophilia. Even if the pathogen cannot be directly visualized, a positive serologic test warrants treatment. Though this infection is completely curable in its chronic state, mortality is exceedingly high for the hyperinfection syndrome. Failure to consider this pathogen can lead to unnecessary morbidity and mortality. Our failure to recognize this pathogen did lead to the inappropriate prescribing of corticosteroids. Fortunately this patient had a good outcome and her infection was completely eradicated.

A RASH DECISION: NOT SIMPLY ANOTHER ATOPIC DERMATITIS!

Maggie Kathleen Benson 1; Peggy Hasley 1. 1University of Pittsburgh Internal Medicine Residency, Pittsburgh, Pennsylvania. (Tracking ID # 10751)

LEARNING OBJECTIVES: 1. Recognize cutaneous T cell lymphoma as an unusual cause of a chronic rash in the primary care setting. 2. Identify the most common skin changes associated with mycosis fungoides.

CASE INFORMATION: A 52 year old Sudanese gentleman presented to clinic with a 10- year history of intermittent 1–2 cm patches on his torso, arms and legs. He denied having fevers, joint, chest or abdominal pain, numbness or weakness, or changes in memory or mood. Exam revealed an irregularly-shaped, coalesced, hypopigmented plaque measuring 4–5 cm with an overlying scale on the right posterior buttock, along with a few other 1–2 cm patches on the back and anterior left thigh. A biopsy of the larger plaque revealed an atypical lymphocytic infiltrate in the papillary dermis with cells positively stained with CD2, CD3 and CD4, supporting a diagnosis of cutaneous T cell lymphoma of the mycosis fungoides subtype. He was referred for CT imaging of his chest, abdomen and pelvis that was normal, and a bone marrow biopsy did not show involvement. He was initiated on bexarotene therapy.

IMPLICATIONS/DISCUSSION: Mycosis fungoides is the most common type of cutaneous lymphoma, and compromises almost 50% of cutaneous T cell lymphomas. It is characterized histologically by the proliferation of small to medium T lymphocytes within the epidermis with unique cerebriform nuclei. Mycosis fungoides is generally considered an indolent lymphoma, with a 5-year survival rate of >90%, but has the potential to spread to the lymph nodes and deeper tissues if left untreated. Mycosis fungoides’ relative rarity (incidence of 1 in 100,000) and unique clinical presentation create a diagnostic challenge for internists. The chronic nature of the skin findings and frequent lack of systemic manifestations in early disease prompts many patients to seek initial evaluation by their primary care physician in the outpatient setting. It is thus important for internists to be familiar with the key features of this condition.
The clinical hallmark of mycosis fungoides is that of multiple fluctuating patches that have a predilection for non sunexposed skin, particularly of the buttocks or proximal extremities. The initial patch phase may have characteristic poikiloderma, consisting of motiled pigmentation with overlying epidermal atrophy. The patches progress over years to decades and ultimately form larger, both thin and thicker plaques. Over time, the disease may progress to subcutaneous tumors, but always passes through the patch and plaque phases first. Primary care physicians should consider the possibility of mycosis fungoides before making the diagnoses of the much more common atopic dermatitis or linea corpora.

A TRANSIENTLY SWOLLEN BOWEL Jennifer Cowart 1; Lee Lu2.
1Baylor College of Medicine, Houston, Texas ; 2Baylor College of Medicine, Friendswood, Texas. (Tracking ID # 10753)

LEARNING OBJECTIVES: 1. Recognize hereditary angioedema (HAE) as a cause of recurrent abdominal pain. 2. Review the pathophysiology and treatment of HAE.

CASE INFORMATION: A 58-year-old white male with obstructive sleep apnea and recurrent abdominal pain for 2 years presented with 2 days of severe right lower quadrant abdominal pain of sudden onset with nausea and decreased oral intake. He denied fever, vomiting, diarrhea, or constipation. Physical exam revealed heart rate of 100 s and diffuse abdominal tenderness without rebound or guarding. His WBC was 26,300 with 82.1% neutrophils and hemoglobin was 20.9 from baseline (normal 16.5); LFTs were normal. CT abdomen showed ascites, a normal liver, mesenteric fat stranding most prominent in the left abdomen, and a single loop of jejunum dilated at 3.5 cm without bowel wall thickening. The final report was consistent with viral gastroenteritis, although the ascites was of uncertain etiology. He was admitted with the diagnosis of gastroenteritis. Upon further questioning, patient reported a history of recurrent, transient swelling in his arms, face, and throat starting in adolescence. He was diagnosed with hereditary angioedema nine months prior to admission and took danazol for three months, but had initially been treated for presumed allergic conjunctivitis. Her symptoms progressed over the week prior to admission, and included photophobia, nausea, and chills. Physical exam on admission was remarkable for right periorbital swelling, exophthalmos, conjunctival chemosis, and corneal haze. She displayed no light perception on visual acuity. A right internal jugular tunneled dialysis catheter and a left sided AICD were present without surrounding erythema or discharge. WBC count was 9.8. Blood and vitreous cultures drawn at presentation grew methicillin resistant staph aureus. Empiric intravenous and intravitreal antibiotics were started on admission and subsequently narrowed to vancomycin. The dialysis catheter was removed and a temporary catheter was placed. A transesophageal echocardiogram revealed a 1.8 cm x 0.6 cm vegetation on a defibrillator lead. Patient underwent extraction of her AICD. She failed to improve with antibiotic therapy alone, and subsequently underwent right eye enucleation. Blood cultures eventually cleared and the patient was discharged with a six week course of vancomycin.

IMPLICATIONS/DISCUSSION: Endogenous endophthalmitis occurs when a systemic infection is spread hematogenously and seeds the eye by crossing the blood brain barrier and entering the internal ocular spaces. In contrast, exogenous endophthalmitis occurs when intraocular surgery, penetrating injury, a corneal ulcer, or periocular infection breaches the external ocular barriers. The former accounts for only 2-8% of cases of endophthalmitis. Risk factors for endogenous endophthalmitis include diabetes mellitus, renal failure, malignancy, immunosuppressive therapy, extended surgical procedures, indwelling catheters, and intravenous drug abuse. Symptoms include decreased vision, floaters, redness, discharge, eye pain, and headache. About half report systemic symptoms of fever, chills, or malaise. Classical signs include hypopyon, lid swelling, conjunctival injection, vitreous opacification, and decreased visual acuity. Fundoscopic exam is typically hindered by vitreous opacification, although Roth’s spots may be seen early in the course of the disease. When endophthalmitis is suspected, immediate intravitreal application of antibiotics is warranted. In contrast to exogenous endophthalmitis, all patients with endogenous endophthalmitis should also receive systemic antibiotics. Many also
advocate complete vitrectomy as a means to improving visual outcomes. A significant proportion of cases are initially misdiagnosed as conjunctivitis, noninfectious uveitis, iritis, acute glaucoma, stroke, or cellulitis. A third of patients with endogenous endophthalmitis initially present to a primary care or ER physician. Thus, the generalist can play a vital role in preventing visual loss by maintaining a high level of awareness and promptly referring suspected cases to an ophthalmologist.

**PHARMACEUTICAL FORMULATION FOR FATIGUE AND FORGETFULNESS IN POST TRAUMATIC STRESS DISORDER** Thomas R. Roeiel, 1; Molly Feliciano, 2; Nancy L. Stano, 2; Karen Friedman, 2; Leslie Hunter, 2; Crowley Brian, 2; Pamela Noye, 2; Uniformed Services University for the Health Sciences, Washington, District of Columbia; 1; Department of Health Clinical Center, Walter Reed Medical Center, Washington, District of Columbia. (Tracking ID # 10763)

**LEARNING OBJECTIVES:** 1. Diagnose vitamin B12 deficiency in those patients who are on proton pump inhibitors or metformin, when they present with fatigue, memory problems, and shortness of breath without the hematological findings of anemia and macrocytosis. 2. Treat metformin and proton pump inhibitor (PPI) induced vitamin B12 deficiency with supplementation to enhance cognitive behavior therapy for the anxiety and fear related to post-traumatic stress disorder (PTSD).

**CASE INFORMATION:** A 55 year old nurse, who returned from a year-long deployment to Iraq four years ago, presents with PTSD-related mood and sleep disorder with symptoms of anxiety, tiredness, memory problems and shortness of breath. Her pulmonary testing was normal. Under the care of cardiologists for her family history of coronary artery disease, she was taking simvastatin/ezetimibe. Gastroenterologists initiated rabeprazole 20 mg daily for reflux esophagitis 4 years ago. Her last endoscopy 2 years ago revealed residual esophagitis. An endocrinologist started metformin 4 years ago for metabolic syndrome. At the time of her current presentation, she was taking 2000 mg metformin daily. She rated her fatigue as 7.4 centimeters (cm) on a 0 to 10 cm scale (10 representing very fatigued). Her clinician-administered PTSD scale (CAPS) registered 72 (>65 implies PTSD). Laboratories revealed normal values for her complete blood count, red cell indices, folate, methylmalonic acid and homoglobin A1C, but a low vitamin B12 at 184 pg/L. The patient was started on oral vitamin B12 and received a single parenteral vitamin B12 injection intramuscularly (im). Several weeks later she began participation in a multidisciplinary three-week all day outpatient cognitive behavior and exercise therapy program for PTSD. At the start, she had already noted improved cognition, mood, sleep, memory, and shortness of breath, with less fatigue (5.2 cm on 10 cm scale). A mini-mental status examination (MMSE) scored 27/30. Her lipids and homoglobin A1C were normal, but a ferritin was 8 ng/L. Iron supplementation was started. A second im dose of vitamin B12 was administered, which decreased her fatigue score to 0 the next day. Her MMSE was unchanged. She successfully completed the program with overall improvement in her PTSD related symptoms with a repeat CAPS of 12. She was referred back to her gastroenterologist for further care.

**IMPLICATIONS/DISCUSSION:** Metformin and PPIs have been associated with vitamin B12 deficiency. Absorption of vitamin appears to be hampered by metformin at the ileal membrane through a calcium dependent mechanism. PPIs are thought to cause deficiency through the impaired release of the vitamin from food due to absent acid secretion. This case study illustrates that when these drugs are taken together for several years, there may be a greater need to screen for vitamin B12 deficiency. The fact that drug therapy likely induced deficiency in 4 years time points to the large storage capacity of the liver for this vitamin. Thus, a delayed presentation of vitamin B12 deficiency can be expected after PPIs or metformin are started. Vitamin B12 deficiency should be suspected when there are neurological signs and symptoms present despite normal hematological findings. Low iron stores as represented by a low ferritin in this case, was likely due to a chronic residual esophagitis in this patient. Low iron stores can mask any potential macrocytosis, making the diagnosis of vitamin B12 deficiency based on this hematological sign more difficult. The paient’s improvement in her symptoms of poor sleep, disordered mood, poor memory, fatigue, and shortness of breath through supplementation contributed to her successful cognitive behavior and exercise treatment for her PTSD. Her rapid and near complete improvement indicates that vitamin B12 deficiency can exacerbate the neuropsychiatric symptoms of PTSD.

**HYDRONEPHROSIS: A RARE PRESENTATION OF CROHN’S DISEASE** Shelly Vijay, 1; Puneet Bajaj, 2; Moiz Hamdani, 2; Anil Sharma, 1; North Shore Long Island Jewish Health Systems, Forest Hills, New York; 2North Shore Long Island Jewish Health System, Forest Hills, New York. (Tracking ID # 10765)

**LEARNING OBJECTIVES:** 1. Recognize hydronephrosis from ureteral obstruction as a rare extra intestinal presentation of Crohn’s disease. 2. Diagnose Crohn’s disease in a patient who presents with hydrenephrosis without evidence of urolithiasis.

**CASE INFORMATION:** We report a unique case of a patient in whom the first presentation of Crohn’s disease was right sided hydronephrosis. A 20 year old female presented to our hospital for complain of right flank pain since two weeks. Her other complaints included on and off diarrhea for about four years, chronic feet and wrist pains and history of anemia of unknown etiology. She smoked cigarettes about one pack a day. Her labs showed microcytic anemia, normal WBC count, normal BUN/creatinine and normal urinalysis. Patient’s CT scan showed mild right sided ureteral obstruction causing hydrenephrosis and thickened terminal ileum. No evidence of renal calculus was noted. Immunologic work-up including c- Anti neutrophil cytoplasmic antibody, p-Anti neutrophil cytoplasmic antibody and anti-saccharomyces cerevisiae antibodies were negative. Patient C-reactive protein was elevated. Colonoscopy showed ileocecal valve with nodularity, erythema, friability and scarring. Biopsy showed ulcerated mucosa with marked acute and chronic inflammation, lymphoid follicles, crypt abscesses and distorted crypt architecture consistent with Crohn’s disease. Patient was started on prednisone and mesalamine with conservative management of hydrenephrosis in consultation with urology. She was discharged to follow up with urology and gastroenterology.

**IMPLICATIONS/DISCUSSION:** Crohn’s disease can present with several complications like intestinal obstructions, fistulas, and anal fissures. Ureteric stricture causing hydrenephrosis is a rare complication of Crohn’s disease. This complication is due to mechanical obstruction caused by inflammatory penetration of the affected distal ileum into retroperitoneum. The right ureteral involvement is predominantly seen in Crohn’s disease. A majority of these patients have been treated with surgical intervention, which includes resection of ileocecal lesion and ureterolysis. Conservative treatment with corticosteroids and mesalamine may be considered before surgery. The possibility of Crohn’s disease should be borne in mind in a patient who presents with hydrenephrosis without urolithiasis.

**THE ADULTERATED COCAINE EPIDEMIC** Suresh Misra, 1; Joseph Joe Lukose Vadakara, 1; Vinut Kurur, 1; Temple University Hospital, Philadelphia, Pennsylvania. (Tracking ID # 10787)
LEARNING OBJECTIVES: 1. Recognize the hematological and dermatological complications of Cocaine adulterated with Levamisole. 2.

CASE INFORMATION: 24 year old African American female was admitted to the hospital because of chest pain after having smoked cocaine. Physical examination was unremarkable. On admission, her labs were - Hb 12.8gm/dl, Pt 228000/uL and WBC 1600/ mm3. WBC Differential was Lymph-80%, Neutrophils- 3%, bands-3%. (ANC - 72/mm3). Basophils- 2% atypical lymphocytes-12%. Other labs including renal, hepatic and cardiac chemistries were negative. Peripheral smear showed neutropenia and was otherwise unremarkable.

Urinary Drug screen was positive for Cocaine. On day 2, her counts were unchanged. She was initiated on Filgrastim 480mcg SQ daily and kept under neutropenic precautions. On Day 3, she developed painful, ecchymotic and necrotizing lesions on her earlobes, arms and legs. Over the next 24 hours the rash worsened and there was a concern for early TEN.

Further workup revealed a positive ANA (1:640 titer) in a homogeneous and speckled pattern, a positive TTI ratio, a prolonged PT, a prolonged DVV test and a positive PIT mixing study suggestive of an inhibitor, Anti Cardiolipin antibodies were negative, ESR 84 mm/hr, CRP-1.14 mg/dL. Other negative workup included - c-ANCA, p-ANCA, Hepatitis C ab, HIV, C3, C4, RF, HIV, AT III activity, Protein C and S levels.

Further workup revealed a positive ANA (1:640 titer) in a homogeneous and speckled pattern, a positive TTI ratio, a prolonged PT, a prolonged DVV test and a positive PIT mixing study suggestive of an inhibitor, Anti Cardiolipin antibodies were negative, ESR 84 mm/hr, CRP-1.14 mg/dL. Other negative workup included - c-ANCA, p-ANCA, Hepatitis C ab, HIV, C3, C4, RF, HIV, AT III activity, Protein C and S levels.

On day 3, her WBC 2800 /mm3 and the ANC was 1064/mm3. Filgrastim was stopped as her ANC stabilized.

Due to the worsening skin lesions, a skin biopsy was obtained. This demonstrated an early leukocytoclastic vasculitis versus thrombotic occlusion of superficial cutaneous vessels. Due to worsening pain and progressive skin lesions, she was started on Enoxaparin 40 mg SQ twice daily. With these measures, the patient's skin lesions gradually improved over 4-5 days. Her neutropenia resolved after two doses of Filgrastim. Her condition was thought to be Levamisole induced agranulocytosis with skin necrosis, secondary to use of adulterated cocaine.

IMPLICATIONS/DISCUSSION: The 2008 National Survey on Drug Use and Health estimated the cocaine users to be approximately 1.9 million or approximately 0.7% of the population above the age of 12. Levamisole is increasingly used for the adulteration of cocaine. The DEA estimates that as much as 80% of the seized cocaine coming into the United States is contaminated.

Levamisole, a levo isomer of tetramisole, has been used as an anthelmintic, immunomodulatory and antineoplastic effects. It was voluntarily withdrawn from the US markets due to its side effects which include agranulocytosis and necrotizing skin lesions. Levamisole is used as an adulterant because of a similar taste and color, and because it potentiates the "rush" from cocaine. It increases the release of noradrenaline in the sympathetic system, blocks monoamine oxidase, and is converted to Aminorex, which has been scheduled as a class I agent because of amphetamine like effects.

Levamisole can be detected in the urine by gas chromatography and mass spectrometry. However, this is difficult due to its short elimination half life 5.6 +/- 2.5 hrs. Other findings include a positive Lupus anticoagulant, C-ANCA, P-ANCA, ANA, Anti Cardiolipin Ab, Anti dsDNA, and Cryoglobulinemia. Skin biopsy may show Leukocytoclastic vasculitis or thrombotic occlusions of the superficial and dermal vessels however none of these are specific for this condition.

No recommendations are available for levamisole induced hematologic and dermatologic manifestations. Treatment is usually supportive with systemic antibiotics for neutropenic fever and use of Filgrastim for neutropenia. Cutaneous manifestations can be disfiguring. As these lesions sometimes have evidence of thrombosis and leukocytoclastic vasculitis, steroids and anticoagulation can be considered.

PASTEURELLA MULTOCIDA PNEUMONIA AND BACTEREMIA WITHOUT ANIMAL BITE OR SCRATCH Michael Rothberg 1; Kenneth Kuper 2; Scott Kaatz 3. 1Henry Ford Hospital, Detroit, Michigan; 2Wayne State University, Detroit, Michigan. (Tracking ID # 10800)

LEARNING OBJECTIVES: 1. Recognize that Pasteurella multocida can present as pneumonia and bacteremia without a preceding cut or dog bite or scratch. 2.

CASE INFORMATION: A 59 year old female with chronic cirrhosis presented to the hospital with altered mental status, abdominal pain, and dyspnea for two days. She was febrile (102.3 F), tachycardic, HR
ABSTRACTS

LEFT FLANK PAIN: LETTING THE KHAT OUT OF THE BAG
Lee Mozessohn,1 Daniel Panisko1.1University of Toronto, Toronto, Ontario.

138, with a pulse ox reading of 91% on 2 L. She was noted to have perioral herpetic vesicles, oral thrush, and ascites. Paracentesis yielded 10,400 PMNs, with no organisms grown on ascitic fluid culture. Chest x-ray revealed right middle and lower lobe infiltrate. 2 out of 4 Blood cultures grew Pasteurella multocida. She had no history of animal bites or scratches but did admit to letting her cat sleep on her shoulder and allowing her dog to lick her face. For treatment of pasteurella bacteremia, pneumonia and SBP, she received Unasyn for ten days. Midway through the course of Unasyn, she became afebrile and retesting of the ascitic fluid revealed resolution of SBP. The patient reported reduction in symptoms, including return of mental status back to baseline and improvement of abdominal pain and dyspnea.

IMPLICATIONS/DISCUSSION: P. multocida is a gram negative coccobacillus which colonizes the oropharynx of both dogs, cats, pigs and other animals. The most common presentation includes bite or scratch from a dog or cat, followed by rapid onset of soft tissue infection. The second most common site of infection is respiratory tract. This mode of transmission may involve inhalation of contaminated aerosols or direct inoculation of the oral cavity with cat or dog secretions, which could occur by licking or kissing. In support of transmission by contaminated aerosols, P. multocida has been shown to colonize the oropharynx in persons with close contact to animals, namely, veterinary students and animal handlers. Of P. multocida respiratory tract infections, pneumonia is the most common. Typically, patients who get this pneumonia have underlying lung disease. In a review of 136 pasteurella infections which occurred without history of animal bite, 80 involved the respiratory tract and all of them had chronic pulmonary disease. P. multocida pneumonia has a high incidence of bacteremia, possibly as high as 55%, seen in one small sample of 49 patients with pasteurella pneumonia. In our patient, the most likely cause of her pneumonia was from respiratory transmission since she had history of close animal contact without bite or scratch. An alternative consideration could be direct inoculation into the blood from her dog licking her perioral herpetic vesicles, with subsequent development of pneumonia by hematogenous spread. Supporting this mechanism are two case reports involving transmission via herpetic vesicles. It is important to consider that P. multocida can present as pneumonia and bacteremia, without preceding bite or scratch.

A STRAY BULLET WITH A STRAY DIAGNOSIS! Ayad Jindeel 1; Ayad Jindeel2. 1Harbor-UCLA Medical Center, San Pedro, California; 2Harbor-UCLA Medical Center, San Pedro, California. (Tracking ID # 10807)

LEARNING OBJECTIVES: 1. As a result of listening to the vignette, health care providers will distinguish femoral neuropathy caused by infragluteal lesions from suprainguinal lesions by focusing on history and physical exam. 2. As a result of listening to the vignette presentation, health care providers will recognize the differential diagnosis of underlying causes of femoral and lumbosacral plexus pathology.

CASE INFORMATION: A 25-year-old male presented to urgent clinic for severe anterior right thigh pain that started a year earlier and progressively increased in severity. Pain was associated with occasional tingling and numbness. Six months prior to presentation patient developed progressive weakness flexing his right hip or extending his right knee, resulting in increased difficulty with walking. Over the same period, patient noticed wasting of his right thigh muscles. Two weeks prior to presentation, patient developed right lower abdominal pain where he felt a mass. Ten months earlier, he stopped working in a warehouse secondary to constant pain. Patient had a history of gunshot wound to his right mid-thigh four years earlier. The bullet was left inside...
and patient was asymptomatic until one year prior to presentation. He denies any h/o smoking, drug use or alcohol use. No past surgical history. On examination, his temperature was 96.5, BP 126/71, pulse 113, RR 20, lungs were clear, heart exam was normal and abdomen was soft with palpable right lower quadrant mass. He was alert, cranial nerves exam (II-XII) was normal. Motor exam was normal, except reduced strength of the right knee extension 3/5 and right hip flexion 3/5. Hip adduction, extension and abduction were 5/5. Sensations were intact in upper extremities and left lower extremities with decreased pinprick in the anterior aspect of the right thigh and the antero-medial aspect of the right leg. Reflexes were normal (2+), except right patellar reflex (0+). Basic chemistry, complete blood count, Folate, Vitamin B12, were normal. X-ray of the right thigh showed a very superficial bullet at mid-thigh level. Abdominal CT scan showed large right retroperitoneal mass involving the right psoas muscle measuring approximately 13 cm × 13 cm. Chest X-ray revealed multiple bilateral pulmonary nodules. A CT-guided biopsy showed Synovial Sarcoma. After the diagnosis, the patient transferred his medical care to another facility.

**IMPLICATIONS/DISCUSSION:** This presentation is consistent with femoral neuropathy or lumbosacral plexus pathology. Since the patient’s symptoms are limited to the distribution of the right lower extremity and he does not have metabolic disorder like DM, he most likely has compression of the right femoral nerve or the lumbosacral plexus rather than other etiologies like lumbosacral plexopathy (diabetic or non diabetic). Diabetic and non-diabetic lumbosacral plexopathy could present in an asymmetrical pattern but usually progress to involve both sides.1 Pathology could be: 1. at or below the inguinal ligament, for example gunshot wound, lymphadenopathy, etc. . If the injury is limited to this level, then only knee extension is affected sparing hip flexion. 2. above the inguinal ligament with abdominal/pelvic pathology like malignancy, abscess and hematomas, or lumbosacral spine pathology like prolapsed discs, abscess and malignancy. Since hip flexion and knee extension were both impaired in this patient, the defect must be proximal to the inguinal canal because the branches of femoral nerve supplying the psoas and iliacus muscles are taking off as the femoral nerve passes between these muscles. Posterior divisions of L2, L3,L4 ventral rami form the femoral nerve that supply motor branches to the hip flexors (Iliacus and Psoas muscles) and knee extensors (Sartorius, Quadriceps Femoris ;Rectus femoris, vastus intermedius, vastus medialis, vastus lateralis). Cutaneous innervation of femoral nerves is the anterior thigh, anteriomedial aspect of the leg. Anterior divisions of L2,L3,L4 ventral rami form the obturator nerve that supply the hip adductors. References:1. P.J.B. Dyck et al Non-Diabetic Lumbosacral radiculoplexus neuropathy Brain (2001)124, 1197–12072.

**EXENATIDE: A RARE CAUSE OF PANCREATIC PSEUDOCYST** Navneet Singh Dang 1, Navneet Singh Dang 2, Jennifer Hadam 3, Katie Farah4.

1Allegeny General Hospital Pittsburgh, Pittsburgh, Pennsylvania ; 2Allegeny General Hospital Pittsburgh, Pittsburgh, Pennsylvania ; 3Allegeny General Hospital, Pittsburgh, Pennsylvania. (Tracking ID # 10812)

**LEARNING OBJECTIVES:** 1. Recognise exenatide as a cause in diabetics presenting with pancreatitis and pseudocyst. 2. The incidence of drug-induced pancreatitis is approximately 1.4% and the development of pancreatic pseudocyst as a result, is an even more rare entity.

**CASE INFORMATION:** A 46 year old female with past medical history of DM presented with a 2 week history of epigastric pain, nausea and vomiting. No family history of pancreatitis or alcohol abuse. Exenatide was started 6 weeks prior for diabetes treatment. Exam revealed abdominal distension and tenderness. Amylase 76, lipase 30; calcium and triglyceride levels normal. IgG4 and ANA were negative. CT revealed a 10cm×10 cm pancreatic cyst in the body and tail. Ultrasound revealed no evidence of gallstones, sludge or CBD dilatation. Exenatide was discontinued. EUS revealed a large pseudocyst and no evidence of pancreas divisum, chronic pancreatitis or mass. FNA revealed debris consistent with pseudocyst. Cystogastrostomy was performed. CT scan at 4 weeks revealed complete resolution. No recurrence has been reported to date.

**IMPLICATIONS/DISCUSSION:** Exenatide is the first incretin mimetic, introduced for the adjuvant treatment of type 2 diabetes mellitus in 2005. It is a glucagon-like peptide-1 (GLP-1) receptor agonist used as twice-daily injection. The most common causes of acute pancreatitis are gallstone disease (30–60 percent), alcohol (20–30 percent) and hypertriglyceridemia (1.3–3.8 percent). The incidence of drug-induced pancreatitis is approximately 1.4%, and the development of pancreatic pseudocyst as a result, is an even more rare entity. Proposed criteria for classifying drugs as having an association with pancreatitis include pancreatitis develops during treatment with the drug, other likely causes of pancreatitis are not present, pancreatitis resolves upon discontinuing the drug and pancreatitis usually recurs upon read-ministration of the drug. The temporal relationship of our patient’s symptoms after introduction of exenatide in the absence of other identifiable causes of pancreatitis together with the normalization of clinical and radiographic parameters upon drug withdrawal strongly suggests exenatide as the etiology. Review of the literature reveals only 36 reports of exenatide-induced pancreatitis but to the best of our knowledge no reported cases of exenatide causing pancreatic pseudocyst. The overall reported incidence for pancreatitis in exenatide users is 1 in 3000 and for the more severe necrotizing or hemorrhagic forms less than 1 in 10,000. This is the first reported case of pancreatic pseudocyst secondary to exenatide with all other common etiologies thoroughly excluded. Pancreatitis should be considered in patients with persistent severe abdominal pain (with or without nausea), and exenatide should be discontinued in such patients. If pancreatitis is confirmed, it should not be restarted. Our case is the first reported case of development of pancreatic pseudocyst secondary to exenatide. Exclude exenatide as a cause in diabetics presenting with pseudocyst.

**DIFFUSE ALVEOLAR HEMORRHAGE IN PATIENTS ON SYSTEMIC ANTI COAGULATION** Daniel Eiras 1; Michael Janjigian1. 1New York University Langone Medical Center, New York, New York. (Tracking ID # 10817)

**LEARNING OBJECTIVES:** 1. Diagnose and manage a patient on systemic anticoagulation with diffuse alveolar hemorrhage 2. None
A PAIN IN THE NECK: EXTRAPULMONARY TUBERCULOSIS

Han Na Kim1; Nicole Adler1; Bo Shopsin1. 1New York University Langone Medical Center, New York, New York. (Tracking ID # 10825)

LEARNING OBJECTIVES:
1. Treat abscess with incision and drainage followed by antibiotics as inadequate local infection control can result in dramatic complications with significant morbidity.
2. Recognize the significance of agr gene mutation in Staphylococcus aureus infections.

CASE INFORMATION: History: A 35-year-old Hispanic man presented with two days of bifrontal and retro-orbital headache. The patient has a history of type II diabetes and recurrent cellulitis. Four months prior to presentation, he developed a left axillary abscess, which was treated with Augmentin then changed to Bactrim after incision and drainage was performed with culture growing Methicillin-resistant Staphylococcus aureus (MRSA). Two days prior, he developed severe throbbing headache with nausea and vomiting. He presented to an outside hospital where a non-contrast head CAT scan revealed a mass in the right temporoparietal region with associated vasogenic edema and local mass effect. Magnetic resonance imaging of the head revealed a 3x3x3 cm ring enhancing lesion consistent with intra-cerebral abscess. He was started on empiric antibiotics with vancomycin, ceftriaxone, and Flagyl and transferred to Bellevue Hospital for neurosurgical drainage.

Physical Exam: On presentation, vitals were notable for a rectal temperature of 100.2 F but otherwise hemodynamically stable. His physical exam was unremarkable other than skin findings of furuncle on the left calf and a carbuncle on mid right back.

ATYPICAL PRESENTATION AND COMPLICATION OF MRSA BACTEREMIA Han Na Kim1; Nicole Adler1; Bo Shopsin1. 1New York University Langone Medical Center, New York, New York. (Tracking ID # 10825)

LEARNING OBJECTIVES:
1. Diagnose and treat extrapolumony tuberculosis in immunocompetent patients. N/A

CASE INFORMATION: A 71-year-old white man with no significant past history presented with a recently noticed mass in the left neck. He had no recent history of fever, chills, night sweats, or weight loss. He also denied cough, dyspnea, hemoptysis or any recent or remote foreign travel. He was a retired mechanic and had never used tobacco and only occasionally drank alcohol. No family member or associate had a history of tuberculosis. On physical exam he was well-developed, afebrile, had a 5X5cm firm, nontender, slightly mobile mass in his left anterior cervical neck region, had clear lungs, normal heart sounds, soft abdomen without organomegaly, and no other palpable lymph nodes. Laboratory was essentially normal and HIV was negative. CT of the neck revealed a 5.7×4.2 cm wide heterogeneous mass just superior and lateral to the left lobe of the thyroid. CT of the chest was normal. Fine needle aspiration of the mass was nondiagnostic. Excisional biopsy showed granulomatous inflammation with necrosis and abundant acid fast organisms. Sensitivity and susceptibility results revealed Mycobacterium tuberculo-

not require invasive ventilation. His coagulopathy was not corrected given the risk of thromboembolic complications from the metallic valve. Blood cultures grew group B streptococcus, and a transesophageal echocardiography revealed an abscess extending into the interatrial septum and along the ascending aortic graft. The patient underwent surgical replacement of the valve and aortic graft but he died intraoperatively.

IMPLICATIONS/DISCUSSION: Diffuse alveolar hemorrhage (DAH) is a clinical syndrome characterized by hemoptysis, anemia, diffuse pulmonary infiltrates, and hypoxic respiratory failure. It is typically caused by diseases that damage the alveolar capillary barrier, and is associated with vasculitides including Wegener's granulomatosis, Goodpasture's syndrome, systemic lupus erythematosus, and idiopathic pulmonary hemosiderosis. It may be seen as an adverse reaction to certain drugs including penicillamine, nitrofurantoin, amiodarone, propylthiouracil, cocaine, or coumadin, where it may be seen even with a therapeutic INR.

Radiographic findings include dense airspace consolidations seen on chest x-ray, and interlobar thickening (crazy paving pattern) with consolidations and ground glass opacifications on chest CT. These findings can be confused with pulmonary edema, or multilobar pneumonia. Supportive care is indicated, including correction of coagulation disorders, platelet support, supplemental oxygen, and careful fluid management.

As was seen with this case, sepsis may also initiate or exacerbate an underlying coagulopathy. During sepsis, proinflammatory cytokines such as interleukin-1, interleukin-6, and tumor necrosis factor alpha can lead to a procoagulant state and promote thrombosis. Proinflammatory cytokines also increase permeability of endothelial cells, allowing inflammatory cells to shift from the blood into the interstitial space. These two effects shift the coagulation balance towards a consumption of coagulation factors, leading to an increased risk of bleeding.

This case highlights a relatively rare presentation of DAH caused by warfarin therapy with concurrent sepsis and antibiotic administration. Patients admitted with bacteremia and presumed sepsis requiring antibiotics who are on anticoagulation should be monitored closely since they are at a higher risk for bleeding complications, as was seen in this case. The patient was treated with isoniazid, rifampin, ethambutol, and pyrazinamide and showed slow but progressive clinical improvement.

IMPLICATIONS/DISCUSSION: Tuberculosis (TB) remains an important public health problem worldwide. Though rates continue to fall, the CDC recorded over 10,000 new cases in 2009. Our patient fits the demographics of these new cases in that he is male (current rates 2:1 male to female), over the age of 65 (group with highest incidence), and lives in Texas (tied for highest incidence). Being white, HIV negative, and US born, however, are low risk. Extrapulmonary tuberculosis represents about 20% of new TB cases among HIV negative patients and TB lymphadenitis, or scrofula, as our patient had, is the most common manifestation. Our patient's history and exam were classic in that he had no systemic symptoms (though patients with HIV may have fever, night sweats, and weight loss) and the nodes were cervical, firm, and nontender. Some infected nodes will become fluctuant and drain spontaneously. Causative organisms include M. tuberculosis (95%) and atypical Mycobacteria. Although it can occur at any age, it is more common in young adults and children. Most patients have a positive PPD and a normal chest x-ray. A systematic review of commercial tests, including PCR, of needle aspirates of infected nodes have shown wide ranges of sensitivity and specificity making them unreliable. Excisional biopsy of the lymph nodes with histology, AFB stain, and mycobacterial culture is the procedure of choice. The differential diagnosis includes metastatic carcinoma, lymphoma, fungal infection, cat-scratch disease, sarcoidosis, toxoplasmosis, and bacterial adenitis. Treatment of scrofula is similar to that of any other case of TB, which, based on sensitivities would include the antmycobacterials our patient received. Internists must maintain a high index of suspicion and proceed with biopsy to accurately diagnosis the condition. The result is gratifying as most patients can be cured with directly observed therapy.
Laboratory Results: Significant pertinent laboratory results included white blood cell count of 11,000/mcL, and a negative HIV test. All blood cultures were negative but nasal swab was positive for MRSA.

Interim History: Contrast head CAT scan revealed multiple ring enhancing lesions in the right parietal lobe with associated vasogenic edema and midline shift of 4 mm. The patient underwent a right parietal abscess drainage and resection. Abscess cultures were positive for agr defective MRSA and the patient was continued on vancomycin. Further workup with transesophageal echocardiogram and bone scan for source of infection was negative and he was assumed to have been transiently bacteremic secondary to his axillary abscess, leading to the formation of brain abscesses.

IMPLICATIONS/DISCUSSION: This case represents a dramatic complication of MRSA bacteremia demonstrating that metastatic infection of any body site is possible when local infection is inadequately controlled with treatment. The patient likely developed brain abscesses secondary to transient MRSA bacteremia from the axillary abscess. Incision and drainage of an abscess is critical for proper management and control of local infection. Abscess fluid should be cultured and antibiotic selection must be based on culture data to avoid breeding of resistance and treatment failure, which could lead to significant complications.

This case of afebrile MRSA brain abscesses is an atypical presentation of a common illness, potentially explained by Staphylococcus aureus accessory gene regulator (agr) gene mutation developed during the patient’s illness. The patient’s initial MRSA strain from the axilla was agr-positive, but the organism later developed an agr mutation, likely allowing a persistent infection in the brain as lack of agr, a quorum-sensing virulence factor, results in upregulation of surface proteins allowing adhesion of organisms to cell surfaces and thus contributing to persistent infections. A recent study investigating agr-dysfunction in S. aureus bacteremia and 30-day-in-hospital mortality demonstrated an increased mortality among severely ill patients with agr-dysfunction and suggested that routine examination of agr function may have a role in predicting patient outcomes and optimizing antibiotic therapy [1]. The significance of Staphylococcal agr mutation in clinical practice needs further investigation but it seems to have potential for therapeutic value and in this case, may explain the patient’s persistent infection with an atypical presentation.

References:
[1] Schweizer M, Furuno J, Sakoulas G et al. Increased Mortality with infection with an atypical presentation.

WHEN PROPHYLAXIS FAILS: A CASE OF MALIGNANCY AFTER RISK REDUCING SURGERY IN A BRCA MUTATION CARRIER Cassandra Murphy 1; Stephen Cannistra1. 1Beth Israel Deaconess Medical Center, Boston, Massachusetts. (Tracking ID # 108390)

LEARNING OBJECTIVES: 1. Review the benefits of risk reducing salpingo-oophorectomy (RRSO) in carriers of BRCA mutations 2. Characterize primary peritoneal serous cancer (PPSC) and current controversy over its origin

CASE INFORMATION: A 58 year old woman with BRCA-1 mutation presented to her PCP with abdominal pain for 2 days. Her past medical history included breast cancer diagnosed in 1991 treated with lumpectomy and radiation with recurrence, prophyllactic bilateral salpingo-oophorectomy 3 years prior and Crohn’s disease. About 2 weeks before this visit, she had constipation and abdominal pain relieved with colace. Two days prior to her visit, the pain recurred and she described worsening lower abdominal tenderness. The pain was worse with bending and squatting and associated with bloating. She was on chronic narcotics for chest wall pain after mastectomy but these were not relieving her abdominal pain. She denied vomiting, change in oral intake or ongoing constipation. Her abdominal exam was notable for normal bowel sounds, diffuse tympany, and tenderness in the lower abdomen. There were no palpable masses or organomegaly. On genital exam, cervix appeared normal without cervical motion or adnexal tenderness. Initial differential diagnoses included Crohn’s flare in the setting of a recent prednisone taper, cystitis, and partial SBO. A CT scan of the abdomen/pelvis showed diffuse omental caking and a low attenuation soft tissue mass in the pelvis, concerning for carcinomatosis. A small amount of ascites and free pelvic fluid were noted. Eleven days after her initial presentation, she underwent exploratory laparotomy with peritoneal tumor biopsy. Disease was noted on the right hemidiaphragm, peritoneum, anterior abdominal wall, paracolic gutters, rectosigmoid and its mesentry. Biopsy showed a poorly differentiated primary peritoneal carcinoma. She has now completed an initial course of chemotherapy, followed by interval debulking surgery, with plans for additional chemotherapy post-operatively.

IMPLICATIONS/DISCUSSION: Carriers of BRCA mutations are at increased risk of several malignancies, including breast, ovarian, fallopian tube, primary peritoneal serous cancer (PPSC), pancreatic cancer, and melanoma. Relative risk of gynecologic cancers can be dramatically reduced by performance of risk reducing salpingo-oophorectomy (RRSO), which is an important consideration for BRCA mutation carriers. RRSO is typically timed to occur after child bearing is completed (often in the 35–40 year old age range, although this must be individualized). Consideration is sometimes given to performing concurrent hysterectomy if subsequent use of estrogen-only hormone replacement is desired. If RRSO is to be delayed, estrogen-progestin contraceptives may have some benefit in reducing the risk of ovarian cancer, although it cannot replace performance of RRSO. The value of ovarian cancer screening has not yet been proven in BRCA carriers. Of note, there is a 4 to 8% risk of detecting occult malignancy during a RRSO, which can rise to as high as 20% in women over age 45. For this reason, a finely sectioned pathologic evaluation of the surgical specimens from both the ovaries and fallopian tubes is performed. The procedure should also include a survey of the peritoneum with biopsy of suspicious lesions, peritoneal lavage for cytology, omental biopsy and cytology of the diaphragm. After RRSO, women typically undergo yearly pelvic exams and CA-125 levels, which may be useful in detecting the development of PPSC (risk estimated at 4.3%, 20 years after oophorectomy). PPSC has a similar clinical presentation, histology and response to chemotherapy as ovarian cancer. The cell of origin of PPSC remains controversial. Recent research including p53 mutation analysis has linked the presence of serous tubal intraepithelial carcinoma (STIC) of the fallopian tube fimbriae to cases of fallopian, peritoneal and ovarian carcinomas, suggesting a tubal origin for at least some of these cancers.

SWOLLEN ARM? NEED FOR ALARM! Jodie Ann Bryk1; Peggy Hasley1. 1University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania. (Tracking ID # 10833)

LEARNING OBJECTIVES: 1. To recognize the clinical presentation of superior vena cava syndrome (SVCS) 2. To identify when emergent therapy for SVCS is required

CASE INFORMATION: A 42 year old white male with no past medical history presented with new onset swelling in his left arm following a long-distance bike ride. The swelling extended from the lateral neck to the forearm with no associated warmth or tenderness. One month prior to presentation, he developed midsternal musculoskeletal pain, mild
dyspnea on exertion, and dysphagia. He denied stridor, fevers, chills, night sweats, or weight loss. His physical exam was notable for left arm swelling without redness, warmth, pitting or venous distension. His face showed slight swelling, but no plethora. A venous doppler of the left extremity revealed no venous thrombosis. A subsequent chest x-ray showed a mediastinal mass and follow-up CT revealed an 8 x 4.4 x 8.9 cm heterogeneous anterior mediastinal mass with anterior and superior extension surrounding the right internal mammary artery and narrowing the superior vena cava. A subsequent tissue biopsy was performed and pathology demonstrated a CD20 positive diffuse large B-cell lymphoma. Treatment was initiated with cyclophosphamide, hydroxydaunorubicin, vincristine, prednisone and rituximab.

**IMPLICATIONS/DISCUSSION:** Superior vena cava syndrome (SVCS) occurs when there is obstruction of blood flow through the superior vena cava. Facial edema is the most common symptom of SVCS occurring in 82% of cases, however unilateral arm swelling is also seen in up to 54% of cases. Other symptoms of SVCS include dyspnea, chest pain, headaches, and dysphagia which may gradually progress over several weeks, but improve with formation of venous collaterals. Malignancy, primarily lung cancer and non-Hodgkin’s lymphoma, is responsible for 60 to 85% of SVCS cases, whereas nonmalignant conditions, such as fibrosing mediastinitis and catheter related thrombosis, result in 15 to 40% of cases of SVCS. In stable patients, without stridor, initial management of malignancy related SVCS should be postponed until a histologic diagnosis is made and chemotherapy is the preferred treatment. SVCS rarely requires emergent therapy and treatment is guided by clinical symptoms. Emergent endovascular stenting is indicated in patients with stridor secondary to airway obstruction, coma from cerebral edema, or significant hemodynamic instability. Radiation therapy may also be used to emergently minimize airway obstruction, however may obscure the histologic diagnosis.

**LEIMYOSARCOMA ARISING FROM THE EXTERNAL ILIAC ARTERY**

Nael Gharbi 1; Shazel Gharbi 2; Geetha Selvakumar3. 1Saint Francis Hospital, Chicago, Illinois; 2Saint Francis Hospital, Chicago, Illinois; 3Saint Francis Hospital, Evanston, Illinois. (Tracking ID # 10836)

**LEARNING OBJECTIVES:**

1. Although leiomyosarcoma of the central veins and pulmonary arteries have been widely reported, similar tumors of the aorta are much less common, and those arising from the peripheral arterial system are extremely rare. 2. I didn’t find a single case arising from the external iliac artery

**CASE INFORMATION:**

86 year old female presented to the clinic with one month history of left leg swelling. It was not associated with pain, fever, or redness. She denied shortness of breath, abdominal pain, or swelling of the other leg. She denied loss of appetite or weight loss. Her past medical history was consistent with hypertension for which she took amldipine and irbesartan. On physical examination, her vital signs were normal. Cardiopulmonary exam was unremarkable. On abdominal exam, there was no tenderness, distension, organomegaly, mass, or ascites. She had pitting edema in the left lower extremity up to the knee. Laboratory studies were unremarkable. Venous Doppler was negative. Contrast-enhanced CT abdomen and pelvis showed a soft tissue mass measuring 6.3x4.4 cm in left anterior hemipelvis, just above the inguinal region, affecting adjacent iliofemoral vessels. She was admitted to the hospital. Ultrasound-guided biopsy was done which showed moderately differentiated leiomyosarcoma. Patient underwent laparotomy, it was described as soft and fleshy mass, fixed towards the psoas, with blood supply coming deeply from the obturator artery. And the external iliac artery went directly into this mass. The tumor was resected, vascular reconstruction was performed, and postoperative radiation therapy was administered. Pathology: Leiomyosarcoma arising from External Iliac Artery

**IMPLICATIONS/DISCUSSION:** Sarcomas are rare malignant tumors that arise from mesenchymal tissue at any body site. Approximately 13230 cases are diagnosed annually in the United States. The annual incidence is 30 per million. Although leiomyosarcoma of the central veins and pulmonary arteries have been widely reported, similar tumors of the aorta are much less common, and those arising from the peripheral arterial system are extremely rare. Approximately 80 percent of the neoplasms that arise within the retroperitoneal space are malignant. Furthermore, the majority of patients who present with a primary retroperitoneal, extravascular, unifocal soft tissue mass will be found to have a sarcoma. Leiomyosarcomas of the retroperitoneum generally arise from the inferior vena cava, its branches, or any small vessel. They often present as a mass and, occasionally, with unilateral or bilateral leg swelling, and they are usually of a large size when diagnosed. A study was published in the world journal of surgical oncology on Nov 22, 2010: leiomyosarcoma accounts for 0.7% of all malignant soft tissue tumors treated at Operative Reference Center for soft tissue sarcoma, BG University Hospital Bergmannsheil, Ruhr University Bochum, Germany, from 2000 to 2009 they had just 12 cases of vascular leiomyosarcoma.

**LEIMYOSARCOMA ARISING FROM THE EXTERNAL ILIAC ARTERY**

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**LEARNING OBJECTIVES:**

1. Unusual presentation of acute blastomycosis which developed during hospitalization with minimal clinical symptoms and rapidly progressive multiple lung masses, mediastinal lymphadenopathy and pleural effusion which are rare in acute blastomycosis. 2. This is a very rare case of acute blastomycosis which presented in chronic blastomycosis radiologic features.

**CASE INFORMATION:** A 70 year old male was admitted to the hospital for high creatinine and worsening anemia which showed on work up for worsening fatigue. The patient denied cough, shortness of breath, chest pain, fever, chills, abdominal pain and weight loss. He had past medical history of carcinoid tumor in the small intestine which causing chronic diarrhea, hypertension, chronic kidney disease, mitral valve repair. Physical examination on admission day. Patient was pale, no jaundice or distended jugular venule. Cardiovascular, rhythm and rate were regular, S1, S2 normal with mild systolic murmur. Lungs were clear. The remainder of physical exam was unremarkable, Laboratory studies were remarkable of creatinine of 9.21 mg/dl (baseline Cr: 2-3, hemoglobin 10.2, chloride 120, bicarbonate 9, BUN 127. CXR on admission revealed heart silhouette was enlarged with no evidence for any infiltrates. The patient was started on dialysis. On day nine of hospitalization, he developed productive cough of yellowish sputum. CXR showed infiltrates in the left lower lobe. Empirical antibiotics were begun. On day fifteen, he had a low-grade temperature of 100.1 with persisting productive cough in spite of the antibiotics. Blood, sputum, stool cultures for several times were negative. Three days later, CXR showed a large mass at the right lung base and another at the right hilum. CT of chest showed multiple pulmonary masses throughout the right lung with mass-like opacities also seen in the left lower lobe with mediastinal and bilateral hilar adenopathy and left pleural effusion. CT-guided biopsy from the right lung mass showed granulomatous inflammation. Pathology report showed few granulomas show central necrosis/suppurative inflammation. Within the granulomas and and within some giant cells yeast organisms are identified with few
budding forms. PAS, GMS and Auramine-Rhodamine stains were performed, and the results were consistent with blastomycosis. Itraconazol was started.

**IMPLICATIONS/DISCUSSION:** Blastomycosis is a systemic pyogranulomatous infection, primarily involving the lungs, that arises after inhalation of the conidia of Blastomyces dermatitidis. Pulmonary blastomycosis varies from an asymptomatic infection to acute or chronic pneumonia. In Acute blastomycosis symptoms develop tow to four weeks after exposure. Chest radiographs usually reveal patchy alveolar infiltrates or lobar consolidation. Pleural effusions and mediastinal or hilar adenopathy are rare. Chronic pulmonary blastomycosis may develop after acute infection. Patients often have symptoms lasting 2–6 months.

**LEARNING OBJECTIVES:** 1. Breast sarcomas are primary nonneoplastic malignancies arising from connective tissue within the breast. They can arise de novo or secondary to radiation therapy or lymphedema. Primary breast sarcomas are rare histologically heterogeneous tumors. 2. They account for less than 1% of all breast malignancies. Myxoid liposarcoma of the breast is a very rare subtype of breast liposarcoma. This is a case of breast myxoid liposarcoma with an unusually large size, thus posing therapeutic challenges.

**CASE INFORMATION:** A 60 year old female incidentally noted a breast lump. She sought no medical attention for about six months and finally presented to the clinic with an enlarging breast mass. Physical exam showed large fixed lobulated left breast mass, about 17×17 cm in size with significant stretching of skin along with nipple areolar complex inferior displacement, peripheral vein enlargements with lateral skin breakdown and hyperemia. Chest CT scan was significant for a 17 cm enhancing soft tissue mass in the left breast likely involving the underlying chest wall and possibly the adjacent pleura along with complex inferior displacement, peripheral vein enlargements with lateral skin breakdown and hyperemia. Needle biopsy of breast mass revealed it to be myxoid liposarcoma. Given the huge size of the tumor, decision was made to do neoadjuvant therapy with Adriamycin and radiation and was scheduled for surgery. However, she declined surgery and was treated with Itraconazol. Neoadjuvant chemotherapy and radiation prior to surgical tumor removal. She completed neoadjuvant therapy with Adriamycin and radiation and was scheduled for surgery. However, she declined clinically and hence family decided to enroll her into hospice.

**IMPLICATIONS/DISCUSSION:** Vast majority of primary breast sarcomas are seen in women and the average age is 45–50 years old. Liposarcoma of the breast represents 3–24% of the primary breast sarcomas, prognosis is highly dependent upon histologic grade and tumor size, and surgery represents the only potentially curative modality. To the best of our knowledge only 1 breast myxoid liposarcoma case has been reported before this one. Our case is unique in both its size, being one of the largest ones reported so far and its histologic features.

**HOLD THE PREDNISONE: IMMUNOGLOBULIN A (IgA)-DOMINANT GLOMERULONEPHRITIS FOLLOWING STAPHYLOCOCCUS AUREUS INFECTION**

Melissa Y. Wei 1; Jose E. Navarrete 1; Emory University School of Medicine, Atlanta, Georgia. *(Tracking ID # 10843)*

**LEARNING OBJECTIVES:** 1. Recognize immunoglobulin A (IgA)-dominant glomerulonephritis following *Staphylococcus aureus* infection as a novel form of glomerulonephritis distinct from primary IgA nephropathy and non-IgA-dominant post-infectious glomerulonephritis. 2. Distinguish treatment and management differences in immunoglobulin A (IgA)-dominant post-infectious glomerulonephritis compared with primary IgA nephropathy.

**CASE INFORMATION:** A 49-year-old man with chronic low back pain status post L5-S1 fusion in 2006 presents with left lower extremity pain and weakness and is diagnosed with pseudoarthrosis. MRI of the spine shows transforaminal lumbar interbody fusion at L5-S1 with residual left neuroforaminal stenosis and disc herniations at L2-L4. His lumbar spine is fused with new hardware implanted. Three weeks post-operatively he develops purulent drainage from the surgical site, and surgical debridement confirms a deep wound abscess with methicillin-sensitive *Staphylococcus aureus* (S. aureus) cultures. The patient's lumbar hardware is retained, and he is initiated on nafcillin. During the initial three weeks of nafcillin treatment his creatinine increases from baseline 0.9 mg/dl to 1.0 mg/dl. However, after an additional two weeks of nafcillin he is admitted with nausea and anorexia and found to have creatinine elevated to 6 mg/dl and 10 mg/dl two days later with metabolic acidosis. Urine is dilute with 2.6 grams of protein, 12 WBC/hpf, no eosinophils, and no casts reported. Renal ultrasound does not show hydronephrosis or ureteral obstruction. Nafcillin is discontinued and linezolid initiated but renal function continues to deteriorate with creatinine to peak of 15 mg/dl. Hemodialysis is initiated with symptomatic alleviation of nausea, but renal failure persists for two weeks. Whether corticosteroids should be initiated is broached. Renal biopsy reveals acute tubular injury and necrosis, interstitial fibrosis and tubular atrophy, and focal global glomerulosclerosis (5% of glomeruli) with significant immunoglobulin A (IgA) deposits. The patient is diagnosed with acute IgA-dominant post-infectious glomerulonephritis. Corticosteroids are not initiated. His renal function gradually improves, and he is discontinued from hemodialysis with a creatinine of 5 mg/dl, proteinuria and peripheral edema. Two months later his creatinine improves to 1.4 mg/dl, and his proteinuria and edema have resolved.

**IMPLICATIONS/DISCUSSION:** Worldwide, immunoglobulin A (IgA) nephropathy is the most common form of glomerulonephritis (GN) and a major cause of end-stage renal disease. IgA nephropathy is induced by immune complex deposits containing IgA1 and other antigens in the glomeruli. Potential antigens responsible for IgA nephropathy include bacteria, viruses and food antigens. The post-infectious GN highlighted in this case is uniquely characterized by IgA-dominant glomerular deposits. IgA-dominant post-infectious GN following *S. aureus* infection is a novel form of GN induced by the *S. aureus* cell envelope antigen that co-localizes with IgA antibody in glomeruli (Koyama 2004). It is distinct from post-infectious GN associated with glomerular immune complex deposits containing complement, IgG and IgM. IgA deposits on renal biopsy resemble primary (idiopathic) IgA nephropathy and may be misdiagnosed as primary IgA nephropathy. However, in IgA-dominant post-infectious GN acute kidney injury resolves without corticosteroids or immunosuppressants. IgA-dominant GN following *S. aureus* infection was initially described by Koyama (1993). Ten patients with methicillin-resistant *S. aureus* (MRSA) infections developed acute GN with significant IgA deposits on renal biopsy. At diagnosis creatinine ranged 1–12 mg/dl, proteinuria ranged 1–5 g/day, and most patients had microscopic hematuria. Four patients developed severe renal failure, and three patients remained on hemodialysis by end of follow-up. More recently *S. aureus* mesangial or intracapillary proliferative GN with IgA-dominant glomerular immune complex deposits has been linked to methicillin-sensitive *S. aureus* (MSSA), MRSA and methicillin-resistant *S. epidermidis* infections (Satoskar 2006). Post-infectious GN...
A RARE CAUSE OF JAUNDICE: WHAT HAPPENED TO THE DUCTS?
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LEARNING OBJECTIVES: 1. To appreciate Vanishing Duct Syndrome (VDS) as a rare cause of cholestasis. 2. To understand the clinical characteristics, pathogenesis and management of Vanishing Duct Syndrome.

CASE INFORMATION: A 40 year-old male with no significant past medical history presented with 6 weeks of fatigue and lethargy. He reported a 20 pound weight loss, night sweats and low grade fevers. He complained of decreased appetite, but denied abdominal pain, nausea, vomiting or diarrhea. He had also noticed yellow discoloration of his eyes and skin. On systemic review, he denied any other significant complaints.

On physical exam he was ill-appearing with a temp of 100.5°F P: 68, BP: 127/82 and an oxygen saturation of 100% on room air. He was icteric and cervical lymph nodes were matted, fixed and enlarged (maximum size: 3.5 cm ×3 cm). Chest was clear to auscultation. S1 and S2 were audible with no murmur or gallops. Abdomen was soft, non-tender, with no hepatosplenomegaly.

Complete blood count and electrolytes were within normal limits. LFTs were elevated (ALT: 351, AST: 132, Alkaline Phosphatase: 698, Total Bilirubin: 4.2, Direct Bilirubin: 2.5, gGTP: 559). Haptoglobin and LDH were within defined limits. Excisional biopsy of a cervical lymph node was positive for Hodgkin’s Lymphoma. A PET scan was done that showed increased FDG uptake in the spleen and lymph nodes on the both sides of the diaphragm. Bone marrow biopsy showed no abnormalities. Thus, a diagnosis of stage III lymphoma was made. However the etiology of the elevated LFTs remained unclear. Hepatitis profile, AMA and ASMA were all negative. PET CT done for tumor staging showed no liver involvement. Ultimately, a liver biopsy was done that revealed “Ductopenia” consistent with a diagnosis of Vanishing Duct Syndrome.

The patient was started on Adriamycin, Bleomycin, Vinblastine and Dacarbazine, which resulted in normalization of his LFTs. He was positive for Hodgkin Lymphoma. A PET scan was done that showed CAD 10847

NEUROCYSTICERCOSIS Natalie Zelta 1; Manuela Calvo 2. 1Albert Einstein Montefiore Medical Center, New York, New York ; 2Albert Einstein Montefiore Medical Center, Bronx, New York. (Tracking ID # 10847)

LEARNING OBJECTIVES: 1. Identify neurocysticercosis as a possible cause of central nervous system infections in patients coming from endemic areas. 2. Recognize the various clinical presentations of neurocysticercosis and the way it can mimic other neurological conditions.

CASE INFORMATION: A forty year-old male worker from Mexico presented with episodic and progressively worsening lower back pain and headaches. Five months prior to admission, the patient injured his back and received a number of steroid injections to the lumbar region. The back pain worsened over the last two weeks prior to admission to involve associated symptoms of radiation down his lower extremities, severe band-like headaches, nausea, vomiting, fevers, chills, and photophobia. The day prior to admission, he became confused and could not recognize his family. On admission, the patient was alert and oriented only to name, appeared extremely tremulous, had nuchal rigidity, positive Kerning and Brudzinski sign, tenderness to palpation along the lumbar spinal processes, and lower extremity weakness with motor strength of 4/5 bilaterally. Laboratory data were only significant for a leukocytosis of 17 k/uL. Computed tomography-guided lumbar puncture was attempted twice, however, cerebrospinal fluid was unattainable. Magnetic resonance imaging of the lumbar spine revealed multiple cystic lesions with peripheral enhancement that appeared intradural. The patient was empirically treated for bacterial and viral meningitis and bacterial abscesses with broad-spectrum antibiotics; however, on the two subsequent days of hospitalization, the patient became delirious with urinary retention, worsening neurological function with a broad-based gait. MRI of the brain and entire spine attained on day two revealed cysts too numerous to quantify extending from the thoracic to lumbar regions and communicating hydrocephalus; the brain was unremarkable. A cisterna magna puncture was performed to attain cerebrospinal fluid that revealed pleocytosis with a white blood cell count of 168, 0% polymorphonuclear cells, 95% lymphocytes, and 5% monocytes; slightly elevated protein of 63 mg/dL, and a Western blot positive for Cysticercosis. Treatment with Albendazole and high-dose steroids was initiated.

IMPLICATIONS/DISCUSSION: Back pain and headaches are problems commonly encountered in the inpatient and outpatient settings. At first presentation, analgesics and physical therapy are often tried and imaging only attained when risk factors or alarm symptoms are involved; such as trauma, persistent or progressive symptoms, signs of underlying malignancy or infection, or an abnormal neurological exam. In this case, the patient was refractory to analgesics and had...
associated neurological abnormalities, suggesting an underlying neurological process. Imaging revealed cystic lesions throughout the spinal canal and included a differential diagnosis of microabscesses, tuberculous meningitis, toxoplasmosis, mycosis, neurocysticercosis, and drop metastasis.

Neurocysticercosis is the most common and serious parasitic infection of the central nervous system. It occurs during an infection by the larval stage of Taenia solium when ova are ingested. Ova develop into larvae, penetrate the intestinal wall and disseminate through the body via the hematomat spread to encyst in tissue. T. solium preferentially invade the brain, appearing as parenchymal cysts on CT or MRI, and rarely as isolated spinal neurocysticercosis. Seizures are the presenting finding in over 70% of cases; in fact, neurocysticercosis is the most common cause of acquired epilepsy worldwide. Hydrocephalus and increased intracranial pressure, which develop in approximately 25% of cases, may manifest as nausea, vomiting and papilledema. However, the infection can manifest as any cognitive or neurological abnormality ranging from psychosis to stroke. In rare occasions, like in this case, it can present with meningeal signs. Clinical suspicion should be based upon travel history, history of contact with an individual who might carry the tapeworm, or history of residence in an endemic area of Latin America, Southeast Asia, and India. It is in these areas that the incidence of neurocysticercosis is up to 4% of the population.

NEUROLOGICAL MANIFESTATIONS AS THE INITIAL PRESENTATION OF LUNG CANCER: PARANEOPLASTIC NEUROLOGICAL SYNDROME

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LEARNING OBJECTIVES: 1. To recognize the importance of investigation for occult malignancy in case of unusual neurological symptoms, we present a patient initially presenting with peripheral neuropathy who was later diagnosed to have small cell carcinoma of lung. 2. Paraneoplastic syndromes are a group of clinical disorders that are associated with malignant diseases and are manifested in sites distant from the primary or metastatic tumors.

CASE INFORMATION: A 77-year-old male presented with gradual worsening of numbness and weakness in bilateral lower extremities associated with tingling of his hands. His past medical history was significant for diabetes mellitus, coronary artery disease and hypertension. Neurological examination revealed diminished power, absence of reflexes and decreased sensation in bilateral lower extremities. Rest of the physical examination was normal. Basic laboratory investigations were normal except low sodium of 128 mmol/L. Vitamin B12, methylmalonic acid, thyroid function tests, BPR, IgA and IgM levels were normal. IgG level was elevated with a value of 3313 mg/dL (700-1600). CSF examination was normal except elevated protein. Electrodiagnostic studies revealed peripheral neuropathy in lower extremities. MRI of spine showed no abnormalities. He was given IV immunoglobulin for presumed variant of Guillain-Barre syndrome with no improvement. Further investigations revealed syndrome of inappropriate antidiuretic hormone secretion as the cause for hyponatremia. The combination of neurological and endocrine symptoms lead to the suspicion of neuroendocrine tumor and work-up for malignancy was undertaken. Anti-neuronal antibodies were negative. CT scan of the chest demonstrated a small mediastinal mass and further biopsy revealed small cell lung cancer. Subsequent PET scan demonstrated no evidence of metastases. Patient’s neurological symptoms have improved within a week of initiation of chemotherapy for small cell carcinoma of the lung.

WHAT LIES BENEATH (LOWER GASTROINTESTINAL BLEEDING IN A YOUNG FEMALE)

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LEARNING OBJECTIVES: 1. Recognize lower gastrointestinal bleeding as a possible manifestation of acute retroviral syndrome 2. Diagnose acute retroviral syndrome recognizing the specific utilities of different tests used to identify HIV infection in the early phase

CASE INFORMATION: A 38 year-old nurse’s aide presented with malaise, feverishness, chills, vomiting and right lower quadrant abdominal pain for 6 days and 3 episodes of bright red blood per rectum in 2 days. She also had history of headache and blurry vision for several months. She was sexually active with only one partner of opposite sex, but admitted to having unprotected anal intercourse. Physical exam revealed normal temperature and stable hemodynamic parameters. Exam showed mildly tender right lower quadrant and absence of lymphadenopathy or rash. Stool was positive for occult blood. Her initial lab tests showed mild anemia, leucopenia and thrombocytopenia (Hemoglobin 10.8 g/dL, WBC 3.6 CMM, Platelets 106 CMM). Vaginal swab was positive for Trichomonas, Gardnerella and Candida but negative for Neisseria gonorrhoea. Colonoscopy revealed scattered irregular ulcers in the cecum and ascending colon and abnormal thickening of rectal mucosa. Biopsy showed ischemic colitis of unclear etiology. HIV-1 and HIV-2 antibodies were negative on ELISA tests. In the meantime, because of a strong suspicion for acute retroviral syndrome, she was further tested with HIV viral load, which was found to be 68,000 copies/ml. p24 antigen was negative. The patient was initially treated with supportive management alone but was started on antiretroviral therapy after diagnosis of primary HIV infection was made. Follow up evaluation in 2 months revealed complete resolution of symptoms of bleeding per rectum and an undetectable viral load.

IMPLICATIONS/DISCUSSION: Acute retroviral syndrome commonly presents with fever, malaise, sore throat, lymphadenopathy rash, or unexplained cytopenias. Up to 20% of patients later diagnosed with HIV have acute retroviral syndrome as their initial presentation. If the
standard ELISA antibody assay is negative and suspicion for acute HIV infection is high, a p24 enzyme immunoassay or a plasma HIV RNA level should be obtained to assess for acute HIV infection. p24 antigen is present for a short period only in the early phase of HIV infection. HIV RNA level is more sensitive and specific, and detects HIV infection 12 days earlier than the standard HIV ELISA and 6 days earlier than the p24 antigen test.

To the best of our knowledge, this is the first reported case of bleeding from ischemic colitis associated with primary HIV infection. No alternative etiology could be identified for the lower gastrointestinal bleeding symptoms which resolved with initiation of antiretroviral therapy.

There is evidence suggesting that early treatment with HAART can preserve HIV-specific immune responses, raise CD4+ counts, decrease the incidence of opportunistic infections, and reduce transmission, although effect on mortality has not been established.
LEARNING OBJECTIVES: 1. To recognize the clinical signs and symptoms of an insidious pulmonary infection with Mycobacterium avium complex. 2. To recognize the diagnostic criteria and management of nontuberculous mycobacterium infections

CASE INFORMATION: A 75 year-old Japanese woman with a past history of diabetes mellitus and mitral regurgitation presented with 1 day of diffuse chest tightness and two episodes of vomiting. She additionally complained of significant malaise and appetite loss that day. She denied any fever or cough and had no history of smoking. She previously worked as a teacher and kept a pet parakeet at home. On physical examination she was noted to be afebrile but with an O2 saturation of 86% on room air and bilateral rhonchi in the lower lobes. Laboratory examination including a CBC was normal. A chest x-ray appeared normal however a CT of the chest revealed a diffuse infiltration with occasional bronchiectasis in the right middle and lower lobes. An atypical pneumonia was suspected especially given the bird exposure so she was started on ceftriaxone and azithromycin. She continued to have low oxygen saturation and loss of appetite so antibiotics were switched to minocycline with improvement. A urine Streptococcus pneumoniae antigen and urine Legionella antigen were both negative. A sputum culture was obtained and was negative for Mycoplasma pneumoniae, Chlamydia pneumoniae, and Chlamyphilia psittaci. The initial sputum culture then became positive for Mycobacterium avium complex (MAC) 3 weeks later. By then the patient had been discharged so repeat sputum cultures were obtained on follow-up and also became positive for MAC. The patient now awaits evaluation for an appropriate antibiotic course.

IMPLICATIONS/DISCUSSION: Mycobacterium avium complex (MAC) is an intracellular organism that is known to cause insidious pulmonary infections. Typically it is seen in immunocompromised patients, but immunocompetent patients can be affected. Lady Windermere Syndrome describes a nodular/bronchiectatic type of MAC infiltration in the middle lobe. It occurs in postmenopausal women with no underlying lung disease or smoking history. These patients may be tall with skeletal abnormalities such as scoliosis and pectus excavatum, and mitral valve prolapse. Named for Oscar Wilde’s Lady Windemere’s Fan, it was thought that women with voluntarily cough suppression were at risk of infection; a behavior that was typical during the Victorian era. While our patient was not tall nor did she have any skeletal problems, she had other characteristics consistent with Lady Windermere Syndrome. Cough suppression may have made her susceptible to infection as coughing in public is an impolite gesture in Japanese culture. Diagnosis of nontuberculous mycobacterial lung infection requires nodular opacities on chest x-ray or nodules and bronchiectasis on chest CT. Additionally, the patient must have positive results from at least two separate sputum samples or from one bronchial lavage. Patients who do not meet full diagnostic criteria should be followed until the diagnosis can be established. Thus follow-up and repeat sputum cultures were important in making the diagnosis of a MAC infection in our patient. The foundation of MAC therapy involves the use of a macrolide. Ethambutol and/or rifampin are also used to prevent resistance to monotherapy with a macrolide. Tetracyclines have shown in vitro activity against mycobacterium but are not first-line treatment. This may have been why our patient initially responded to minocycline however complete treatment will require a 2-3 drug regimen. Therapy should continue for a minimum of one year from the last negative culture with monthly sputum cultures as follow-up.
and eosinophilia. A strong clinical suspicion of eosinophilic myocarditis, as in our patient, reinforces the need to perform endomyocardial biopsy early in the disease course as well as to potentially start immunosuppression while waiting for the results of biopsy. Some trials suggest that immunosuppression should not be prescribed for routine treatment of myocarditis. However myocarditis due to autoimmune diseases and eosinophilic myocarditis are responsive to immunosuppressive therapy. Corticosteroids are particularly indicated in myocarditis associated with CSS. In our patient, endomyocardial biopsy allowed for the diagnosis of Churg-Strauss Syndrome by full ACR diagnostic criteria as well as supported the appropriate use of high-dose corticosteroid therapy.

A GOUT ATTACK CAUSING A HEART FAILURE EXACERBATION

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LEARNING OBJECTIVES: 1. Recognize the impact of systemic inflammation on heart failure pathophysiology 2. Review diuretic management in a medically complicated patient

CASE INFORMATION: A 60 year old female with biventricular heart failure presents with 3 days of worsening swelling, early satiety, orthopnea, and dyspnea. She also reports pain, warmth, and swelling over her left wrist. Her past medical history is significant for systolic dysfunction with EF of 35%, sleep apnea, hypertension, diabetes, gout, and stage III CKD with baseline Cr 1.3 mg/dL. On exam, her BP was elevated at 152/72 mmHg. Lungs had scattered basilar crackles, JVD noted at ear lobe, and extremities were grossly edematous. Additionally, her left wrist was tender to palpation, erythematous, and swollen. Laboratories showed BUN of 42 mg/dL, Cr of 1.57 mg/dL, and BNP of 579 pg/mL. She was diagnosed with decompensated heart failure complicated by a acute gout attack. Initial treatment included afterload reduction, diuresis, and prednisone for gout. Unfortunately, her urine output did not increase, her fluid balance was only mildly net negative, and she continued to complain of wrist pain. At this point, diuresis was held while steroids were continued for gout. After treating her gout, diuresis was resumed two days later with a significant improvement in both creatinine and urine output. The clinical course is summarized below:

| Day 1 | Day 2 | Day 3 | Day 4 | Day 5 |
|-------|-------|-------|-------|-------|
| Intake | 1,263 | 1,968 | 1,712 | 1,700 | 2,494 |
| Output | 1,650 | 2,109 | 2,370 | 5,200 | 6,200 |
| Balance | -387 | -141 | -658 | -3500 | -3706 |
| Cr | 1.85 | 2.21 | 1.59 | 1.42 | 1.26 |

mg/dL

*Diuressis held on day 2; restarted Day 4

IMPLICATIONS/DISCUSSION: Heart failure admissions have increased annually since 2000, costing the US healthcare system $32.2 billion in 2010. Efficient and effective treatment of heart failure is a necessity. Typical treatment includes diuretics as a therapeutic mainstay for volume and fluid management. However, diuresis is often complicated by other medical conditions frequently accompanying heart failure.

Heart failure leads to chronic renal hyperperfusion, neurohormonal activation of the Renin-Angiotension-Aldostrone system, and inappropriate renal vasoconstriction causing a “pre-renal azotemia” clinical picture. An acute gout attack releases inflammatory cytokines which further worsen renal vasoconstriction, and sodium and water retention in heart failure patients. This case illustrates the important interplay between these two conditions. While aggressive diuresis can often prompt a gout flare, the inflammatory milieu that occurs with gout can also complicate heart failure. If severe enough, the inflammatory cytokine effect from gout can paradoxically trigger an exacerbation of heart failure instead.

In this case, treating the gout flare and calming the acute inflammatory response with corticosteroids was an essential and necessary step towards increasing renal perfusion and thereby maximizing the diuretic effect. This effect was manifested by a 3-fold increase in diuresis as well as improved GFR.

In conclusion, this case highlights the complex physiology of heart failure and illustrates the impact of systemic inflammation on heart failure treatment. Hospitalists must understand the intricacies of heart failure and its interplay with other diseases such as gout to effectively treat these patients.

ABDOMINAL PAIN AS A NEUROLOGICAL EMERGENCY:

UNEXPLAINED ABDOMINAL PAIN IS A HERALD OF SUBARACHNOID HEMORRHAGE

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LEARNING OBJECTIVES: 1. Recognize the association between abdominal pain and neurological emergency and the probable pathophysiological basis of this relationship. 2. Expedite the diagnosis of subarachnoid hemorrhage based on the recognition of atypical, severe abdominal pain as a presenting sign of paralytic ileus.

CASE INFORMATION: A 56-year-old Asian woman presented to the hospital with severe acute epigastric and right abdominal pain of 3 hours duration, awakening her suddenly from sleep. She had a history of mild hypertension not requiring treatment and a 4-hour episode of transient amnesia two years prior with negative CT brain imaging at that time. Prior to admission, no headache, neck pain or stiffness, vomiting, or visual changes were reported. Abdominal exam revealed normal bowel sounds and no rebound or guarding, despite diffuse tenderness to palpation. Other physical exams, including neurologic, were unremarkable. Labs revealed only mild increase in amylase; electrolytes, complete blood count, and liver function tests were normal. Abdominal CT imaging showed right-sided constipation and mild ileus without acute pathology. The patient was admitted for pain control, assistance with stool evacuation, and monitoring for evolving abdominal pathology. On the morning of the 2nd hospital day, the patient continued to have exquisite abdominal pain without peritoneal signs, accompanied by gradual onset of a subacute headache and bilious emesis after taking lactulose. Shortly thereafter, the patient was noted to have sudden seizure-like activity and loss of consciousness; massive subarachnoid hemorrhage (SAH) was found on emergent brain imaging, revealed on subsequent pathology to be due to rupture of a saccular aneurysm with accompanying bilateral vertebral artery dissection (VAD). No abdominal pathology was identified except for markedly desiccated proximal stool impaction in the ileocecal area which appeared to be chronic in nature. Macro- and micropathological examination, including for evidence of ischemia, vasculitis, and porphyria, was otherwise unrevealing.

IMPLICATIONS/DISCUSSION: Subacute aneurysmal rupture with VAD leading to SAH continues to be a difficult diagnosis for physicians in the absence of typical symptoms. The clinical presentation of unexplained abdominal pain prior to neurological manifestations of SAH has not been previously reported. In this patient, slow or repeat intracranial hemorrhages is suspected to have resulted in progressive ileus, possibly over several weeks, causing abdominal pain as the first manifestation of catastrophic SAH. Recent animal models suggest that intracranial hemorrhage can induce neuronal death at dorsal root ganglia, and may cause ileus in a mechanism similar to that frequently observed in spinal nerve injury. Severe abdominal pain, initially without
accompanying neurological symptoms, is an unusual presentation of VAD/SAH, a relatively uncommon but serious condition. Despite lack of typical neurological manifestations, unexplained abdominal pain should be considered a possible herald of impending neurologic catastrophe. All general physicians should consider VAD/SAH, often resulting in adverse outcomes if missed, in young patients with atypical abdominal pain and mild ileus.

OVERZEALOUS DIURESIS MAY PRECIPITATE HYPERAMMONEMIC ENCEPHALOPATHY IN PATIENT WITH HISTORY OF GASTRIC BYPASS Vinod Khatri 1 ; Krishna Khatri 2 ; Michele Gentile 3 ; Kalyan Nadiminti 3 ; Sangmesh Jabshetty 7 ; Lakshmikant Pathak 7 ; Harvey Friedman2. 1St Francis hospital, Evanston, Illinois ; 2St Francis Hospital, Evanston, Illinois ; 3St. Francis Hospital, Evanston, Illinois.

IMPLICATIONS/DISCUSSION: With the epidemic of obesity & ever-increasing number of patients with history of gastric bypass done in the past, many long term neurological complications of these procedures including optic neuropathy, myelopathy, polyradiculopathy, encephalopathy, behavioral changes & seizures are seen in clinical practice. These neurological complications can manifest many years after the surgery & can be fatal. Literature review mostly attributes these complications to multiple biochemical & nutritional deficiencies that occur after a gastric bypass. Hyperammonemic encephalopathy is one of such complications, but little is known about its exact mechanism & precipitating factors. It has been postulated that some patients could be carriers of a genetic defect of urea cycle, whose subclinical disease can be unmasked after bariatric surgery in presence of metabolic abnormalities. Gastric bypass also results in hyperinsulinemia & insulin can itself down regulate urea cycle enzymes, which can impede with handling of ammonia. In our case the metabolic alkalosis (contraction alkalosis) induced by overzealous diuresis might have precipitated the hyperammonememic encephalopathy by conversion of charged ammonium ions (NH4+) into ammonia (NH3) which can easily penetrate blood brain barrier. This case highlights the importance of being aware of this potential complication of over-diuresis in patients with history of gastric bypass.

OVERZEALOUS DIURESIS MAY PRECIPITATE HYPERAMMONEMIC ENCEPHALOPATHY IN PATIENT WITH HISTORY OF GASTRIC BYPASS Vinod Khatri 1 ; Krishna Khatri 2 ; Michele Gentile 3 ; Kalyan Nadiminti 3 ; Sangmesh Jabshetty 7 ; Lakshmikant Pathak 7 ; Harvey Friedman2. 1St Francis hospital, Evanston, Illinois ; 2St Francis Hospital, Evanston, Illinois ; 3St. Francis Hospital, Evanston, Illinois.

LEARNING OBJECTIVES: 1. To recognize the clinical differences of anorexia in male patients. 2. To recognize those at risk for refeeding syndrome.

APPEARANCES CAN BE DECEIVING: A CASE OF MALE ANOREXIA Lauren Michelle Maragh 1 ; Susana Morales 1 . 1New York Presbyterian Hospital Weill Cornell Medical Center, New York, New York. (Tracking ID # 10947)

LEARNING OBJECTIVES: 1. To recognize the clinical differences of anorexia in male patients. 2. To recognize those at risk for refeeding syndrome.
carbohydrates are reintroduced into the diet this stimulates an increase in insulin. Insulin secretion results in intracellular shifts in phosphate, magnesium, potassium and expansion of the extracellular fluid compartment. The resultant hypokalemia and hypophosphatemia can lead to paralysis, arrhythmias, changes in myocardial contraction and respiratory failure. Feeding should start at 20kCal/kg/day or about half the estimated caloric intake with 1.0 to 1.5 g/kg/day of protein with careful correction of electrolyte abnormalities. A low sodium and fluid restricted diet may also help prevent fluid overload. By monitoring weight, heart rate and electrolytes a feeding program can be adequately tailored to avoid complications.

SIMULTANEOUS NEW DIAGNOSES OF HIV INFECTION AND METASTATIC GASTRIC ADENOCARCINOMA  Amy DeGueme 1; Andrew Lawton 1; Amanda Reiswig 1; Theodore MacKinney 3. 1Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 10960)

LEARNING OBJECTIVES: 1. Recognize the potential for development of aggressive gastrointestinal non-AIDS defining malignancies in HIV positive individuals 2. Identify possible mechanisms, specific to HIV disease, that can lead to aggressive non-AIDS defining malignancy development

CASE INFORMATION: A 37 year-old male presented with a 1-year history of abdominal pain, vomiting, and a 30-pound weight loss. He denied any chronic medical conditions but did report being sexually active with men. Abdominal CT on admission showed diffuse stomach wall thickening. Esophagogastroduodenoscopy (EGD) and subsequent ultrasound-guided EGD revealed diffusely thickened erythematous gastric folds, and multiple biopsies taken were inadequate for definitive diagnosis but felt to be concerning for malignancy. Pre-surgical PET imaging showed multifocal uptake at the left axilla, scapula, mediastinum and stomach, prompting a left axillary lymph node biopsy which showed inconclusive findings of follicular hyperplasia. Chest, abdomen, and pelvis CT on hospital day 13 showed multifocal lumbar and pelvic lytic bone lesions not seen on previous imaging. CT-guided bone biopsy revealed metastatic adenocarcinoma of unclear primary origin. On hospital day 20, diagnostic laparoscopy showed diffuse peritoneal carcinomatosis and locally advanced stomach carcinoma involving the greater omentum. Omental biopsy revealed poorly differentiated carcinoma of possible upper gastrointestinal origin. Based on the patient’s historic, radiographic, surgical, and pathologic findings, a clinical diagnosis of metastatic gastric adenocarcinoma was made. The patient was concurrently evaluated by the infectious disease service, whose work-up revealed a reactive HIV ELISA, a HIV-1 viral load of 27,248 copies and CD4 count of 289, consistent with a new diagnosis of HIV infection. The patient was offered immediate initiation of inpatient chemotherapy and highly active antiretroviral therapy (HAART), which he chose to start at an outside institution. Despite starting appropriate treatment with one cycle of chemotherapy and HAART, he died approximately 3 months after the diagnosis of metastatic gastric adenocarcinoma with diffuse peritoneal carcinomatosis was made.

IMPLICATIONS/DISCUSSION: Non-AIDS defining malignancies (non-ADMs) are cancers other than Kaposi’s sarcoma, non-Hodgkin’s lymphoma, and invasive cervical carcinoma seen in patients with HIV infection. To our knowledge, gastric cancer has been rarely described among non-ADMs. With only 8 case reports in the HIV literature, the aggressive nature and young age of onset are notable features of this patient’s malignancy which are consistent with the 8 identified case reports of gastric cancer in HIV. Several mechanisms have been proposed to explain the development of aggressive non-ADMs in young patients with HIV infection. Inadequate or altered immune surveillance may place patients with HIV at increased risk of neoplastic growth. Additionally, oncogenic viral coinfections known to be associated with HIV, including Epstein Barr virus, human papilloma virus, and hepatitis B and C viruses, may have additional pro-neoplastic effects that have not yet been documented. Finally, a possible oncogenic property of HIV itself has been proposed. Our case serves to remind clinicians that, while the exact mechanisms are yet unclear, HIV infection may be associated with the development of aggressive gastrointestinal non-ADMs in relatively young patients. Further reports and investigation are needed to determine the specific relationship between HIV infection and development of gastrointestinal non-ADMs, including gastric adenocarcinoma.

“STIRRING THE POTT” : A CASE OF COMPLICATED POTT’S DISEASE. Irem Nasir 1; Irem Nasir 2. 1Greenwich Hospital, Yale New Haven Health, Astoria, New York; 2Greenwich Hospital, Yale New Haven Health, Astoria, New York. (Tracking ID # 10987)

LEARNING OBJECTIVES: 1. To name mycobacterium tuberculosis (Mtb) in the differential diagnosis of vertebral osteomyelitis/discitis in industrialized countries. 2. To recognize psoas abscesses as one component of Complicated Pott’s disease.

CASE INFORMATION: A 23 year old male immigrant with no prior medical history presented after a MVA, with a four month history of increasing nonradiating R flank pain. He had subjective low grade fevers, but no cough, night sweats, or weight loss. He denied any weakness or numbness of his extremities or changes of his bowel or bladder. There was no history of IVDA or risky sexual behavior. He did not recall any history of Mtb. On exam, he was afebrile. His lung exam was normal. He had full motor strength and normal sensation all four extremities. Purulent drainage was noted from his R flank. Labs revealed a WBC of 11.6 (80% PMN) and ESR of 79. CXR was normal. CT scan of the abdomen/pelvis revealed discitis and osteomyelitis at T9-10 and T11-12 associated with an abscess from T7-L1, contiguous with the R psoas muscle. MRI of the thoracolumbar spine showed a T8-10 epidural abscess. Ampicillin-sulbactam was empirically started. CT guided percutaneous I + D of the psoas abscess was performed and cultures were positive for pansensitive S aureus and Coag Neg Staph. They were negative for AFB smear and fungi. Quantifon assay was positive. HIV PCR was negative. All blood and induced sputum cultures were negative for AFB and fungi. The patient underwent epidural abscess evacuation, decompression, and laminectomy. Bone biopsy of the vertebral body was negative. Surgical aspiration of the R psoas muscle showed granulomas and, given the high index of suspicion for tuberculosis, RIPE therapy was empirically started. Ampicillin-sulbactam was discontinued after 4 weeks. The epidural and psoas abscess cultures were positive for pansensitive Mycobacterial tuberculosis strain after 4 weeks. The patient was discharged on 2 months of RIPE with pyridoxine, then 10 months of INH and Rifampin under direct observation therapy. A 2 month follow up MRI showed resolution of both the psoas and epidural abscesses. The ESR decreased to 34.

IMPLICATIONS/DISCUSSION: Spinal infections are serious, affecting the vertebral bodies, intervertebral disks, spinal canal, and the paravertebral soft tissues. A level of awareness is required by clinicians in order to diagnose the infections of the spine promptly. Pott’s disease results from hematogenous spread of Mtb from other sites, often pulmonary, and accounts for about 20% of extrapolumonary Mtb. Although most spinal infections are pyogenic (S aureus, Strept species, E. coli), seen often in immunocompromised patients, a high index of suspicion is needed to promptly diagnose Pott’s disease, especially in immigrants from developing countries, as was the case in our patient.
Fever is more likely to be absent in Pott’s disease and sometimes, the disease can have an indolent course. Complicated Pott’s disease, which results when secondary psoas abscesses form, is rare and is a result of direct contiguous spread from spinal infections. As with our patient, emergent surgery may be necessary for diagnostic purposes as well as prevention of neurologic deficits and spine deformity. Traditionally, a 4 drug RIPE regimen (2 months) followed by INH and Rifampin (10–12 months) are advocated, although shorter 6–9 month regimens have also been effective. There have been only 2 case reports of a psoas abscess caused by both Mtb and S aureus, where the psoas abscess was probably initially caused by Mtb and subsequently became superinfected. Clinicians must maintain a high index of suspicion in patients with flank, back, or thigh pain, even in the absence of constitutional symptoms, to promptly diagnose Complicated Pott’s disease.

THINK BEYOND PATIENT’S ILLNESS: AN EMPATHETIC APPROACH TO DELIVER BAD NEWS Huy Duc Do 1; David Kern 2. 1Johns Hopkins/ Bayview Medical Center, Baltimore, Maryland ; 2Johns Hopkins School of Medicine, Baltimore, Maryland. (Tracking ID # 10988)

LEARNING OBJECTIVES: 1. Deliver bad news empathetically to patients with poor disease prognosis in the presence of physical and socioeconomic barriers. 2. none

CASE INFORMATION: A 58 year old hard of hearing male presented with worsening chronic cough, shortness of breath and right rib pain. Chest CT showed a right lung mass and abdominal nodules. Biopsy of the lung mass revealed primary small cell carcinoma. Mr. Z had no home and no job. His brother had agreed to let him stay at his house. The brother, however, was an alcoholic who abused him. According to Mr. Z’s niece, Mr. Z lived in a poorly kept house and did not have access to nutritious meals. He had been sick for months, but had not gone to a doctor because of the cost. Mr. Z was on the service when I arrived. He did not know his diagnosis nor understand his condition. Because he was hard of hearing, he had not heard the conversation that the previous physician had had with him and his family. The communication problem was recognized when he said “What is happening to me? It seems that everyone knows about my health except me.” It became my role to discuss his health status with him. Although my residency program provided a brief course on delivering bad news, I did not feel prepared to face Mr. Z. I thought of questions and challenges that would occur during the encounter. I wondered how I should respond to Mr. Z’s emotional reactions (will he resist me, become more depressed?). My attending and the palliative care team provided support when I did not know what to say. Recognizing Mr. Z’s hearing deficit, I spoke loudly and distinctly, and checked for comprehension. The situation was very stressful, but the news was delivered with great empathy. The hardest part was telling him that he had only few months to live. By knowing his financial status and home situation, our team was able to present options. Mr. Z and his sister decided on inpatient hospice. We found him a hospice in his house. The brother, however, was an alcoholic who abused him. Mr. Z had no home and no job. His brother had agreed to let him stay at his house. The sister was happy that he would have a home and a place to live. Mr. Z was on the service when I arrived. He did not know his diagnosis nor understand his condition. Because he was hard of hearing, he had not heard the conversation that the previous physician had had with him and his family. The communication problem was recognized when he said “What is happening to me? It seems that everyone knows about my health except me.” It became my role to discuss his health status with him. Although my residency program provided a brief course on delivering bad news, I did not feel prepared to face Mr. Z. I thought of questions and challenges that would occur during the encounter. I wondered how I should respond to Mr. Z’s emotional reactions (will he resist me, become more depressed?). My attending and the palliative care team provided support when I did not know what to say. Recognizing Mr. Z’s hearing deficit, I spoke loudly and distinctly, and checked for comprehension. The situation was very stressful, but the news was delivered with great empathy. The hardest part was telling him that he had only few months to live. By knowing his financial status and home situation, our team was able to present options. Mr. Z and his sister decided on inpatient hospice. We found him a hospice in an area where his sister could visit. Mr. Z’s sister was happy that he would be well cared for during his remaining months. He passed away about 1 month after discharge.

IMPLICATIONS/DISCUSSION: Delivering bad news is a challenging task for which physicians are insufficiently trained. 1-3 Yet good communication can help patients make better decisions, decrease healthcare costs, minimize litigation, and be satisfying to healthcare providers, patients and their families. 3-5 In delivering bad news, providers experience stress 6,8, time constraints7, and fears of harming the doctor-patient relationship7, worsening patients’ ability to cope8, causing depression, and reducing hope.3,12 But in a few studies disclosure of prognosis did not correlate with depression. 9-11 In another most patients preferred to know all information about their health status, except for the exact prognosis. 10 Patients’ perceptions of warm, patient, caring, empathetic, informative, and respectful communication with their provider about these issues is associated with improved satisfaction, alleviation of fear and anxiety, short and long-term (>13 months) psychological adjustment.5,14-16 Preferred nonverbal communication such as sitting, eye contact, and not looking at one’s watch, can reduce distress in patients and their families.5,16 Being truthful while promoting hope is an important skill that can be mastered.13,17 Addressing socioeconomic issues, such as financial barriers, is necessary.18 Assurance of ongoing support (non-abandonment) is a powerful and important message. 5 Fortunately, short training courses improve provider skills at delivering bad news.1-3 The SPIKES protocol (Setting; Perception-exploring the patient’s; Invitation-assessing patient preferences; Knowledge-empathetically providing desired information; Emotion-addressing with empathetic responses; Strategy/Summary-assessing understanding, summarizing, and collaboratively planning) provides a mnemonic that encompasses most of the desired elements. 3,19,20 Our case demonstrates the value of exercising these skills with support, and the importance of addressing physical and socioeconomic factors as part of the process

A RARE CAUSE OF A SMALL BOWEL OBSTRUCTION Mehmet Asim Bilen 1; Jose J Perez 2; Garrett R Lynch 2; Lee B Lu 1. 1Baylor College of Medicine, Department of Internal Medicine, Houston, Texas ; 2Baylor College of Medicine, Department of Medicine-Hematology & Oncology, Houston, Texas. (Tracking ID # 10989)

LEARNING OBJECTIVES: 1. To raise awareness to the gastrointestinal metastasis of adenocarcinoma of the lung as a possible cause of small bowel obstruction. 2. To present a literature review for gastrointestinal metastasis of adenocarcinoma of lung.

CASE INFORMATION: A 66-year-old Caucasian female who presented with nausea, vomiting, anorexia, diarrhea, and increasing abdominal distention for two days. She was diagnosed with metastatic adenocarcinoma of lungs with involvement of abdominal and clavicular lymph nodes one year prior to the presentation and was treated with radiation therapy and chemotherapy. She showed significant improvement after initial therapy with decrease in size of the tumors and lymph nodes; however, six months later, the tumor masses in the lung began to increase in size. The patient was started on Pemetrexed and Cisplatin regimen and had received her last chemotherapy three weeks prior to occurrence the gastrointestinal symptoms. On admission, her abdomen was soft, non-tender and distended with tympanic bowel sounds. Further evaluation with abdominal X-rays showed dilated small bowel loops with air-fluid levels suggestive of small bowel obstruction (SBO). The patient was kept NPO and a nasogastric tube was placed for decompression. Esophagogastroduodenoscopy showed a non-circumferential mass in the proximal jejunum causing approximately eighty percent obstruction of the bowel lumen. Subsequent pathologic evaluation of the mass was consistent with metastatic adenocarcinoma of the lungs. Immunohistochemical staining revealed malignant cells with immunoreactivity to CK7, TTF-1 and negative to CK20, CDX2, synaptophysin, and chromogranin which was identical to the previous lung biopsy findings. She was diagnosed with adenocarcinoma lung cancer with metastasis to jejunum. Despite continuous supportive treatment, she could not
tolerate oral intake due to functional dilatation of her small bowel with each attempt to start her on oral feeding. With the overall poor prognosis, a percutaneous endoscopic gastrostomy tube was placed, and she was referred for hospice care.

**IMPLICATIONS/DISCUSSION:** Lung cancer is the most lethal cancer in United States with 1.18 million deaths annually. The most common sites of metastasis include lymph node, brain, lung, pleura, adrenal gland, and bone. However, gastrointestinal metastasis from primary lung cancer is very rare. Based on a review of the literature, the prevalence of intestinal metastasis from lung cancer at autopsy was between 4.7 to 14%. According to one study, the prevalence of small intestinal metastasis was 8.1%, gastric metastasis was 5.1%, and large intestinal metastasis was 4.5%. The most common types of lung cancer metastasizing to gastrointestinal tract are large cell or squamous cell. To our best knowledge, this is the first case report of adenocarcinoma of lung with symptomatic jejunal metastasis. Primary lung cancer patients with metastasis to small bowel may present with symptoms of nausea, vomiting, abdominal pain, SBO, gastrointestinal bleeding, perforation or intussusception. Our patient presented with SBO. Non-operative and operative management are used in patients with SBO. Nasogastric suction and intravenous fluids can sometimes be successful for partial SBO. However, surgery is still the primary treatment for malignant obstruction. For non-operative or terminal patients, alternative management is the use of octreotide as an anti-secretory agent allowing removal of nasogastric tube earlier. Overall prognosis remains to be poor. In conclusion, even though gastrointestinal metastasis from primary lung cancer is rare, it should be recognized and included in the differential diagnosis in patients with prior history of lung cancer who present with obstructive symptoms of the bowel.

**TREATMENT OF SULFASALAZINE-INDUCED DRESS WITH CORTICOSTEROIDS AND N-ACETYLCYSTEINE** Joyce Ann Jose 1; Robin Klein2. 1Emory University Internal Medicine, Atlanta, Georgia; 2Emory University School of Medicine, Department of Internal Medicine, Division of General Medicine, Atlanta, Georgia. (Tracking ID # 11005)

**LEARNING OBJECTIVES:** 1. Recognize clinical features of Drug Rash with Eosinophilia and Systemic Symptoms or DRESS. 2. Review treatment options for DRESS, including N-acetylcysteine as a safe adjunct to steroid therapy for severe cases of DRESS.

**CASE INFORMATION:** A 66-year-old woman with the diagnosis of Birt-Hogg-Dubé syndrome presented to the general medicine service with abdominal pain. She was diagnosed with DRESS. She was started on prednisolone dosage was increased and N-acetylcysteine infusion was placed, and she was referred for hospice care.

**IMPLICATIONS/DISCUSSION:** Though internists do not encounter patients with Birt-Hogg-Dubé syndrome on a regular basis, they do frequently see patients with one of the following: abdominal pain, hematuria, a renal mass, renal vein thrombosis, skin lesions or a history of spontaneous pneumothorax. Birt-Hogg-Dubé syndrome was first described in 1977 by dermatologists as an autosomal dominant condition of benign tumors of the hair follicle (principally fibrofolliculomas) found on the face, neck or upper trunk that appear in the third or fourth decade of life. By 1999 it was observed that the syndrome also included a predisposition to renal neoplasms, lung cysts, and spontaneous pneumothorax when the cysts rupture. The gene defect has been identified as a germ line mutation at chromosome 17p11.2 which encodes for folliculin, a new protein with unknown function. The largest study of 189 BHD patients showed lung cysts to be present in 89% with 24% suffering at least one pneumothorax. Another study of a subset of the same cohort found renal tumors in 27% of the patients. The renal neoplasms are often multiple and of benign chromophobe/oncocytic nature but up to 7% have been of clear cell renal cell carcinoma type and have been fatal due to later recurrence and metastasis. This case is important as it will help internists recognize patients who may have Birt-Hogg-Dubé syndrome and remind them that close follow-up and screening of family members can identify patients at risk for recurrent pneumothorax or a potentially malignant renal cell carcinoma.

**RENEAL TUMOR-PNEUMOTHORAX-SKIN LESIONS: WHERE THE BIRD DOG POINTS** Mahmood Islam 1; Philip Hamby 1; Roger D Smalligan1. 1Texas Tech Univ HSC, Amarillo, Texas. (Tracking ID # 10992)

**LEARNING OBJECTIVES:** 1. Recognize clinical characteristics of a recently described (1977–1999) inherited syndrome: Birt-Hogg-Dubé syndrome. 2. Diagnose Birt-Hogg-Dubé syndrome in patients with characteristic skin lesions, a spontaneous pneumothorax and/or a renal mass.

**CASE INFORMATION:** A 66-year-old white man presented with left upper quadrant abdominal pain, nausea and vomiting. Several days prior he had noted painless, frank hematuria that resolved spontaneously. He had no history of fever, chills, trauma or chronic weight loss. Past medical history was important for coronary artery disease, diabetes, repeated spontaneous pneumothoraces and having been diagnosed with Birt-Hogg-Dubé syndrome (BHD) in 2004 but without any follow-up. Family history was positive for one sister and one nephew with confirmed BHD. Medications were insulin and amlodipine/benazepril. On physical exam he had normal vital signs, clear lungs, normal heart sounds, mild left upper quadrant tenderness and multiple 2-5 mm firm, flesh-colored, dome-shaped papular lesions on his face. Abdominal CT scan showed left renal vein thrombosis and a 6 cm left adrenal/renal mass. Laboratory values were unremarkable except for microscopic hematuria. He was anti-coagulated and after discussion with experts at the National Institutes of Health was transferred there where he underwent further studies and a left radical nephrectomy/adrenalectomy. The patient recovered and did well.
started. Fortunately, with this treatment she gradually improved clinically with normalization of lab abnormalities.

**IMPLICATIONS/DISCUSSION:** Drug Rash with Eosinophilia and Systemic Symptoms or DRESS is a rare, severe drug hypersensitivity syndrome. DRESS is a clinical diagnosis characterized by fever, cutaneous drug eruption, hematologic abnormalities, and systemic manifestations, including lymphadenopathy and organ involvement. The mortality rate is 10% mostly due to liver failure. The pathogenesis of DRESS is unclear, but it is thought that the offending drug induces a hypersensitivity reaction via defects in its metabolism. This leads to accumulation of toxic metabolites that are directly cytotoxic and indirectly trigger a T-cell mediated immune response. A genetic predisposition is suggested given an increased risk of DRESS in patients with defects in drug metabolism known as slow acetylators.

Withdrawal of the inciting medication is the mainstay of treatment of DRESS. Successful treatment with systemic corticosteroids has been reported. N-acetylcysteine (NAC) has also been suggested as a possible treatment for DRESS as it repletes glutathione stores, an antioxidant involved in drug detoxification pathways. Cases have described the use of NAC in treating DRESS due to anticonvulsants; however, its use as an adjunct in sulfasalazine-induced DRESS has not been widely reported.

We present a severe case of DRESS due to sulfasalazine therapy for rheumatoid arthritis. The presentation of fever and rash after initiation of sulfasalazine is characteristic of DRESS. This case is notable not only in the severity of systemic manifestations, but also the safe and successful use of corticosteroids and NAC in treating this condition. Given the limited treatment options and high mortality rate, treatment alternatives for severe cases of DRESS are needed. Further studies on the efficacy of NAC as a safe adjunct to steroid therapy in the management of DRESS are warranted.

**VERTEBRAL COMPRESSION FRAGILITY FRACTURE IN A PREVIOUSLY HEALTHY 50 YEAR OLD MALE DUE TO IDIOPATHIC HYPERCALCIURIC INDUCED OSTEOPOROSIS**

Jason Coker 1; Edward Kilb III 1; Andrew Schreiner 1; Brad Keith 1. 1Medical University of South Carolina, Charleston, South Carolina. (Tracking ID # 11016)

**LEARNING OBJECTIVES:** 1. Recognize osteoporosis in men as an important public health problem 2. Recognize Idiopathic Hypercalciumia as a cause of Bone Mineral Disease

**CASE INFORMATION:** The patient is a 50 year old Caucasian male with a history of renal stones who presents with severe back pain after jumping off a diving board. Age appropriate cancer screening has been negative. He has no history of steroid use. Social history is significant for a 14-day course of doxycycline.

**IMPLICATIONS/DISCUSSION:** Osteoporosis is typically thought of as a disease in women though it has a prevalence of 7% in Caucasian men and 5% in African American men that will only increase as the population ages. The USPSTF makes recommendations for screening in women however guidelines for men are not as well studied. Currently the ACP recommends screening men who are at increased risk according to traditional risk factors, however the age to initiate screening is uncertain. Though several authors have linked Idiopathic Hypercalciumia to lowered BMD this is not a diagnosis that commonly prompts screening for osteoporosis. More data is needed in the male population in order to direct appropriate and cost effective screening. Hypercalciumic Osteoporosis should be considered in the differential for atrumatic fragility fractures.

**BILATERAL SIMULTANEOUS FACIAL NERVE PALSY DUE TO EARLY NEUROBORRELIOSIS**

Daniel Vogel 1; Dagmar Lin 1; Drahomir Aujesky 1; 1University Hospital Bern, Bern, N/A. (Tracking ID # 11021)

**LEARNING OBJECTIVES:** 1. Recognize bilateral simultaneous facial nerve palsy as a possible leading presentation of early neuroborreliosis 2. Treat early neuroborreliosis, confined to the meninges and peripheral nervous system, with a 14 day course of doxycycline

**CASE INFORMATION:** A 32-year old man presented with a short history of headache and neck pain combined with double vision, slurred speech and drooling. Physical exam showed an afebrile male with meningism and bilateral facial nerve palsy, rapidly progressing to a complete palsy within 24 hours. A brain MRI was unremarkable. The CSF revealed a lymphocytic pleocytosis of 717 M/L (90% monocytic), an elevated protein of 2.6 g/L and a decreased glucose quotient of 0.23. He was diagnosed with early neuroborreliosis by detecting positive Borrelia burgdorferi IgM antibodies in CSF and serum with a positive CSF/serum IgM-index (Fig. 1). In addition to a 14-day therapy with corticosteroids we gave ceftriaxone 2 g daily, then switched to doxycycline 200 mg daily due to the development of ceftriaxone-induced exanthema. Treatment was continued for a total of 2 weeks. Facial nerve palsy resolved completely within 2 months.

**IMPLICATIONS/DISCUSSION:** Bilateral simultaneous facial nerve palsy is a rare clinical entity with an incidence of approximately 1 per 5 million. It often indicates a serious underlying medical condition warranting urgent medical investigation. The most common causes are borreliosis, Guillain Barre syndrome, idiopathic palsy, leukemia, sarcoidosis, bacterial meningitis, syphilis, leprosy, Moebius syndrome, infectious mononucleosis and skull fracture.

The diagnosis of early neuroborreliosis is challenging, requiring criteria such as suggestive neurological symptoms not otherwise explained, cerebrospinal fluid pleocytosis and Borrelia burgdorferi specific antibodies produced intrathecally. Facial nerve palsy has been found in up to 11% of patients with Borreliosis, being bilateral in 30-40% of these cases. Early neuroborreliosis should be treated with antibiotics to prevent further sequelae. The preferred treatment is intravenous ceftriaxone. Recent investigations however showed non-inferiority of oral doxycycline when compared to intravenous ceftriaxone in early neuroborreliosis confined to the meninges and peripheral nervous system, as in our patient. Prognosis of facial nerve palsy is generally good, although 5-20% experience ongoing neurological impairment. Major advantages of a 14-day course of oral doxycycline in early neuroborreliosis, confined to the meninges and peripheral nervous system, are the oral route of administration and lower costs when compared to ceftriaxone.

**THE TIPPING POINT: METHADONE AS A TRIGGER FOR SEROTONIN SYNDROME**

Brita Roy 1; F. Stanford Massie 1. 1University of Alabama at Birmingham, Birmingham, Alabama. (Tracking ID # 11042)

**LEARNING OBJECTIVES:** 1. To recall the clinical criteria for diagnosis of serotonin syndrome.

2. To be aware of the dangers of polypharmacy.
CASE INFORMATION: A 72-year-old female with no significant past medical history presented to clinic with a one day history of progressive, upper anterior chest pain which worsened with movement. This was accompanied by pain in the neck and anterior shoulders bilaterally. Three days prior to presentation she had been evaluated for a sore throat and was diagnosed with an upper respiratory infection. She denied any history of trauma to the upper anterior chest, intravenous drug abuse, or any previous joint pain or swelling. On physical exam the patient appeared comfortable and was afebrile. There was mild erythema and tenderness without swelling over the sternoclavicular joints bilaterally. The anterior neck was also tender to palpation. Limited range of motion in the shoulders bilaterally and neck was noted. Laboratory exam showed a WBC of 14,100/mm$^3$ with 86% neutrophils and a CRP of 38.8 mg/dl. While infection was not initially suspected, it could not be ruled out so blood cultures were obtained. An enhanced CT scan of the neck and chest showed marked tissue swelling around the heads of the clavicles bilaterally. The patient returned the next day with worsening erythema and pain. Blood cultures grew gram negative rods and the patient was admitted for sternoclavicular septic arthritis. MRI of the sternoclavicular area showed no evidence of osteomyelitis. She was initially treated with IV ceftriaxone and clindamycin with improvement. On hospital day 4, blood culture results showed *Haemophilus influenzae*, type b, which was susceptible to ampicillin. She was maintained on IV antibiotics for three weeks and then discharged home on oral antibiotics with full resolution of her symptoms.

IMPLICATIONS/DISCUSSION: Sternoclavicular septic arthritis (SCSA) usually presents with chest pain localized to the sternoclavicular joint (SCJ) or pain referred to the shoulder or neck with limited motion of the upper extremities. Fever when present, is usually low grade and erythema and swelling of the joint may be absent early in the disease course. The initial clinical differential diagnosis of SCSA may include local trauma, rheumatologic diseases, or malignancy of the SCJ area. SCSA is a rare condition that accounts for 1% of all types of septic arthritis. It usually occurs in patients with predisposing factors such as intravenous drug abuse, diabetes mellitus, or trauma. However no underlying medical condition is found in 23 % of patients. *H. influenzae* is recognized as an important pathogen in adults and may cause acute sinusitis, epiglottitis, and pneumonia. Serotype b (Hib) is a serious form of *H. influenzae* and is known to cause more invasive diseases such as bacteremia and meningitis, particularly before the era of Hib vaccination. *H. influenzae* is a rare cause of septic arthritis in adults. Upper respiratory infection is a frequent coexistent extra-articular finding and may be helpful in including *H. influenzae* in the differential diagnoses of septic arthritis. In the case of a missed diagnosis, serious and life-threatening complications such as a chest wall phlegmon, abscess, or mediastinitis may occur. When the infection is contained within the confines of the joint capsule, conservative treatment with intravenous antibiotics represents the first therapeutic option and may be successful in most patients. Heightened awareness of this unusual infection is needed for timely and appropriate diagnosis and treatment.

UNEXPECTED MRI FINDINGS IN A 24 YEAR-OLD MALE WITH NEWLY DIAGNOSED ACUTE LYMPHOBLASTIC LEUKEMIA WITH HIP PAIN. Paul Clark, DO $^1$; Tanya Wroblewski, MD $^2$; (Tracking ID # 11065)

LEARNING OBJECTIVES: 1. Identify common and uncommon causes of bone marrow necrosis. 2. Distinguish patterns of bone marrow necrosis versus avascular necrosis on MRI.

STERNOClavicular SEPTIC ARTHRITIS DUE TO HAEMOPHILUS INFLUENZAE IN A PREVIOUSLY HEALTHY ADULT. TOMOHiro FUnakOSHI $^1$; Simi Padival$^2$; *Teine Keijinkai Hospital, Sapporo, N/A*; $^2$Teine Keijinkai Hospital, Sapporo, N/A. (Tracking ID # 11052)

LEARNING OBJECTIVES: 1. To define the characteristics of sternoclavicular septic arthritis and recognize the importance of early diagnosis to avoid preventable complications 2. To recognize *Haemophilus influenzae* as a rare cause of septic arthritis in adults.
CASE INFORMATION: A 24 year-old male with a recent diagnosis of Philadelphia chromosome positive Acute Lymphoblastic Leukemia (ALL) presented to the Hematology ward for consolidation chemotherapy. The patient initially presented to his primary care provider in Texas in Oct 2010 for fevers, night sweats, headaches and was treated for a viral syndrome. He returned to the Emergency Room for worsening bone pain, night sweats and pain localized to the left hip. A CBC was done which showed a WBC of 50,000/uL with circulating blasts noted on the peripheral blood smear. A bone marrow biopsy was performed which revealed leukemic cell necrosis and 56% blasts. Flow cytometry results were consistent with pre-B Cell ALL and FISH was positive for t(9:22). The patient underwent induction chemotherapy and once FISH results were obtained, his chemotherapy treatment was adjusted to incorporate imatinib based on t(9:22) positivity.

Patient was transferred to Walter Reed Army Medical Center for continuation of his chemotherapy. Patient presented December 2010 for consolidation chemotherapy complaining of persistent left hip pain. CBC at this time showed 4500/uL. Plain film radiographs of the left hip, pelvis and L-spine were unremarkable for fractures or acute osseous involvement. A MRI of the left hip was obtained, which showed consolidated low T1 signal and increased T2 signal along borders of red marrow of the left pelvis and left peritrochanteric region. This was most consistent with necrosis of leukemia cells within the marrow space versus osteonecrosis, as seen in image one.

IMPLICATIONS/DISCUSSION: Bone marrow necrosis (BMN) is a clinicopathological diagnosis distinctly different from avascular necrosis (AVN). BMN is most often associated with hematological malignancies, sickle cell disease, infections, sepsis, antineoplastic drugs, metastatic carcinoma and less commonly anorexia nervosa, hemolytic uremia syndrome and antiphospholipid syndrome. Acute leukemia is the most common underlying malignancy related to BMN. The most common clinical symptoms that BMN can present with are bone pain (80%) which is either diffuse or localized to lower back, fever (70%), and fatigue.

MRI findings of BMN usually show extensive involvement, signal abnormality and central area of variability surrounded by a distinct peripheral enhancing rim. The pattern of signal in BMN may be similar to AVN but BMN usually has a diffuse pattern and commonly involves the spine and pelvis. Another defining feature is that BMN lesions do not usually progress to fractures as often seen with AVN.

MRI findings have different stages of signal abnormalities which are described in the literature (A-D) and correlate with the degree of BMN as described by Tang et al. Our patient demonstrated evidence of Class C findings with T1 hypointensity and T2 hyperintensity. This patient’s case of left hip pain and eventual diagnosis of BMN highlights several points. BMN can occur anytime during treatment of a malignancy and in our patient’s case he was in a remission from ALL however MRI showed active BMN of the hip. Despite the severity of the patient’s hip pain, the cortical bone was structurally intact and there was no concern for pathological fracture, distinct from cases of AVN.

APICAL HYPERTROPHIC CARDIOMYOPATHY IN A NEW POPULATION
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LEARNING OBJECTIVES: 1. Recognize Apical Hypertrophic Cardiomyopathy (AHCM) as a cause of new heart failure with morbidity and mortality implications in elderly patients with no previous structural heart disease. 2. Distinguish AHCM from other cardiomyopathies based on echocardiogram and EKG diagnostic criteria.

CASE INFORMATION: An 84 year old Caucasian woman presented with increased dyspnea on exertion. She felt well overall, but noticed a marked decrease in exercise tolerance that began one year prior and has progressively worsened over the past few months. She needed to rest after walking 3–4 blocks. She denied orthopnea, PND, or lower extremity edema. She also denied chest pain, palpitations, dizziness or syncpe. Her medical history was pertinent for paroxysmal atrial fibrillation status post pacemaker placement for slow ventricular response on coumadin, mild aortic valve insufficiency, hypertension controlled on HCTZ, and non-Hodgkin Lymphoma post radiation therapy. Her family history was negative for stroke, myocardial infarction or heart failure. Her blood pressure was 127/70, pulse 92, and respiratory rate 16. Her exam was unremarkable except for crackles at the lung bases, hearts sounds which were irregularly irregular and a laterally displaced apical impulse. Her neck veins were flat and she had no lower extremity edema. Laboratory tests included INR 2.4. ECG demonstrated ventricular paced rhythm with rate of 77. Chest xray showed stable cardiomyopathy. A transthoracic echocardiogram (TTE) was obtained. Her ejection fraction was 65%. She had mild mitral regurgitation, normal right ventricle, and moderately dilated atria. Her left ventricle had normal cavity size with moderately increased wall thickness as well as hypertrophy of the apex and increased septal thickness at the apex consistent with apical hypertrophic cardiomyopathy (AHCM). TTEs from 2 and 5 years prior were retrospectively reviewed and showed evidence of early apical hypertrophy. An EKG at age 66 was normal with no signs of LVH, another at age 70 demonstrated LVH. An EKG at age 82 showed anterior T wave changes different than typical LVH. The combination of the EKG tracings and TTEs suggest the phenotypic expression of AHCM after age 66 in this patient.

IMPLICATIONS/DISCUSSION: Hypertrophic cardiomyopathy (HC) is a common problem in general internal medicine that causes significant morbidity and mortality across all age groups. AHCM as a variant of HC may be under-recognized by general internists. AHCM had previously been described in middle-aged Japanese adults, however, a recent case series described elderly Caucasian patients, most of whom had a documented structurally normal ventricle earlier in life, who developed AHCM. This variant HC typically manifests with giant negative T waves on electrocardiography and a spade-like ventricle on echocardiography. Many patients in the case series had a history of hypertension and giant negative T waves on ECG as well an 8% annual risk of stroke when atrial fibrillation was also present despite warfarin. Coronary artery fistulae were found in 6 of 13 patients studied with coronary angiogram. Sequelae of AHCM also include diastolic dysfunction, aneurysms because of the destruction of hypertrophied myocardium, ventricular arrhythmias, and myocardial infarction. The most common cardiac complication is atrial fibrillation, which when associated with AHCM portends a higher incidence of heart failure, sudden cardiac death, and stroke. Treatment includes management of angina, palpitations, and arrhythmias with beta blockers or calcium channel blockers as well as prevention of further remodeling with ACE inhibitors. Antiocoagulation is indicated in patients with atrial fibrillation though the mechanism of thromboembolism formation is unknown given the apparent resilience despite aggressive warfarin therapy. More research regarding the underlying genetic and environmental factors influencing AHCM and ideal medical management is needed. Once the diagnosis of AHCM is considered by the general internist, it can be readily evaluated with TTE and EKG and may result in risk reduction of stroke, heart failure, and sudden cardiac death from arrhythmia in elderly adults.
ATYPICAL PRESENTATION OF PRIMARY ADENOCARCINOMA OF THE LUNG
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LEARNING OBJECTIVES: 1. Differentiating between adenocarcinoma and squamous cell carcinoma of lung 2. Effects of hypercalcemia secondary to neoplasm

CASE INFORMATION:
Introduction: Adenocarcinoma of the lung is the most frequent non-small cell lung cancer in the United States comprising 40% of all lung neoplasms. Typical presentation includes a peripherally located mass causing coughing, hemoptysis, dyspnea and honeseness. It is rare for a patient to develop hypercalcemia secondary to adenocarcinoma because, unlike squamous cell carcinoma of the lung, it does not produce parathyroid-like hormone. We now present such a case.

Case Presentation: A 56-year old man presented to the emergency room with dyspnea, confusion, and bilateral swelling of his neck. He was stabilized with supplemental oxygen, but initial labs revealed an elevated calcium of 11.4. Admission chest radiograph showed a questionable mass in a central location along the proximal bronchus. CT of the chest and abdomen revealed a 3.2 x 2.8 cm mass in the right upper lobe adjacent to the proximal bronchus with associated hilar adenopathy. Samples of the lung mass and 3 lymph nodes were obtained via bronchoscopy. The final pathological results confirmed a diagnosis of T2N1M0 adenocarcinoma of the lung. Despite lymph node involvement, the patient was considered a good surgical candidate with a plan for adjuvant chemotherapy in the future. The pulmonary and oncologic team expected the patient’s altered mental status to resolve with right upper lobe wedge resection and consequent improvement in hypercalcemia.

IMPLICATIONS/DISCUSSION:
Discussion: Although the diagnosis and treatment for adenocarcinoma is similar to the other histiologic types of non-small cell lung cancer, this patient presented with findings inconsistent with those typical of adenocarcinoma. The findings of hypercalcemia and lung mass in a central location are predominately consistent with squamous cell carcinoma. Hypercalcemia secondary to squamous cell carcinoma is due to the production of parathyroid-like hormone which increases the blood levels of calcium. Hypercalcemia causes confusion and change in mental status which was evident in our patient. Furthermore the location of the lung mass was in a central location which is also generally consistent with squamous cell carcinoma while adenocarcinoma is most commonly found in a peripheral location. Despite clinical signs pointing towards a diagnosis of squamous cell primary of the lung, a true diagnosis cannot be made without histological confirmation.

ACUTE MYOCARDIAL INFARCTION IN A YOUNG FEMALE WITH SICKLE CELL DISEASE
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LEARNING OBJECTIVES: 1. Recognize that not all chest pain in patient with sickle cell disease is acute chest syndrome 2. Discuss diagnosis and management strategies of myocardial infarction in sickle cell disease

CASE INFORMATION: 24 year old female with past medical history significant for sickle cell disease presented with fever and chest pain for 7 days. She was recently treated with outpatient course of antibiotics without any response. On exam, patient was in mild distress secondary to pain with temperature of 103.3 F, pulse 120/min, blood pressure 98/54 and pulse oximetry of 98% on room air. Laboratory data revealed hemoglobin of 7.6, white cell count 10.6 and troponin 1 of 1.75. Electrocardiogram showed 1 mm ST segment elevation in leads III, aVF and V6. Patient received aggressive hydration and 2 units of packed red cell transfusion. Along with dynamic EKG changes, troponin 1 continued to trend up with peak of 3.17. Patient was started on aspirin, heparin, lopressor and nitroglycerin for acute coronary syndrome with close monitoring in the cardiac intensive care unit. Echocardiogram showed isolated inferior wall motion abnormality in a single segment of the left ventricle with preserved ejection fraction. Hemoglobin electrophoresis showed very high HbS level of 60.3. Patient underwent exchange transfusion following which her symptoms gradually abated. She was discharged in a good condition on hydroxyurea with appropriate follow-up and documented negative exercise stress test prior to discharge.

IMPLICATIONS/DISCUSSION: Vaso-occlusive crisis are well-known complications of sickle cell diseases (SCD). However, sickling in the heart resulting in ischemia or infarction is not commonly reported. In fact, some reports describe sickle cell disease as protective against large vessel coronary artery disease. The exact mechanism of myocardial infarction in sickle cell disease is unknown, although the combination of stress of anemia-morphological, rheological and biochemical effects of the sickle cells themselves-and platelet abnormalities may play a role. These patients often have few or no traditional risk factors for coronary artery disease, and risk stratification tools such as the Thrombolysis in Myocardial Infarction (TIMI)and Global Registry of Acute Coronary Events (GRACE) models place these patients at low risk. Non-specific changes in cardiac enzymes and ECG may be of little diagnostic value. Coronary angiography is usually normal and may not be recommended as a routine procedure in young SCD patients with low conventional risk profiles. In sickle cell patients who present with chest pain as an element of their sickle cell crisis, the clinician must consider acute myocardial infarction in the differential along with more common entities like acute chest syndrome.

ITCHING FOR A DIAGNOSIS: A WOMAN WITH PRURITIS, NAUSEA, AND VOMITING
Sarah Weiss 1; Jordan Turk 1. 1Montefiore Medical Center, Bronx, New York. (Tracking ID # 11104)

LEARNING OBJECTIVES: 1. Recognize the differential diagnosis of severe transaminase elevation. 2. Diagnose acute viral hepatitis C.

CASE INFORMATION: A 55 year-old Guamanian woman presented with 2 days of pruritis, nausea, and vomiting. One week ago, she was prescribed dicloxacillin for a mild cellulitis. Several days after starting the antibiotic, she noted onset of fatigue, nausea, pruritis, dark urine, and light-colored stools. She denied fever, abdominal pain, or diarrhea. Past medical history was significant for coronary artery disease, hypertension, and hyperlipidemia but all were well controlled on her current medications including aspirin, metoprolol, rosuvastatin, and lisinopril. She had a known penicillin allergy but denied any other new medications or herbal remedies. She had no known history of hepatitis, alcohol abuse, toxic ingestions, or intravenous drug use. She was afebrile, with stable vital signs. Jaundice and scleral icterus were present. The abdomen was soft, nontender, nondistended, and with no evidence of ascites. Initial laboratory testing was remarkable for: WBC 5.9 x 10^3/U, albumin 3.8 g/dL, INR 1.1, total bilirubin 5.1 mg/dL, direct bilirubin 3.3 mg/dL, alkaline phosphatase 82 U/L, aspartate aminotransferase (AST) 815 U/L, and alanine aminotransferase (ALT) 1102 U/L. Right upper quadrant ultrasound showed
mild periportal edema, but did not demonstrate any gallbladder pathology or biliary ductal dilatation. The patient was admitted for a work-up of her hepatocellular disease. All medications were held. AST and ALT peaked at 1394 U/L and 1726 U/L, respectively. Hepatitis A and B serologies, ANA, anti-smooth muscle and anti-LKM antibodies, CMV, EBV, and HIV were all negative. Anti-hepatitis C virus (HCV) antibody was positive. No prior serology was available for comparison. Hepatitis C viral load was 60,000,000 IU/L. To determine the etiology of the severe transaminase elevation, a liver biopsy was performed and revealed parenchymal disease with severe lobular disarray consistent with acute viral hepatitis C.

**IMPLICATIONS/DISCUSSION:** Transaminase elevation is a common laboratory abnormality encountered by the general internist. Severely elevated transaminases (>1000 U/L) indicate hepatic cellular injury. The differential diagnosis includes viral, autoimmune, drug-induced, or ischemic hepatitis.

Acute hepatitis C is usually asymptomatic and is rarely diagnosed. Internists frequently screen patients for viral hepatitis C based upon evidence of liver disease. Distinguishing between acute and chronic hepatitis C can be challenging because the presence of anti-HCV antibodies, HCV RNA, and elevated transaminases are found in both phases. Anti-HCV antibodies are usually detectable 3 to 15 weeks after infection but serologic testing is not enough for diagnosis. HCV RNA by PCR is the earliest marker of infection and is positive days to weeks after exposure. Positive HCV RNA and anti-HCV antibody seroconversion are diagnostic of acute hepatitis C. However, if the patient has not been tested before, the timing of seroconversion cannot be determined.

Diagnosis of acute hepatitis C becomes more complicated if there is no history of an acute exposure or if another diagnosis is plausible. In this case, our patient’s use of potentially hepatotoxic medications also suggested an idiosyncratic drug-induced hepatitis. In order to determine the diagnosis and to guide our subsequent management, a liver biopsy was performed. In diagnosing acute hepatitis C, general internists should be aware that 25% of patients spontaneously clear the virus after 8 to 12 weeks. The remainder of infected patients have an 80% increased risk for developing chronic liver disease and should be referred to a hepatologist.

**A BUG’S LIFE:** Jason Noam Salamon1; Sheira Schlair2. 1Albert Einstein College of Medicine, Bronx, New York; 2Montefiore Medical Center, Bronx, New York. (Tracking ID # 11115)

**LEARNING OBJECTIVES:** 1. Identify the association between long term IUD usage and systemic actinomycosis. 2. Recognize that actinomycetes israelii is a common inhabitant of intestinal and genital tract but rarely results in systemic infection

**CASE INFORMATION:** A 40 year-old woman of Latvian descent presented with one month of fatigue, weight loss, and abdominal swelling. One month prior to admission she began feeling fatigued with minimal exertion. Her husband noted that she appeared pale with significant weight loss despite adequate oral intake. Associated symptoms included intermittent low grade fevers. Last menses was 8 months prior to admission compared to a history of regular menses. She denied a family history of cancer. On admission, she was noted to be pale, cachectic, and in moderate distress. Heart rate was 117, respiratory rate 35, oral temperature 101.3 F, and oxygen saturation was 92%. Her abdomen was distended without tenderness or guarding. Fluid wave and shifting dullness were present. A solid fixed mass below her umbilicus, a 1 cm left axillary lymph node and a 2 cm erythematous purulent ulcerating lower back mass were noted. Pelvic exam revealed thick yellow discharge and a palpable posterior cervical mass. Initial laboratory studies revealed hemoglobin of 5, MCV of 76 and 25,000 white blood cells. CT chest/abdomen/pelvis revealed multiple large ill-defined masses in the uterus, ovary, liver, peritoneum and soft tissue of the back with a dudeno-pleurocutaneous fistula, as well as an intraperitoneal device (IUD). She was transfused with packed red blood cells, placed on a non-rebreather mask and underwent paracentesis. Paracentesis removed 3 liters of fluid and was negative for bacteria or dysplasia. Her IUD, which had been in place for over 10 years, was removed. She was treated with broad spectrum antibiotics with resolution of fever, tachypnea, and tachycardia. PPD was negative. Laparoscopic biopsies of multiple masses were negative for malignancy and tissue was negative for mycobacteria and fungi but positive for actinomycosis. She was diagnosed with systemic actinomycosis and treated with high dose penicillin. Her symptoms improved and she was discharged in stable condition.

**IMPLICATIONS/DISCUSSION:** The use of IUDs as a contraceptive method is increasing, especially outside of the United States. In Eastern Europe and Asia between 27-50% of women choose IUDs for contraception. Actinomycosis israelii is a common anaerobic gram positive...
non-acid-fast filamentous bacterial inhabitant of normal intestinal and genital tracts. Approximately 7% of Pap smears have positive actinomyces cultures, however treatment is reserved for symptomatic patients as there is no correlation between colonization and disease. Systemic infection uncommonly occurs through invasion of breached necrotic tissue causing granulomatous disease, abscesses and fistulas. Cervicofacial involvement is most common (50%) followed by abdominal involvement (20%) and rarely hemogenous spread. Common risk factors include recent trauma or surgery, especially with perforation, and long term IUD placement of on average 8 years. Clinical signs and symptoms are non-specific, such as indolent constitutional symptoms and abdominal masses, making diagnosis difficult and causing increased confusion with M. tuberculosis, inflammatory bowel disease and malignancy. Diagnosis is made using histological specimens showing sulfur granules and a positive anaerobic culture. Approximately 90% of IUD associated actinomycosis infection is limited to the pelvis and includes tubo-ovarian abscesses. Patients with pelvic pain or uterine tenderness who have evidence of actinomycetes on Pap smear should have IUD removal sent for culture as actinomycoses flourish on foreign bodies. Treatment for systemic actinomycosis consists of high dose penicillin for 6–12 months (first 6 weeks 10–20 million units IV then oral 4 g/d). Women who choose to use an IUD for contraception should be informed of the small risk of actinomycotic infections, particularly when the IUD is left in place for an extended period of time.

CHRONIC MEGACOLON: HIRSCHSPRUNG’S DISEASE IN AN ADULT? Kamyar Shahedi 1; James Wilson 1; Darin J Saltzman 1. 1Olive View - UCLA Medical Center, Sylmar, California. (Tracking ID # 11128)

LEARNING OBJECTIVES: 1. Assess the different etiologies of chronic megacolon 2. Recognize that Hirschsprung’s disease may present in adulthood

CASE INFORMATION: A 22-year-old man presented in October 2010 complaining of chronic fatigue and failure to thrive. He had a significant history of refractory chronic constipation since age 2, with limited relief from laxatives and other bowel regimens. He had no other medical conditions and used no other medications. On physical exam he appeared thin, with a soft, non-tender but distended and tympanic abdomen. An abdominal CT scan showed an impressive markedly distended rectosigmoid and descending colon measuring up to 17 cm in diameter, filled with stool and air, without evidence of perforation. Laboratory work-up was remarkable for a microcytic anemia with hemoglobin 7.9 g/dl, hematocrit 25.2 percent, and MCV of 68. Hemoeclotic testing was positive and iron studies were consistent with iron deficiency anemia. Further work-up was unrewarding including thyroid studies, stool studies, ANCA, ANA, HIV, and serologies for Trypanosoma cruzi. The patient was treated with tap water enemas and polyethylene glycol while in-house with mild improvement. After discharge a CT scan obtained for monitoring revealed persistent dilated descending and sigmoid colon with slight decrease in stool content without otherwise interval change. He was scheduled to undergo endoscopic evaluation for further diagnostic work-up, but missed his appointment. We plan to obtain rectal biopsy for tissue diagnosis and further management of what is believed to be an adult presentation of Hirschsprung’s disease, a disease usually seen in infancy.

IMPLICATIONS/DISCUSSION: Chronic megacolon describes long-standing dilated and elongated large bowel which may be congenital or acquired. A large differential exists for the cause of chronic megacolon, but the most common acquired cause worldwide is infection with Trypanosoma cruzi (Chagas disease), which destroys ganglion cells in the enteric nervous system. Other causes include chronic constipation caused by slow transit secondary to medications and metabolic disorders such as hypothyroidism. Neurologic diseases (multiple sclerosis, diabetic neuropathy) or certain systemic diseases (scleroderma, mixed connective tissue disease) may also cause progressive colonic dilatation. Congenital megacolon caused by Hirschsprung’s disease results from failure of migration of neural crest cells to the distal large intestine. The absence of ganglion cells results in failure of relaxation and functional obstruction with the proximal healthy bowel becoming progressively dilated. Although commonly presenting in infancy, milder cases may present in adulthood. These patients commonly have a history of chronic refractory constipation since a young age with failure to thrive, similar to our patient. Anorectal manometry showing absence of rectoanal inhibitory response may indicate Hirschsprung’s. However, rectal biopsy showing an absence of ganglion cells on histology is needed for confirmation and is the gold standard. Chronic anemia is not typical in Hirschsprung’s disease although two cases in adults have been reported in the literature. In these cases, the anemia was caused by compromise of the vasculature by colonic distention and superficial inflammation of the mucosa. Recognition of Hirschsprung’s as a potential etiology in adults with chronic megacolon can be life changing for these patients. Surgical resection of the distal affected segment is curative and may prevent catastrophic presentations such as perforated bowel as well as dramatically improve quality of life.

SYMPTOMATIC GASTRIC SARCOIDOSIS IN A PATIENT WITH SYSTEMIC SARCOIDOSIS ON CHRONIC STEROID THERAPY AND H. PYLORI INFECTION Eduardo Javier Bazan 1; Jose Fernando Echaiz 1; Jennifer Swiderek 1. 1Henry Ford Hospital, Detroit, Michigan. (Tracking ID # 11130)

LEARNING OBJECTIVES: 1. In the following report, we present a case of gastric sarcoidosis, in order to recognize the complexity of the evaluation of this rare condition when it coexists with peptic ulcer disease. 2. Assess the severity of the disease and discern whether specific treatment is needed when there is coexistence with H. pylori-related gastritis.

CASE INFORMATION: A 50-year-old female presented with complaint of nausea and vomiting. Past medical history is significant for well controlled Type 2 diabetes, hypertension and multisystemic sarcoidosis on chronic therapy with systemic steroids. Her symptoms had been present for 8 months prior to admission. Her symptoms usually responded to antiemetic medications; however, they worsened significantly leading to persistent vomiting and volume depletion 3 days prior to admission. There was no abdominal pain, diarrhea or constipation associated with her symptoms. She had a history of peptic ulcer disease 3 years before, with evidence of ulcers and H. pylori infection for which she received standard treatment. Despite this, she continued to have abdominal pain and, at that time, the treatment for her sarcoidosis was ineffective as well. She received a second course of treatment for H pylori 2 years before admission. On admission, oropharyngeal and abdominal examination did not show abnormalities. Liver profile showed AST 49 IU/L (<35), albumin 2.4 g/dL (3.2-4.6) and alkaline phosphatase 456 IU/L (0-140) with normal bilirubins. Abdominal ultrasound showed a liver with a homogeneous echo pattern. Amylase was normal. Initial treatment included intravenous hydration and proton pump inhibitor as well as bowel rest, with improvement of symptoms. Prednisone was continued at the same dose of 10 mg daily. Esophagogastroduodenoscopy
A 46-year-old African-American man presented with subjective fever, productive cough and generalized body aches including chest discomfort for two days. The patient had sickle/beta thalassemia disease complicated by two prior episodes of acute chest syndrome as well as avascular necrosis of several large joints. On arrival, his BP was 114/70, pulse 89, respiratory rate 20 and temperature 100.2°F. The patient was in no distress and had entirely normal mentation. Exam was notable for scleral icterus and tenderness on palpation of ribs, legs, and right upper quadrant of abdomen; all normal mentation. Exam was notable for scleral icterus and tenderness on palpation of ribs, legs, and right upper quadrant of abdomen; all normal mentation.

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**IMPLICATIONS/DISCUSSION:** Vaso-occlusive episodes result in significant morbidity and occasional mortality in patients with sickle cell disease. Acute multiorgan failure syndrome is defined as the acute development of severe dysfunction of at least 2 of 3 major organs in the setting of a sickle cell vaso-occlusive episode. While it carries a high mortality rate of 40-60%, it is encountered infrequently during an acute vaso-occlusive episode. This disastrous complication is even rarer in patients with concurrent alpha or beta thalassemia since these patients have higher levels of hemoglobin A and less hemoglobin S. This case highlights an unusual yet classic case of the acute multiorgan failure syndrome in a sickle/beta thalassemia patient. Although the pathophysiology of acute multiorgan failure in sickle cell crisis is partly unclear, the dramatic fall in hemoglobin levels immediately preceding organ failure and the rapid recovery with simple or exchange transfusion of packed erythrocytes indicates that it is caused by extensive microvascular occlusion and tissue ischemia of affected organs by sickled cells. Notable features of this case include the extensive and precipitous progression of neurologic, hematologic, renal, hepatic, and muscle dysfunction and the rapid recovery of clinical status after plasma transfusion, with clearing of encephalopathy, and recovery of organ function. High baseline hemoglobin levels, as was present in our patient, may represent a predisposing factor to this disastrous complication of vaso-occlusion. The prognosis for complete recovery is good only if the syndrome is recognized early and treated aggressively with transfusion support. Thus, prompt recognition of this syndrome and initiation of transfusion therapy can be life-saving.
only to painful stimulation; however she did not have neck rigidity or any focal neurological deficits. EEG was ordered showing frequent frontal triphasic waves, suggestive of a metabolic encephalopathy. Cefepime was discontinued, without improvement over the next day. A repeat EEG was obtained showing persistent and continuous runs of generalized high amplitude bilaterally symmetrical triphasic sharp waves, suggestive of NCSE. Phenytoin was started in conjunction with hemodialysis. Her neurological status improved after dialysis as seen clinically as well as with resolution of epileptiform activity on EEG.

IMPLICATIONS/DISCUSSION: Cefepime induced neurotoxicity is a relatively rare consequence of cefepime administration which is seen more often in elderly patients and those with impaired renal function. The presentation of cefepime induced neurotoxicity ranges from simple encephalopathy with confusion, myoclonus, and asterixis to nonconvulsive status epilepticus (NCSE), coma and even death. A typical electroencephalogram (EEG) associated with NCSE typically shows triphasic sharp waves. Repeat EEGs are necessary to monitor improvement after cefepime discontinuation, anticonvulsant therapy, and dialysis. Patients with impaired renal function generally improve with hemodialysis as only 15% of cefepime binds to serum protein. Knowledge and awareness that cefepime can cause neurotoxic clinical manifestations with characteristic EEG findings is essential for clinicians in early identifying and treating this potentially lethal but reversible complication. The appropriate renal dosing of the cefepime can minimize this complication.

A FAILING HEART—THE FIRST MANIFESTATION OF MULTIPLE MYELOMA Salman Jamaluddin Bandeali 1; Lee Lai Bach 2. 1Baylor college of Medicine, Houston, Texas ; 2Baylor College of Medicine, Houston, Texas. (Tracking ID # 111134)

LEARNING OBJECTIVES: 1. Recognize congestive heart failure may be the first initial presentation of multiple myeloma (MM).

2. Review amyloid cardiomyopathy (CMP) and its association with multiple myeloma.

CASE INFORMATION: A 58-year-old male with HTN for 5 years and a recent embolic stroke secondary to paroxysmal atrial fibrillation presented with worsening shortness of breath, orthopnea, and paroxysmal nocturnal dyspnea for 2 weeks. Physical exam was remarkable for elevated JVP, pulmonary crackles up to mid zones bilaterally, pedal edema, and residual left sided weakness. Laboratory studies showed Hb 14.1 g/dl, BNP 1396 pg/mL, creatinine 1.1 mg/dl, and calcium 9.6 mg/dl. EKG revealed normal sinus rhythm, low voltage QRS with nonspecific T wave inversions in V1,2,3. A chest x-ray showed pulmonary congestion and pleural effusions. Cardiac ischemia was ruled out by negative cardiac enzymes. The patient was diuresed and responded well. An echocardiogram reported an ejection fraction of 20% with generalized left ventricular hypokinesis and concentric biventricular hypertrophy. The ejection fraction has been steadily declining from 55% to 20% over a period of one year. Initially, his heart failure was attributed to his HTN. However, a coronary angiography revealed mild atherosclerotic disease, and the right heart catheterization demonstrated findings consistent with restrictive CMP with associated pulmonary hypertension. Infiltrative disease was considered. Serum ferritin, ceruloplasmin, ACE levels were all negative. Serum protein electrophoresis was significant for a monoclonal IgG spike of 1.5 g/dl, and Beta2-microglobulin was 3259 ng/mL (4-500 ng/mL). Further workup showed multiple lytic lesions in the left femur, glenoid and humerus bilaterally. UPEP identified 2 monoclonal peaks IgG kappa and lambda Bene Jones protein. An abdominal fat pad biopsy tested positive for amyloid with Congo red stain. A bone marrow biopsy revealed 30-40% infiltration of plasma cells positive for CD38. A diagnosis of MM with an initial presenting feature of cardiac amyloidosis was made. He was started on bortezomib and dexamethasone.

IMPLICATIONS/DISCUSSION: The common causes of systolic heart failure are ischemic heart disease, hypertension, valvular disease, and dilated CMP with only 5% being infiltrative. Amyloid CMP is a rare condition. About 10% to 15% of patients with multiple myeloma may develop overt amyloidosis during the course of their disease. Only one case in an Italian literature reported cardiac amyloidosis manifesting as the initial presentation. Typically, patients with amyloid CMP present with right sided heart failure, and pulmonary edema is rare. Uniquely, our patient had pulmonary edema. Diagnostic clues usually include low voltage EKGs and echocardiogram showing left ventricular wall thickening with diastolic dysfunction. The classic “granular and sparkling” pattern on echocardiogram is identified in only 26% of patients with amyloid CMP. Treatment is with supportive therapy. Digitalis should be used cautiously due to its potential binding to the amyloid fibrils, increasing its susceptibility for toxicity. In patients with MM, the presence of cardiac amyloidosis is an independent poor prognostic factor with a median survival of 1.1 years after diagnosis of heart involvement and 0.75 years after onset of heart failure. Only one third of the patients with MM are eligible for stem cell transplant. In the phase I VELCADECANT2007 study, the combination of bortezomib with dexamethasone has revolutionized the treatment of AL amyloidosis resulting faster hematological response and possible prolonged survival. In the literature, there are two cases reporting improvement of myocardial functionality by at least 20% after treatment with bortezomib and dexamethasone in addition to hematological and clinical remission. In conclusion, congestive heart failure is a common presentation requiring work up; recognizing amyloid CMP may be the first manifestation of MM is critical for prompt diagnosis and treatment to warrant a better outcome.

BACTERIAL OVERGROWTH IN AN OSTOMY RESPONSIVE TO RIFAMIXIN THERAPY. Bryan Jesus Romero 1; Priyanka Ashish Vyas 2; Anthony Donato3. 1Reading Hospital, Reading, Pennsylvania; 2Reading Hospital and medical center, Wyomissing, Pennsylvania; 3Reading Hospital, Birdsboro, Pennsylvania. (Tracking ID # 111145)

LEARNING OBJECTIVES: 1. Short bowel syndrome has a unique set of medical problems for the internist including bacterial overgrowth, B12 deficiency, and kidney stones

2. Diarrhea can be an especially morbid concern, as large-volume diarrheas without bowel surface area to absorb them can lead rapidly to hypotension and vascular collapse.

CASE INFORMATION: 67 year-old male with history of rectal cancer status post ileostomy presented to the hospital twice within one week due to symptoms of increased output in his ileostomy. In the first presentation he was hypotensive and had new renal failure, with creatinine going from 1.0 mg/dl to 3.3 mg/dl but responding immediately with correction of renal failure with saline within 2 days. One week later, returned to the ER with dizziness on standing, hypotension and creatinine of 5.0 mg/dl. Pt reported no risk factors for diarrhea, no travel history, no change in diet, and no sick contacts at home. He was taking metformin, but had been on it for years without diarrhea. His ileostomy had been in working properly since 2003. In the hospital patient require aggressive fluid repletion and creatinine slowly improved. Stool analysis for blood. Clostridium difficile toxin, ova and parasite, and routine cultures were all negative. Given the lack of a new medicine or infection, bacterial overgrowth was suspected, and an empiric trial of Rifaximin was undertaken. On day three stools were
solid, output was to a minimum, and he was tolerating solids. Patient was discharged to finish two weeks of Rifamixin with PRN imodium and to date has not returned to the hospital.

IMPLICATIONS/DISCUSSION: Bacterial overgrowth is a common cause of diarrhea in short bowel syndrome. Rifamixin is an antibiotic that is non-absorbable in the gut, and can alter the flora responsible for bacterial overgrowth. Patients with ileostomies presenting with acute diarrhea and negative stool cultures may benefit from rifamixin therapy to control overgrowth of gram negative organisms.

A CASE OF HEALTHY ATTENTION-SEEKING BEHAVIOR Wendy Gray 
Wendy Gray 
1. Boston University Medical Center, Boston, Massachusetts. (Tracking ID # 11149)

LEARNING OBJECTIVES: 1. Strategically diagnose causes of attention-seeking problem behavior in patients with Intellectual and/or Developmental Disabilities (ID/DD) who have communication challenges.
2. Recognize premenstrual symptoms as an etiology of problem behavior in female patients Intellectual and/or Developmental Disabilities (ID/DD) who have communication challenges.

CASE INFORMATION: A 29-year-old female with cerebral palsy and communication challenges presented to Primary Care accompanied by the manager of her Group Home, who raised concerns of problem behavior. The behavior was described as “attention-seeking” and “demanding” in nature, occurring around 3 pm, upon return from Day Program, when the patient would complain of pain and request a prn dose of ibuprofen. Group home staff suspected that the patient’s demands were related to a need for attention rather than to physiologic pain, for three reasons: the patient’s inconsistent and vague description of her pain; the ability to distract the patient from her pain; and the potential for “copycat” behavior, since another group home resident also requested and received prn analgesics on a regular basis. Social history revealed the patient to be independent in many activities of daily living, able to self-toilet and dress herself privately. She communicated using facial expressions, pointing, and verbalization of “yes,” “no,” and select other words. At the time of initial presentation, the patient had no complaint of pain. Lab work and physical exam were unrevealing. With the premise that the behavior was attention-seeking in nature, an empiric trial of a daily afternoon coffee breaks with social interaction was initiated. At one month follow-up, this intervention seemed to be having great effect, however, the behavior eventually resumed in an infrequent and apparently random manner. A connection to the patient’s menstrual cycle was made when the patient requested a sanitary pad during a week of increased frequency of behavioral episodes. Ensuing conversation with the patient revealed that the episodes in question were, in fact, related to monthly cramping and headaches associated with menses. Changing the ibuprofen prescription from prn to regularly scheduled TID dosing during the week of menses resulted in lasting success and relief to the patient and group home staff.

IMPLICATIONS/DISCUSSION: Diagnosis and management of medical etiologies underlying problematic behavior is a common reason adults with Intellectual and/or Developmental Disabilities (ID/DD) present to adult primary care clinics. The list of potential medical causes of problematic behavior in adults with ID/DD is extensive and includes acute and chronic systemic illness, organ system dysfunction, medication effects and psychiatric illness. Some causes of behavior disorder are specific to adults with ID/DD. For example, specific genetic syndromes are characterized by behavioral phenotypes including excessive talkativeness or impulsivity. On the other hand, many common medical etiologies of problematic behavior in adults with ID/DD are conditions common in all adults, including constipation and premenstrual syndrome. This case illustrates two important aspects of the diagnostic workup of behavioral problems in an adult with ID/DD. First, evaluation of physiologic causes of behavior disruption should be accompanied by a strategy of reducing the demands on the patient to make requests. In this case, making social interaction a scheduled event reducing the confusion of secondary gain associated with prn ibuprofen requests. As scheduled social interactions are enjoyed by most adults, such an intervention must be evaluated over many months, with close attention to needs that persist once the novelty of scheduled attention has worn off. A second important point illustrated by this case is the effect that premenstrual syndrome, which affects an estimated 30% of the general adult female population, may have in the behavior pattern of an adult woman with ID/DD. Women with ID/DD may not have the vocabulary necessary to describe menstrual cramps, and non-verbal indications may erroneously indicate abdominal problems. A careful assessment of the relation of problem behaviors to the menstrual cycle of an adult woman with ID/DD is an important step in the diagnostic evaluation of behavior disorders.

METRONIDAZOLE-INDUCED ENCEPHALOPATHY Maria Han 1; Cynthia Margaret Cooper 1. Massachusetts General Hospital, Boston, Massachusetts. (Tracking ID # 11160)

LEARNING OBJECTIVES: 1. Identify the symptoms of metronidazole-induced encephalopathy, MIE
2. Recognize the characteristic findings of MIE on magnetic resonance imaging

CASE INFORMATION: Patient is a 64-year-old female who presented with dysarthria. Two months prior, she had an above-the-knee amputation. Three weeks prior, she developed diarrhea positive for C. difficile toxin and began an extended course of metronidazole. Days prior, she received doses of IV prochlorperazine for nausea. That day, she was discharged to rehab where her family found her confused and requested her return. She complained her tongue felt too big for her mouth and of pain in her limbs. Speech was slow, hypophonic, and dysarthric. She had odd oral movements with frequent tongue thrusting. There was subtle arm weakness and diminished reflexes. Toxicology screen and cultures were negative. Brain MRI showed non-specific subcortical T2 FLAIR signal abnormalities. Prochlorperazine-induced dyskinesia was suspected and this medication discontinued. Oral dyskinesia resolved but dysarthria and paresthesias persisted. She became lethargic and developed flaccid paresis. Motor conduction study showed reduced signal amplitude and conduction. CSF had normal protein and no leukocytes. ABG demonstrated hypoxia and hypercarbia. She was intubated. Repeat MRI showed symmetric T2 FLAIR signal hyperintensity of the subcortical white matter in the frontal and parietal lobes, corpus callosum, midbrain red nuclei, and dentate nuclei. Findings were felt to be consistent with metronidazole-induced encephalopathy, MIE. Metronidazole was discontinued, after a cumulative dose of 65 g. Ataxia improved though weakness persisted. Subsequent MRI showed less hyperintensity in the midbrain and dentate nuclei. Polyneuropathy only minimally improved with IV immunoglobulin.

IMPLICATIONS/DISCUSSION: Metronidazole is widely used for the treatment of anaerobic, abdominal and genital infections, including C. difficile colitis. Common side effects include nausea and altered taste. Neuropologic side effects are uncommon and include seizures and peripheral neuropathy. MIE is a rare complication with less than 20 previous case reports.
MIE typically manifests as cerebellar dysfunction, including ataxia and dysarthria. Symptoms have been reported with cumulative doses ranging from 25 g to 1080 g. Symptoms usually resolve within 7 days of discontinuation.

The characteristic MRI finding is bilateral symmetric T2 hyperintense lesions of the dentate nuclei. Lesions may affect the brainstem, corpus callosum, and subcortical white matter. The differential includes other toxic or viral leukoencephalitides and Marchiafava-Bignami Disease. Radiographic improvement typically begins within 14 days of antibiotic cessation. Neurotoxicity has been attributed to drug binding of ribonucleic acid and inhibited protein synthesis. Axonal edema may produce the characteristic MRI findings. Why certain brain areas are preferentially affected in MIE remains unclear.

MIE should be considered in any patient receiving a high cumulative dose of metronidazole who presents with new-onset cerebellar dysfunction.

**LEARNING OBJECTIVES:**

1. Recognize carbamezapine as a rare cause of thrombocytopenia.

**CASE INFORMATION:** A 21 year old female with history of bipolar disorder presented to the ER from county prison with four days of fever, petechial rash and severe thrombocytopenia. In ER, she did not look acutely ill and was afebrile. Physical exam showed a prominent petechial rash in bilateral lower extremities. Workup revealed a platelet count of 4 K/ul, WBC count of 3 K/ul and Hg 13.1 mg/dl. PT, APTT, INR, BUN/Cr and LFTs were within normal range. Antiplatelet antibodies GP Ia/IIa, GP IIb/IIIa and GP IIb/IIIa were negative. CT head was negative for hemorrhage. Peripheral smear showed normal RBC morphology with no schistocytes. Patient was given one dose of prednisone 60 mg IV, IVBG 50 grams and Ceftriaxone 2 grams IV in the ER. When asked specifically about the medication history, she stated that carbamezapine (200 mg BID) was a new drug started a month ago. Her only other medication included nevirapine. Carbamezapinewas held and nevirapine was continued. Pt was given one dose of platelets transfusion on hospital day 2. Her platelet count decrease to 161 k/ul over the next few days.

**IMPLICATIONS/DISCUSSION:** Drug induced thrombocytopenia is usually suspected in any patient with acute or subacute thrombocytopenia as per criteria defined by George et al in the literature. Thrombocytopenia can be a complication of many drugs including carbamezapine which is commonly used to treat bipolar disorder. In our case carbamezapine was the probable cause of thrombocytopenia in a young female with bipolar disorder. The development of unexplained abdominal pain in patients taking oral contraceptives should prompt clinicians to consider this possibility and to perform ultrasound with Doppler studies.

**LEARNING OBJECTIVES:**

1. Recognize levamisole-associated cutaneous vasculitis and neutropenia as a serious and common consequence of cocaine use in a vulnerable population.

**CASE INFORMATION:** A 42 year old man presented with pain, swelling and rash on his left lower leg for 2 days. He had a twenty year history of active daily cocaine use and had noted that eight months prior to admission, when he changed cocaine suppliers, he developed a truncal rash. Examination revealed many tender purpuric lesions accompanied by significant non-pitting edema to the middle shins of his bilateral lower extremities. In addition, there was a diffuse violaceous reticular rash on his arms and back. The patient became neutropenic within 48 hours of hospitalization with a white blood count nadir of 3,200/ µL, and absolute neutrophil count of 800/ µL.
Urine toxicology was positive for cocaine and cannabinoids. Serological workup showed marginal anti-nuclear antibody (titer of 1:40), negative double stranded DNA, markedly positive erythrocyte sedimentation rate of 89 mm/hr, and C-reactive protein of 9 mg/dl. Low C3 and C4, positive anti-histone antibodies, positive anti-cardiolipin antibodies (IgG and IgM), positive lupus anticoagulant, and positive both peripheral-and cytoplasmic- anti neutrophil cytoplasmic antibodies (p-ANCA and c-ANCA). Hepatitis B, HIV, and Hepatitis C viral serologies were all negative. While a test for Lyme antibody titer was positive (titer 1.6), the confirmatory Lyme immunoblot was negative. Biopsy of skin of lower leg showed nonspecific vasculitis. Although urine testing for levamisole was not performed, serum testing for levamisole was negative from a sample taken at least 48 hours after the patients’ most recent cocaine use.

**IMPLICATIONS/DISCUSSION:** There have been reports that up to 70% of confiscated cocaine supplies in the United States have been cut with levamisole (1). Cutting agents are frequently added for several reasons including boosting the volume of compounded drug, “tracing” the drug to identify its point of origin, and to add other agents to enhance the experience when using the drug (2). Similar contamination occurred in the early 1980s with MPTP which resulted in the development of a permanent Parkinsonian syndrome (2). Patients who use and/or are addicted to illegal drugs remain vulnerable to contamination of these unregulated substances.

Levamisole is an anti-parasitic and immunomodulating agent known to cause serious side effects including bone marrow suppression and neutropenia. In addition, cutaneous vasculitis with or without skin necrosis in association with anti-phospholipid and antineutrophil cytoplasmic antibodies may occur. Histologic specimens typically reveal a vasculopathic reaction pattern ranging from leukocytoclastic and thrombotic vasculitis to thrombotic vasculopathy without true vascular reactive pattern ranging from leukocytoclastic and thrombotic vasculitis to thrombotic vasculopathy without true vasculitis. Testing for levamisole via gas chromatography and mass spectrometry in blood and urine should be done promptly as the drug has a short half-life (5.6 hrs). While spontaneous resolution occurs by discontinuing levamisole use, lack of awareness of this diagnostic entity on the part of treating clinicians might delay the correct diagnosis and result in additional patient harm. Clinicians who observe skin necrosis or purpuric rashes and neutropenia in patients who use cocaine should consider levamisole as a possible cause in this vulnerable population.

1. Agranulocytosis associated with cocaine use - four States, March 2008–November 2009. MMWR Morb Mortal Wkly Rep 2009;58:1381–5.
2. Chang A, Osterloh J, Thomas J. Levamisole: a dangerous new cocaine adulterant. Clin Pharmacol Ther;88:408–11.

**THE FATAL CONSEQUENCES OF OVERLOOKING A FIBROID**

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**LEARNING OBJECTIVES:**

1. Recognize metastatic leiomyosarcoma as a rare cause for hematoma and lung nodules.
2. Recognize the current diagnostic dilemma of differentiating a fibroid from a leiomyosarcoma and the potential implications.

**CASE INFORMATION:** A 49 year old female presents with 3 weeks of scant hematoma occurring each morning. Past medical history significant for asthma, fibroids, GERD, breast augmentation, a former 7 pack year smoking history, and a maternal history of breast cancer at age 42. On review of symptoms, she reports intermittent sweats, progressive dyspnea on exertion, 70 pound weight gain over the last 2 years, pelvic pressure, difficulty urinating, and intermenstrual spotting for the last 3 months. She denies fevers, constitutional symptoms, URI symptoms, chest pain, orthopnea, PND, lower extremity edema, epistaxis, bleeding diathesis, skin lesions, rash. On exam, she is afebrile with stable vital signs. She is an obese female in no acute distress. Her lungs are clear, heart is regular without murmurs, breasts have no masses, abdomen is non-tender, non-distended with no shifting dullness, skin has no rashes, nodules, atypical nevi, no lymphanopothy. On bimanual exam, the uterus is large occupying the entire pelvis. A CXR reveals bilateral pulmonary nodules. CT chest shows greater than 30 pulmonary nodules with associated ground glass halos. CT abdomen/pelvis shows a large heterogenous mass that favors a uterine fibroid but cannot rule out a sarcoma with no associated lymphadenopathy. An ECHO shows no obvious vegetations. Patient had a normal screening mammogram 3 months prior. Laboratories reveal a normal CBC, negative bacterial and fungal cultures, and negative rheumatologic serologies. A CT guided lung biopsy shows poorly differentiated malignancy, with S100 positive favoring metastatic melanoma but inconclusive. A whole body PET scan shows abnormal uptake in pulmonary nodules, pelvic mass, and right breast. An ultrasound guided biopsy of the breast lesion and hysterectomy are performed. Pathology from the breast mass and hysterectomy return as metastatic leiomyosarcoma, which is consistent with the lung biopsy. The patient is now undergoing chemotherapy.

**IMPLICATIONS/DISCUSSION:** Leiomyosarcomas account for 1% of all uterine malignancies with a female incidence of 0.67/100,000. Given the rarity of leiomyosarcomas, our experience and diagnostic capabilities are limited.

Fibroids are extremely common and are noted in approximately 80% of surgically excised uteri. As of now, there is no clear indication for when fibroids must be further evaluated and treated and current guidelines are based on patient preference. Certain signs and symptoms may signify the need for further work up including pelvic pain, irregular or heavy uterine bleeding, rapid increase in growth, and infertility. Like fibroids, leiomyosarcomas occur more often in African Americans and present with similar symptoms consisting of bleeding, pelvic pressure, abdominal distension, and reproductive issues, making the diagnosis of leiomyosarcoma a formidable challenge.

The ability to distinguish malignant and benign uterine tumors is now more important than ever as more conservative approaches to fibroids are available that preserve the uterus. There is evidence that MRI may help differentiate sarcoma from fibroid and endometrial biopsy may be a less invasive modality to diagnose sarcoma however a negative result does not rule it out.

Leiomyosarcomas are aggressive tumors. Early hematogenisis metastases most often involve the lungs followed by the liver. Metastases to the breast are rare and represent less than 2% of all breast malignancies. This may be secondary to the relatively avascular fibrous tissue of the breast. To date, there are 5 case reports of uterine leiomyosarcomas that have metastasized to the breast. We describe the 6th case.

**ETANERCEPT ASSOCIATED ACUTE ONSET HEART FAILURE REQUIRING BIVENTRICULAR ASSIST DEVICES**

**Monique S Tanna 1; Sharon Leung 1; Darlene LeFrancois 1**

1 Montefiore Medical Center, Bronx, New York. (Tracking ID # 111198)

**LEARNING OBJECTIVES:**

1. Recognize adverse cardiovascular effects of tumor necrosis factor antagonists.
2. Assess cardiac function prior to prescribing tumor necrosis factor antagonists and know when they are contraindicated.

**CASE INFORMATION:** A 42-year-old woman presented with dyspnea on exertion and intermittent palpitations for two days. She had an unlimited exercise capacity at baseline and no cardiac history or risk factors. The patient had recently initiated treatment with etanercept, a
A 75-year-old gentleman with a past medical history of neurofibromatosis and a chronic left groin wound secondary to prior peripheral nerve sheath tumor removal was admitted to an ongoing review of peripheral nerve sheath tumor resection. Laboratory findings included WBC count 14,000, SGOT 120, SGPT 126, CPK 346 (normal four days prior), CK-MB 84.3 (24.4%), and troponin-T 0.98 (0.35 four days prior). While a chest radiograph and transthoracic echocardiogram four days prior had demonstrated clear lung fields and normal ejection fraction (EF), repeat testing revealed pulmonary edema with bilateral pleural effusions, biventricular global dysfunction, and an EF of 10%. CT chest was negative for pulmonary embolism. Serologic testing for an infectious etiology and histologic examination of myocardium were negative for myocarditis. Refractory cardiogenic shock despite treatment with intravenous diuretics and inotropic agents required emergent placement of biventricular assist devices. She underwent device explantation on post-operative day 5 and demonstrated normal ventricular function and normal EF. At five week follow-up she was symptom free with unlimited exercise tolerance.

**IMPLICATIONS/DISCUSSION:** Heart failure is associated with elevated TNF levels, and these levels correlate with disease severity. Once thought to be a promising therapeutic agent for the treatment of heart failure, TNF antagonists have not been efficacious in randomized clinical trials. In contrast, one trial found higher rates of mortality and heart failure hospitalizations in the TNF antagonist (infliximab) group. There are also rare cases of etanercept associated heart failure described in the literature. A case series identified by querying the FDA’s MedWatch program found 47 cases of new or worsening heart failure after TNF antagonist therapy. Of these, 38 were new onset heart failure; 19 of these had no identifiable risk factors. It has been argued that rheumatoid arthritis patients may have an intrinsically higher risk of heart failure, potentially confounding these findings. Despite this current controversy, the particular severity and shorter interval from first dose to symptom onset (8 days) in this case strongly suggests a causal relationship between drug exposure and heart failure development. In addition to the temporal relationship of etanercept associated severe new onset heart failure, complete resolution with drug discontinuation also supports a true association.

Current guidelines recommend against the use of TNF antagonists in patients with NYHA Class III or IV heart failure. One guideline recommends obtaining an echocardiogram in patients with well compensated heart failure (Class I or II), and avoiding TNF antagonists in those with an EF <50%. If therapy is initiated, early recognition of the signs and symptoms of new or worsening heart failure is critical, in which case TNF antagonists should be discontinued immediately.

**LEARNING OBJECTIVES:**

1. To recognize indiscriminate herbal medications use as a cause of severe, “silent” hepatocellular injury and a probable etiology of future hepatic failure
2. To highlight the broad differentials for transaminitis in a young, otherwise healthy female

**CASE INFORMATION:** A 43-year-old female presented for annual physicals and had labs drawn afterwards. About 2 days prior, she had mild chills, nausea and RUQ pain which were self-limited and resolving at the time of presentation. However, severely elevated transaminases (ALT >14000, AST >12000) prompted direct admission for further evaluation, upon which she denied fever, unintentional weight loss, nausea, vomiting, jaundice, anorexia, diarrhea, pruritus, arthralgias, myalgias, headaches, suicidal thoughts, cough, or hemoptysis. She had no pertinent past medical history and consumed 6–8 alcoholic drinks every weekend, including the weekend prior to her physicals. She denied tobacco or illicit drugs use. She denied recent travel or sick contacts. She was married and used condoms for birth control.

Medications included a multivitamin, a fatty acid supplement and colon cleansing herbal preparations all purchased over the internet. She used these herbal preparations weekly for colon cleansing and weight loss. She denied tylenol use.

**A MAN AND HIS HORSE... **

**BACTERIA** Thomas Jensen 1; Neha Prakash 2; Michael Frank 2. 1MCW, Greenfield, Wisconsin; 2MCW, Milwaukee, Wisconsin. *(Tracking ID # 112024)*

**LEARNING OBJECTIVES:**

1. 1) Describe an unusual organism causing complicated skin infections.
2. 2) Review treatment of Streptococcus bacteremia.

**CASE INFORMATION:** A 75-year-old gentleman with a past medical history of neurofibromatosis and a chronic left groin wound secondary to prior peripheral nerve sheath tumor removal was admitted to an outside facility for fevers, chills, nausea, vomiting, and worsening erythema around his left groin wound. He was found to have leukocytosis with bandemia, tachycardia, and a fever of 102 degrees F. The patient was started on vancomycin and piperacillin/tazobactam and subsequently transferred to our hospital for continued management and topotherapy for a second peripheral nerve sheath tumor. Blood cultures drawn at the outside facility revealed pan-sensitive *Streptococcus dysgalactiae* subspecies *Equisimilis*, and echocardiogram was negative for endocarditis. He was started on penicillin G and then switched to ceftriaxone out of dosing convenience for a fourteen-day course of treatment. Upon discharge his erythema had drastically improved, and his other symptoms had resolved.

**IMPLICATIONS/DISCUSSION:** *Streptococcus dysgalactiae* subspecies *Equisimilis* (SDSE), also known as group G strep, has often been known as a veterinary pathogen. However, in recent years it has been increasingly recognized as a human pathogen. SDSE is normal human flora on skin and in the vagina and upper respiratory and gastrointestinal tracts. Infections most commonly manifest in skin and soft-tissue, including pyoderma, cellulitis, wound infections, abscesses, necrotizing fasciitis, and bacteremia. The spectrum of clinical manifestations of this organism closely resembles those of *Streptococcus pyogenes*. Predisposing factors for SDSE infections include older age, diabetes mellitus, drug or alcohol abuse, cardiovascular or neoplastic disease, history of irradiation or immunosuppression. SDSE remains almost uniformly susceptible to penicillin and other beta-lactam agents. Addition of aminoglycosides may be considered to avoid poor or delayed response; however, the use of penicillin alone has been considered the therapy of choice. In aggressive cases such as toxic shock syndrome, clindamycin may be of benefit to decrease toxin production. Typical treatment course is ten to fourteen days for bacteraemia with IV antibiotics.
Lab studies revealed ALT 14,314, AST 12,060, normal albumin, bilirubin, alkal phos, GGT, BMP and CBC. LDH was elevated at 8724, INR was 1.5. CK, amylase, lipase, and acetaminophen levels were within normal limits. A urine tox screen, hepatitis panel, autoimmune panel, HIV serologies, EBV and CMV IgM were negative. Abdominal CT showed mild thickening of the gallbladder wall with surrounding fluid. A negative HIDA scan ruled out cholecystitis. Hepatic vein thrombosis was ruled out by abdominal doppler ultrasound.

The herbal remedies were stopped, abdominal tenderness completely resolved and transaminases trended downwards. Liver biopsy was deferred following lab improvement. Post discharge, transaminases, LDH and INR completely normalized after 3 weeks of abstinence from herbal medications.

**IMPLICATIONS/DISCUSSION:** Though not confirmed by liver biopsy, hepatocellular injury as evidenced by abnormal labs was likely caused by one or more of the ingredients in the herbal formulations. Other causes of hepatocellular injury like viral hepatitis, autoimmune hepatitis, acetaminophen toxicity, NAFLD, hepatic vascular disease were unlikely in this case. Besides, the temporal relationship between use of the remedies, the abnormal labs and their rapid normalization after discontinuation strongly suggested herbal formulation as the main etiology of hepatocellular injury. The high B12 level was due to use of a multivitamin preparation obtained from same source which contained various vitamins in very high concentrations including 3333% RDA of B12 in each pill! The colon cleansing remedies was a package of 3 formulations containing 9, 22 and 35 herbs respectively. Some of the herbs were in more than one formulation, increasing the likelihood of toxicity. Literature review revealed that several of these herbs have been implicated as causes of hepatitis including black cohosh, glycyrrhiza and skullcap. Also many herbal remedies have been linked to liver toxicity ranging from asymptomatic transaminits to fulminant hepatic failure.

The use of herbal medications is regaining popularity in recent years. Easy accessibility to herbal remedies, increasingly through the Internet, has led to increased frequency of use, and expectedly an increased incidence of their side effects. The active ingredients and exact formulations of herbal remedies are frequently obscure. More importantly, their benefit and side effect profiles are often not well established. Clinicians should routinely inquire about patient’s use of herbal preparations during clinical interviews and consider herbal toxicity early during the workup for transaminits and hepatitits.

This case shows the potential danger of indiscriminate use of herbal remedies as well as the urgent need for their regulation and standardization.

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**FROM NON-ST ELEVATION MYOCARDIAL INFARCTION TO LYMPHOMA**

Pamela Joyce Barnes 1; Pamela Joyce Barnes 1; Dustin T. Smith 2.
1Morehouse School of Medicine, Atlanta, Georgia; 2Veterans Administration Hospital, Atlanta, Georgia. (Tracking ID # 11217)

**LEARNING OBJECTIVES:**
1. Understand the clinical classification of non-Hodgkin’s lymphomas
2. Recognize the classic B-symptoms and extranodal disease sites
3. Identify the most common treatment regimen for Diffuse Large B-cell Lymphoma

**CASE INFORMATION:** A 66 year old male presented with non-ST elevation myocardial infarction secondary to demand ischemia due to a normocytic anemia (hemoglobin 7.4 g/dL). The patient’s prior hemoglobin was noted to be 15.5 g/dL. Review of systems was positive for a ten pound weight loss, night sweats, and decreased energy. Physical exam revealed pale conjunctiva and tachycardia with a 3/6 high pitched early peaking systolic murmur. Splenomegaly and a fixed bony forehead lesion were also noted. EKG showed sinus tachycardia with nonspecific T-wave changes and isolated ST depression in V2. Troponin trended down from a peak of 0.26 ng/mL. The patient was transfused with 4 units of red cells and his presenting symptom of chest pain resolved.

Cardiology was consulted and determined the patient’s presentation was consistent with demand ischemia due to anemia. Computed tomography scans of the head and abdomen were obtained. Imaging revealed multiple punched out lytic lesions within the bilateral calvarium with an associated soft tissue mass in the left frontal bone and marked splenomegaly at 28.1 cm. Further laboratory studies to evaluate for multiple myeloma including urine and serum protein electrophoresis were negative and iron studies were consistent with an iron deficiency anemia. HIV was negative and thyroid studies were normal. A bone marrow biopsy was obtained and demonstrated hypercellular marrow with findings consistent with a mature B-cell lymphoproliferative disorder. Flow cytometry confirmed the presence of a distinct clonal CD5 positive/CD23 positive/FMC 7’ positive mature B-lymphocyte population.

**IMPLICATIONS/DISCUSSION:** The World Health Organization currently classifies lymphoid neoplasms into 3 categories: B-cell neoplasms, T-cell and NK cell neoplasms, and Hodgkin lymphomas. Approximately 80–85% of non-Hodgkin’s lymphomas in adults are of B-cell origin. Clinically, non-Hodgkin’s lymphomas can further be divided into indolent, aggressive, or highly aggressive tumors. Patients with indolent tumors typically live for several years, even without treatment but cure is usually not possible. Highly aggressive lymphomas are frequently curable as they are generally responsive to chemotherapy. Diffuse large B-cell lymphoma (DLBCL) is considered an aggressive B-cell lymphoma. It is the most common lymphoma of the aggressive lymphomas. Approximately 30% of patients with DLBCL may present with B-symptoms (night sweats, fever, and weight loss). The most common extranodal location for disease is the gastrointestinal tract but other sites such as the testis, thyroid, bone, and central nervous system may be affected by disease. The primary therapy for this neoplasm is CHOP plus rituximab for at least six cycles. This case illustrates to clinicians the importance of physical exam findings and the importance of considering the differential diagnosis for causes of both coronary ischemia/infarction and anemia.

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**A CASE OF CERVICAL EPIDURAL ABSCESS DUE TO MYCOBACTERIUM TUBERCULOSIS**

Masayuki Kobayashi 1; Simi Padival 2; Teine Keijinkai Hospital, Sapporo, N/A; 2Teine Keijinkai Hospital, Sapporo, Hokkaido, N/A. (Tracking ID # 11219)

**LEARNING OBJECTIVES:**
1. To recognize the presentation of spinal epidural abscess, a rare disease with high mortality
2. To recognize the diagnostic process of identifying tuberculous infections without a positive culture

**CASE INFORMATION:** A 75 year-old man with a medical history of pulmonary tuberculosis treated 57 years ago and diabetes mellitus presented with a 2 week history of daily fever, headache, and neck stiffness. He had been admitted to another hospital 5 days prior to presentation on suspicions of meningitis however the lumbar puncture was negative. He was then transferred to our hospital for further evaluation due to persistent fever and worsening neck stiffness. On physical exam, he appeared ill with a temperature of 38.6 C and had limited range of motion in his neck without point tenderness along the spinous processes. The neurologic exam was initially unremarkable. Laboratory exams showed an alkaline phosphatase 1144 U/L, PGTP
A FORTUNATE RASH

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LEARNING OBJECTIVES: 1. To recognize the clinical findings of heparin induced skin necrosis
2. To increase awareness of complications associated with the low molecular weight heparins (LMWH).

CASE INFORMATION: We present the case of an 82 year old female with a history of rheumatoid arthritis on methotrexate and abatacept admitted to the hospital with diverticulitis complicated by a perforation and abscess who on hospital day 10 complained of a painful abdominal rash. On admission, the patient having normal renal function was started on enoxaparin (40 mg qd sc) for DVT prophylaxis. The platelet count on the day prior to the onset of the rash was 402,000 and 286,000 the day the rash appeared. During the 7 days prior to the development of the rash, the platelets ranged from 402,000-430,000. The day before the rash, the patient had a platelet count of 286,000. The rash started on day two with eventual resolution and no further consequences during her hospital stay. The day the rash was noted both a HIT ELISA and serotonin release assay were sent. The HIT ELISA later returned markedly positive with an OD of 2.68, and the serotonin release assay also returned positive confirming a diagnosis of HIT.

IMPLICATIONS/DISCUSSION: Spinal epidural abscess (SEA) is a rare but potentially life threatening disease that requires early diagnosis and management. It is seen in 2-3/10,000 hospital admissions and risk factors include diabetes mellitus, IV drug use, or trauma. Patients classically present initially with pain and fever only, however rapid progression of neurologic deficits such as paralysis can occur. Mortality has remained at 14% over the last several years emphasizing the need for rapid assessment and treatment. Contrast MRI with gadolinium is important for delineation of SEA and specimens should be obtained either from CT-guided needle aspiration or surgical drainage of the abscess to determine antibiotic coverage. Blood cultures may be negative in 40% of cases. The most common cause of SEA in the developed world is Staphylococcus aureus, however Mycobacterium tuberculosis has been known to present in atypical ways including as an SEA. Tuberculous SEA typically is an extension of Pott’s disease and less than 1% is isolated. While the gold standard of diagnosing extrapolmonary tuberculosis is acid-fast bacilli-positive cultures, some patients have culture-negative findings. Histopathologic findings of granulomatous inflammation with Langerhan’s giant cells along with risk factors may be sufficient to initiate a patient on tuberculosis therapy. Our patient had a history of previous tuberculosis infection as well as histopathologic findings of granulomatous disease prompting treatment for M. tuberculosis. Drainage of the abscess and the antibiotic regimen helped this patient with full recovery. A high clinical suspicion is needed to prevent mortality in a precipitous disease caused by an insidious but global pathogen.

A 67 year old man with hypertension presented with five months of episodic, intermittent dizziness associated with vomiting and diaphoresis. The patient denied trauma, fevers, weight loss, fatigue, tinnitus, pruritus, hearing loss, headache, focal weakness, dysarthria, visual changes, shortness of breath, chronic cough, snoring at night, dyspnea on exertion, or changes in urine. He denied any history of smoking or drug use, but he used to work as a welder for 50 years. On exam, orthostatics were negative with a blood pressure of 129/72 mmHg and an arterial oxygen saturation of 98% on room air. He appeared comfortable with no signs of cyanosis, his lungs were clear to auscultation, his heart sounds were normal, and his abdominal exam was benign and revealed no organomegaly or masses. His neurological drain demonstrated ESBL E. coli. In isolation, the lowered platelet count may have been thought due to the new medication; however, the timing of the decreased platelet count and the rash were characteristic of heparin-induced skin necrosis. We immediately held the enoxaparin injections and began an argatroban drip. Over the course of the next few days the platelet count continued to drop and a total of three painful rashes developed over the lower abdomen each with a central area of necrotic tissue and surrounding erythema (see Figure 1). A platelet nadir of 104,000 was reached seven days after the appearance of the rash and the discontinuance of enoxaparin. The rashes ceased progressing around day two with eventual resolution and no further consequences during her hospital stay. The day the rash was noted both a HIT ELISA and serotonin release assay were sent. The HIT ELISA later returned markedly positive with an OD of 2.68, and the serotonin release assay also returned positive confirming a diagnosis of HIT.

IMPLICATIONS/DISCUSSION: LMWHs such as enoxaparin are anticoagulants closely related to unfractionated heparin in structure and mechanism of action; however, as a class these anticoagulants are preferred due to their predictability, ease of administration, and decreased risk of complications such as heparin induced thrombocytopenia (HIT). The risk of HIT with LMWHs ranges from 0.7-2% depending on the study population and dosage. HIT may result in a prothrombotic state, which with clinical evidence of thrombosis is termed heparin induced thrombocytopenia with thrombosis (HITT). Heparin-induced skin necrosis is an example of thrombosis - it is a rare complication and even more unusual for the LMWHs. Blood clots develop in the small, penetrating blood vessels of skin tissue, usually affecting the abdomen, nose, and extremities - often near sites of drug injection. The resulting lesion is characterized by an area of central necrosis with an erythematous base, and the natural course ranges from self-limiting reactions to full-thickness skin loss with need for skin grafting. The Four T’s is a clinical tool used as a guide for diagnosis of HIT and includes the following: timing, degree of thrombocytopenia, evidence of thrombosis, and lack of alternative causes. In isolation, the initial drop in the platelet count for our patient might not have led to consideration of HIT because the platelet count was in the normal range and had only decreased approximately 30%. The rash was thus fortuitous for our patient as the enoxaparin was discontinued and argatroban started one or two days sooner than would have otherwise been. By recognizing the skin rash as heparin induced skin necrosis, stopping enoxaparin and initiating anticoagulant therapy may have prevented more serious thrombotic complications.

LEARNING OBJECTIVES: 1. Understand the differential diagnosis of erythrocytosis.
2. Recognize Renal Cell Carcinoma as a common cause of secondary erythrocytosis.

CASE INFORMATION: A 67 year old man with hypertension presented with five months of episodic, intermittent dizziness associated with vomiting and diaphoresis. The patient denied trauma, fevers, weight loss, fatigue, tinnitus, pruritus, hearing loss, headache, focal weakness, dysarthria, visual changes, shortness of breath, chronic cough, snoring at night, dyspnea on exertion, or changes in urine. He denied any history of smoking or drug use, but he used to work as a welder for 50 years. On exam, orthostatics were negative with a blood pressure of 129/72 mmHg and an arterial oxygen saturation of 98% on room air. He appeared comfortable with no signs of cyanosis, his lungs were clear to auscultation, his heart sounds were normal, and his abdominal exam was benign and revealed no organomegaly or masses. His neurological
A CASE OF SEVERE SERUM SICKNESS IN A RENAL TRANSPLANT RECIPIENT

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LEARNING OBJECTIVES: 1. Distinguish serum sickness from infection in immunocompromised patients. 2. Treat serum sickness in post-transplant patients aggressively and early with plasmapheresis in an effort to preserve the transplanted graft.

CASE INFORMATION: A 51-year-old male presents to the emergency department (ED) with a 12-hour history of abdominal pain, diarrhea, vomiting, fever to 39.3°C, myalgias, and jaw pain. He is status-post unrelated living donor renal transplant seven weeks prior to admission. His post-transplant course had been complicated by two episodes of acute cellular rejection, the most recent requiring a three-day course of solomedrol followed by seven days of rabbit anti-thymocyte globulin infusions. He was discharged one day prior to presentation. In the ED his temperature was noted to fluctuate from normal range to 39–39.3. His physical exam was pertinent for tachycardia and a diffuse maculopapular rash on his chest. His abdominal pain was out of proportion to his physical exam. A Computed Tomography scan without contrast of his abdomen revealed no abnormalities. He was subsequently admitted to the general medicine team. On hospital day one his abdominal pain, vomiting, and diarrhea resolved, but he developed diffuse bilateral joint pain and swelling. He continued to have oscillating high fevers for the first four days of hospitalization despite broad-spectrum antibiotics. All infectious workup including blood, urine, and stool cultures, joint aspiration, echocardiogram, and viral serologies such as Parvovirus, Cytomegalovirus, and Ebstein barr virus were negative. He also developed acute renal failure with a rise in creatinine from 2.2 to 5.2 in four days. Complement levels were normal and erythrocyte sedimentation rate was >100. Serum sickness was diagnosed and high-dose solomedrol was initiated on hospital day 3. Given his rising creatinine and only minimal improvement of symptoms after two doses of steroids, plasmapheresis was started. After one session of plasmapheresis his fevers resolved and his joint pain and swelling improved. He only received two sessions of plasmapheresis and had complete resolution of symptoms and normalization of creatinine.

IMPLICATIONS/DISCUSSION: Serum sickness is a clinical diagnosis with symptoms of rash, high fevers, and arthralgias in addition to exposure of an offending agent 1–2 weeks prior to symptom onset. Jaw pain and acute renal insufficiency are also common. It is a type three hypersensitivity reaction. Human immunoglobulins bind to proteins and deposition of these immune complexes lead to activation of the complement cascade. Anti-thymocyte globulin (ATG) is one drug known to cause serum sickness. ATG is commonly used for the treatment of acute graft rejection in kidney transplant patients. The incidence of serum sickness in this population is 7% to 27%.

It is very difficult to distinguish infection from serum sickness especially in immunocompromised hosts. All patients should be evaluated for infection with bacterial cultures and viral serologies. It is prudent to start empiric broad spectrum antibiotics as infection can be lethal. Unfortunately concern for infection often delays diagnosis or the patient is misdiagnosed as fever of unknown origin. Serum sickness should always be in the differential in transplant recipients with fever and ATG exposure history. Serum sickness resolves after removal of the antigen from the serum. Treatment is based on symptomatic relief and symptoms can last 1–2 weeks. Mild cases can be treated with anti-histamines and severe cases with steroids. The role for plasmapheresis is ill defined and has been recommended for refractory cases. This case shows that aggressive and early treatment with plasmapheresis is necessary not only for symptomatic relief but for graft preservation by preventing immune complex deposition. Furthermore, plasmapheresis may be preferential to steroids in this population given the difficulty in distinguishing serum sickness from infection and by avoiding systemic steroid's side effects. A prospective randomized trial would be beneficial to further evaluate the role of plasmapheresis in serum sickness.

HYPERTENSION IN NEUROFIBROMATOSIS TYPE 1: MUST ALWAYS CONSIDER PHEOCHROMOCYTOMA

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LEARNING OBJECTIVES: 1. Pheochromocytomas occur in 0.1–5.7% of patients with Neurofibromatosis Type 1. They can be life threatening if
missed but curable with early diagnosis. Therefore, PHEO should always be considered in patients with NF-1 and hypertension.

2. Patients with NF-1 should have yearly physical exams to screen for the many complications associated with NF.

**CASE INFORMATION:** We present the case of a 40-year-old female with PMH of Neurofibromatosis Type-1 with no medical follow-up in over 20 years who presented to the ER with complaints of nausea, vomiting, weight loss, headache, fever. She was found to be tachycardic, hypertensive, and febrile with a white blood count of about 30,000, elevated liver enzymes in the range of 800-900, elevated cardiac enzymes and a markedly prolonged QT. On physical exam, the patient appeared anxious, had dry mucous membranes and had cutaneous signs of NF but the remainder of the exam was unremarkable. The patient was worked up for an infection, hepatitis and cardiac disease but all studies were normal. Given the patient’s presentation, there was a high suspicion for pheochromocytoma (PHEO) and an underlying malignancy. A CT of the abdomen was done which showed a 10 cm heterogeneous right adrenal mass. A twenty four hour urine catecholamine collection was done which showed norepinephrine=4,508 mcg (NL < 170); epinephrine=840 mcg (NL < 35); normetanephrine=43,141 mcg (NL < 900) and metanephrine=16,478 mcg (NL < 400). Plasma studies also showed metanephrine=722 mcg (NL < 62) and normetanephrine=5,433 mcg (NL < 145). The patient was diagnosed with PHEO, pre-medicated with phenoxybenzamine for several weeks and subsequently had a right adrenalectomy with an uncomplicated post-op course. Pathology of the resected mass was diagnostic for PHEO.

**IMPLICATIONS/DISCUSSION:** Pheochromocytomas are rare catecholamine secreting neuroendocrine tumors arising from chromaffin cells in the adrenal medulla or extra-adrenal paraganglia. PHEOs are rare and occur in 0.05-0.2% of hypertensive individuals. Neurofibromatosis type 1 (NF-1) is an autosomal dominant genetic disorder where mutations occur in 0.05-0.2% of hypertensive individuals. Neurofibromatosis type 1 (NF-1) is an autosomal dominant genetic disorder where mutations in the NF-1 gene result in loss of functional proteins causing tumors to arise from nerve tissue. NF-1 affects approximately 1 in 3000 individuals worldwide. PHEO occurs in 0.1%-5.7% of patients with NF-1.

The patient’s history of NF-1 along with HTN, though rare, raised suspicion for PHEO. Along with ruling out infection and an underlying malignancy, pheochromocytoma also needed to be ruled out. Pheochromocytomas can potentially be life threatening if missed but are usually curable if diagnosed in time, therefore should always be considered in NF-1 patients who have hypertension. Furthermore, patients with NF-1 should have yearly physical exams to screen for the many complications associated with NF.

**THE HEART OF THE PROBLEM OF THE HEART** Kristal Carthan 1; Jasleen K Randhawa 2; Kurt Pfeifer 2. 1Medical College of Wisconsin, Wauwatosa, Wisconsin; 2Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 11245)

**LEARNING OBJECTIVES:** 1. Describe the impotence of transthoracic echocardiography in the evaluation of patients with recurrent heart failure of unknown cause. 2. Emphasize structural cardiac lesions as a potential source of recurrent cardiac decompensation.

**CASE INFORMATION:** A 63-year-old gentleman with a past medical history of coronary artery disease, prostate cancer treated with local radiation therapy and hypertension presented with progressively worsening exertional dyspnea, paroxysmal nocturnal dyspnea and orthopnea despite titration of his heart failure medication regimen. Transthoracic echocardiogram showed a left ventricular ejection fraction of 30% and a 4 x 2 cm right atrial mass. He was started on warfarin but was also found to have new-onset sick sinus syndrome and high-grade atrioventricular block. To better characterize the mass, he underwent cardiac MRI which revealed findings consistent with a neoplasm. He subsequently underwent surgical resection of the mass, and pathology showed B-cell non-Hodgkin’s lymphoma (NHL).

Further work-up for another source of tumor included PET imaging and bone marrow biopsy and was negative for systemic involvement. He was diagnosed with primary cardiac lymphoma causing his recurrent heart failure. He underwent complete surgical resection followed by systemic chemotherapy with rituximab, cyclophosphamide, doxorubicin, vincristine and prednisolone (R-CHOP), and he remains free of recurrence.

**IMPLICATIONS/DISCUSSION:** Systemic lymphoma with cardiac involvement has been reported in up to 20% of cases; however, primary cardiac lymphoma (PCL) is rare and accounts for less than 2% of all primary cardiac tumors. The clinical presentation of PCL is highly variable but commonly includes congestive heart failure, pericardial effusion, superior vena cava syndrome and arrhythmia. Variability of clinical symptoms frequently leads to delay in diagnosis and contributes to overall poor prognosis. Most reported cases are either diagnosed at autopsy or result in death within 2 to 3 weeks despite therapy. Transthoracic echocardiography is a convenient first diagnostic modality as it can detect both structural lesions and pericardial effusions. CT and MRI can be useful to evaluate the extent of involvement and size of the tumor. The diagnosis of PCL is made when there is involvement of heart and/or pericardium without evidence of nodal or other extra-nodal disease. Cytologic evaluation of associated pericardial fluid is diagnostic in many cases, but in patients without effusion or those with inconclusive cytology, diagnosis may require open surgery which has 100% diagnostic yield. Less invasive options, including mediastinoscopy, transesophageal echocardiography-guided biopsy and endomyocardial transvenous biopsy, are other available diagnostic procedures but have high false-negative rates. Early diagnosis of PCL is important as survival is greatly increased with early intervention and treatment. The treatment of PCL is determined by the histology and as in our patient, B-cell NHL is generally treated with the R-CHOP regimen.

**SUPRACLAVICULAR LYMPHADENOPATHY AS INITIAL PRESENTATION FOR TESTICULAR CANCER: AN IMPORTANT DIFFERENTIAL DIAGNOSIS FOR YOUNG MEN** Masayuki Kobayashi 1; Simi Padival 2. 1Teine Keijinkai Hospital, Sapporo, N/A; 2Teine Keijinkai Hospital, Sapporo, Hokkaido, N/A. (Tracking ID # 11248)

**LEARNING OBJECTIVES:** 1. To recognize testicular cancer as an overlooked but serious malignancy in young men 2. To recognize the importance of evaluating suprACLAVICULAR lymphadenopathy

**CASE INFORMATION:** A 27-year-old Japanese male with no past medical history presented with a left neck mass. He was unaware of it until his wife detected it, prompting a visit to the outpatient clinic on the following day. He denied any recent fevers, night sweats, weight loss, or malaise. On physical examination he was noted to have a left suprACLAVICULAR lymph node measuring 2 cm in diameter. The node was hard and fixed without tenderness. No other lymph nodes were palpable and the remainder of his exam was normal. On laboratory testing a CBC was within normal limits. A CT scan of the chest and abdomen confirmed the left suprACLAVICULAR lymphadenopathy and also showed mediastinal and para-aortic lymphadenopathy. While waiting for lymph node biopsy the patient had an endoscopy and colonoscopy to evaluate for gastric cancer or colon cancer however these were negative. The patient underwent biopsy of the suprACLAVICULAR node and histology revealed metastasis of a germ cell tumor. A genitai exam was performed.
and did not reveal any abnormalities however testicular ultrasound showed two hypo-echoic heterogeneous lesions in the left testis. Serum human chorionic gonadotropin was elevated at 0.21 ng/mL respectively. The patient underwent a left-sided orchiectomy and histology revealed seminoma. The patient subsequently initiated chemotherapy without complications.

**IMPLICATIONS/DISCUSSION:** Testicular cancer is the most common solid tumor of men between the ages of 15 and 35. While frequent in young men, it is rare compared to other cancers. Despite this, the rate of testicular cancer has been increasing and is more commonly found in developed countries. Typical symptoms include painless testicular masses, however tenderness may be a finding. Occasionally the patient is asymptomatic but with metastatic findings such as in our patient. The prognosis is good with a more than 95% cure rate, however treatment is more likely to be successful when testicular cancer is found early. Thus early diagnosis and management is important. Seminomas account for close to half of testicular germ cell tumors and tend to be localized at the time of diagnosis. Common sites of metastasis include the para-aortic lymph nodes or even to the lungs but supraclavicular node involvement has been noted. In one series, metastasis to the neck occurred in 4.5-15% of patients with 5% having a neck mass as the initial presentation. Left supraclavicular lymphadenopathy, also known as Virchow’s node, is concerning for abdominal or pelvic malignancy. Thus a thorough assessment including genital examination is warranted in young males even if they are asymptomatic.

**INTERFERON GAMMA IN THE DIAGNOSIS OF TUBERCULOUS PLEURAL EFFUSION IN AN HIV POSITIVE PATIENT**

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**LEARNING OBJECTIVES:** 1. Diagnose tuberculous pleural effusion via surrogate pleural fluid markers in high risk patients. 2. N/A

**CASE INFORMATION:** Pleural effusion is a common manifestation of tuberculosis. In the absence of acid fast bacilli (AFB), the diagnosis of tuberculosis based on pleural effusion fluid characteristics alone can be made with a high degree of accuracy. We describe the case of a 41-year-old, HIV-positive, incarcerated male with a pleural effusion of unknown etiology. Pleural effusion was observed on x-ray, and ultrasound-guided thoracentesis with pleural biopsy was performed. Histology and cytology of pleural tissue and fluid was non-diagnostic. Smears of sputum and pleural fluid were negative for AFB. Pleural fluid adenosine deaminase was not suggestive of tuberculosis, however, interferon gamma was highly elevated at 377 pg/ml and the diagnosis of tuberculosis was made. The patient was administered a standard multidrug regimen for treatment of tuberculosis one month before AFB cultures from the pleural biopsy were deemed positive. As tuberculosis is an AIDS-defining illness, the patient has been referred for initiation of HAART.

**IMPLICATIONS/DISCUSSION:** Pleural effusion is the presenting symptom of Mycobacterium tuberculosis infection in approximately 3-25% of cases. Induced sputum is positive on smear or culture for over 50% of patients with tuberculous pleural effusion despite an otherwise normal chest x-ray. Approximately 10% and 40% of patients will have acid fast bacilli (AFB) present on smear or culture of pleural fluid, respectively, making the diagnosis of tuberculosis straightforward. Pleural fluid smear is more frequently AFB positive in HIV positive patients. Pleural biopsy is positive for AFB in approximately 70% of patients with a tuberculous pleural effusion.

When there are no AFB to be found in sputum or pleural fluid, the use of alternative diagnostic markers is crucial. These markers include adenosine deaminase (ADA) and interferon gamma, two by-products of T-cell metabolism which are both highly sensitive and specific for M. tuberculosis infection. We report a case of a middle-aged, HIV-positive, incarcerated male with a high suspicion for tuberculosis pleural effusion. Initial workup for tuberculosis was inconclusive, and our diagnosis hinged upon the results of these surrogate markers. In our case the diagnosis was made via surrogate markers a full month prior to culture positivity in the pleural biopsy specimen, and all other tests returned as equivocal or negative. Without the use of interferon gamma, this patient may have been taken off respiratory isolation and could have exposed numerous other contacts before his infection was discovered.

**DISSEMINATED INFECTION WITH VANCOMYCIN-INTERMEDIATE STAPHYLOCOCCUS AUREUS (VISA) IN A 37-YEAR-OLD**

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**LEARNING OBJECTIVES:** 1. Diagnose VISA and identify its risk factors and treatment options 2. Recognize the insufficiency of maximal standard infection control practices for reliable control of VISA outbreaks

**CASE INFORMATION:** A 37-year-old female with history of intravenous drug use and hepatitis C was admitted after one day of nausea, vomiting, abdominal pain and left flank/back pain. She was undergoing treatment with daptomycin for MRSA endocarditis complicated by septic pulmonary emboli and tricuspid valve vegetation at a subacute facility, after having failed a six-week course of vancomycin. Evaluation of symptoms included an abdominal CT showing a possible tubo-ovarian abscess and possible osteomyelitis of the left sacroiliac joint, confirmed by lumbar spine CT. Echocardiogram showed vegetations of the tricuspid, aortic, and mitral valves. Blood cultures grew methicillin-resistant staphylococcus aureus (MRSA) that was also of intermediate resistance to vancomycin (i.e. VISA). The patient was begun on quinupristin-dalfopristin and trimethoprim-sulfamethoxazole. On the third hospital day, the patient developed new word-finding difficulties. Neuroimaging demonstrated a small MCA-territory infarction with hemorrhage, likely from a septic embolus. The tubo-ovarian abscess and osteomyelitis seen on prior imaging were also felt to be due to disseminated VISA infection. The patient underwent aortic valve replacement and tricuspid and mitral valve repair without complication, and was discharged on a six-week course of dalfopristin and trimethoprim-sulfamethoxazole.

**IMPLICATIONS/DISCUSSION:** MRSA is an increasing public health threat, but is usually susceptible to vancomycin and other glycopeptides. Vancomycin-resistant staphylococcus aureus (VISA), defined by a minimal inhibitory concentration (MIC) greater than 16, is very rare. Within the United States, only seven cases have been confirmed. More common is MRSA with a vancomycin MIC of 4-8 mg/mL, which is known as vancomycin-intermediate staphylococcus aureus (VISA). VISA is usually caused by the synthesis of an abnormally thickened staphylococcal cell wall that impairs the ability of the drug to reach targets within the cell. The first case of VISA was reported in Japan in 1997. Risk factors include indwelling central lines, dialysis, and prolonged courses of vancomycin. No single treatment has been reliably validated, but most reports suggest using an agent to which the VISA strain is known to be susceptible, such as daptomycin, linezolid, or quinupristin-dalfopristin. Our patient had persistent bacteremia despite a prolonged course of vancomycin, a risk factor for VISA. She then failed
to clear her cultures with daptomycin. Her VISA strain demonstrated sensitivity to trimethoprim-sulfamethoxazole, so this agent was used with quinupristin-dalfopristin. Linezolid and quinupristin-dalfopristin sensitivities were not available. Guidelines for prevention and control of VISA are also unclear; an outbreak in an ICU in France in 2006, in which 8 of 22 infected patients died, demonstrated that maximum contact precautions were insufficient to control spread of infection, requiring twice-daily environmental cleaning and admission restrictions. VISA is a concerning threat to public health, especially in hospital settings, whose definitive prevention and treatment is poorly understood.

**A CASE OF RECURRENT PERTUSSIS INFECTION**

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**LEARNING OBJECTIVES:**

1. Recognize the presentation, diagnosis and management of Bordetella pertussis infection
2. Review timing of immunity to Bordetella pertussis after infection and vaccination

**CASE INFORMATION:** A 65 year old Caucasian female with a history of incidentally noted, untreated Waldenstrom’s macroglobulinemia, presented with a 3 month history of severe cough. She experienced paroxysmal cough prompting her to gasp for breath. She denied nasal congestion, sore throat, or sputum production. At the time of her visit, the cough had largely resolved. On exam, her oropharynx was normal and her lungs were clear to auscultation. A chest radiograph showed a new rib fracture but no lung findings. Bordetella pertussis IgG serology was positive at 30ug/mL. As she had symptoms three months ago, she was not treated. Two years later, she again presented to her primary care doctor with 12 days of cough. The cough had worsened during 4 days prior to presentation, when she had one day of paroxysmal cough with a sensation of catching her breath, reminiscent of her pertussis. The cough since improved. She was concerned as she was a caregiver to a chronically ill infant. Her physical exam was normal. B. pertussis serology 14 days from onset of symptoms was negative at 12 ug/mL, but repeat serology 45 days after symptom onset was positive at 20 ug/mL. She was treated with azithromycin and her symptoms gradually resolved.

**IMPLICATIONS/DISCUSSION:** Whooping cough is an acute respiratory illness caused by the gram negative bacterium Bordetella pertussis. While often thought of as a childhood infection, pertussis is increasingly recognized as a cause of prolonged cough in adults. Pertussis infections classically begin with a 7-10 days of mild upper respiratory tract symptoms (catarrhal phase), followed a paroxysmal cough often with a characteristic inspiratory whoop (paroxysmal phase). Symptoms gradually wane in the convalescent phase. In adults and adolescents, the inspiratory whoop is often absent, making differentiating pertussis from other viral causes of URI difficult. Laboratory testing for B. pertussis include bacterial culture, serum serology, direct fluorescent antibody testing or PCR. Treatment with macrolide antibiotics can potentially decrease the severity of symptoms and can reduce the likelihood of transmission. Classically it has been thought that Pertussis confers long term immunity to future B. pertussis infections, but it has become evident that this immunity wanes over time. Studies have demonstrated laboratory confirmed reinfection in children in as little as two years, as was true in our patient. The second infection tends to have less typical symptoms, and is less severe. Our patient was retested only because her symptoms were briefly reminiscent of her first infection. This suggests that pertussis should not be discounted even in the presence of a recently diagnosed infection. While the incidence of pertussis will hopefully wane as booster vaccination results in greater herd immunity, it is uncertain whether vaccination in patients with documented infection is useful.

**ENCEPHALITIS AND ARRHYTHMIAS- RECOGNIZING AN UNUSUAL ASSOCIATION**

Shuchi Gulati 1; Richard Alweis1. 1The Reading Hospital and Medical Center, West Reading, Pennsylvania. (Tracking ID # 11323)

**LEARNING OBJECTIVES:**

1. Recognize the likely association between herpes encephalitis and cardiac arrhythmias.

**CASE INFORMATION:** A 73 year old male with a past medical history of hypertension and coronary artery disease on beta blocker therapy presented to the hospital with an acute change in mental status following an episode of witnessed tonic-clonic seizure-like activity. The patient had recently flown and had developed low grade intermittent fever since. Examination revealed obtundation with an otherwise non-focal neurological exam. He was intubated for airway protection and transferred to the ICU. Laboratory evaluation revealed only mild leukocytosis with a normal differential. Blood chemistries were normal with negative toxicology screening. Lumbar puncture revealed clear appearance of the CSF, with normal glucose of 76 mg/dL, elevated protein of 64 mg/dL (nl 20-45 mg/dL), elevated white cell count of 304 cells/microliter (nl 0–5 cells/microliter), with 80% lymphocytes (nl 0-50%) and 1% neutrophils. Herpes Simplex type 1 DNA was detected by PCR. A diagnosis of herpes encephalitis was made and the patient was started on intravenous acyclovir. After transfer out of the unit, he was noted to have sinus bradycardia with heart rate ranging from 40–60 beats per minute. Review of his rhythm revealed a first degree heart block. The patient was evaluated and, for unclear reasons, restarted on his home dose of metoprolol. This was followed by development of complete heart block which necessitated implantation of a dual-chamber pacemaker.

**IMPLICATIONS/DISCUSSION:** Herpes simplex virus is the most common cause of acute, sporadic viral encephalitis, accounts for 10% to 20% of all cases. Of these more than 95% are caused by subtype I virus. The clinical hallmark of HSV encephalitis is acute onset of fever accompanied by focal neurologic signs (most commonly involving the temporal lobes). There have been isolated case reports in literature connecting cases of herpes encephalitis with development of cardiac arrhythmias. Hence patients with encephalitis need close cardiac monitoring. Literature search reveals that these patients spontaneously recover with treatment of the underlying infection and have not needed pacemakers. Physicians taking care of patients need to recognize the association of cardiac arrhythmias with non-cardiac causes like viral infection. This can help avoid catastrophic sequelae.

**IT IS MORE THAN CELLULITIS**

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**LEARNING OBJECTIVES:**

1. To describe the clinical features of Pyomyositis.
2. To raise the awareness of Pyomyositis in immunocompetent patients.

**CASE INFORMATION:** This is an 18 year-old previously healthy male, who presented to the ER with a 3 day history of fever, malaise, pain and swelling of the left anterior chest and axilla. He practices martial arts and started having symptoms one day after his last training. He took
SPONTANEOUS TENDON RUPTURE AS A RARE SIDE EFFECT OF STATIN USE

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LEARNING OBJECTIVES: 1. Recognize the clinical presentation of tendinopathy/tendon rupture. 2. Identify rare adverse reactions of statin therapy.

CASE INFORMATION: A 61-year-old male presented to the emergency department with excruciating pain in his right knee. On the morning of presentation, he developed sudden onset of stabbing pain in his right knee along with a sudden popping sound while bending down to pick up a newspaper. He was unable to bear weight and fell to the floor. He was essentially asymptomatic prior to this event and denied any preceding trauma or excessive muscular strain. Medical history was significant for hypertension, diabetes mellitus 2 and hypercholesterolemia. On examination, there was swelling in the suprapatellar region of his right knee associated with ecchymosis. He was unable to perform a straight leg raise and active extension of his right knee. Passive movements in both the knees and active movements in the left knee were normal. Hip examination was normal. Anterior-posterior and lateral radiographs of the knees showed thickening of the quadriceps tendon on the right and normal findings on the left. A non-contrast MRI of his right knee showed a tear of his right vastus lateralis tendon with mild retraction. The patient underwent successful open vastus lateralis tendon repair of his right knee.

IMPLICATIONS/DISCUSSION: Iatrogenic, non-traumatic causes of tendon rupture include steroid and fluoroquinolone use. Statins are associated with a multitude of musculoskeletal complaints of which myopathy is the most frequent. Tendinopathy and tendon rupture are very rare but reported adverse effects of statin use. The present report describes a quadriceps tendon rupture during simvastatin therapy and contralateral symptoms of quadriceps tendinopathy on rechallenge. The lack of other causative factors, the temporal relation and reproducibility of symptoms on rechallenge support the causative role of statin therapy in our patient. The exact etiology of statin-induced tendinopathy and tendon rupture remain unclear. However, proposed mechanisms include statin-induced suppression of matrix metalloproteinase and prostaglandin E2 activity. This leads to impaired tendon remodeling and potentially to weakening and rupture. As the prevalence of hyperlipidemia and the prescription of statins continue to increase, it is imperative that physicians should remain vigilant to the possibility of such rare and potentially disabling side effects.

STATUS REPORT: NON-CONVULSIVE STATUS EPILEPTICS AS A CAUSE OF ALTERED, BUT AWAKE, MENTAL STATUS

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LEARNING OBJECTIVES: 1. Recognize in which situations assessment for Non-Convulsive Status Epilepticus is warranted 2. Diagnose Non-Convulsive Status Epilepticus and review the evidence around cost-effective evaluation for this condition

CASE INFORMATION: A 64 y/o man presented with altered mental status. He was brought to the ED after 2 days of gigling, smiling inappropriately, intermittent recognition of family members, and inability to perform ADLs. He was awake and alert with a preserved
sleep-wake cycle. His family noted fevers but no other abnormalities. His past medical history was significant for CAD s/p CABG 3 years prior complicated by atrial fibrillation leading to serial PCA and PICA infarcts. These resulted in cortical blindness, balance disturbances, and seizures, although he had been seizure-free for 2 years. Medications included benazepril, metoprolol, atorvastatin, amiodarone, warfarin, levetiracetam, escitalopram, and clonazepam. Medication adherence had been excellent. On physical exam, he was febrile to 39.2°C with otherwise normal vitals. He had neck stiffness, a regular heart rhythm, and clear lungs. Neurologically, he was A&Ox 0, making nonsensical responses and intermittently following commands. Motor exam revealed increased tone throughout. His chemistry and CBC were unremarkable. His INR was 2.7. UA revealed + Nitrite, and >50 WBC per HPF. Given his fever and rigidity, the differential diagnosis included toxidrome such as serotonin syndrome, infectious meningitis, and delirium secondary to UTI. Non-contrast head CT was unchanged from prior. LP was performed which revealed CSF with 0 WBCs, 0 RBCs, no xanthochromia, and mildly increased protein. He was treated for his UTI and admitted to the ICU for monitoring. He failed to improve and given his past seizure history a diagnosis of non-convulsive status epilepticus was considered. This was confirmed by EEG. Levetiracetam was increased and he was started on topiramate, with resolution of his seizure activity and improvement in his mental status. After an 8 day hospitalization, he was discharged to home.

**IMPLICATIONS/DISCUSSION:** Broadly, non-convulsive status epilepticus (NCSE) is continued seizure activity in absence of major motor signs. As with convulsive status epilepticus, seizure activity is not necessarily continuous, but must recur before the postictal period has cleared. There are several major sub-types of NCSE including absence SE (varying impairment of consciousness, disorientation), simple partial SE (preserved consciousness, symptoms of a single sensory system), complex partial SE (impaired consciousness and confusion), and “subtle” SE (loss of consciousness, no movements or subtle automatisms). NCSE should be suspected in those with consistent symptoms and a history of seizure disorder, CVA, structural brain lesions, metabolic abnormalities, or toxidromes. NCSE can also occur in the setting of anti-epileptic drug (AED) underdose or treatment failure, as in this case. The epidemiology of NCSE is unclear, but estimates of all cases of status epilepticus are around 40 per 100,000 patients per year. Of these, approximately 5-40% are NCSE. NCSE makes up a higher proportion of SE as people age. EEG is diagnostic. No data directly address cost-effectiveness of EEG evaluation for altered mental status. Treatment is similar to that of convulsive status epilepticus, with benzodiazepines being the treatment of choice. Phenytoin/fosphenytoin, barbiturates, and propofol have also been used. The prognosis is generally better than with convulsive status epilepticus and there is less evidence of excitatory neurotoxicity. In conclusion, NCSE is a rare but treatable cause of altered mental status at all levels of derangement. In patients with risk factors who are not improving with treatment for other etiologies in 24-48 hours, EEG evaluation for NCSE is warranted.

**CASE INFORMATION:** A 55-year-old alcoholic man was admitted to the hospital due to persistent hiccups and agitation. He was hypertensive, had asthma and chronic renal insufficiency stage 3. Medications: amiodipine 10 mg, folic acid 1 mg, thiamine 100 mg and tamsulosin 0.4 mg. Physical examination: blood pressure of 115/86 mmHg, pulse 105 beats/min, temperature 98°F and respirations 18/min. He was alert, agitated and had no focal neurological signs. Laboratory: sodium of 116 mEq/L, potassium 4.3 mEq/L, blood urea nitrogen 3 mg/dL, creatinine 1.4 mg/dL, Serum osmolality was 259 mOsm/L (normal 289-308 mOsm/L); aspartate aminotransferase 48 U/L, alanine aminotransferase 29 U/L, total bilirubin 0.5 mg/dL, direct bilirubin 0.1 mg/dL. Sodium spot urine was <10 mEq/L (normal 10-30 mEq/L), urine osmolality 34 mOsm/L (normal 300-900 mOsm/L). Thyroid-stimulating hormone was 0.10 uIU/mL (normal 0.34-5.6 uIU/mL). Lipid panel was also normal. On intravenous (IV) normal saline at a rate of 100 ml/hour, sodium increased to 128 mEq/L the next day. Ultrasonogram of abdomen reported homogenous liver, normal left ventricular ejection fraction (66%) on echocardiogram. On discharge his sodium was 134 mEq/L and potassium 3.9 mEq/L.

**IMPLICATIONS/DISCUSSION:** Severe hyponatremia (<125 mEq/L) has a high complication rate, particularly when the level is <105 mEq/L. The mortality is 50%, especially in alcoholics, 18% of them develop the osmotic demyelination syndrome (ODS). Beer potomania is characterized by 1) a history of chronic alcoholism; 2) protein malnutrition; 3) signs, symptoms and laboratory values consistent with water intoxication; 4) no evidence of another cause of hyponatremia; 5) urine osmolality <100 mOsm/L, indicating suppression of ADH. A normal kidney can dilute the urine to a maximum of 50 mOsm/L. On a regular diet, protein catabolism and other sources produce about 1,000 mOsm/day of solute. Water excretion depends on the free water clearance and the osmotically bound water. To become hyponatremic, more than 20 liters (1000 mOsm/50 mOsm/L) of water may be ingested in a period of 24-hour. In beer potomania, in addition to ingesting a large fluid volume, poor nutritional status contributes to the hyponatremia because of the decrease in the osmolar load to approximately 250 mOsm/day. This reduces the ability to excrete osmotically bound water. Beer carbohydrate also suppresses protein catabolism. The first case was reported by Demanet JC et al in 1971. Since then about 26 cases published in the English literature, five developed ODS (19%) and four died (15%). Management of severe hyponatremia is often challenging and fluid restriction is indicated. When serum sodium is corrected faster than the recommended rate, dextrose 5% in water needs to be added with additional solutes restriction. If these measures fail, desmopressin should be considered.

**A CASE OF NESISIOLBLASTOSIS AFTER BARIATRIC SURGERY**

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**LEARNING OBJECTIVES:**
1. To determine the clinical characteristics of nesidioblastosis.
2. To broaden the differential diagnosis of postprandial hypoglycemia in bariatric patients.

**CASE INFORMATION:** A 48 year old female known to have morbid obesity underwent laparoscopic bariatric surgery in 2006. Two years after the surgery, she started experiencing intermittent bouts of severe abdominal pain often following food intake. In addition, she had episodes of both fasting and postprandial hypoglycemia which occasionally caused presyncope. She underwent a 3 hour glucose tolerance test with the following results: the fasting glucose was 69 mg/dL, one
hour following a 75 gm of glucose load it was 104 mg/dL, after two hours it dropped to 37 mg/dL and at three hours it was 70 mg/dL. During the hypoglycemia, the insulin level was 60 uIU/mL and the C-peptide 8.5 ng/mL (both elevated). A computed tomography scan of her abdomen was negative for any pancreatic lesion. A selective calcium injection and blood sampling of the gastroduodenal, superior mesenteric, and splenic arteries demonstrated diffuse insulin production throughout the pancreas, with positive responses in all three arterial distributions.

**IMPLICATIONS/DISCUSSION:** Postprandial hypoglycemia following gastric bypass surgery is often attributed to the dumping syndrome. Nesidioblastosis is a rare but increasingly recognized culprit of postprandial hypoglycemia in postgastric bypass patients. It is characterized by endogenous postprandial hyperinsulinemia and pathologic findings of hypertrophic beta cells with enlarged or normal-appearing islets. The distinction between dumping syndrome, insulinomas and nesidioblastosis is an important one to make as the treatment modalities differ significantly. Using selective arterial calcium injection, the affected area of the pancreas is localized and surgically removed with significant improvement of symptoms. Non-surgical candidates such as our patient with diffuse insulin production can be treated with somatostatin analogues with a fair response.

**IRON DEFICIENCY ANEMIA IN PREMENOPAUSAL WOMEN: THINKING PAST THE PERIOD**

**CASE INFORMATION:** A 47 year old healthy female presented to outpatient clinic for annual health maintenance exam. She has had back pain for which she has been taking diclofenac, her only medication. She mentions that the pills have a sour taste and make her feel nauseated if she takes them without food. She also mentions having heartburn triggered by drinking coffee. She denied having any dark stools. She did have one episode of nonbloody, nonbloody emesis. On physical exam, she was a well-appearing African American, vital signs were normal, BMI was 30, abdominal exam was normal, systolic flow murmur was present on heart auscultation. CBC was ordered because of GI symptoms and Hb was critically low at 5.2, Hct 20%, platelets 980, MCV 67, and peripheral smear demonstrated hypochromic microcytic RBCs, moderate polikilocytosis, anisocytosis and ovalocytes. She had not had a previous CBC. The degree of anemia juxtaposed with her general health suggested a chronic cause and so non-GI sources of bleeding were considered. During a telephone call, she described chronically heavy but regular menstrual flow. She denied fatigue, SOB, or other bleeding such as hematuria or epistaxis. On a weight loss diet, she had recently stopped eating meat. She was advised to stop taking all NSAIDS, started on PPI and iron supplements. On return visit, we noted conjunctival and palmar pallor, rectal and pelvic exams were normal. Stool was negative for H. Pylori antigen, ferritin was 1.4, and a pelvic US showed extensive fibroids. Her severe iron deficiency anemia is most likely due to fibroid-induced menorrhagia, although a slow GI bleed (gastritis vs PUD) given her chronic NSAID use, epigastric pain, and emesis, cannot be ruled out. Diet may also be contributing with the recent absence of red meat.

**IMPLICATIONS/DISCUSSION:** The most common cause of IDA in premenopausal women is menstrual blood loss, most often due to structural lesions (fibroids, polyps, adenomyosis, and malignancy) or anovulatory cycles, both of which occur most frequently during the transition to menopause. Clinically relevant fibroids have been found in 35% of Caucasian women and 50% of African American women at menopause transition. When compared with Caucasians, African Americans present with symptomatic fibroids an average of 5 years earlier and are more likely to have anemia. The percentage of fibroids that cause anemia, and more importantly severe anemia, has not been well characterized. In all women over 35, including this patient, workup should include an endometrial biopsy to rule out cancer or hyperplasia, regardless of other findings such as fibroids. Many clinicians stop their IDA workup when heavy bleeding is present, but standard of care for workup of IDA in men and postmenopausal women includes both upper and lower endoscopy. Studies of IDA in premenopausal women in which both gynecologic and GI workup were completed have found dual pathology in as many as 20-34%. The most important predictor for GI pathology is UGI symptoms (OR=5.2) including nausea, vomiting, dysphagia, heartburn, dyspepsia and epigastric pain. Other predictors include lower levels of Hbg, MCV and ferritin. These studies suggest that EGD should be considered in all IDA patients regardless of menstrual blood loss, and especially in our patient with severe anemia, UGI symptoms and NSAID use. Unfortunately, EGD is an invasive test for young healthy women to undergo, and noninvasive testing such as testing for H pylori, FOBT or tissue transglutaminase for celiac disease have been suggested but not specifically studied in this population. Another approach would be to continue workup only if the patient is unresponsive to a trial of oral iron supplementation.

**LEVAMISOLE: WHEN COCAINE IS NOT ENOUGH**

**CASE INFORMATION:** 46 y/o female with no significant past medical history transferred from an outside facility after presenting with nausea, vomiting and right elbow soft tissue infection. She originally presented to an urgent care for suturing of her right elbow abrasion sustained due to falling after cocaine use. On physical exam she had right elbow bullae and edema, peripheral purpura and nose tip purpura. Initial labs showed pancytopenia, acute renal failure, mildly elevated liver function tests, positive Disseminated intravascular coagulation panel and lactic acidosis. Urine toxicology screen confirmed cocaine use and Levamisole urine test was obtained. She received aggressive fluid resuscitation and Intravenous Immunoglobulins. Due to concern for Disseminated intravascular coagulation the patient was transferred to our institution for intensive care management.

On arrival, management for suspected toxic shock syndrome with broad-spectrum intravenous antibiotics was continued in addition to 3 days of Intravenous Immunoglobulins. The patient’s skin changes progressed rapidly developing generalized bullae and dry gangrene of all digits. Dermatology service was consulted and multiple biopsies demonstrated congestion of superficial dermal vessels with purpura and fibrin thrombi formation, associated dermal edema and rare eosinophils, also negative PAS stains. C-ANCA, P-ANCA, ANA, anticardiolipin antibodies were requested and returned negative. As part of her management, the patient received 12 units of single-donor platelets due to persistent counts of less than 20000 per microliter although she
never had spontaneous bleeding. Ten days after presentation, toxicology report came back positive for Levamisole. The patient underwent Amputation of her Left foot toes; Right hand fingers and Debridement of Right foot amputation site. The patient’s platelet counts continued to improve gradually without any directed intervention (e.g. steroid therapy, plasmapheresis, etc.).

**IMPLICATIONS/DISCUSSION:** Levamisole is an antihelminthic agent that has also been used as an immunomodulating agent in adjuvant chemotherapy for malignancies such as colon cancer and melanoma. The suggested mechanism of immune modulating action has been associated with the generation of autoantibodies such as ANA, LA and ANCA. Levamisole has also been associated with bone marrow suppression and even agranulocytosis, as the most commonly reported hematologic side effect. Levamisole-induced thrombocytopenia (LIT) occurs in rarely but reported cases are increasing.

The most pronounced cutaneous adverse effect is a purpuric eruption with a predilection for involvement of the ears. Histological examination reveals a mixed pattern of leukocytoclastic vasculitis and microvascular thrombosis or by pure microvascular thrombosis.

Levamisole is increasingly being used as a cocaine ‘cutting agent’ with reports of levamisole present in almost 70 % of the cocaine seized at US borders. The purpose of Levamisole as an adulterant is still unknown; the leading theory is that it is added during the manufacture of cocaine to potentiate cocaine’s effects, possibly through its metabolite aminorex.

**ANNULAR PANCREAS, UNUSUAL DIAGNOSIS IN AN ELDERLY WOMAN**

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**LEARNING OBJECTIVES:** 1. Although a diagnosis of an annular pancreas is rare, especially in adults, it should be considered in situations when a patient with possible associated symptoms of gastroduodenal obstruction. 2. Endoscopic ultrasound is an excellent emerging non-invasive modality to diagnose annular pancreas and rule out pancreatic mass lesions particularly in elderly patient like ours.

**CASE INFORMATION:** A 72 years old woman was admitted to the hospital with left foot cellulites. She had some mild abdominal discomfort for few months prior to admission for which she was kept on PPI Therapy. During hospitalization she was complaining of abdominal pain without nausea, vomiting, changes in appetite or weight loss. Physical exam was unremarkable and did not reveal any abdominal masses or significant tenderness. Lab workup showed elevated Lipase 1725 IU/L with normal liver numbers. She was diagnosed with acute pancreatitis and treated with intravenous fluid support. CT scan was performed for evaluation and showed possible pancreatic tissue surrounding the second portion of the duodenum. She was treated for the cellulites and was discharged home. Outpatient Endoscopic ultrasound was done and showed evidence of partial duodenal obstruction with inability of the scope to be passed through the second part and significant amount of residual food in the stomach despite being NPO for the procedure. In addition she had typical finding of annular pancreas (figure 1) with obvious pancreatic tissue surrounding the entire second part of the duodenum. There were no mass lesions noted either by the CT scan or by the endoscopic ultrasound. Patient symptoms progressed over the course of several weeks to nausea, vomiting, increasing abdominal pain and weight loss consistent with the duodenal obstruction. The patient is scheduled for duodenoduodenostomy to bypass the obstructed second part of the duodenum for relief of symptoms.

**IMPLICATIONS/DISCUSSION:** Annular pancreas is a congenital anomaly with symptoms typically beginning in childhood and develop as a result of duodenal obstruction, with intractable vomiting most commonly noted. Although it is a congenital abnormality, it can rarely present during adulthood and should be considered in the differential diagnosis of gastroduodenal obstruction. Endoscopic ultrasound is an excellent non-invasive test to diagnose the condition and to rule out pancreatic mass lesions particularly in elderly patient like ours. Surgery remains the management of choice for those patients to relieve obstructive symptoms.

**ALCOHOL WITHDRAWAL: AN ATYPICAL CAUSE OF TAKATSUBO CARDIOMYOPATHY**

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**LEARNING OBJECTIVES:** 1. Report a typical case of stress cardiomyopathy due to an atypical cause 2. Review causes for stress cardiomyopathy and to emphasize the importance of assessing for these causes

**CASE INFORMATION:** A 58-year-old African American female with a history of chronic alcohol abuse was admitted with alcohol withdrawal seizures. No significant past medical history. On examination patient was found to be delirious, hypertensive (BP 193/106 mmHg) and tachycardic (HR 120-160/minute), remainder of exam was normal. She had negative UDS and an normal Echocardiogram in the past with EF of 60%. EKG done in the ER initially showed diffuse ST segment and elevated troponins (0.020 ng/ml). Patient was intubated and admitted to the ICU. In view of her rising troponins and hypotension, an emergency cardiac catheterization was performed which showed LVEF of 25% with anterior apical akinesia/dyskinesia and normal coronary arteries. An echocardiogram performed after the catheterization showed moderate anterior wall hypokinesis with apical akinesia and her BNP was elevated to 960. She was on a pressor for a short while. Patient responded to supportive treatment for delerium tremens and once stabilized was transferred to other facility. A diagnosis of stress cardiomyopathy was made.

**IMPLICATIONS/DISCUSSION:** Stress or Takatsuho cardiomyopathy is increasingly well known in the western hemisphere presenting with symptoms similar to acute coronary syndrome with elevated troponins and acute ST segment changes but with clean arteries on cardiac catheterization. This is a transient cardiomyopathy with a classic apical ballooning on echocardiogram due to apical akineses. The pathophysiology behind this is yet to be characterized definitively. There is speculation of inherited susceptibility due to structural or metabolic predisposition, which may play a role in sudden death. Unique features include incidence greater in postmenopausal women, associated with emotional stress and rare recurrence. It is likely that alcohol withdrawal causing autonomic dysfunction, by inducing increase in catecholamine plasma concentrations may have contributed to development of stress cardiomyopathy in this patient. This particular cardiomyopathy has been associated with varied number of scenarios. Its cause and mechanism being a mystery and consequently the optimal management still remains unclear. There have been 3 case reports so far describing alcohol withdrawal association with takatsubo. Other rare causes associated with or presenting with takatsubo cardiomyopathy in the literature are pheochromocytoma, metoprolol withdrawal, post ablation association with takatsubo. Other rare causes include incidence greater in postmenopausal women, associated with emotional stress and rare recurrence. It is likely that alcohol withdrawal causing autonomic dysfunction, by inducing increase in catecholamine plasma concentrations may have contributed to development of stress cardiomyopathy in this patient.
A “NOT SO CLASSIC” CASE OF DIABETIC KETOACIDOSIS  
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LEARNING OBJECTIVES: 1. Review the pathophysiology and precipitants of diabetic ketoacidosis. 2. Recognize the role of hypertriglyceridemia in pancreatitis.

CASE INFORMATION: Mr G. is a 28 year old Hispanic male with a history of insulin dependent diabetes mellitus and “alcohol-related pancreatitis” who presented to the emergency department with a three day history of nausea, vomiting, and severe abdominal pain. He had been noncompliant with his medications over the three months prior to presentation. Vital signs were significant for tachycardia and tachypnea. On physical exam, he was awake but appeared to be in acute distress. There was severe tenderness to palpation in the abdomen diffusely, especially in the epigastrium. He had multiple subcentimeter, raised yellow papular eruptions on the legs, shins, back, and hands bilaterally. The remainder of his exam was unremarkable. Labs revealed serum sodium of 115 mg/dL, bicarbonate of 4 mg/dL, and glucose of 261 mg/dL. White blood cell count was 22.9. His arterial pH was 6.95, and carbon dioxide was 6 mg/dL. Serum lactate and beta-hydroxybutyrate were markedly elevated. Amylase was 248 mg/dL and lipase was 288 mg/dL. An emergency department nurse incidentally noted that the patient’s blood separated into two distinct layers of yellow and red every time it was drawn, and stated it “looked like fat”. Serum lipid panel revealed triglyceride level of 2708 mg/dL. The working diagnosis was diabetic ketoacidosis precipitated by pancreatitis, secondary to severe hypertriglyceridemia.

IMPLICATIONS/DISCUSSION: Diabetic ketoacidosis is a severe complication of diabetes in which insulin resistance or insulin deficiency leads to increased gluconeogenesis, glycogenolysis, and lipolysis, resulting in ketoacidosis. Common precipitants include, infection, pancreatitis, myocardial infarction, systemic glucocorticoid administration, and medication noncompliance. His elevated amylase and lipase in the setting of severe abdominal pain led us to believe that pancreatitis was the precipitant for his diabetic ketoacidosis. Pancreatitis has several precipitants, most commonly alcoholism and gallstones. Other less common causes include pancreatic masses, hypertriglyceridemia, medications, and certain infections. Our patient, though he had past history of alcoholism, avidly denied recent alcohol abuse within the past year. It was not until the nurse noted that the appearance of his blood was grossly abnormal and “looked like fat” that we discovered his markedly elevated triglyceride level in the thousands, which is typical for familial hypertriglyceridemia.

In this case, a major teaching point for our team was that alcoholism and gallstones, although common, are not the only causes of pancreatitis. As we often learn in medicine, listening to our patient (who avidly denied recent alcohol abuse) is always key in accurate clinical diagnosis. Sometimes, when faced with a case that seems like an obvious diagnosis, we should be sure to exclude any “not-so-common” pathological processes.

CEPHALOSPORIN NEUROTOXICITY IN END STAGE RENAL DISEASE  
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LEARNING OBJECTIVES: 1. Diagnose cephalosporin neurotoxicity despite renal dosing adjustment. 2. In presence of a high clinical suspicion for neurotoxicity, manage by immediately decreasing the antibiotic dose and confirming with a serum drug level.

CASE INFORMATION: A 47-year old male being treated for multiple myeloma and end-stage renal disease (ESRD) on peritoneal dialysis and cirrhosis was admitted for a methicillin-sensitive S. aureus port infection treated with IV cefazolin, dosed for his creatinine clearance. Following surgical removal of his port, the patient was noted to be more lethargic by his family at bedside. Upon physical examination, the patient was difficult to arouse, which was initially attributed to recovery from anesthesia. On subsequent physical examinations, the patient’s stupor persisted, along with development of slow myoclonic movements at rest and with intention. Removal of opiates, benzodiazepines, and gabapentin did not resolve symptoms over the following 48 hours.

Electroencephalography(EEG) revealed diffuse, bi-hemispheric slow-wave delta activity of low amplitude which suggested a drug side-effect. Subsequently, the serum sample for cefazolin level was drawn, and cefazolin dose was reduced to 1 gram daily. The myoclonus started to improve the following day and almost completely disappeared by the 3 rd day. A trough serum cefazolin level was later reported as >200 μg/mL (peak normal therapeutic level: 188 μg/mL), which suggested to us that despite aggressive peritoneal dialysis, there existed a high serum level of cefazolin.

IMPLICATIONS/DISCUSSION: Cephalosporins are widely prescribed beta-lactam antibiotics for broad-spectrum coverage of infections. In patients with renal insufficiency, active infection and/or prior neurologic diseases, CNS penetration of cefazolin is excellent, leading to the potential for movement abnormalities and even seizures at toxic levels. The manifestations of cephalosporin-associated neurotoxicity vary greatly, ranging from mental status changes, myoclonus, seizures, potentially fatal nonconvulsive status epilepticus and coma. Patients will typically respond to lowering dosage or discontinuation of the drug, but the drug can be removed via hemodialysis in life-threatening situations. Clinicians should have a high degree of suspicion and awareness about the potentially fatal but reversible neurotoxic side-effects of cephalosporins.

ANEMIA AND PNEUMONIA- WHAT CAUSED THE HEMOLYSIS?  
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LEARNING OBJECTIVES: 1. Recognize anemia in a patient with Mycoplasma pneumoniae infection could be secondary to hemolysis. 2. Early institution of therapy for the underlying pneumonia can lead to rapid recovery of both the infection and the anemia.

CASE INFORMATION: A 57 year old male patient with history of alcoholic liver disease was admitted with a three day history of dry cough and subjective fever. Positive exam features included fever and mild respiratory distress, as well as signs of chronic liver disease. Laboratory evaluation revealed WBC count 4500/microliter, hemoglobin of 6.0 g/dL, hematocrit of 19.4%, platelet count 90,000/microliter. Evaluation of peripheral blood smear showed anisopikocytes, acanthocytes and occasional schistocytes. An elevated reticulocyte count of 2.9 %, LDH of 316 IU/L, total serum bilirubin of 6.6 mg/dL (indirect bilirubin of 3.3 mg/dL) and a suppressed haptoglobin level of <1 mg/dL pointed toward intravascular hemolysis as the underlying cause. The patient was transfused packed red blood cells and empiric treatment initiated with cefepime and metronidazole for presumed pneumonia. Because of the pneumonia and unexplained hemolysis, the diagnosis of Mycoplasma pneumoniae was sought and confirmed.
by positive cold agglutinin titers. Treatment was initiated with intravenous steroids, immunoglobulins for the autoimmune hemolytic process and with moxifloxacin for the mycoplasma infection. The patient’s anemia and respiratory symptoms showed consistent improvement, after the initial lag. LDH, bilirubin and haptoglobin trended toward normal ranges and he was discharged home in a stable condition.

IMPLICATIONS/DISCUSSION: Each year Mycoplasma pneumoniae infection is responsible for an estimated 2 million cases and 100,000 pneumonia-related hospitalizations in the United States. While majority develop upper respiratory tract infections, radiologically confirmed pneumonia develops in 5-10% of cases. Less than 10% patients can develop extrapulmonary complications of M. pneumoniae infection, including cold antibody-mediated hemolytic anemia. Internists need to remember that although majority of autoimmune hemolytic anemia cases are primary, hemolysis can also occur secondarily in association with certain infectious diseases (e.g., Mycoplasma infection, infectious mononucleosis, CMV infection), lymphoproliferative diseases (e.g., non Hodgkin’s lymphoma and chronic lymphocytic leukemia) and the use of certain drugs. Early recognition of the association of hemolytic anemia with Mycoplasma pneumoniae infection can result in prompt therapy and can limit morbidity in this patient population.

“HOW DID THAT BALL LAND UP IN MY HEART”?! Andrew Gregory De Nazareth 1; Shawn K Mathias 1; Dusan Stanojevic 1; Susan Schimia2.

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LEARNING OBJECTIVES: 1. Recognize the presence of giant left atrial thrombi could lead to catastrophic complications with dislodgement.
2. Diagnosis and Management of these large thrombi

CASE INFORMATION: An 81 y/o caucasian woman was admitted for management of a two day history of abdominal pain. Physical exam was significant for poorly localized peri-umbilical tenderness with no rebound tenderness. All her labs were within normal limits and an Abdominal CT scan was normal except for a surprising incidental finding of a 3.5 cm left atrial mass that was seen in the superior slices of the scan. She had no complaints suggestive of a stroke/ transient ischemic attack or chest pain or dyspnea. Her past medical history is significant for hypertension, diabetes and atrial fibrillation and her INR was therapeutic at the time of admission.

A trans-thoracic echocardiogram showed a large, circular partially mobile left atrial mass with no other significant valvular or functional abnormalities

A follow up cardiac MRI showed a large 3.5 cm spherical mass with a stalk originating from the left atrial appendage. The signal intensity and gross features of the mass were consistent with a thrombus.

The patient’s anticoagulation was continued at discharge and she was scheduled for a follow up visit with Cardio-Thoracic surgery for surgical extraction of this clot.

IMPLICATIONS/DISCUSSION: Management of Giant Left Atrial Thrombi has no set guidelines and they could lead to catastrophic complications with dislodgement. This case illustrates the medical dilemma that we face due to lack of guidelines when we are presented with a patient with a large left atrial thrombus. Cardiac MRI is able to differentiate between masses that are thrombi and malignancy. The most significant risk factors for development of these clots are atrial fibrillation and Mitral stenosis. Case reports and prospective case series have explained that between 25 to 70% of thrombi resolve with continuing oral anticoagulation. A 3 year follow up study of similar patients revealed that over 50% of patients developed embolic complications which included cerebral or peripheral embolism and even death despite therapeutic anticoagulation. Anticoagulation may promote fragmentation or detachment of the left atrial thrombus. Predictors of subsequent thrombo-embolism were dimension of >1.5 cm, history of thrombo-embolism and mobile thrombus. Surgical extraction of these large thrombi has been performed successfully in quite a few instances and could be the answer to saving these patients from devastating complications.

THROMBOSIS DESPITE THROMBOCYTOPENIA: A CASE OF ANTIPHOSPHOLIPID SYNDROME Shuchi Gulati 1 ; Anthony Donato2.

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LEARNING OBJECTIVES: 1. Recognize the occurrence of arterial and venous thromboses despite thrombocytopenia in a patient with antiphospholipid syndrome (APLS). 2. Manage patients with antiphospholipid antibodies and thrombosis with lifetime anticoagulation.

CASE INFORMATION: A 27 year old female patient with a history of unprovoked right leg Deep Venous Thrombosis (DVT) one year ago was readmitted to the hospital with an acute left leg DVT. She had been anticoagulated at diagnosis of the first DVT but had not been compliant with anticoagulation. She did not have any history of pregnancy losses and no family history of coagulation disorders. She had a six pack year history of smoking. Her physical exam was notable for swelling and moderate tenderness over the affected limb. Labs revealed an elevated Partial Thromboplastin Time (PTT) of 52 seconds (nl 25–31 seconds) with a normal Prothrombin Time (PT) and International Normalized Ratio (INR). Her hemoglobin was 11.7 g/dl, hematocrit 38.3 %, MCV 101.3 fL with normal MCH and MCHC. Her platelet count was 64,000 cells/microliter. Other labs including white cell count with differential and chemistries were normal. The setting of recurrent DVT, thrombocytopenia and elevated PTT suggested the diagnosis of an antiphospholipid antibody syndrome specifically due to lupus anticoagulant antibodies. A mixing study was done which showed a lack of correction of the Russell viper venom time and confirmed the presence of an inhibitor in the patient’s plasma. Additional testing including an anticardiolipin antibody IgM was negative while the IgG was weakly positive. The rapid plasma reagin test, Protein C, protein S, antithrombin III and genes for Factor V Leiden were normal. The patient was anticoagulated with enoxaparin followed by warfarin and discharged home with intent to anticoagulate her for life.

IMPLICATIONS/DISCUSSION: Antiphospholipid Syndrome (APLS), also known as the Hughes syndrome is an autoimmune disease characterized by the occurrence of arterial and venous thromboses, thrombocytopenia, recurrent pregnancy losses, and disturbances of the coagulation cascade. Overall risk of thrombosis in this patient population is between 0.5% to 30%. The most frequent thrombotic events at presentation are deep vein thrombosis and ischemic stroke, occurring in 32% and 13% of patients respectively.

While APLS is characterized by the presence of three types of antibodies, our case illustrates that the triad of recurrent thrombosis, thrombocytopenia and an elevated PTT points to an underlying lupus anticoagulant antibody. Patients with these antibodies and thrombosis require lifetime anticoagulation because of a high risk of recurrence.
AN UNUSUAL ETIOLOGY OF ACUTE GASTROENTERITIS: SALMONELLA TRANSMITTED FROM AN AMPHIBIAN CARRIER
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LEARNING OBJECTIVES: 1. To appreciate the importance of thorough history taking in a case of reportable infectious disease. 2. To be aware of the various carriers and reservoirs of Salmonella.

CASE INFORMATION: 27 y/o female nurse with no significant past medical history, presents to the ER with a 48 hour history of nausea, vomiting, diarrhea and fever of 103°F. Patient reports non-bloody, watery diarrhea every 10 min during the day and two hours at night. Patient has no recent history of antibiotic use or travel, and has not been in close contact with sick people other than at work. She has two children in daycare who have not been sick. She recalls sampling salami at Wal-Mart a couple days prior; however her children who had the same sample were not ill. Upon admit, patient was aggressively rehydrated and started on Levaquin empirically, even though her WBC was not elevated. Stool was sent for culture, ova and parasites, and C. Diff toxin. Studies subsequently showed fecal leukocytes and Salmonella type B. The county health department was notified to start outbreak investigation. Further comprehensive questioning revealed patient contact with a frog that her children had found outside. Her condition improved after three days and she was discharged on Levquin. Several days later her son presented to the ER with similar symptoms.

IMPLICATIONS/DISCUSSION: This case demonstrates the importance of obtaining a thorough history when determining the etiology of a reportable infectious disease, such as Salmonella. Upon admission, the only suggested cause of the gastroenteritis was a food source. It was not until several days later that the possible frog source was discovered. As physicians, we need to be aware of possible sources of infectious disease and ask appropriate questions to quickly determine the most probable etiology for the protection of the community. It has been well recognized that reptiles and amphibians can be carriers of Salmonella. Most outbreaks in the past have been associated with the handling of turtles. This past year, the first multistate outbreak of Salmonella infections associated with amphibians was investigated, where 85 human isolates and 40 amphibian isolates were recovered from the same source. CDC investigation showed an association between the infections and exposure to aquatic pet frogs such as African dwarf frogs. While 95% of Salmonella infections are foodborne from raw or undercooked egg products, raw milk products, contaminated water and meat, our case has shown that animal contact is an important source of human salmonellosis. Salmonella species remain one of the most common causes of enteric illness in the U.S. so it is imperative that we recognize both the well documented and the more recent trends of infectious etiologies.

ATYPICAL PRESENTATION OF A CATASTROPHIC ILLNESS: A NARROW ESCAPE! Jason E Lambrecht 1; Rohini Garg 1; Eric Peters 1; Tara Sabby1. 1Creighton University, Omaha, Nebraska. (Tracking ID # 11487)

LEARNING OBJECTIVES: 1. Consider aortic dissection in any patient with presents with abrupt onset of severe pain within the thorax. But “classic findings” of tearing pain, pulse deficit and radiological abnormalities are often absent. 2. Recognize that Type A aortic dissection is a surgical emergency whereas a Type B aortic dissection is managed medically.

CASE INFORMATION: A 59 year old African American male presents to the ER with 4 days of abdominal pain. The abdominal pain is described as dull and aching, has worsened from a 2/10 to 6/10 intensity. The pain radiates to his flanks bilaterally, and at times to his left shoulder, describes it as a pressure feeling in his epigastrium. Movement exacerbates the pain, he reports alleviation when he lies on his side. He reports nausea on the first day but no vomiting. He has had normal bowel movements, without hematechezia or melena and is able to tolerate oral intake without difficulty but does describes early satiety. Other associated symptoms include chest tightness and SOB. However, the patient relates this to pain in his rib cage and associated difficulty taking a deep breath. He denies palpitations, dizziness, and has had no previous similar episodes. It has been 15 years since he last saw a physician. His past medical history is significant for untreated hypertension, GERD, and history of carpal tunnel syndrome. He has a 40-pack year history of smoking, drinks alcohol socially, and denies illicit drug use. Physical exam is remarkable for elevated blood pressure, 148/77, mild distress, no murmur, coarse breath sounds bilaterally, tender abdomen above the epigastrium, nontender in other quadrants, rib cage is tender to palpation bilaterally, positive CVA tenderness, and no notable pulse deficits. Serial cardiac enzymes and EKG were obtained to rule out a cardiac cause. CT of the patient’s chest and abdomen is obtained to determine the cause of his abdominal pain. The CT results show the patient has an aortic dissection from his carotids to the bifurcation of the aorta. The patient receives emergent repair of his ascending aorta with a 32 mm hemashield Dacron graft and repair of his aortic valve. Aggressive blood pressure management is initiated. The patient was discharged 15 days later without any complications.

IMPLICATIONS/DISCUSSION: Aortic dissection is a catastrophic illness usually presenting with severe chest pain and acute hemodynamic compromise. Left untreated, 33% of patients die within the first 24 hours, and 50% die within 48 hours. Overall, in-hospital mortality for acute aortic dissection is 27%. Early mortality rates are reported to be 1% to 2% per hour after the onset of symptoms. The major cause of early death is aortic rupture. Predisposing factors are systemic hypertension (approximately 70%), pre-existing aneurysm, vasculitis, collagen disorders, and bicuspid aortic valve. Symptoms are so variable that it is overlooked in 39% of the cases. Usual presentations are chest pain (type A dissections), back pain and abdominal pain (type B dissections). It can lead to syncope due to cardiac tamponade and stroke. Signs on physical examination include pulse deficit, aortic regurgitation, hypotension, MI, variation (>20 mm Hg) in systolic blood pressure between arms. Initial tests include D-dimer, chest X-ray, CT angiography, MRI, TTE and TEE. Typical findings on chest X-ray are widening of the superior mediastinum, greater than 8 cm on AP and displacement of aortic wall calcification. Surprisingly, chest X-rays are normal in 20% of the cases. TTE has a sensitivity of 59-85% and specificity of 93% to 96%. TEE has greater sensitivity and specificity, 97-99% and 97-100%, respectively. Angiography, the gold standard, is rarely used. Type A is a surgical emergency. Type B can be medically managed unless excessively dilated or mesenteric/limb ischemia occurs. Reduction of systolic blood pressure to 100 to 120 mm Hg or the lowest tolerated level should be done. Intravenous beta-blocker (BB) should be used to reduce the heart rate below 60 beats/min. Verapamil or diltiazem can be used if BB is contraindicated. Switch to oral therapy after heart rate control has been achieved. Nitroprusside can be initiated in recalcitrant patients but should not be used without betablockade.
TOPHI OR NOT TOPHI: GOUT IS THE QUESTION Oanh Kieu Nguyen1; Stephen Harder1, 1University of Texas Southwestern Medical Center, Dallas, Texas. (Tracking ID # 11489)

LEARNING OBJECTIVES: 1. Understand that tophaceous gout can affect the spine.
2. Recognize that tophaceous gout of the spine may present as back pain and fever, mimicking an acute spinal infection.

CASE INFORMATION: A 65 year-old African American man with diabetes presented with four weeks of fever and progressive lower back pain radiating to the bilateral lower extremities. On physical examination, the patient had a temperature of 38.9°ES C. No murmurs were auscultated. He had limited range of motion and tenderness of the bilateral shoulders and was diffusely tender over the lumbar spine.

Hard, subcutaneous nodules were palpated over both elbows and the left knee was erythematous and tender, with a small palpable effusion. Blood cell count was 13 x 10⁹ cells/L with a neutrophilic predominance, erythrocyte sedimentation rate was 130 mm/hr, C-reactive protein was 20.5 mg/dL and serum uric acid was 11.3 mg/dL. Blood cultures and echocardiogram were negative. Magnetic resonance imaging of the lumbar spine revealed two loculated fluid collections at L3-L4, concerning for abscesses. Fluid aspiration revealed turbid yellow fluid with white, flaky cellular debris. Bacterial, fungal, and acid-fast bacterial cultures of the fluid were negative; polarized microscopy was not performed.

Broad spectrum intravenous antibiotics were initiated with no improvement in the patient’s fever or pain. During treatment, the patient acutely developed a swollen, erythematous and tender right wrist. Arthrocentesis showed intracellular and extracellular urate crystals. He was started on colchicine and a prednisone taper with rapid defervescence and resolution of wrist and back pain. Following six weeks of intravenous antibiotics, a gallium scan revealed increased activity in the lumbar spine despite resolving clinical symptoms. Biopsy of the lumbar spine demonstrated fluid with extracellular urate crystals. The diagnosis of spinal gout was made.

IMPLICATIONS/DISCUSSION: The recognition of atypical presentations of gout by the general internist is crucial for timely initiation of therapy. Cases of gout affecting the spine have been infrequently reported in the medical literature to date. Acute gout can affect intervertebral joints and tophaceous deposits may occur in the axial skeleton, even in the absence of peripheral signs or symptoms. Clinical presentations of spinal gout may range from neck or back pain to myelopathy, cauda equina syndrome, and paraplegia. A subset of these patients may present with fever, making them difficult to distinguish from spinal infections such as epidural abscess, diskitis, or vertebral osteomyelitis. Radiographic studies may not be sufficient to help differentiate between these etiologies and tissue biopsy is frequently necessary to establish a diagnosis. Spinal gout should be considered in the differential diagnosis for patients with a suspected or confirmed history of gout presenting with fever and back pain.

"POOR AND CONTENT IS RICH AND RICH ENOUGH" : A CASE OF FINANCIAL EXPLOITATION OF A COGNITIVELY IMPAIRED ELDERLY VETERAN Waridibo E Allison1; Ravishankar Ramaswamy1; Kit Harrnett2; Clark Elizabeth1; 1James J Peters Veteran Affairs Medical Center, New York, New York. (Tracking ID # 11490)

LEARNING OBJECTIVES: 1. Recognize financial exploitation as a component of elder abuse. 2. Assessment of financial exploitation in cognitively impaired elderly patients

CASE INFORMATION: An 82 year old veteran admitted to hospital with acute exacerbations of COPD and CHF and with rapid atrial fibrillation was assessed by the geriatric consultation service. His dementia was found to be significantly worse than on evaluation five months prior with a Mini Mental State Examination score of 18/30 and a St Louis University Mental Status examination score of 6/30. He was deemed not to have decision-making capacity for medical consent for procedures but was able to express goals and values. He repeatedly expressed his contentment and wish that Ms X, his girlfriend of over 20 years, was to be his health care proxy.

A subsequent meeting with Ms X revealed that she was the veteran’s sole carer and that they were struggling on a limited income. They had never married and had no joint bank accounts. Ms X had been signing the patient’s name on checks for monthly bills and had hired a lawyer 2 months previously to have the veteran sign a will bequeathing all his assets including property to her. She planned to sell one of the houses on the property to make ends meet. The veteran was estranged from his three siblings but discussion with them revealed that he had inherited the property from his mother’s estate conditional upon no sale of the property in his lifetime. After his death, ownership would revert to surviving siblings. Legally his eldest ninety year old sister was his next of kin.

Ms X’s fitness as a carer was called into question by previous documentation of her refusal to allow the Visiting Nurse Service (VNS) and other services into the home and her turning up at the hospital intoxicated on two occasions during the patient’s current admission. Legal advice was taken from the Veteran Affairs regional counsel and the veteran was eventually discharged in the care of Ms X with referral to VNS for home care and to Adult Protective Services to evaluate the safety of the patient’s home situation.

IMPLICATIONS/DISCUSSION: Cognitive impairment is a major risk factor for financial exploitation because of its detrimental effect on memory, judgment and the capacity to make decisions. Recognition and assessment of financial exploitation in patients with dementia is challenging because they are often unable to answer specific questions about their financial situation. Other risk factors for financial exploitation include recent spousal death, physical disability, social isolation, alcoholism and unemployment or financial difficulties in family members.

Once suspected, cases are best handled by an experienced geriatric-led multidisciplinary team. A cognitive assessment is central to evaluating capacity of an individual to make financial decisions as is a psychiatric assessment to evaluate for psychological vulnerabilities that impair judgment. An interview with the suspected abuser should be attempted. This should be non-confrontational and include questions about relationship with the patient, daily activities/routines and financial questions about housing, income sources and bill payment. Other family members should be contacted about any concerns and a home visit by a nurse or social worker is recommended.

When abuse is confirmed a clinician’s priority is protection of the elderly victim as in the case described. Laws vary between states but if a physician believes financial abuse has occurred the relevant state Office of Protective Services should be informed. Application for guardianship may be necessary to deal with financial abuse in a mentally incapacitated person but it should be borne in mind that misuse of powers of attorney and guardianship can constitute financial abuse.

Education of physicians about risk factors for financial abuse and methods of assessment and intervention is critical to improving their effectiveness in combating this underreported form of abuse within our elderly population.
AN UNCOMMON CAUSE OF SUDDEN DEATH AND ACUTE CORONARY SYNDROME (ACS) IN THE POST PARTUM PERIOD

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(Tracking ID # 11491)

LEARNING OBJECTIVES: 1. Recognize spontaneous coronary artery dissection (SCAD) as an infrequent and unusual cause of ACS in young patients with no risk factors 2. Recognize SCAD as a diagnosis that must be considered particularly in young women with chest pain during pregnancy and the post partum period.

CASE INFORMATION: A 33 year old woman of African origin, gravida 1 para 1, had sudden onset of severe central chest pain in OB/GYN clinic. She had undergone an uncomplicated cesarean section two weeks prior following a normal antenatal course. She had no known risk factors for coronary disease and did not smoke, drink alcohol or use recreational drugs.

She was immediately taken to the ER in a wheelchair and on arrival at triage collapsed and became unresponsive. The patient was found to be in ventricular fibrillation cardiac arrest and ACLS protocol was initiated. She received atropine, epinephrine, magnesium and amiodarone and was defibrillated with 120/200/200 joules. There was spontaneous recovery of circulation and the patient was intubated and ventilated. A transthoracic echocardiogram (TTE) post arrest showed normal left ventricle (LV) function, no wall motion abnormalities and no pericardial effusion.

In ICU the patient was titrated off Dobutamine, amiodarone was continued and she was put on a mild hypothermic protocol to minimize anoxic brain injury. The patient was additionally commenced on aspirin, clopidogrel, lisinopril and a heparin infusion. Serial troponin levels peaked at 12.73 on Day 2 after the cardiac arrest and repeat TTE on the same day showed markedly reduced LV systolic function with an ejection fraction of 30% and severe hypokinesia of the apical wall. Right ventricle function was also reduced. Electrocardiograms initially showed inferior-lateral ST depression and later anterior-lateral T wave inversion. Extubation occurred successfully on Day 3 after the cardiac arrest and the patient underwent coronary angiography on Day 6. This revealed spontaneous coronary artery dissection of the mid LAD artery causing 95% stenosis and apical akinesis. Two drug eluting stents were placed at the dissection site.

The patient made a good recovery and was discharged 9 days after the cardiac arrest.

IMPLICATIONS/DISCUSSION: Prevalence of SCAD was recently estimated at 0.7% in an angiographic study. A 2010 review of the literature found 440 reported cases of which 70% were women. Pregnancy was associated with 26% of cases and of these 84% of cases occurred in the post partum period with 70 events occurring within 2 weeks of delivery. Approximately a fifth of all cases were diagnosed by post mortem examination and the majority of the remainder by coronary angiography. The patient in this case was fortunate to have collapsed in a hospital setting close to an ER. Mortality was even higher with pregnancy associated SCAD with sudden death or death within a few hours of symptom onset occurring in 40%.

Presentation is usually with typical symptoms of ACS including chest pain. Electrocardiogram may be normal initially. The exact etiology of SCAD is unclear but it may be influenced by eosinophilic infiltration and cystic medial necrosis, hormonal changes weakening the arterial wall and hemodynamic stress that occurs during the final trimester of pregnancy. Further research is needed to elucidate the processes involved in development of SCAD as this knowledge will assist in improving risk stratification.

There are currently no evidence based guidelines for medical management of this condition but pharmacological agents used include aspirin, clopidogrel, heparin, beta-blockers, and angiotensin-converting enzyme inhibitors. Thrombolytics may cause extension of the dissection and further narrowing of the true lumen and are not recommended. It has been shown that coronary intervention with stenting has superior outcomes compared to conservative medical management of SCAD for both right and left coronary artery lesions. Rapid diagnosis and subsequent appropriate treatment is essential to avert disastrous clinical sequelae and to achieve an excellent outcome in this condition that disproportionally affects young women.

AN UNEXPECTED CAUSE OF UPPER AIRWAY OBSTRUCTION AFTER EXTUBATION: AN ILLUSTRATIVE CASE OF THE POTENTIAL VALUE OF HEALTH INFORMATION EXCHANGE

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(Tracking ID # 11493)

LEARNING OBJECTIVES: 1. Recognize that myasthenia gravis can cause upper airway obstruction resulting in respiratory impairment and extubation failure.

2. Recognize the potential role of health information exchange in expediting diagnostic work ups and reducing duplication of efforts.

CASE INFORMATION: A code blue was called for an 18-year-old African-American female with sickle cell anemia following a CT angiogram of the chest. She was emergently intubated for hypercapnic, hypoxic respiratory failure. She had been admitted 12 hours prior for sickle cell crisis with shortness of breath. The CT chest was remarkable for new consolidations in the right middle and left lower lobes, consistent with acute chest syndrome. After a single red blood cell exchange transfusion, she had minimal oxygen requirements and met adequate ventilator weaning parameters, such as rapid shallow breathing index and minute ventilation. Immediately following extubation she became hypoxic and tachypneic, with no stridor or audible airflow upon chest auscultation. She was re-intubated without difficulty. Although her neurological exam was limited by sedation, she had mild symmetric proximal muscle weakness with 4/5 strength, ptosis with sustained upward gaze, a negative inspiratory force of ~22 cm H2O, and a forced vital capacity of 460 mL. A CT of her neck was unremarkable for extrinsic airway compression. A second attempt at extubation was performed with bronchoscopic assistance to evaluate for upper airway patency. As the tube was slowly retracted, the upper airway was observed to completely collapse at the level of the vocal cords. A diagnostic workup to evaluate for neuromuscular etiologies of upper airway obstruction revealed elevated anti-acetylcholine receptor antibodies and a significant decrement on a repetitive nerve stimulation study, confirming a diagnosis of myasthenia gravis. After instituting plasmapheresis, corticosteroids, and pyridostigmine, the patient made an uneventful recovery. Once extubated, she reported that she had already been diagnosed with myasthenia gravis. After instituting plasmapheresis, corticosteroids, and pyridostigmine, the patient made an uneventful recovery.

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VALUE OF HEALTH INFORMATION EXCHANGE

AFTER EXTUBATION: AN ILLUSTRATIVE CASE OF THE POTENTIAL VALUE OF HEALTH INFORMATION EXCHANGE

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bulbar muscle weakness are at risk for airway compromise when the stenting effect of an endotracheal tube is removed. When upper airway obstruction is suspected, direct visualization of the airway is essential to exclude more common etiologies, such as tracheal stenosis and laryngeal edema, and can confirm loss of airway patency after extubation. In the absence of structural abnormalities an evaluation for neuromuscular etiologies, including myasthenia gravis, should be pursued.

This case also highlights the potential value of health information exchange. The patient’s perplexing and complicated clinical course, with repeated intubations and a prolonged intensive care stay, could have been preempted by access to her prior health records. However, the limited history and a family who was unaware of her recent diagnosis gave no indication that further relevant information was available. Knowledge of prior history, medications, and care plan at the point-of-care in real-time can circumvent diagnostic challenges, delays in initiating therapy, and duplication of health services—thus, improving outcomes and reducing costs.

**PANCREATICODUODENAL ARTERY PSEUDOANEURYSM CAUSING GASTROINTESTINAL BLEEDING**

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**LEARNING OBJECTIVES:**

1. Pseudoaneurysms arising in the pancreaticoduodenal arterial arcade can be a significant source of gastrointestinal bleeding.

2. A combination of methods should be used when a single approach fails to occlude the aneurysm completely.

**CASE INFORMATION:**

A 48 year old African American male presented with coffee ground emesis and dark tarry stools. His past medical history is significant for pancreatitis. His vital signs on admission were stable. His labs showed an increased amylase at 186, lipase was 6, AST 49, ALT 17, alkaline phosphatase 73, bilirubin 0.7, total protein 6.1, albumin 3.5 and his electrolytes were within normal limits.

A CT scan showed a low attenuation region in the pancreatic head. This was further evaluated with a CT angiogram which showed a 2.2 cm strong contrast enhancing structure in an enlarged and inhomogenous pancreatic head suggesting a pseudoaneurysm.

The selective angiogram of the gastroduodenal artery demonstrated the superior pancreaticoduodenal artery supplying the pseudoaneurysm. The selective angiogram of the superior mesenteric artery demonstrated the inferior pancreaticoduodenal artery filling this aneurysm as well. Using microcatheter technique, both of these branches were selected and embolized with Gianturco coils. Immediate follow-up angiography revealed complete occlusion of the pseudoaneurysm with no evidence of vascular flow. The following day a contrast enhanced CT was performed which revealed residual patency of the pseudoaneurysm and this was confirmed with color Doppler ultrasound. At that time, it was elected to treat the remaining flow within the aneurysm with ultrasound-guided percutaneous injection of thrombin directly into the aneurysm. This was successful with confirmation of complete occlusion with ultrasound at the time of this intervention. A repeat CT scan done a month as a follow up demonstrated that the pseudoaneurysm had remained occluded. The patient continued to improve well and did not have any complaints.

**IMPLICATIONS/DISCUSSION:**

Chronic pancreatitis is the most common cause of pancreatic pseudoaneurysms and is often the result of chronic inflammatory process involving the pancreas. The morbidity and mortality are increased when the pseudocysts rupture into an adjacent vessel causing a pseudoaneurysm. Bleeding of these lesions into the gastrointestinal tract can be rapidly fatal. These lesions should be treated at diagnosis because there is a high risk of rupture irrespective of the size of the lesion. Urgent repair of these lesions is associated with high perioperative morbidity whereas elective repair is not.

The most common visceral artery aneurysm associated with pancreatitis arises from the splenic artery followed by the gastroduodenal artery. Pseudo aneurysms of the pancreaticoduodenal artery due to pancreatitis usually arise in the superior pancreaticoduodenal artery. Inferior pancreaticoduodenal artery pseudo aneurysms are rare and so far only 88 cases are reported in the literature. Our patient had a pseudo aneurysm arising in the pancreaticoduodenal arterial arcade supplied by both the superior and inferior pancreaticoduodenal arteries.

In conclusion the pseudo aneurysm in our patient received blood supply from two large arteries which mandated proximal and distal coil embolization. It also received blood supply from several small branches which explains the presence of flow even after successful coil embolization. Hence, percutaneous injection of thrombin was made which successfully occluded the pseudo aneurysm.

**STERNOCLEAVICULAR SEPTIC ARTHRITIS IN A HEALTHY AFEBRILE MALE**

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**LEARNING OBJECTIVES:**

1. Recognize Sternoclavicular Joint septic arthritis in an afibrile patient with no contributing risk factors.

2. Diagnose septic arthritis using invasive methods when indicated.

**CASE INFORMATION:**

A 43 year old athletic male with no significant past medical history experienced a 3 week history of pain involving the anterior inferior neck and upper chest. He also described concurrent generalized aches, nausea/vomiting, night sweats, and a 20 lb weight loss. The patient noted worsening pain with push ups and internal rotation of the right arm, but had no pain on neck motion or deep inspiration. He denied any recent skin infections and high risk behaviors such as IV drug use or multiple sexual partners. Pain was unrelied by nonsteroidals.

On physical examination he was afibrile but tachycardic. Erythema and tenderness was observed over the right SC joint. Pain worsened with adduction of the right arm, while neck rotation was asymptomatic.

Examination was otherwise normal. Laboratory studies revealed a leukocytosis of 19,300 cells/microl, with 86% neutrophils and 10% bands and sedimentation rate was 108 mm/hr. CT of the neck showed an abnormal enlargement of the sternal insertion of the sternoclavicular-mastoid. No fluid could be aspirated on arthrocentesis of the joint under CT guidance. The patient underwent arthrotenotomy and synovectomy of the right sternoclavicular joint. Findings of necrotic bone prompted resection of the medial end of the clavicle. Pathologic analysis showed focally intense inflammation within the joint space, acute osteomyelitis with erosion, and purulent myositis and myonecrosis of pectoralis major muscle. Blood and excision cultures were positive for methicillin sensitive staphylococcus aureus. The patient responded well to a 6 week course of intravenous nafcillin.

**IMPLICATIONS/DISCUSSION:**

The diagnosis of SC septic arthritis is readily considered in the IV drug abuser with fever, but is more challenging in the afibrile patient without risk factors for high grade bacteremia. Inflammatory disease isolated to the SC joint may also be observed in ankylosing spondylitis, and it may accompany other joint symptoms in rheumatoid arthritis. Risk factors for developing septic arthritis of the joint include intravenous drug use (21%), distant site of infection (15%), diabetes mellitus (13%), trauma (12%), and infected central venous line (9%), none of which occurred
In this patient, over one third of sternoclavicular septic arthritis patients are afebrile at the time of presentation. CT imaging and interventional investigation are key to diagnosis, given common failure of articular aspiration; this approach should be seriously considered in the patient with isolated inflammatory signs involving the SC joint.

A CASE OF ACUTE RESPIRATORY DISTRESS SYNDROME IN A PATIENT WITH AIDS AND KAPOSI'S SARCOMA  Moses Mathur 1; Moses Mathur 1; Vikin Lalan 1; Sami Alasfar 1; Parag Desai 1; Wissam Chatila 1. Temple University Hospital, Philadelphia, Pennsylvania. (Tracking ID # 11512)

LEARNING OBJECTIVES: 1. Recognize immune reconstitution syndrome with underlying Kaposi's sarcoma as a cause for acute respiratory distress syndrome. 2. Recognize extra-cutaneous manifestations of Kaposi's sarcoma.  

CASE INFORMATION: A 46-year-old male with AIDS (CD4 29 cells/mL, viral load 580,000 copies/mL) on highly active antiretroviral therapy (HAART) for 6 weeks, presented with pleuritic chest pain and dyspnea. Cutaneous Kaposi's sarcoma (KS) had been diagnosed 1 month prior, for which he received his first treatment with doxorubicin one week ago. In the past month, he had multiple hospital visits for abdominal pain and dyspnea, which, after an extensive workup, were treated as AIDS cholangiopathy, CMV pneumonitis, and pneumocystis jirovecii pneumonia (PJP).

On presentation he was febrile, in shock and was intubated for management of hypoxic respiratory failure. Initial lab work showed WBC 3.2 k/mm³ (6% lymphocytes), Hgb 10.1 g/dL, platelets 43 k/mm³.

In the ICU he was treated for acute respiratory distress syndrome (ARDS) and shock with concern for immune reconstitution syndrome (IRS). Broad spectrum antimicrobials (including PJP coverage) and corticosteroids were started. HAART was held. He was mechanically ventilated using lung protective strategy. Bronchoscopy revealed a polypoid lesion in the anterior segment of the right upper lobe and erythema throughout the tracheobronchial tree. Continuous venovenous hemodialysis was started for refractory acidemia and oliguric renal failure. Shock and multi-organ dysfunction persisted despite maximal hemodynamic and ventilatory support. With worsening prognosis, the patient’s family decided to withdraw care on day 4 and he expired shortly thereafter. An autopsy was performed.

IMPLICATIONS/DISCUSSION: Although HAART has revolutionized HIV treatment, it is not without complications. In particular, IRS post HAART initiation is well-described with incidence up to 35%. Risk factors for IRS include low pretreatment CD4 (<100 cells/mL), positive immune response to HAART, temporal link between HAART and symptom onset, and absence of drug-resistant infections, noncompliance, malabsorption or reduced dose levels due to drug interactions.

In untreated HIV, KS is the most common complication of HIV-8 infection. Pulmonary (33%) and gastrointestinal (GI) involvement (82%) in KS is common. Pulmonary KS mortality is high whereas GI KS symptoms are rare. In the era of HAART, KS incidence has decreased seven fold, with tumor regression seen in some cases. However, up to 50% of KS patients never achieve total remission. In the setting of IRS, patients are thus susceptible to KS flares (cutaneous or otherwise), as early as 3 weeks after starting HAART.

In our case, not only did autopsy show diffuse alveolar damage consistent with late-phase ARDS but also multifocal, bilateral lung parenchymal KS, with involvement of skin and small intestine as well. Lung specimens, bronchoalveolar lavage samples and blood samples were negative for bacterial, fungal and viral cultures. Three weeks after HAART, our patient did show immunologic response, with CD4 34 cells/mL and viral load 1938 copies/mL. With no evidence for other infections and a positive temporal relationship between clinical events, we speculate that ARDS in our case was most likely from post-HAART IRS causing a flare of pulmonary KS. The contribution of a GI KS flare to his past abdominal pain remains unknown.

Notably, the patient had been given his first dose of chemotherapy for KS a week prior to presentation. In retrospect, this patient could have perhaps benefited had chemotherapy been initiated earlier in conjunction with HAART.

E-I-E-I-O: EVALUATION OF PULMONARY NODULES LEADS TO A SURPRISING CONCLUSION! Gaurav Gulati 1; Shuchi Gulati 1; Richard Alweis 1. The Reading Hospital and Medical Center, West Reading, Pennsylvania. (Tracking ID # 11515)

LEARNING OBJECTIVES: 1. Recognize the broad differential of multiple pulmonary nodules. 2. Recognize the importance of a stepwise approach to the evaluation of multiple pulmonary nodules.

CASE INFORMATION: A 34 year old male with 5 pack-year tobacco usage and active drug abuse presented with acute right-sided chest pain progressively worsening over 4 days. Pain was 9/10 in intensity, sharp and non-radiating. He denied any similar previous episodes, cough, sputum production, or hemoptysis. However, he noted night sweats and 20 pound weight loss over a month. He had chronic occupational exposure to asbestos. Physical examination was unremarkable. Laboratory evaluation was significant for mild normochromic normocytic anemia and urine drug screen positive for cocaine and opiates. Chest CT revealed multiple bilateral pulmonary nodules with the largest measuring 18 mm, primarily in the upper lobes, some with central cavitations, as well as perihilar and subcarinal lymphadenopathy. Initial workup included pan cultures, sputum cytology, and a CT of the abdomen and pelvis which were all normal. Secondary workup for Wegener’s disease (ANCA, MPO) and mycobacterial disease (sputum for AFB, PPD, and quantitiferon Gold test) were negative. After this, echocardiogram looking for a possible source of septic embolic shower was unremarkable; shunt fraction was done to evaluate for the presence of arteriovenous malformations and was within normal limits. Finally, a lung biopsy was performed, revealing fibroblastic and histiocytic aggregates, along with filamentous-appearing organisms. A diagnosis of pulmonary actinomycosis was made based on histopathologic and modified Acid Fast Stain (FITE) results demonstrating Actinomyces sp.

IMPLICATIONS/DISCUSSION: Presence of multiple lung nodules can have a vast differential. This includes: malignancy and metastasis; infections, including abscesses, septic emboli, fungi, and parasitic infestations; inflammatory conditions, including Wegener’s granulomatosis, rheumatoid arthritis, lymphomatoid granulomatosis, amyloidosis, and sarcoidosis; pulmonary AVMs, and pneumoconiosis. Clinical diagnosis can be made using selected laboratory testing and the characteristics of the lesions on imaging. Presence of lymphadenopathy and weight loss can be helpful. Lung biopsy may be necessary to establish an exact diagnosis. As in this case, a multitude of possibilities may coexist and a stepwise approach is necessary to reach a definitive diagnosis without subjecting the patient to unnecessary testing.
A CASE OF Q FEVER WITHOUT A HISTORY OF ANIMAL EXPOSURE
J. ADam Yancey1, Amal Kebede1. The Reading Hospital and Medical Center, West Reading, Pennsylvania. *(Tracking ID # 11519)*

LEARNING OBJECTIVES: 1. Consider Q fever as a diagnosis in patients with culture negative endocarditis or fever of unknown origin despite lacking animal exposure. 2. Acute Q fever is treated with doxycycline alone while chronic Q fever is treated with a combination of doxycycline and either a quinolone or hydroxychloroquine.

CASE INFORMATION: A 48-year-old woman with history polymyositis for ten years on methotrexate and prednisone presented with fever, headache, cough, and light sensitivity, which have been occurring for the past 2 to 3 weeks. She was initially treated with intravenous cefepime and vancomycin for suspected meningitis. Lumbar puncture was consistent with aseptic meningitis. While on broad spectrum antibiotics, she continued to spike daily fevers to greater than 39°C. A workup for fever of unknown origin, including blood cultures, urine culture, transthoracic echocardiogram to evaluate for endocarditis, malignancy workup, and rheumatologic workup were performed. She was found to have slight Lambil’s excrescence present, small filliform processes on the edges of the valves thought to be formed secondary to mechanical trauma. All cultures remained negative. A workup for culture negative endocarditis was performed and the patient was found to have positive Q-fever phase 2 IgM antibody at 1:128 dilution titers. The patient was initiated on doxycycline and hydroxychloroquine. The patient denied any recent travel, animal exposure, or ingestion of unpasteurized milk. The Center of Disease Control was notified of her diagnosis.

IMPLICATIONS/DISCUSSION: Q fever is a zoonotic disease caused by Coxiella burnetii. Many patients are asymptomatic, thus making it difficult to assess incidence of disease. For those with symptoms, high grade fevers, malaise, headache, myalgias, cough, nausea, vomiting, and diarrhea are common. Q fever is rarely fatal but can cause serious complications including endocarditis. Acute Q fever is treated with doxycycline whereas combination therapy is required for chronic Q fever infection. Although Q fever is a rarely diagnosed clinical entity, it can have some serious complications requiring long term treatment including endocarditis. Q fever is often associated with animal exposure; however, the source is not always identifiable.

A CASE OF SEVERE CONSTIPATION SECONDARY TO METASTATIC PHEOCHROMOCYTOMA REQUIRING COLECTOMY. Kari L Edling1; William Reid1. 1Department of Medicine, University of California Los Angeles Medical Center, Los Angeles, California. *(Tracking ID # 11524)*

LEARNING OBJECTIVES: 1. Recognize that severe constipation is a complication of pheochromocytoma that may require surgical treatment when refractory to medical therapy. 2. N/A

CASE INFORMATION: A 42-year old woman with a history of pheochromocytoma with bony metastases presented with severe constipation. She was diagnosed six years prior after a hypertensive crisis involving headache and palpitations and was found to have elevated catecholamines and a right adrenal mass. She underwent crisis involving headache and palpitations and was found to have constipation. She was diagnosed six years prior after a hypertensive pheochromocytoma with bony metastases presented with severe constipation. The patient had struggled with constipation since her initial diagnosis; however, her symptoms worsened significantly with the development of spinal metastases and subsequent uptitration of opioid analgesics.

Physical examination revealed a cachectic woman with a nontender, distended abdomen with decreased bowel sounds. Computed tomography of the abdomen and pelvis revealed marked pan-colonic distention, abundant colonic stool, and diffuse metastatic bony disease. Initial management with medications and suppositories was unsuccessful. The patient was transferred to the Intensive Care Unit for aggressive treatment with phentolamine, neostigmine, and methylaltrexone but had minimal clinical improvement. Surgery was consulted for palliative surgical management and an exploratory laparotomy with total colectomy, end ileostomy and gastrostomy tube placement was performed on hospital day 14. Pathology showed a significantly distended colon and small bowel with fecal impaction and patchy atrophy and fibrosis of the outer muscularis propria without evidence of malignancy. She recovered well and was discharged on hospital day 16 with phenoxybenzamine, metyrosine, prazosin, propranolol, pantoprazole and several opioid pain medications. Follow-up visits with her oncologist demonstrated significant improvement with decreased abdominal distention and pain and clear palliative benefit from aggressive surgical intervention.

IMPLICATIONS/DISCUSSION: This is an unusual case of severe constipation due to catecholamine excess resulting in colonic pseudo-obstruction. Multiple subspecialists collaborated to provide aggressive medical management and ultimately palliative surgical treatment. Pheochromocytoma is a rare disease with an incidence of one to two cases per 100,000 people per year, with malignant pheochromocytomas comprising 10% of all cases. The tumor cells are derived from chromaffin cells which secrete catecholamines. Common presenting symptoms include hypertension, tachycardia, headache and tremor. Approximately 13% of patients will have significant constipation, and pseudo-obstruction has been reported as the initial presentation of pheochromocytoma. Direct catecholamine stimulation of alpha and beta receptors in intestinal smooth muscle cells decreases gastrointestinal motility. In addition, stimulation of mesenteric arterial alpha receptors also causes vasoconstriction and intestinal ischemia. If resection of the pheochromocytoma is not possible, alpha adrenergic blockade is the mainstay of treatment. Initial therapy with oral agents such as prazosin (a selective alpha-1 antagonist) and phenoxybenzamine (a nonselective alpha antagonist) can be attempted. Combinations of intravenous phenolamine (a nonselective alpha antagonist) and neostigmine (an acetylcholinesterase inhibitor) have been successful in more severe cases, but can take up to 30 days to produce a bowel movement. Due to the potential for bradycardia and hemodynamic instability with neostigmine administration, this treatment should only be used in a closely monitored setting such as an intensive care unit. Surgical intervention should be considered if aggressive medical treatment is unsuccessful. Adjalle R, et al. Treatment of Malignant Pheochromocytoma. Horm Metab Res. 2009 Sep; 41(9):867–96. Mason L, et al. An Unusual Case of Severe Constipation Due to Metastatic Pheochromocytoma. J Pain Symptom Manage. 2009 Jun; 37(6):e5-7.

AMPHETAMINE TOXICITY: THINKING OUTSIDE THE BOX Gaurav Gulati1; Anthony A Donato1. 1The Reading Hospital and Medical Center, West Reading, Pennsylvania. *(Tracking ID # 11528)*

LEARNING OBJECTIVES: 1. Recognize Amphetamine abuse in a patient with confusion, ataxia and psychosis. 2. Learn early and appropriate management of amphetamine toxicity

CASE INFORMATION: A 62 year old male with a past history of recreational drug abuse presented with acute onset unsteady gait,
word finding difficulty and erratic speech, with mild confusion and confabulation. Fixed delusions were also noted, as well as visual and auditory hallucinations. He and his accompanying family had denied any recent alcohol use.

On physical exam, he had a blood pressure of 186/105, and neurological examination revealed hypertonia, positive Romberg’s test and abnormal heel to toe test as well as incoordination of movements. He also had some cogwheeling and would fall backwards on standing, which did not change with eyes being open or closed. Laboratory evaluation revealed stable Complete Blood Count (CBC) with differential, normal electrolytes, mild transaminitis, a negative blood alcohol level, negative Lyme test and RPR serology. It was however positive for amphetamines in the urinary drug screen. The patient was treated with as needed lorazepam and haloperidol. Over the next day or two he improved significantly and his problems including ambulatory dysfunction had resolved.

**IMPLICATIONS/DISCUSSION:** Amphetamine abuse is the primary cause of emergency visits in 73,400 patients per year in the United States. Classic presentations include psychosis, agitation and sympathomimetic signs.

Confusion, ataxia and psychosis are symptoms common to alcohol withdrawal, drug ingestion and other rarer medical conditions. It is important to remember to look for a drug screen in a patient where symptoms don’t fit in and the common diagnoses such as alcohol withdrawal seem less likely, even in extremes of age. Early interventions with atypical antipsychotics and benzodiazepines are warranted and bring about improvement in symptoms.

**A CASE OF JELLY IN THE BELLY - RETROPERITONEAL PSEUDOMYXOMA** Sumana Nagireddy1; Sumana Nagireddy2; Suman Srinivasa. 1UAB, Montgomery, Alabama. (Tracking ID # 11531)

**LEARNING OBJECTIVES:** 1. Diagnose a rare case of retroperitoneal pseudomyxoma peritonei. 2. Recognize the importance of accurate treatment to prevent long term complications.

**CASE INFORMATION:** 51 year old African American male admitted to the hospital with abdominal pain, abdominal distension and vomiting in June 2010. His past history was significant for retroperitoneal pseudomyxoma peritonei, diagnosed in 2004 following resection of a 22.0 x 17.5 x 5.0 cm mass. Macroscopically, the contents of the mass were thick, yellow, and mucoid appearing and microscopic examination showed villous adenoma. The patient underwent debulking surgery again in 2008 along with intra peritoneal chemotherapy, and since then he was on palliative chemotherapy with Cisplatin and Gemcitabine. He remained well until he admitted to the hospital in June 2010. On admission he had leukocytosis of 30,000 cells/μL, creatinine of 2.8 mg/dL, and lactate acid of 8.7 mmol/L. Computerized tomography (CT) of his abdomen revealed small bowel obstruction, thickened bowel wall representing ischemia, and a right-sided retroperitoneal fluid-filled structure invading into the iliac muscle and extending into the foramina of the lumbar spine. Exploratory laparotomy showed 8 cm of necrotic bowel, which was then removed. Additionally, he had large loops of bowel attached to the retroperitoneal mass, which were non-resectable. Microscopic examination of the resected small intestine showed atypical epithelium and mucin adherent to intestinal serosa. After removal of necrotic bowel, his condition was improved and he was sent home with continued palliative chemotherapy. Follow up with his recent medical records has indicated that he was admitted to the hospital in October and December of 2010 for intestinal obstruction needing surgical intervention.

**IMPLICATIONS/DISCUSSION:** Literature indicates pseudomyxoma peritonei (PMP) is found in approximately 2 in 10,000 laparotomies, but occurrence of PMP in the retroperitoneal space is rare. There are only 10 cases have been reported in the literature. Mucinous implants of the peritoneum are mostly expected from appendix and ovary, but unusual sources like colon, stomach, uterus, or common bile duct may exist. Retroperitoneal presentation of PMP with out intra peritoneal involvement can be explained by derangement of anatomy of appendix. Common symptoms of retroperitoneal pseudomyxoma are fullness in the right flank, loss of appetite, fatigue and slowly progressive pain. Retroperitoneal pseudomyxoma is commonly diagnosed by CT imaging of the abdomen. Various modalities of treatments like surgery, chemotherapy, and radiotherapy are available with varying degrees of success. Retroperitoneal pseudomyxoma peritonei may have better prognosis than PMP if intact removal of retroperitoneal mass is achievable. It is imperative that complete and intact removal of retro peritoneal mass is accomplished to prevent the iatrogenic spillage of mucin into peritoneal space. In our case, probable extension of retroperitoneal pseudomyxoma into peritoneal space assumed to be resulted in intestinal obstruction and necrosis. Overall, rarity of the retroperitoneal pseudomyxoma makes this case imperative for discussion and gives an insight of its complications and need for prevention of complications.

**TRANSIENT PULMONARY HYPERTENSION IN A CASE OF UNCOMPLICATED MALARIA.** Suman Srinivasa 1; Suman Srinivas2; 1New York University School of Medicine, New York, New York; 2NYU School of Medicine, New York, New York. (Tracking ID # 11533)

**LEARNING OBJECTIVES:** 1. Recognize malaria as an uncommon underlying cause of pulmonary hypertension. 2. Recognize that treatment of uncomplicated malaria may prevent further sequelae of pulmonary hypertension.

**CASE INFORMATION:** A 18 year-old man from Mali with recurrent episodes of malaria initially presented to an outside hospital with three days of fever, vomiting, and diffuse abdominal pain followed by a presyncopeal episode. The patient arrived in the United States one month prior to this presentation. Labs were notable for hemoglobin 12 g/dL, platelets 88 K/μL, AST 68 U/L, ALT 104 U/L, LDH 284 U/L, and creatinine 1.3 mg/dL. HIV test was negative. A blood smear on admission was positive for plasmodium falciparum with 0.5% parasitemia. Cat scan of the abdomen and pelvis with contrast showed a splenic lesion consistent with infarction. The patient was treated with a seven day course of doxycycline and quinine for uncomplicated malaria. A transthoracic echocardiogram was performed as part of the presyncopal workup and revealed severe pulmonary hypertension based on decreased pulmonary acceleration time and systolic notching. On hospital day 7, the patient was transferred to the present hospital for further evaluation of his pulmonary hypertension. He denied chest pain, dyspnea, and decreased exercise tolerance. Vital signs were unremarkable. Physical exam was significant for a well appearing male in no acute respiratory distress; elevated jugular venous pressure, a right ventricular heave, a loud P2, and lower extremity edema were absent. A six minute walk test revealed oxygen saturations of 98-100% on room air. A repeat transthoracic echocardiogram on hospital day 11 revealed normal pulmonary arterial pressures with a preserved ejection fraction and no chamber enlargement. Two repeat blood smears were negative for plasmodium falciparum. The patient had improved clinically and was discharged home with scheduled follow up of a serial transthoracic echocardiogram.

**IMPLICATIONS/DISCUSSION:** Pulmonary hypertension (pHTN) is an elevation in the pulmonary arterial pressure, which if severe enough can lead to right ventricular failure. The World Health Organization proposed a classification of pHTN into five groups based upon pathophysiology. Group 1 describes idiopathic disease and the remaining groups focus on an
underlying cause. Although parasites, such as schistosomiasis, have been classified in Group 4 as causing pHTN by embolic disease, little is understood about the mechanism by which malaria causes pHTN. One study proposed that malaria causes pHTN by intravascular hemolysis in a manner similar to sickle cell disease. During the hemolysis process, nitric oxide may be depleted leading to increased pulmonary arterial pressures. [1] In patients living in endemic areas of malaria, repeated infections may aid in the development of partial immunity and subsequently lead to less severe infections but, pulmonary hypertension is an important disease sequela that can contribute to increased mortality. In this case, it seems that prompt treatment of uncomplicated malaria with doxycycline and quinine led to the resolution of pulmonary hypertension and presyncope/syncope. Further studies are needed to fully understand the relationship between malaria and pHTN.

[1] Janka J. et al. Increased Pulmonary Pressures and Myocardial Wall Stress in Children with Severe Malaria. The Journal of Infectious Disease. 2010; 202(5):791–800.

**SHORT PR INTERVAL IN HYPERTROPHIC CARDIOMYOPATHY , NOT ALWAYS WOLF PARKINSON WHITE**

KATNA PRIYA GANGI 1; Venkata Alla 2; Claire Hunter 2; CREIGHTON UNIVERSITY MEDICAL CENTER, Omaha, Nebraska; 2Creighton University Medical Center, Omaha, Nebraska. (Tracking ID # 11535)

**LEARNING OBJECTIVES:**
1. Discuss differential diagnoses for short PR interval in patients with hypertrophic cardiomyopathy (HCM).
2. Discuss genetic and prognostic implications of short PR interval in HCM phenotype.

**CASE INFORMATION:** A 19 year-old female patient with known history of hypertrophic cardiomyopathy was evaluated for retrosternal tightness and episodes of presyncope / syncope. She denied smoking or alcohol use; family history was positive for premature cardiac death. Electrocardiogram (EKG) showed sinus rhythm with short PR interval, left ventricular hypertrophy with left axis deviation and secondary repolarization changes. There was no obvious delta wave. Echocardiogram revealed asymmetric antero-septal hypertrophy and an ejection fraction of 55-60%. There was no resting or exercise induced outflow gradient. Cardiac magnetic resonance imaging (MRI) revealed focal mid myocardial fibrosis involving basal to mid anterior segments and asymmetric anterior and antero-septal wall thickening (30 mm) consistent with hypertrophic cardiomyopathy. Given the history of otherwise unexplained syncope, family history of sudden death and a wall thickness of 30 millimeters the patient was offered an Electrophysiology (EP) study +/- Implantable Cardioverter Defibrillator (ICD). However, she declined it due to personal/social concerns and was started on atenolol. In addition, given the EKG evidence of accelerated atrioventricular conduction, possibility of HCM mimics lysosomal storage disorder or coexistent Wolff Parkinson White (WPW) syndrome were considered.

**IMPLICATIONS/DISCUSSION:** Electrocardiographic abnormalities are common in patients with HCM. Entirely normal EKGs are seen in less than 15% of patients. In addition to left ventricular hypertrophy, ST- T wave changes secondary to repolarization, abnormal Q waves, and giant negative T waves in anterior leads are well known. Rarely, accelerated atrioventricular conduction manifested by short PR interval with or without associated delta wave can be seen. This could be due to coexistent Wolf Parkinson White syndrome seen in less than 5% of HCM or due to accelerated atrioventricular conduction without any anatomic accessory pathway. Certain genetic diseases like storage disorders are known to phenotypically mimic HCMP and are frequently associated with short PR interval or WPW syndrome. These include PRKAG2 (Protein Kinase AMP-activated Gamma 2) mutation of Fabry’s disease or LAMP2 (Liposomal Associated Membrane Protein 2) mutation seen in Pompe’s and Danon’s diseases. It is important to differentiate these genetic variants as Fabry’s, Pompe’s and Danon’s are glyco-gen storage disorders characterized by vacuoles containing intermediary products. These are multisystem disorders with pleotropic manifestations. Cardiac involvement in these patients is characterized by early onset of heart failure in their third decade, increase in left ventricular wall thickness greater than HCM and severely impaired left ventricular function. True pre excitation with single or multiple accessory pathways is frequently seen and patients die at a very young age secondary to life threatening ventricular arrhythmias. They are also prone for AV reciprocating tachycardias which increase risk of syncope and inappropriate ICD shocks. Therefore it is advisable to perform EP study prior to ICD implantation in these patients. Also considering the higher morbidity and mortality in patients with LAMP2 / PRKAG2 mutations, genetic testing is advisable in phenotypic hypertrophic cardiomyopathy patients with short PR interval.

**MY DAD KEEPS SHOUTING AT ME...”** Tara Ashlee Mencias 1; Tara Ashlee Mencias 2; Ankit Sakhuja 2; Kurt Pfleifer 2; Medical College of Wisconsin, Franklin, Wisconsin; 2Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 11539)

**LEARNING OBJECTIVES:**
1. Recognize the non-specific presentation of digoxin toxicity. 2. Review the indications to use digoxin immune Fab.

**CASE INFORMATION:** A 52 year-old male with a history of congestive heart failure and paroxysmal atrial fibrillation presented with two weeks of abdominal pain, nausea, and vomiting. He presented to an outside hospital one month prior with similar complaints, and an abdominal CT at that time failed to show any intra-abdominal pathology. On presentation to our institution, he was also complaining of auditory hallucinations, stating he could hear his deceased father scolding him. His outpatient medications included furosemide, carvedilol, digoxin, hydralazine, isosorbide mononitrate, spironolactone, lisinopril, amiodarone and warfarin. In the emergency department, his initial blood pressure was 67/47 with a heart rate of 50. His serum creatinine was 2.78 mg/dL with a baseline of 1.1 mg/dL, and his serum potassium was 5.2 meq/L. ECG did not show any acute changes suggestive of hyperkalemia. Considering his symptoms and associated acute kidney injury, digoxin toxicity was considered and confirmed by a digoxin level of 3.3 ng/mL. Considering his symptomatic bradycardia, acute kidney injury and hyperkalemia, the patient was given digoxin immune Fab. A few hours later, his digoxin level decreased to 1.7 ng/mL, and his potassium level improved to 4.2 meq/L. His digoxin was discontinued per discussion with his cardiologist. With these interventions, his hypotension, bradycardia, renal failure, nausea, vomiting and hallucinations resolved. He did continue to complain of some mild abdominal discomfort.

**IMPLICATIONS/DISCUSSION:** Digoxin toxicity usually presents with non-specific symptoms, such as nausea, vomiting, diarrhea, abdominal pain, hallucinations, alterations in color vision and arrhythmias. The digoxin level may be diagnostically helpful in toxicity, but given the imperfect correlation between serum and intracellular levels, does not effectively rule out digoxin toxicity, particularly in acute ingestion. Instead, clinicians must use history, physical and ECG findings in addition to digoxin levels to make the diagnosis. Common ECG findings in acute digoxin toxicity include ventricular premature beats due to increased ectopy and bradycardia or any degree of AV block due to enhanced vagal tone. In patients with pacemakers, the ECG may not show these findings,
so clinical exam and potassium levels should be used to guide treatment in these patients. A potassium level between 5.0-5.5 meq/L or signs of end organ damage (acute kidney injury and altered mental status in this case) are both indications for the use of digoxin immune Fab. A potassium level greater than 5.5 meq/L secondary to digoxin toxicity is typically fatal. Most symptoms of digoxin toxicity disappear with clearance of the drug, but abdominal pain can take months to resolve.

**LEARNING OBJECTIVES:** 1. To recognize Lamotrigine and other non-aromatic antiepileptic drugs as potential causes of DRESS syndrome a severe and possibly fatal drug reaction. 2.

**CASE INFORMATION:** A 62 year-old female with longstanding bipolar disorder, presented with fever and a diffuse, non-pruritic rash that began on her back which then spread to her torso, limbs, and face beginning approximately 1-2 weeks after initiating lamotrigine. She continued taking this medication for a total of 21 days. Her physical exam was significant for T 38.6 C, and a diffuse morbilliform rash on the torso, arms and legs, involving palms but not soles. There was no mucocutaneous lesions, lymphadenopathy, hepatosplenomegaly, abdominal ascites, or jaundice noted Laboratory testing revealed thrombocytopenia (nadir 68 K), absolute eosinophilia, transaminitis AST/ALT (peak levels 490/456) and elevated LDH >2000. An abdominal ultrasound and extensive viral, bacterial and autoimmune serologies were unremarkable. A skin biopsy done on hospital day 4 revealed a mild perivascular infiltration of mononuclear cells in the superficial plexus most consistent with a drug reaction. With discontinuation of the offending drug and administration of high dose oral prednisone, her rash greatly improved and her liver function tests began to trend down. She was discharged in stable condition on hospital day 6.

**IMPLICATIONS/DISCUSSION:** Drug rash with eosinophilia and systemic symptoms (DRESS) syndrome is a severe drug hypersensitivity reaction characterized by a triad of rash, fever and internal organ involvement. Hepatitis is most common, but interstitial pneumonitis, renal failure/interstitial nephritis, myocarditis, thyroiditis, and neurologic symptoms can be found. Symptoms usually begin two to eight weeks after exposure to the offending drug. Drugs most commonly implicated are the aromatic anticonvulsants: carbamazepine, phenytoin, phenobarbital. Our case involves DRESS syndrome following the administration of Lamotrigine, a non-aromatic antiepileptic drug. The patient presented with a hypersensitivity syndrome, rash, fever, and elevated liver function tests. Less than a dozen cases of severe hypersensitivity syndrome associated with lamotrigine have been reported in the literature, at least three cases progressing to acute hepatic failure.

Early recognition of the entity known as DRESS syndrome is imperative as it can mimic other serious pathologies and withdrawal of the offending drug is usually curative. An important issue in DRESS syndrome is the documented cross-sensitivity (40-80%) among the aromatic anticonvulsant drugs. We propose that a patient with a history of non-aromatic anticonvulsant drug induced DRESS syndrome should also avoid others within the same pharmacologic class. Careful monitoring of liver function tests is recommended when initiating the drug lamotrigine as the liver is the most common site of internal organ involvement. In the future, attempts should be made to further understand the susceptibility profile, as there has been some research on a genetic basis and an association with HH6 virus.

**WHEN A WHEEZING WOMAN HAS MORE THAN ASTHMA**

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**LEARNING OBJECTIVES:** 1. Recognize the clinical presentation of Churg-Strauss syndrome. 2. Recognize that Churg-Strauss syndrome occurs almost exclusively in patients with a history of adult onset asthma and should be considered in the differential in patients not responding to conventional therapy.

**CASE INFORMATION:** A 60-year-old woman presented to her primary care physician with a two-month history of chronic chough, wheezing, and malaise. At that time she was diagnosed with asthma and treated with a fluticasone/salmeterol inhaler, albuterol, and montelukast. Ten months after her diagnosis, she presented again to her primary care physician with worsening cough and occasional hemoptysis. She was treated with a prednisone taper for a presumed asthma flare. Three weeks later her symptoms returned, prompting her to come in for evaluation.

On presentation to our medical center, she noted that her symptoms had become worse over the past year despite therapy. In addition, she had a one week history of numbness, pain, weakness, and swelling in both hands and in her left foot. Two days prior to presentation she had developed a rash on her abdomen that spread to her chest and left foot. She also noted a twelve pound weight loss over the prior month, nausea, and sinus pressure.

The patient is a non-smoker and had a past medical history of presumed asthma and rhinitis. Her exam was notable for bilateral lung crackles, bilateral hand swelling, pain in her digits with flexion, distal left lower extremity weakness, and a purpuric rash on her abdomen, chest, and left foot. Preliminary work up was significant for a white blood cell count of 12,100/cmm with 40% eosinophils, a chest x-ray that showed diffuse interstitial pulmonary opacities, and head CT that demonstrated opacification of the sinuses. Further inpatient work up was significant for p-ANCA positivity, an ESR of 87 mm/hr, and a CRP of 149.6 mg/L. A skin biopsy demonstrated leukocytoclastic vasculitis with extensive eosinophilic infiltration. She was diagnosed with Churg-Strauss syndrome and started on 1 gram of solmedrol daily and cyclophosphamide 2 mg/kg on day 3 of treatment. Her eosinophilia completely resolved and her symptoms improved. She was discharged home on prednisone and cyclophosphamide.

**IMPLICATIONS/DISCUSSION:** Churg-Strauss syndrome is a small-to-medium vessel vasculitis that tends to occur in people with adult onset asthma. The disease prevalence in the U. S. is only 1–3 cases per 100,000, making this syndrome a diagnostic challenge. The exact pathophysiology of the disease is unclear, however abnormal immune and genetic factors are thought to play a role. The American College of Rheumatology has proposed criteria for the diagnosis of Churg-Strauss syndrome. Four or more of these criteria yields a sensitivity of 85% and a specificity of 99.7%: 1) asthma, 2) eosinophilia of more than 10% in peripheral blood, 3) paranasal sinusitis, 4) pulmonary infiltrates, 5) histological proof of vasculitis with extravascular eosinophils, and 6) mononeuritis multiplex or polyneuropathy. Therefore, this case illustrates a classic presentation of a rare syndrome.

This patient’s clinical presentation was thought to be most consistent with Churg-Strauss syndrome. However, based on her purpura and positive ANCA, other vasculitides were considered including microscopic polyangiitis and Wegener’s vasculitis. Furthermore, while adult onset asthma does occur, this diagnosis prompted the consideration of “asthma mimics” including allergic bronchopulmonary aspergillosis, upper airway obstruction, and pulmonary eosinophilic syndromes.
Recognizing and treating Churg-Strauss syndrome early is important in reducing disease mortality, as the 5-year survival rate without treatment is 25%. In patients such as the one presented here, who have a history of persistent cough and wheezing which is unresponsive to conventional asthma therapy, early consideration of alternative diagnostic possibilities that can mimic asthma is critical to optimizing patient outcomes.

CRACK YOU ONCE, CRACK YOU TWICE...RECURRENT AGRANULOCYTOSIS ASSOCIATED WITH REPEATED LEVAMISOLE CONTAMINATED COCAINE

Jonathan D Kirsch 1; Jonathan D Kirsch 1.

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LEARNING OBJECTIVES: 1. Recognize an adverse effect of cocaine contaminated with levamisole 2. Consider levamisole contaminated cocaine in the differential diagnosis of unexplained agranulocytosis

CASE INFORMATION: A 51 year old female with a history of acute hepatitis B, gluten intolerance and intermittent cocaine abuse presented to the emergency department with a swollen, painful, red fifth digit on her right hand consistent with cellulitis. Her absolute neutrophil count (ANC) was 0.1 x 10^9/L. She admitted to recent, intermittent cocaine abuse. Her medications included prn acetaminophen. She is allergic to sulfa. Her past medical history was otherwise unremarkable.

Her hospital course included an extensive hematologic, infectious, and rheumatologic workup. Guided by a recent MMWR report [12/18/09 58 (49)] highlighting an unexplained etiology of agranulocytosis, levamisole contamination of cocaine was considered, but not checked at that time. Her urine toxicology screen was positive for cocaine. Her lab workup also showed an elevated anti-SSA antibody and ANA of 1: 640, but was otherwise unremarkable. A skin biopsy of her necrotic finger lesion was consistent with neutrophilic dermatosis thought to be Sweet’s syndrome without vasculitis. The patient was treated with filgastrin (G-CSF) until her neutropenia resolved and she was discharged with antibiotics for cellulitis that resolved as an outpatient. She was counseled on cocaine cessation and was set up with outpatient resources.

She returned twice over the subsequent 6 months with similar presentations: periorbital cellulitis with neutropenia and 1st digit cellulitis with neutropenia. Her ANC was 0.5 and 0.6 x10^9/L, respectively. On both of these latter occasions, she had a positive urine toxicology for cocaine and her urine levamisole level was elevated. Both hospitalizations were uncomplicated, being treated with G-CSF on the second admission and spontaneously recovering on the final admission. She did not follow up for repeat hematologic or rheumatologic workup.

IMPLICATIONS/DISCUSSION: Neutropenia is a rare event (7.2 cases per 1,000,000 population per year) in patients not receiving cytotoxic drugs. While technically agranulocytosis refers to ANC less than 0.1 and neutropenia is less than 0.5, the terms are often used synonymously in the literature. Levamisole has been used to cut cocaine since at least 2005, presumably due to its similar appearance and texture to cocaine, low cost, and availability for use in veterinary medicine as an anti-helminthic agent. Although levamisole was initially approved for use in livestock farms, Levamisole now contaminates up to 90% of cocaine and availability for use in veterinary medicine as an anti-helminthic agent. Presumably due to its similar appearance and texture to cocaine, low cost, and availability for use in veterinary medicine as an anti-helminthic agent, levamisole is not a reportable event. Cocaine itself has not been associated with neutropenia. Clinicians should be suspicious of levamisole contaminated cocaine in patients presenting with unexplained neutropenia. Workup includes a urine toxicology screen, CBC with differential and urine or serum levamisole levels measured within 48 hours of drug use. There is no established treatment, as most cases resolve spontaneously. Close monitoring, consideration of treatment with G-CSF, and substance abuse counseling is recommended. The CDC is now performing national surveillance in some states.

ILIAC VEIN COMPRESSION SYNDROME: AN ANATOMIC ANOMALY ASSOCIATED WITH INCREASED RISK OF DEEP VEIN THROMBOSIS

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LEARNING OBJECTIVES: 1. Identify patients with deep venous thrombosis who may require further evaluation for iliac vein compression syndrome (IVCS) also known as May-Thurner Syndrome.

2. Determine appropriate evaluation and management strategy for patients with IVCS.

CASE INFORMATION: A 26-year-old woman on warfarin for prior deep vein thrombosis (DVT) presented with a one-day history of pleuritic and fleeting right-sided chest pain and recurrent left lower extremity (LLE) discomfort and edema. Symptoms developed suddenly following a 3.5 hour drive. She was first diagnosed with a LLE DVT 14 months prior when she was 30 weeks pregnant. She was managed with lovenox until she delivered and then treated with warfarin to complete 6 months of anticoagulation. Approximately three months later patient developed recurrent LLE swelling and pain. Imaging revealed a recurrent LLE DVT. Patient underwent a hypercoaguable evaluation, which was unremarkable. She was restarted on warfarin at that time. Her blood pressure was 126/77, pulse 91, temperature 36.4 Celsius, and respiratory rate of 18. Physical exam was notable for trace LLE edema, with 2+ dorsalis pedis and posterior tibial pulses. Her LLE was non-tender, without erythema or palpable cords. Laboratory studies were notable for an INR of 2.2. Doppler ultrasound revealed a clot in the left femoral, common femoral, and iliac vein. Results were compared to previous study, which revealed that clots were in near identical location, suggestive of a chronic DVT. Chest computed tomography angiography was obtained which did not reveal any evidence of pulmonary embolism. Left leg magnetic resonance venography (MRV) was suggestive of iliac vein compression syndrome (IVCS). Patient was evaluated by vascular surgery and currently consideration is being given to stent placement versus bypass surgery.

IMPLICATIONS/DISCUSSION: Deep venous thrombosis (DVT) is a condition commonly encountered by internists. The risk factors for thrombogenesis include venous stasis, endothelial trauma, thrombophilia, malignancy, and history of prior DVT. Virchow first noted a predominance of left-sided iliofemoral DTVs in the 1850’s. Approximately 100 years later, May and Thurner identified an anatomic variant in which the right common iliac artery compresses the left common iliac vein, known as IVCS. IVCS can promote venous stasis, one component of Virchow’s triad for DVT. IVCS is a common anatomic variant and patients with this variant are more likely to develop DVT. Three stages of IVCS have been identified. Stage one is defined by asymptomatic vein compression. In stage two, fibrous vascular lesions form at the site of the compressed iliac vein. The third phase is defined by development of DVT, which often occurs in the setting pregnancy, prolonged immobility, with use of oral contraceptives, or peri-operatively. Chronically, patients with IVCS...
can present with claudication, lower extremity pain, swelling, and chronic venous stasis changes. The goal of identifying patients with IVCS is to ensure proper evaluation by vascular surgery for potential interventions to relieve discomfort and prevent disability/restore function. MRV is currently the study of choice for the diagnosis of IVCS. Acute IVCS is managed with catheter-directed thrombolysis along with anticoagulation. Chronic IVCS is managed with insertion of stents and less commonly with thrombectomy or bypass surgery. General internists should consider IVCS in patients with left iliofemoral DVTs. Identification of patients with IVCS is important as appropriate intervention can reduce risk of recurrent DVT and post-thrombotic syndrome.

**LEARNING OBJECTIVES:** 1. The diagnosis of non compaction cardiomyopathy is often missed, because the disease is still not as well known as it should be among most physicians. 2. Longterm anticoagulation is needed in patients with NCCM without atrial fibrillation with LVEF < 40 percent.

**CASE INFORMATION:** A 77 year old male with no significant past medical history was admitted with a 3 week history of progressive dyspnoea, orthopnoea, paroxysmal nocturnal dyspnoea, dry cough and bilateral leg swelling. On examination vitals signs revealed irregular heart rate of 84 per min, blood pressure of 123/81 mm of Hg, respiratory rate of 20/min, and saturation of 100% on O2. Cardiac examination showed jugular venous distension, S1, S2 and S3 were present. Lung examination showed bibasilar crackles. Extremities showed bilateral pitting pedal edema. On evaluation EKG showed sinus tachycardia with frequent and consecutive PVCs and fusion complexes and left axis deviation and left bundle branch block. CXR showed bilateral pleural effusions, interstitial edema and cardiomegaly. Cardiac markers were negative and BNP was 1250. Patient was treated as acute congestive heart failure according to standard guidelines with diuretics, ACEinhibitors, beta-blockers and oxygen. On further evaluation to determine the cause, Echocardiography was done, and showed global LV hypokinesia with prominent trabeculations and deep intertrabecular recesses suggestive of non compaction cardiomyopathy. LVEF was 23percent. Patient was anticoagulated with Coumadin as recommended. Patient condition improved and was discharged home.

**IMPLICATIONS/DISCUSSION:** Non compaction cardiomyopathy is a rare genetic form of characterized by prominent left ventricular wall trabeculation and intertrabecular recesses communicating with the ventricular cavity. The diagnosis is often missed, because the disease is still not well known as it should be among most physicians. It is important that clinicians recognize and differentiate this condition from other forms of cardiomyopathy as treatment and prognosis may differ significantly. The major clinical manifestations of NCCM are heart failure, atrial and ventricular arrhythmias, and thromboembolic events. Echocardiography is the diagnostic test of choice for NCCM. The diagnosis is based on the following echocardiographic criteria: the presence of at least 4 prominent trabeculations and deep intertrabecular recesses, blood flow from ventricular cavity into the intertrabecular recesses, and a typical bilamellar structure of the affected portion of the left ventricular myocardium. NCCM can also be diagnosed with magnetic resonance imaging of the heart. The main emphasis of the clinical treatment of patients with NCCM is on the treatment of heart failure and arrhythmias and the prevention of thromboembolic events. The treatment of heart failure in patients with NCCM follows the general guidelines for heart failure treatment. Long-term oral anticoagulation is indicated in particular for patients with atrial fibrillation, impaired left ventricular function (LVEF < 40 percent), or demonstrated intracardiac thrombi. All patients with NCCM should be screened annually with 24-hour electrocardiogram recordings.

**CRITICAL ILLNESS POLYNEUROPATHY PRESENTING AS LOCKED-IN SYNDROME** Geetha Selvakumar 1; Muhammed Sherid 2; Jilalu Kelbe 2; Meghana Gopal 2; Ayesha Salahuddin 3; Haritha 1; Mhd. Wisam BaqdunesBellam 4; Nael Gharbi 2; Shazel Gharbi 2; Harvey Friedman2. 1Saint Francis Hospital, Evanston, Illinois ; 2St.Francis Hospital, Evanston, Illinois ; 3St.Francis HospitalSt.Francis Hospital, Evanston, Illinois ; 4St.Francis Hospital, Chicago, Illinois. (Tracking ID # 11647)

**LEARNING OBJECTIVES:** 1. Locked-in syndrome refers to quadriplegia and anarthria with preserved consciousness 2. Critical illness polyneuropathy presents with flaccid quadriparesis with intact cranial nerve function

**CASE INFORMATION:** We present a case of an 82 year old Chinese female who was admitted and was being treated for community acquired pneumonia and a hepatic abscess. Her past medical history was significant for DM, HTN, CAD and CKD. Her medications were vancomycin, primaxin, hydrocortisone, heparin, protonix and digoxin. Her hepatic abscess was drained. During the hospitalization she had an episode of asystole which lasted for two minutes. A code was called and the patient was resuscitated. She was intubated and transferred to the ICU. She was not on any sedatives. On day two in the ICU, the patient had her eyes open but did not follow any commands. She did not have any other motor response. However, she could track and look at people in their eyes. But she did not follow other objects with her eyes. Her reflexes were nonreactive in bilateral upper and lower extremities and toes were downgoing bilaterally. She had some withdrawal to ticking in her left foot. Her WBC was 13.7, magnesium was normal, phosphorus was high at 5.9, calcium was 6.9, BUN and creatinine were 40 and 3.8 respectively. Albumin was 2.6 and alkaline phosphatase was 894. AST and ALT were within normal limits. Chest X ray showed a right lung base opacity. Her clinical findings were suspicious for locked-in syndrome and a CT head was obtained which did not show any evidence of hemorrhage or acute intracranial pathology. A neurology consult was obtained. An EMG was done which showed short duration, low amplitude motor unit potentials consistent with a diagnosis of critical illness polyneuropathy. The patient did not improve clinically and a decision was made to do a tracheostomy and a PEG tube placement following which she was sent to a long term care facility.

**IMPLICATIONS/DISCUSSION:** Locked-in syndrome is caused by ischemic stroke or hemorrhage in the brainstem. Patients can communicate through eye movements due to the preservation of higher cerebral functions. Certain conditions like coma and persistent vegetative state can sometimes present like locked-in syndrome. Critical illness polyneuropathy causes flaccid quadriparesis but the cranial nerves are intact. Our patient’s clinical presentation was highly suggestive of locked-in syndrome. But radiological studies failed to reveal an intracranial pathology. A diagnosis of critical illness polyneuropathy was made by electrogram. Critical illness polyneuropathy takes weeks to months to resolve. On the other hand locked-in syndrome is a potentially irreversible condition.
PSEUDO-RENAL FAILURE: HOW BINGE DRINKING CAN REALLY RUIN YOUR WEEKEND. Carla Gergi Sawan 1; Carla Gergi Sawan 2; Stephen Holt 3. 1Yale Internal Medicine, Primary Care, 06514, Connecticut; 2Yale Internal Medicine, 06514, Connecticut; 3Yale Internal Medicine, Primary Care, Waterbury, Connecticut. (Tracking ID # 11655)

LEARNING OBJECTIVES: 1. To diagnose and manage spontaneous bladder perforation following alcohol binge drinking. 2. To recognize the presentation of urinary ascites clinically and biochemically.

CASE INFORMATION: We report the case of a 57 year old gentleman with a history of alcohol abuse and hypertension, presenting with severe abdominal pain and constipation of five days duration. History was further notable for binge drinking of vodka during the week prior to presentation. He had oliguria and progressively increasing abdominal girth. Physical examination revealed a silent, distended, diffusely tender abdomen, with guarding and a fluid wave. He was afebrile, with stable vital signs. Serum chemistries were remarkable for potassium 6.0, sodium 136, chloride 76, serum bicarbonate 39, and creatinine elevated to 8.3 (baseline 0.91 mg/dL). Liver function tests and coagulation studies were normal. He had a leukocytosis of 16,000 cells /mm3. His corrected calcium level was 11.1 mg/dL. Arterial blood gas at room air was: pH 7.41, PCO2 51, PO2 71, HCO3 35, oxygen saturation of 91% at room air. Urinalysis results were: density 1.024, pH 7.5, negative for nitrites, ketones and leukocyte esterase, RBC > 100, WBC 3–5. Urine sodium was 119 mmol/L.

Given patient’s abdominal distension and absence of bowel movements for four days, an abdominal film was obtained, showing distended loops of small bowel with absence of free air or transition. For his urinary retention, a Foley catheter was inserted yielding 600 cc of dark urine. The patient was started on empiric antibiotic coverage and IV hydration. Creatinine improved quickly so a CT scan of the abdomen and pelvis with IV and oral contrast was obtained. It showed a small amount of fluid and air anterior to the urinary bladder, of uncertain etiology. These findings prompted urgent exploratory laparotomy for suspected visceral rupture. A 1.4 cm urinary bladder perforation was identified and repaired.

Post-operatively, the patient improved with normalization of renal function, correction of biochemical abnormalities, and rapid recovery of urinary output. He was discharged 5 days later and a follow up cystoscopy after two weeks was normal.

IMPLICATIONS/DISCUSSION: Bladder perforation in the setting of alcohol binge drinking is a rare (<1% of bladder rupture cases) but serious condition. Heavy alcohol intake results in ADH suppression and polyuria. Toxlic alcohol metabolites in the systemic circulation suppress the sensation of bladder fullness and ultimately lead to pathologic urinary retention. As the urinary bladder becomes increasingly distended, the dome becomes thinner and more susceptible to small changes in intravesical or intrabdominal pressures. Once rupture has occurred, urine leaks into the peritoneum and results in urinary ascites with reverse auto-dialysis across the peritoneal membrane. This phenomenon ultimately creates the illusion of acute renal failure with oliguria, hyperkalemia and rising serum creatinine. Interestingly, as urine is a sterile body fluid, most patients do not present in a septic picture. Our patient had a remarkable elevation in his serum bicarbonate despite the uremic presentation. In fact, his heavy alcohol use lead to significant epigastric discomfort for which he was taking a high amount of calcium carbonate tablets “tums”, resulting in hypercalcemia and metabolic alkalosis, basically milk-alkali syndrome.

Spontaneous bladder rupture requires a high level of suspicion to avoid any delay in diagnosis given the high mortality rate (80%) associated with this condition. Cystography and urgent surgical repair of the bladder wall are essential.

APPROPRIATE MANAGEMENT OF AN INCIDENTAL DISCOVERY OF MEDIASTINAL LIPOMATOSIS Lindsay Lucas 1; Zachary Young 1; Syma Rashid 1; Tariq Cheema 1. 1West Penn Allegheny Health System, Pittsburgh, Pennsylvania. (Tracking ID # 11669)

LEARNING OBJECTIVES: 1. To differentiate mediastinal lipomatosis radiographically and clinically as compared to other causes of mediastinal masses. 2. To address the appropriate diagnostic evaluation of mediastinal lipomatosis.

CASE INFORMATION: A 73 year-old obese (BMI 27.4), Caucasian male with active cigar use, diabetes mellitus type 2 and hypertension presented with vertigo and slurred speech. His physical exam was notable only for horizontal nystagmus and right-sided facial droop, and the patient denied chest pain, dyspnea, cough, or dysphasia. Vital signs, laboratory values (CBC, BMP, cardiac enzymes, and FLIP), and EKG, were all within normal limits; however, he was found to have a widened mediastinum on portable chest radiograph. An acute posterior circulation CVA was diagnosed on MRI with concurrent small vessel ischemic changes, and the patient was started on antiplatelet treatment with appropriate management of glucose and blood pressure. PA and lateral chest films confirmed the presence of what appeared to be an anterior mediastinal mass with widening of the mediastinal silhouette (figure 1). The patient was taken for chest CT with contrast where mediastinal lipomatosis was diagnosed (figure 2).

IMPLICATIONS/DISCUSSION: Mediastinal lipomatosis is a rare benign condition of accelerated deposition of unencapsulated mature adipose tissue in the mediastinum. Unlike its pathologic imitators, it does not compromise mediastinal structures and rarely requires treatment. It also does not require diagnostic tissue sampling. The pathology is unclear, although it is commonly associated with Cushing’s syndrome, exogenous corticosteroid use and alcoholism, and is probably similar to lipodystrophy seen in these conditions. Recently it has become increasingly associated with simple obesity, reflecting the overall increase in obesity worldwide. In such cases this incidental finding can herald potentially undiagnosed associated conditions including insulin resistance, hyperlipidemia and hypertension. Radiographically, mediastinal lipomatosis presents as smooth widening of the superior mediastinum with lateral displacement of mediastinal pleura extending beyond the transverse aortic arch. Because the radiolucency of fat is often distorted by the lucency of pulmonary tissue, diagnosis should be confirmed on contrast computerized tomography. CT should reveal homogenous fat attenuation in the superior mediastinum and in the cardiophrenic sulcus that does not compress or invade adjacent structures. Differential diagnosis includes thymoma, lymphoma, liposarcoma, lipoblastoma, encapsulated lipoma, thymolipoma, germ cell tumors, congenital cysts, intrathoracic thyroid, and parathyroid tumors; vascular abnormalities such as persistent left superior vena cava; mediastinal adenopathy; and mediastinitis. In true mediastinal lipomatosis, patients should not present with symptoms suggestive of mass effect. In the absence of symptoms and in the presence of diagnostic features on CT, no further workup is indicated. Attempts at distinguishing lipomatosis from liposarcoma require large amounts of tissue, often resulting in emotional stress and risk to the patient with minimal gain.
LEARNING OBJECTIVES: 1. Recognize that high-grade gastric lymphoma is associated with Helicobacter pylori infection and responds to eradication. 2. N/A

CASE INFORMATION: A 49yo HIV-negative Puerto Rican male presented with one month of dyspepsia, lower extremity edema, abdominal distension and a 30 pound weight gain. Two weeks prior, he presented to another institution where he was found to have bilateral pleural effusions and middle mediastinal mass extending to the right hepatic lobe that compressed the IVC. An endoscopic biopsy only revealed Helicobacter pylori gastritis. A thoracentesis had no growth on bacterial, fungal and AFB cultures with negative cytology. He was discharged and three days later presented to our institution after his symptoms failed to improve. He denied fevers, night sweats, weight loss or adenopathy. His only medication was tamsulosin. Past medical history was significant for untreated hepatitis C and benign prostatic hypertrophy. He is a former IV drug user and active smoker with no family history of malignancy. Initial exam was notable for normal vital signs, no adenopathy, findings of bilateral pleural effusions, tenuous ascites and bilateral pitting edema. A CBC, electrolytes, LFTs, and LDH were all within normal range. HCV viral load was 189,964 and urine histoplasma antigen was negative.

On hospital day 2, he was initiated on H. pylori eradication therapy with a 7-day course of amoxicillin, clarithromycin and lansoprazole. He did not receive corticosteroids and denied taking any medications or supplements. His symptoms steadily improved and completely resolved by hospital week 4. Several non-diagnostic fine needle aspirations were obtained via EGD. A PET/CT on hospital day 24 showed a dramatic reduction of the mediastinal mass and no change to his liver lesion. A core needle liver biopsy revealed diffuse large B-cell lymphoma (DLBCL) without features of mucosa-associated lymphoid (MALT) lymphoma.

IMPLICATIONS/DISCUSSION: Diffuse large B-cell lymphoma is the most common histologic type, comprising 30-35% of all and 50-60% of high-grade lymphomas. Primary gastric DLBCL arises either de novo or, more commonly, via transformation from H. pylori associated low-grade MALT lymphomas. Transformation from low to high grade confers a poorer prognosis and alters treatment: although H. pylori eradication alone cures up to 80% of low-grade MALT lymphomas, high-grade lymphomas often mandate chemotherapy. However, in the past decade, several reports have noted resolution of early stage primary gastric DLBCL after H. pylori eradication alone. A recent prospective trial showed complete remission in 14 of 22 patients (64%) with early stage DLBCL transformed from MALT lymphoma, none of whom progressed after 5 years of follow-up. Similar response rates of 60-80% are reported in case series of patients with primary gastric DLBCL with or without MALT features. Given the potential response to H. pylori eradication alone in localized disease and the toxicity of chemotherapy, it is vital to identify patients who may only require H. pylori therapy. It may also be a reasonable first-line option in frail and elderly patients who are not candidates for more aggressive treatment.

This case illustrates an atypical presentation of DLBCL, with a normal LDH, lack of PET avidity, and dramatic reduction in size without cytotoxic chemotherapy. While it is unclear that this patient has an H. pylori-associated DLBCL given disseminated disease at presentation and no MALT features on pathology, it remains the best explanation of the dramatic response to H. pylori eradication. Subsequently the patient was treated with six cycles of R-CHOP and has achieved a complete remission.

SUPRADIAPHRAGMATIC HETEROTOPIC LIVER PRESENTING AS A PLEURAL MASS CAUSING SPONTANEOUS PNEUMOTHORAX: Kranthi Andhavarapu 1; Richard Sue 2; Ana Moran 2; Anthony Perry 3. 1SJHMC, Phoenix, Arizona; 2SJHMC, Phoenix, Arizona. (Tracking ID # 11703)

LEARNING OBJECTIVES: 1. Recognize supradiaphragmatic heterotropic liver tissue as a cause of spontaneous pneumothorax
2. Recognize supradiaphragmatic heterotropic liver tissue as a cause of spontaneous pneumothorax

CASE INFORMATION: A 39 year old female with history of uterine fibroid resection presented with a 3 day history of chest discomfort worsened with deep inspiration. She denied fevers, history of smoking, asthma, or prior trauma to chest wall. She did however report that menstruation began on day of symptom onset. Chest radiography revealed a small right sided pneumothorax and subsequent chest thoracostomy tube was placed with evidence of lung re-expansion. Patient declined pleurodesis and was discharged home in an improved condition. Months thereafter, she returned with a right sided pneumothorax and agreed to undergo pleurodesis, during which two tan-brown 2 cm supradiaphragmatic masses were found. Pathology report confirmed heterotropic liver tissue consisting of polygonal hepatocytes. Postoperative course was uneventful and patient discharged home.

IMPLICATIONS/DISCUSSION: Accessory liver tissue has been described commonly in the vicinity of liver such as in the gallbladder, spleen, pancreas, umbilicus, adrenal gland, or omentum. However, supradiaphragmatic ectopic livers specifically in the pleural space is a rare finding. It is usually detected as an incidental finding during laparoscopy or autopsy. Even in the thoracic cavity, accessory liver tissue is more likely to be attached to the livertissue forming a diaphragmatic defect. Heterotropic or ectopic liver has been classified into fourtypes. The case we described belongs to the third class of which ectopic tissue is not attached to the liver. A literature search disclosed 17 cases of supradiaphragmatic heterotropic liver. One proposed mechanism describes asperate liver bud independent of the main hepatic diverticulum without any prior connection. In our case, this mechanism may explain the pathogenesis of the supradiaphragmatic liver without a pedicle into the liver proper. Surgery has been favored with excellent prognostic [2]. Unique to our case is the presentation with recurrent spontaneous pneumothorax.

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EXTRAGONADAL MEDIASTINAL METASTATIC YOLK SAC TUMOR: Patrick Tang 1; Anthony Charles, II 2; Andres 3; Christopher FlanneryZavala 2; Boe Ghee Love 4. 1SJHMC, Phoenix, Arizona; 2sjhmcsjhmc, phoenix, Arizona; 3sjhmc, phoenix, Arizona; 4S491
**CASE INFORMATION:** 18 year old male presented with lower back pain for 1 month and subsequent bilateral leg pain and numbness of bilateral 1st toe. Physical exam findings were remarkable for mild expiratory wheezes over left lung fields, tenderness to palpation of anterior thighs and calves and decreased sensation of the 1st toes. Chest radiograph revealed a 13 cm x 11 cm heterogenous left sided mediastinal mass with mass effect on the left pulmonary artery and left mainstem bronchus. With consideration of a primary germ cell tumor, serum AFP, LDH, and beta HCG were ordered and elevated at 12,096 ng/ml, 1292 U/L, and 262 mIU/ml respectively. However, ultrasound of the testes revealed no masses. This constellation of findings suggested an extragonadal GCT. Imaging studies revealed widely metastatic disease with multiple hepatic lesions, an L5 mass with extension into the neural canal, T4 acute compression fracture, lytic lesions in the pelvic bones, multiple lytic lesions of the ribs, and multiple calvarial lesions. Diagnosis of a yolk sac tumor was confirmed with a CT-guided biopsy of a hepatic lesion. Since bronchoscopic biopsy of lung mass yielded inconclusive findings, Neoadjuvant chemotherapy with bleomycin, etoposide, and cisplatin was started with anticipation for debulking procedure after four cycles.

**IMPLICATIONS/DISCUSSION:** Germ Cell Tumors without evidence of primary tumor in either the ovaries or testes are classified as extragonadal. Extragonadal GCTs in adults commonly presents in the anterior mediastinum, retroperitoneum, or pineal and suprasellar regions. Patients commonly present with symptoms of fever, chills, weight loss, chest pain, and dyspnea. Serum tumor markers alpha-fetoprotein (AFP), beta-HCG, and lactate dehydrogenase. Although beta-HCG levels may be elevated in patients with seminomatous or nonseminomatous tumors, AFP is increased only in patients with nonseminomas. Nonseminomatous GCTs include yolk sac tumors, choriocarcinomas, embryonal carcinomas and mixed tumors with more than one cell line. Most patients present with metastatic disease and are risk stratified into favorable, intermediate or poor prognostic groups based on histologic type, level of serum tumor markers, and site of the primary tumor. Mediastinal GCTs tend to be more aggressive, less common, and carry a worse prognosis. Given the aggressive nature of these tumors, treatment usually requires initial chemotherapy followed by surgery. Acceptable regimens include etoposide, ifosfamide and cisplatin (VIP) or bleomycin, etoposide, and cisplatin (BEP). Radical resection of residual tumor is considered thereafter and additional cycles of chemotherapy are indicated if there is evidence of remaining disease. Even with the above therapies, the five year survival rate is estimated at 45%.

**INTRACARDIAC DEVICE ENDOCARDITIS CAUSED BY PROPIONIBACTERIUM ACNES** Suresh Challa 1; Weerawat Tananu-son 2; Jaya Raj 2.

**LEARNING OBJECTIVES:** 1. Diagnose hypereosinophilic syndrome and recognize it as a cause of pericarditis and endomyocardial disease. 2. Treatment of hypereosinophilic syndrome with myocardial and pericardial involvement.

**CASE INFORMATION:** A 72 year old male presented with worsening bilateral lower extremity swelling and shortness of breath over 2 months. Physical examination was significant for elevated jugular venous pressure of 10 cm H2O, decreased breath sounds at bilateral lung bases with wheezing throughout, and marked bilateral lower extremity edema. The patient had bilateral pleural effusions consisting of mesothelial cells and 11% eosinophils. There were 20.2×10^3/L leukocytes with eosinophil predominance of 71.4% in the peripheral blood. A bone marrow biopsy was normocellular with polymorphic cell population and marked eosinophilia. Flow cytometry studies confirming marked eosinophilia with a small population of clonal B cells, and cytogenetic studies were negative for BCR-ABL and FIP1L1-PDGFRα genes. Transthoracic echocardiography revealed a thickened pericardium.
with minimal pericardial effusion and constrictive hemodynamic pattern with preserved left ventricular ejection fraction of 61%. Follow up cardiac magnetic resonance imaging demonstrated diffuse thickening of the right ventricular wall with delayed enhancement, warranting a right heart catheterization which confirmed decompensated heart failure with constrictive hemodynamics. Subsequent myocardial biopsy showed moderate myocyte hypertrophy with vacuolization and granulation tissue with eosinophils, suggestive of evolving eosinophilic endomyocardial disease. The patient was started on corticosteroid and imatinib mesylate therapy for presumptive hypereosinophilic syndrome (HES) with myocardial and pericardial involvement causing effusive constrictive pericardial inflammation. The patient continued to deteriorate clinically with fevers and worsening mental status and was noted to have an LDH of 682 U/L, ferritin of 1682 ng/mL, erythrocyte sedimentation rate greater than 100 mm/hr, TSH 0.02 μUI/mL, an undetectable free T4, T3 of 0.3 ng/dL, FSH of 0.4 μU/mL, LH less than 0.3 μU/mL, and ILGF of 33 ng/mL. The patient ultimately expired. At autopsy, widespread involvement of intravascular lymphoma was identified.

IMPLICATIONS/DISCUSSION: Intravascular lymphoma is a rare extranodal diffuse B cell lymphoma. Patients commonly present with fever (45%) and nonspecific laboratory abnormalities including elevated LDH (86%), elevated protein in CSF (82%), elevated erythrocyte sedimentation rate (43%), and anemia (63%). The absence of lymphadenopathy and pathologic lymphocytes in peripheral blood and other body fluids make definitive diagnosis challenging. In fact, approximately 50% of cases are diagnosed only after autopsy. Biopsy of affected organs remains the only reliable diagnostic modality. Intravascular lymphoma is associated with poor outcomes, however early diagnosis and treatment (typically with a CHOP regimen with or without rituximab) have been shown to improve outcomes. Thus, it is important to consider intravascular lymphoma as part of the differential for fever of unknown origin, as 3-year survival is as high as 30% with treatment, and median survival only a few months without treatment.

HYPOGLYCEMIC IN DISGUISE: A RARE CASE OF SYMPTOMATIC HYPOGLYCEMIA CAUSED BY HYDROXYCHLOROQUINE
Nalinikumari Gandhe1; Chowdhury Nazrul2; Matt Chua2; Bharat Khandheria2; Roger D Smalligan3. 1TTUHSC, Amarillo, Texas; 2Texas Tech University Health Science Center, Amarillo, Texas; 3Texas Tech Univ HSC, Amarillo, Texas. (Tracking ID # 11783)

LEARNING OBJECTIVES: 1. To recognize that hydroxychloroquine can cause hypoglycemia. 2. Hydroxychloroquine’s hypoglycemic effect can be used as adjunct in controlling poorly controlled diabetes mellitus type 2 especially patients with both Rheumatoid arthritis and Diabetes mellitus

CASE INFORMATION: A 78-year-old white female with past medical history of hypertension, diabetes mellitus (DM) type 2, asthma, breast cancer, rheumatoid arthritis (RA) on hydroxychloroquine presented with episodes of cold sweats, dizziness, palpitations and nausea. She was on glubride for diabetes 24 months prior and 9 months after starting hydroxychloroquine for Rheumatoid arthritis, she developed frequent episodes of hypoglycemia and her glubride was discontinued. Despite discontinuing her glubride she would still have frequent hypoglycemic episodes with profound symptoms (one to three times in a week) hence she was brought by her family to the hospital.

Initial evaluation showed temperature of 98.3, heart rate of 91 bpm, BP of 138/57, RR 12/min, blood glucose 30 mg/dL, which improved to 50 mg/dL after receiving 1 ampule of D50. Her symptoms improved significantly as well and her hydroxychloroquine was discontinued. After a consistently stable blood sugar she was put on 72 hour supervised fasting to accurately measure her insulin and c-peptide levels. Her insulin, c-peptide as well as cortisol levels were within normal range. Serum sulfonylurea measurement was undetectable. CT scan of the abdomen did not show any pancreatic mass. After several days of close monitoring, her pre-meal blood sugars ranged between 115–150 mg/dL. She was subsequently discharge off of hydroxychloroquine without aggravating her rheumatoid arthritis.

IMPLICATIONS/DISCUSSION: Quinolones and its derivatives have been reported to cause both symptomatic and asymptomatic hypoglycemia. These agents were explored as adjunct to insulin and oral
hypoglycemic agents for poorly controlled type 2 diabetes. Patients with non-insulin dependent diabetes with suboptimal disease control during an intensive outpatient intervention showed an absolute reduction in glycated hemoglobin A1C level of 3.3% when treated for 6 months with hydroxychloroquine dosed at 200 mg 3 times per day. In a trial of patients with type 2 diabetes who had poor glycemic control despite taking maximal doses of sulfonylureas, the addition of hydroxychloroquine improved glycemic control, with greatest benefit in those with baseline hemoglobin A1C levels lower than 13.5%. Petri reported a significantly lower mean glucose levels among participants in the Baltimore Lupus Cohort while they were taking hydroxychloroquine, as well as a protective effect of hydroxychloroquine on abnormal glucose tolerance testing. In a prospective, multicentre, observational study, Wasko et al. showed that 4905 RA patients using hydroxychloroquine is associated with a reduced risk of diabetes. Chloroquine has been shown to alter insulin metabolism in humans by both. Increasing insulin secretion and inhibiting its clearance. It reduces intracellular insulin degradation, increases intracellular insulin accumulation, slows receptor recycling and stimulates insulin-mediated glucose transport.

Our patient developed hypoglycemia without any predisposing disorders such as insulinoma, ethanol intake, oral anti-diabetic and exogenous insulin usage, liver failure or sepsis. Our case emphasize that prompt recognition of this potentially serious side effects is important. On the other hand we can exploit this side effect as an adjunct to control blood sugar in patients with RA and poorly controlled type 2 DM.

**COLLAPSING GLOMERULOPATHY: A RARE AND UNFAVORABLE VARIANT OF LUPUS NEPHRITIS**

Manoj Bhattarai 1; Rachana Sedhai 1; Asha Shrestha 1; Iulia Grillo 1; Memorial Hospital, Pawtucket, Rhode Island. (Tracking ID # 11794)

**LEARNING OBJECTIVES:**

1. Highlight diagnosis, and treatment options for collapsing glomerulopathy.
2. Recognize association of collapsing glomerulopathy with different disease conditions.

**CASE INFORMATION:** A forty-year-old African-American female with past medical history of hypertension, hyperlipidemia, chronic anemia, hypothyroidism, and three first trimester miscarriages presented with three weeks of arthralgias (bilateral shoulders, hands, and knees). She noticed a twenty pound weight loss within two months in association with loss of appetite, vomiting, and fatigue. Her outpatient medications were levothyroxine and amlodipine. She was allergic to hydrochlorothiazide. On admission, her blood pressure was 158/76 mm Hg which remained persistently high during the hospitalization. She had severe stiffness and limited range of movement in bilateral shoulders, knees, and hands. She had trace pitting edema in bilateral lower extremities. There were no oral ulcers or skin rashes. Significant laboratory tests were positive antinuclear antibody, anti-Smith Ab, anti-RNP, anti-cardiolipin IgM Ab, lupus anticoagulant, rheumatoid factor, low C3 and C4, and elevated ESR. She had persistently high serum creatinine (lowest was 4.6 mg/dl). HIV test was negative. Twenty-four hour urine showed 11grams of protein in a volume of 2300 milliliters. Kidney biopsy was suggestive of lupus nephritis with a combination of predominantly membranous pattern of injury and superimposed recent and severe collapsing glomerulopathy (CG). Nephrotic syndrome due to focal segmental glomerulosclerosis was considered and treated with methylprednisolone 1 gram intravenously daily for three days and mycophenolate mofetil 250 mg orally twice daily. Blood pressure was controlled with metoprolol and doxazosin. Within few weeks of treatment her creatinine level came down to 1.5 mg/dl and arthralgias completely resolved.

**IMPLICATIONS/DISCUSSION:** Collapsing glomerulopathy is associated more commonly with HIV positivity, African-American race, intravenous drug abuse, and less commonly with lupus nephritis. It is characterized by pronounced proteinuria and rapidly progressive renal failure. Diagnosis is based on histopathological evidence of segmental and global collapse of the glomerular capillaries, marked hypertrophy and hyperplasia of podocytes, and severe tubulointerstitial disease. Treatments include blood pressure control, steroids, cyclosporine, cyclophosphamide, and mycophenolate mofetil. Some resistant cases have been treated with rituximab and/or plasmapheresis. Our patient had lupus associated CG that was treated with steroids and mycophenolate mofetil. Her disease has been stable over a course of five months to present without any recurrence of symptoms.

**WHITE HERRING: STEMI OR NOT?** Catherine Dodds 1; Cynthia Margaret Cooper 1; Massachusetts General Hospital, Boston, Massachusetts. (Tracking ID # 11797)

**LEARNING OBJECTIVES:**

1. Review the differential for leukocytosis with neutrophilia. 2. Recognize small bowel obstruction as an unusual mimic of acute STEMI

**CASE INFORMATION:** Patient is an 82-year-old man with remote colon cancer s/p curative surgery transferred with leukocytosis. He presented after four days of vomiting and diarrhea. Initial labs showed a white blood cell count of 70,000 and acute kidney injury. Colonoscopy was normal 8 months prior. He had a normal exam and echo within the month. He denied fever, bruising, or change in bowel habits. Symptoms began after eating raw meat. Others who ate the meal had similar symptoms.

He looked dry but well. There was tachycardia and bibasilar lung crackles. Abdomen was mildly distended but non-tender. White blood cell count was 59,400, 70% neutrophils, 20% monocytes. Creatinine was 3.7 mg/dl. Cardiac enzymes were normal. EKG had small inferior Q-waves. CXR had patchy bibasilar infiltrates. There were increased mature neutrophils and monocytes on blood smear.

He had increasing abdominal distention and was tachycardic and diaphoretic. EKG had new ST-segment elevations in the inferolateral leads. He was anticoagulated and cardiac enzymes cycled. Catheterization was deferred due to kidney injury.

Echocardiogram showed inferior pseudodyskinesis from compression by a large subdiaphragmatic structure. NGT returned copious fluid and ST segment elevations resolved. Cardiac enzymes were flat over 24 hours.

Abdominal CT showed small bowel obstruction. This resolved with conservative management. Azotemia improved with IV fluids. Discharge white blood cell count was 16,000. Prior labs showed a white blood cell count of 14,000 with increased neutrophils and monocytes.

**IMPLICATIONS/DISCUSSION:** The differential for neutrophilic leukocytosis includes primary myeloproliferative disorder, such as chronic myeloid leukemia, leukemoid reaction due to stress, infection or malignancy, and marrow stimulation by a medication or toxin. The rapid decrease in white blood cell count in our patient suggests a leukemoid reaction from gastrointestinal inflammation. Reactive leukocytosis, however, rarely presents with a count this high. The increased number of monocytes in his peripheral blood smear and the blood count at his annual physical suggest he may have underlying chronic myelomonocytic leukemia. CMML could raise the baseline for a superimposed leukemoid reaction and result in such elevated counts.
In a recent large geographic study of patients sent for cardiac catheterization to evaluate acute ST elevations, about 10% were deemed false-positives, e.g., no culprit lesion was found on catheterization and cardiac biomarkers were negative. More than 99% of these false-positives were ultimately attributed to a primary cardiac etiology.

Non-cardiac mimics of STEMI are less common. There have been case reports of acute pancreatitis, cholecystitis, and pneumonia causing EKG changes identical to STEMI. The mechanism of EKG elevation due to these processes is unclear. Inflammation of the upper GI tract may produce transient diffuse injury patterns through coronary spasm. Intra-abdominal and pulmonary processes can cause distribution-specific ST-segment elevations without evidence of myocardial damage.

Our patient had physical compression of his heart by a markedly distended stomach, producing territorial ST elevations mimicking acute inferolateral STEMI. These changes resolved with decompression of his small bowel obstruction.

**STAPHYLOCOCCAL PNEUMONIA IN A PATIENT WITH ADVANCED HIV INFECTION PRESENTING WITH THIN WALLED CAVITARY LESIONS ON CHEST X-RAY**

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**LEARNING OBJECTIVES:** 1. Recognize Staphylococcus aureus as an important cause of pneumonia in patients with advanced HIV infection 2. Recognize atypical Chest x-ray patterns of staphyloccocal pneumonia in adults

**CASE INFORMATION:** A 37yr-old male patient was transferred to our hospital from nursing home with complaints of altered mental status described as being more lethargic with refusal to take oral food and medication. Records showed that patient is HIV positive and on Bactrim prophylaxis. Patient was not alert enough to give further history including history of current or previous use of HAART. Physical examination revealed a thin, lethargic male patient with Temp-99.6°F, PR- 102 bpm, B/P 114/85 mmHg and RR-20/ min significant pallor of conjunctive, oral thrush, reduced air entry all over the lung fields (mainly due to poor inspiratory effort), mild diffuse abdominal tenderness. Cardiovascular, skin and extremity examination was unremarkable. On neurologic examination patient was lethargic non verbal with no lateralizing motor deficits and mild resistance to neck flexion. Lab. evaluation revealed WBC count of 9.8 K (82.8% Segments, 3.4% Lymphocytes, 13.7% monocytes) Hgb 6.1gm/dl, Lactic acid 2.3, HIV viral load - 56754 copies/ml, CD4 & CD8 counts of 5 and 162 respectively. Serum Cryptococcal antigen, HIV-infection results in broader degree of immunosuppression which includes cell mediated immunity, humoral immunity and in the late stage of the disease, neutrophil function.

The respiratory system is not an exception to this widespread immunosuppression effect of HIV. As a result patients are susceptible to infection with common and opportunistic organisms. Typical organisms particularly the encapsulated ones, streptococcus pneumonia and haemophilus influenzae, and opportunistic organisms like Pneumocystis carinii are common causes of pneumonia in these patients. Staphylococcal pneumonia assumes increasing importance as immunosuppression worsens. Typically it presents with chest X-ray pattern which includes patchy or homogeneous parenchymal consolidation, typically segmental in distribution; single or multiple abscesses with fluid containing cavities and multiple nodular masses. In children it frequently presents with multiple thin walled cystic spaces or pneumatoceles which may contain fluid levels. In our case the chest X-ray findings; Multiple ring like cavitary lesions which cannot be easily differentiated from the classically thin walled cavitary lesions seen on X-ray of patients with PCP, making it an important differential diagnosis of pneumonia in patients with advanced HIV infection.

This case highlights that, although the radiographic presentation of Staphylococcus aureus pneumonia in patients with AIDS is similar to that of immunocompetent hosts, it remains an important differential diagnosis in patients with atypical patterns which are common with other etiologies, like PCP.

**CHRONIC BACK PAIN - MORE THAN MEETS THE EYE** Pramod Kumar Guru 1; Sanjay Chaudhary 2; Swati Prasad 1; Joleen Fixley3. 1Creighton University Medical Center, Omaha, Nebraska ; 2Creighton University Medical Center, Omaha, Nebraska ; 3Creighton University Medical Center, Omaha, Nebraska. (Tracking ID # 11820)

**LEARNING OBJECTIVES:** 1. Recognize the presentation, complications and treatment of chronic Q fever 2. Assessment of patients with chronic low back pain

**CASE INFORMATION:** A 61 year old male admitted for evaluation of chronic; intermittent; non-radiating band like lower back pain for 10 months progressing to constant pain, associated with episodes of night sweats and 50 lb weight loss over the preceding 12 months. His past medical history was significant for hypertension, hypothyroidism and stable abdominal aortic aneurysm since 2 years. He had a 40 pack year history of smoking and cattle exposure during childhood with a pet cat at home. His examination was essentially normal except mild tenderness of lumbar spine and left thigh discomfort with active left leg elevation. Laborotary examination revealed normal hematocrit, leucocyte, platelet count and ESR of 27 mm / hr. Serum electrolytes, renal function, liver function, urine culture test were normal. His CRP, RF, Anti CCP, PPD, TB quantiferon were all negative. Blood cultures for bacteria, fungal and mycobacterium were negative. His Q fever antibody for phase I and Phase II antigen was positive. MRI and CT scan revealed saccular abdominal aortic aneurysm (AAA) of 4.5 cm in diameter with features suggestive of L2 & L3 osteomyelitis and left psoas abscess. Patient underwent surgery for AAA and was started on Doxycycline and Hydroxychloroquine. He has been doing fine since then.

**IMPLICATIONS/DISCUSSION:** On initial evaluation, we narrowed down the diagnosis to a systemic problem with structural involvement of the vertebral system. With absence of endocarditis on echocardiography, negative aspirates from the psoas, we moved away from acute bacterial infectious causes. Clearly the chronicity of symptoms and relatively healthy appearance of the patient in comparison with the magnitude of the abnormality viewed on the MRI led us to consider an atypical infection. Serology confirmed the diagnosis of Q fever.
Q fever, caused by obligate intracellular gm -ve organism Coxiella burnetii, is a rare zoonotic disease, reported from all parts of world except New Zealand. The prevalence of Q fever is not known exactly due to lack of awareness, rarity of the disease and absence of validated clinical modalities to diagnose. Infectious complication of AAA is rare and mostly due to bacterial pathogens like S. aureus and Salmonella. C. burnetii have been described as a cause of AAA infection. Our case is probably the first case of Q fever with simultaneous infection of an AAA along with lumbar vertebral osteomyelitis and psoas abscess in the absence of documented infective endocarditis. The diagnosis of Q fever is generally done by serology testing, because of need for special conditions for cultures and the lack of sensitivity of the technique and inherent risk of infectivity to the workers. Surgical treatment for aneurysm along with Doxycycline and Hydroxychloroquine for aminium of 18-36 months has been extrapolated from endocarditis treatment for vascular infection. Chronic Q fever should be suspected in patients of AAA with unexplained fever, back pain, weight loss or abdominal pain. In view of high morbidity and mortality associated with chronic Q fever with AAA and valvular defects and the need for specialized tests it is important for physicians to be aware of this rare disease.

**METRONIDAZOLE-INDUCED PANCREATITIS IN A PATIENT TREATED FOR ACUTE DIVERTICULITIS** Rafael Cabrera 1; Kelly Caverzagie 2. 1Henry Ford Hospital, Detroit, Michigan; 2Henry Ford Hospital, Novi, Michigan. (Tracking ID # 11826)

**LEARNING OBJECTIVES:** 1. Diagnose drug-induced pancreatitis.
2. Recognize drugs associated with the development of acute pancreatitis.

**CASE INFORMATION:** A 74-year-old male was admitted to the hospital with an episode of acute diverticulitis. This episode was controlled with intravenous (IV) hydration, narcotics and IV antibiotics (Ceftriaxone and Metronidazole). The patient improved and was discharged on oral Ciprofloxacin and Metronidazole to complete a 10-day course of antibiotics. He presented to the Emergency Department eight hours after discharge complaining of a new onset abdominal pain, which was epigastric, dull and associated with nausea, vomiting and anorexia. An acute abdominal series did not show signs of bowel obstruction and liver function tests were unremarkable. However, serum amylase and lipase were significantly elevated at more than 5 times the upper limit of normal (729 and 2250 IU/L respectively; normal on previous admission). The diagnosis of acute pancreatitis was made and the patient underwent an abdominal ultrasound which did not find evidence of gallstones. The patient denied any prior history of alcohol intake and the diagnosis of Metronidazole-induced pancreatitis was suspected. He was initially kept NPO and started on pain control and IV hydration. Metronidazole was switched to Clindamycin and twelve hours later his abdominal pain improved and diet was progressively advanced with good tolerance. Pancreatic enzymes normalized within the next 48 hours and the patient was discharged with the recommendation to avoid the use of Metronidazole.

**IMPLICATIONS/DISCUSSION:** Pancreatitis is a very rare adverse effect of Metronidazole and its mechanism is not well understood. It can present during treatment with the drug or even after a few days of Metronidazole exposure. The diagnosis of Metronidazole-induced pancreatitis requires a high degree of suspicion and should be considered in patients who present with gastrointestinal symptoms suggestive of acute pancreatitis and a current or recent prior exposure to the drug. If Metronidazole-induced pancreatitis is suspected, the medication should be discontinued and rechallenge should be avoided.

**IS BACK PAIN A PRESENTING FEATURE OF PERNICIOUS ANEMIA?** Geetha Selvakumar 1; Roxana Sabau 1; Meghana Gopal 1; Ayesha Salahuddin 1; Haritha Bellam 1; Muhammed Sherid 2; Habib Dakkak 1; Mhd. Wsiam Bqduunes 1; Naol Gharbi 1; Shazel Gharbi 1; Harvey Friedman 1. 1Saint Francis Hospital, Evanston, Illinois; 2St. Francis Hospital, Evanston, Illinois. (Tracking ID # 11831)

**LEARNING OBJECTIVES:** 1. To recognize the uncommon presentations of pernicious anemia.
2. To differentiate between pernicious anemia presenting with pancytopenia and myelodysplastic syndrome/acute myeloid leukemia.

**CASE INFORMATION:** A 68 year old Caucasian female presented to our hospital with complaints of vomiting for three weeks. More than her presenting complaint, a low back pain of few months duration had been bothering her. She also had pain in her knees and thighs. Family members reported that the patient had been withdrawn for few weeks. Her past medical history was significant for arthritis. She was taking aspirin and Advil. On admission she was afibrile, tachycardic and her blood pressure was 157/73 mmHg. Physical examination was unremarkable. Her labs showed a WBC of 2.2, platelet of 49, hemoglobin of 3.7, hematocrit of 10.1, MCV of 121 and RDW of 40. A comprehensive metabolic panel was within normal limits. The patient refused blood transfusion as she was a Jehovah’s Witness. Iron and folate levels were within normal limits. Vitamin B12 level was 56 ng/ml. Antibodies to intrinsic factor were positive. Haptoglobin was less than 6 mg/dl and coombs test was negative. Reticulocyte count was 2.8 %. LDH was 5370. Thyroid function tests were within normal limits. Bone marrow studies showed marked hypercellularity with megaloblastic changes with hypersegmented neutrophils and mitotic figures. Cytogenics did not show any abnormalities. The patient was started on Vitamin B12 and iron therapy. On day four of hospitalization her reticulocytes increased to 27.2 % and on day 10 of hospitalization her WBC was 8.1, hemoglobin was 6, hematocrit was 20.7. MCV was 108, RDW was 31 and platelet count was 538. Her back pain began to resolve and the patient felt much better than before.

**IMPLICATIONS/DISCUSSION:** Pernicious anemia combined with impaired absorption of Vitamin B12 can be a significant cause of anemia in elderly patients. The treatment of anemia was challenging in our patient since her religious beliefs prevented her from getting blood transfusions. Pancytopenia could also suggest a diagnosis of myelodysplastic syndrome in this patient given her age. But the presence of hypersegmented neutrophils and mitotic figures in the bone marrow has ruled out myelodysplastic syndrome. Examination of the peripheral blood smear did not show any leukemic white blood cell changes suggestive of myelodysplastic syndrome or acute myeloid leukemia.

**WANING EFFECT OF COMPULSIVE BATHING IN CANNABINOID HYPEREMESIS** Satish Bagdure 1; Hooman Sharif 2; Bharat Khandheria 3. 1Department of Internal Medicine, Texas Tech University Health Sciences Center, Amarillo, Texas; 2Department of Medicine, University of Texas Health Science Center, San Antonio, Texas; 3Department of Neurosciences, University of Texas Health Science Center, San Antonio, Texas. (Tracking ID # 11836)

**LEARNING OBJECTIVES:** 1. Recognize the clinical features of cannabinoid hyperemesis; increasing awareness of which may reduce the need for unnecessary investigations in a group of patients who may present repeatedly to hospitals with hyperemesis of unknown cause.
2. Recognize the association between cannabinoid hyperemesis and compulsive bathing episodes and that the relief obtained from bathing tends to wane off and so does the compulsive behavior.
CASE INFORMATION: A 27-year-old male with a history of prolonged and daily use of cannabinoid presented to the emergency department with nausea, vomiting, and abdominal pain that worsened for several days. During the past two years, the patient had several episodes of similar symptoms, each lasting about a week and often requiring being admitted to the hospital. His symptoms were refractory to all types of antiemetic medications and responded initially to hot showers and use of hot water bag applied to the abdomen. Later in the course of his condition the temporary relief he had from hot water bathing tended to wane off and later this behavior did not help at all. He had no underlying medical conditions. His last marijuana use was 1 day before admission to the hospital. He denied alcohol, tobacco, or other illicit drug use.

On physical examination, the patient’s vital signs were stable. Physical examination was largely unremarkable except the abdomen which was soft and diffusely tender with decreased bowel sounds and no rebound or guarding. No organomegaly was detected nor were there any signs of erythema ab igne.

Laboratory studies including complete blood count, complete metabolic panel, liver function and amylase, lipase, and thyroid-stimulating hormone tests, were normal. The patient’s urine toxicology test was positive for tetrahydrocannabinol. Investigations of his symptoms from the past visit and this visit included abdominal radiography, computed tomography (CT) of the head, CT of her abdomen and pelvis without contrast medium, abdominal ultrasonography, magnetic resonance cholangiopancreatography, duplex study of aorta and mesenteric artery and esophagogastroduodenoscopy; all of which were normal.

The patient was admitted for rehydration, antiemetics, and evaluation and was discharged after being asymptomatic for 48 hours. Later follow up revealed that cessation of marijuana use resulted in the alleviation of his symptoms.

IMPLICATIONS/DISCUSSION: Cannabinoid hyperemesis was first described in 2004. Possible mechanisms of cannabinoid hyperemesis include its ability to delay gastric emptying, its dysregulation of thermoregulatory and autonomic equilibrium through its effect on the limbic system, and the binding of cannabinoid to cannabinoid type 1 receptors in the brain. The compulsive and learned behavior of taking multiple hot showers to relieve nausea is a curious phenomenon that has been reported in the literature. The effects of cannabinoid on the functions of the thermoregulatory and autonomic mechanisms of the brain can lead to behavioral changes. Such effects might be the underlying mechanism for the compulsive hot bathing behavior.

Our patient had relief from nausea and vomiting by hot water bathing and by applying hot water bottle on his stomach in the earlier stage of his disease but later the effect waned off and this behavior did not seem to help him. The relief obtained from compulsive bathing behavior is short lasting and we believe it eventually wanes off in a subgroup of this population and the only permanent cure for this condition is to abstain from cannabinoid use.

This case illustrates the importance of recognizing cannabinoid hyperemesis early which may reduce the need for unnecessary investigations. It also illustrates that the phenomenon of compulsive bathing may be short lasting; this finding has not been reported before in the literature. Further studies are needed to elucidate the waning effect of relief from compulsive behavior in cannabinoid hyperemesis.

A BRUSH WITH DEATH Jason G. Shultz1; Erik Wallace2. 1University of Oklahoma - Tulsa, Tulsa, Oklahoma; 2The University of Oklahoma - Tulsa, Tulsa, Oklahoma. (Tracking ID # 11842)

LEARNING OBJECTIVES: 1. Recognize the clinical features of gastrointestinal perforation when foreign body unknowingly ingested. 2. None.

CASE INFORMATION: A 61 year-old white man with a history of gastroesophageal reflux disease (GERD) presented to the emergency department with abdominal pain. He first reported a sudden onset of sharp pain in his abdomen two weeks ago after eating a steak cooked on his outdoor grill. The pain was at first intermittent and eventually became more persistent and intense over the next two weeks. The patient reported fever and chills with associated nausea, fatigue and loss of appetite during the five days prior to admission. On physical exam, the patient’s abdomen was soft and tender to palpation in the mid epigastrum without peritoneal signs. Lipase was 85 IU/L and CBC, chemistries and liver function tests were normal. A CT scan with and without contrast of his abdomen and pelvis showed a nonspecific 4.5 cm low attenuation lesion that was initially thought to be either a hepatic or gastric mass. In addition, a small metallic density was identified adjacent to this lesion. Esophagogastroduodenoscopy revealed a metallic object imbedded in the gastric antrum that could not be safely removed. Surgery was required to remove the metallic object and further evaluate the adjacent lesion. The metallic object was determined to be a bristle from a grill cleaning brush which presumably came loose and attached to the steak he cooked on the grill which he then consumed. The reported lesion seen on CT was determined to be an abscess that had formed after the grill brush bristle perforated his stomach.

IMPLICATIONS/DISCUSSION: While the findings of gastrointestinal perforation are uncommon, complications from an ingested grill brush bristle are exceedingly rare. Despite the fact that grilling food is common and cleaning grills with wire brushes is widespread, only two case reports have been previously published related to complications from ingesting a grill brush bristle. One case described a teenage boy who developed a neck abscess from esophageal perforation and another patient developed a lingual abscess from a grill brush bristle. Our patient developed sudden onset of abdominal pain immediately after eating food cooked on a grill. Several causes of sudden onset abdominal pain after eating, such as mesenteric ischemia and pancreatitis, are much more common. However, patients who present with this history, especially with worsening symptoms over hours to days that does not improve when limiting food intake, should be questioned about what food they ate and how it was prepared to determine if a foreign object could have been accidentally ingested.

POSTPARTUM NASH Anju Dayal1; Anju Dayal1. 1Mount Sinai School of Medicine, New York, New York. (Tracking ID # 11856)

LEARNING OBJECTIVES: 1. LeaLearn to evaluate elevated liver enzymes early in pregnancy
2. Recognize risk factors to the development of nonalcoholic steatohepatitis (NASH)

CASE INFORMATION: A 24 year old woman with obesity and diabetes mellitus (DM) was evaluated in the clinic for elevated liver enzymes five months postpartum. She was asymptomatic and incidentally found to have elevated aminotransferases of about twice the upper limit of normal during her second trimester. Her workup at that time revealed: no proteinuria, normal blood pressures, normal serum bile acids, negative serologies for viral hepatitis A, B and C, negative HIV 1/2 ELISA, mild elevation in fibrinogen and LDH but normal PT/PTT and a HbA1c of 5.9%. She was taking only prenatal vitamins. Her family history was negative for liver disease and VTE. She emigrated from Mexico, had no recent travel history, and used no drugs or tobacco. She used to drink two to five shots of Tequila once every two weeks prior to pregnancy but drank no alcohol since becoming pregnant. She had an intrauterine fetal demise (IUFD) at
36 weeks gestation; pathology revealed chorioamnionitis and autopsy suggested cord accident as the likely cause of death. Since one month postpartum her ALT increased to the 600 s and AST to the 400 s. She had gained 20 lbs since the IUFD (BMI 35), was using Ibuprofen 800 mg every 8 hours for lumbago and had worsening glycemic control with a Hemoglobin A1C of 13.5%. TSH, CPK, ANA, Anti mitochondrial Ab, Anti Smooth muscle Ab, ceruloplasmin, ferritin, cortisol, serum Ig quant, SPEP, and hypercoagulable studies were all normal. Her RUQ ultrasound revealed patent vessels and an enlarged echogenic liver consistent with fatty liver. Her liver biopsy revealed stage 2/3 NASH with perisinusoidal and portal fibrosis. Currently, she no longer uses NSAIDs but her AST/ALT remain elevated in high 100’s/high 300’s. She continues to have poorly controlled DM with most recent HgA1C at 10.8% and obesity with a BMI of 35.

IMPLICATIONS/DISCUSSION: It is well established that certain hepatobiliary syndromes induced by pregnancy including hyperemesis gravidarum, HELLP syndrome, acute fatty liver of pregnancy, pre-eclampsia/eclampsia, and intrahepatic cholestasis, may initially manifest with an asymptomatic elevation in liver enzymes. These diseases may be associated with significant morbidity and mortality for both mother and fetus. Early diagnosis and management has been shown to improve outcomes. However, in the era of the obesity epidemic, increasing numbers of obese adolescents and young adults in their childbearing years have preexisting fatty liver disease and elevated baseline aminotransaminase levels. This makes the evaluation of elevated aminotransaminases during pregnancy more challenging. Unfortunately, there are few studies looking at the natural course of fatty liver disease and/or NASH during pregnancy. Older age is a known independent risk factor for progression to NASH but this case highlights some others, including diabetes mellitus and high aminotransferase levels. Given the current epidemic of obesity and diabetes, more research is warranted to better understand the impact of pregnancy on both fatty liver disease and NASH.

PARANEOPLASTIC CEREBELLAR DEGENERATION WITH ATYPICAL ANTIBODY WORKUP Lissa X. Yu 1; Phillip Young 2; Mitchell D Wong 3.
1David Geffen School of Medicine at the University of California, Los Angeles, Los Angeles, California ; 2UCLA Department of Internal Medicine, Los Angeles, California ; 3UCLA Division of GIM/HSR, Los Angeles, California. (Tracking ID # 118859)

LEARNING OBJECTIVES: 1. Recognize clinical features of neurological paraneoplastic syndromes and associated laboratory findings. 2. Consider pursuing paraneoplastic workup when symptoms cannot be explained by typical causes.

CASE INFORMATION: A 72 year old Caucasian woman with history of treated breast cancer, coronary disease, and 87 pack-year history of cigarette use presented initially with unexplained nausea and vomiting refractory to treatment. She subsequently developed anorexia, diplopia, truncal ataxia and intermittent confusion and agitation. Workup for infection, neurosyphils, B12 deficiency, cerebellar and sellar tumors, and posterior circulation strokes were negative, and head CT and MRI showed no acute intracranial abnormalities. Serum and CSF paraneoplastic studies were positive only for Anti-P/Q Calcium Channel Antibodies, a few CSF IgG oligoclonal bands, and slightly elevated IgG synthesis rate, but were negative for Anti-Yo and Anti-Hu. Whole body PET-CT demonstrated pararachedal, supracuacular, and subcascal lymph nodes with intense metabolic activity. Subsequently, nine mediastinal lymph nodes were biopsied and pathology identified three to contain small cell carcinoma. The patient received 3 doses of methylprednisolone with symptomatic improvement and clearing of mental status after 1 week of treatment. The patient declined recommended chemotherapeutic treatment and instead requested hospice care only.

IMPLICATIONS/DISCUSSION: Paraneoplastic syndromes are the non-local effects of underlying cancers, particularly lung, ovarian and breast cancers, mediated by humoral secretions of the tumor or immune responses to the tumor. Though rare, paraneoplastic effects may warrant consideration if atypical symptoms cannot be explained by other causes. Neurological paraneoplastic findings may be difficult to discern from local causes of functional loss but may be the first presenting manifestations of an underlying malignancy. Exploration of paraneoplastic serum antibodies and CSF workup in our patient enabled us to find a new primary cancer before local effects were noted. Lack of focal lesions on neuroimaging indicated no identifiable tumor or stroke, and infections and nutrition workup were negative. Though pathophysiology of paraneoplastic effects is not completely understood, it is hypothesized that small cell carcinomas may release tumor proteins and DNA that activate Helper T lymphocytes that might then initiate the production of autoantibodies against self-proteins. Paraneoplastic Cerebellar Degeneration is characterized by cerebellar symptoms including movement abnormalities and ataxias, and may be associated with Anti-Hu, Anti-Yo, and Calcium Channel antibodies, as well as Lambert Eaton Myasthenic Syndrome (LEMS). Patients positive for Anti-Hu are more likely to be women, have more diffuse loss of neurological function, and be more disabled by their disease. Patients positive for Anti-Yo are more likely to have diplopia, and P/Q Ca-channel antibodies are often associated with LEMS findings. Although our patient was female, and had disabling multifocal neurological loss including diplopia, she lacked Anti-Hu and Anti-Yo antibodies, and although she was positive for P/Q Ca-channel antibodies, EMG performed to assess for LEMS was negative for any findings. Our patient’s paraneoplastic antibody profile was therefore atypical given her presenting set of symptoms.

UNUSUAL PRESENTATION OF AN UNUSUAL CANCER Ewa Monika Rakowski 1; Danit Arad 1. 1Montefiore Medical Center, Bronx, New York. (Tracking ID # 118633)

LEARNING OBJECTIVES: 1. Recognize central diabetes insipidus as an unusual presentation of cancer. 2. Review the differential diagnosis of an anterior mediastinal mass.

CASE INFORMATION: A 35 year-old man presented with 3 weeks of increased thirst and increased urinary volume. He reported no dyspnea, chest pain, cough, head trauma, headaches, vision change, new rashes or fever. He has no personal or family history of malignancy. He has a 20 pack-year smoking history but no other toxic habits or medical problems. On further questioning he had weakness, fatigue and decreased appetite with a loss of 5% of his normal body weight over 1 month.

The patient’s vital signs were unremarkable. His head was atraumatic with dry mucous membranes and normal visual fields. Lungs, heart, abdomen and testicular exam were unremarkable. There was no lymphadenopathy and no skin changes. Serum sodium was 151 mEq/L, serum osmolality was 307 mOsm/kg and urine osmolality was 111 mOsm/kg. All other laboratory results were within normal range. Chest x-ray revealed bilateral lung nodules and bilateral hilar adenopathy.

Fluid restriction test confirmed central diabetes insipidus (CDI). A magnetic resonance imaging scan of the brain revealed enhancement of the pituitary stalk consistent with metastatic disease. On computed
Tomography scan of the chest revealed a large anterior mediastinal soft tissue mass with extensive associated pulmonary nodules, mediastinal, hilar and lower cervical lymphadenopathy. Angiotensin Converting Enzyme level was normal. HIV test was negative. Transbronchial biopsy revealed malignant cells consistent with thymic squamous cell carcinoma. Signs and symptoms of CDI were controlled with medical therapy and the patient was referred for metastatic thymic squamous cell carcinoma (SCC) treatment.

**IMPLICATIONS/DISCUSSION:** Malignancy can present in many different ways. CDI is one of the unusual presenting features of cancer. Breast and lung cancer as well as lymphoma are reported to metastasize to the pituitary. However, pituitary metastasis overall make up less than 5% of metastasis.

When a mediastinal mass is encountered, two-thirds will be benign, however if the mass is symptomatic almost two-thirds will be malignant. The mediastinum is divided into anterior, middle and posterior subdivisions and anterior mediastinal masses make up half of all mediastinal masses. Anterior masses are usually of thymic or germ cell origin. Thymoma is the most common and usually the mass itself is asymptomatic but up to 30% will present with myasthenia gravis. Lymph nodes are considered part of the middle mediastinum and can be sites of lymphomas or metastasis for malignancies, particularly from the lung.

When an anterior mediastinal mass is found in a patient with a smoking history along with histological features of SCC it is highly suspicious for primary lung SCC. However, the presentation of the marker CD5 is not consistent with lung SCC and in some studies has high specificity (96-100%) to thymic carcinoma. The co-appearance of the marker CD117 also supports this rare diagnosis. This distinction is of clinical importance because primary thymic SCC has a better prognosis than a comparable primary lung SCC. Thymic SCC is a rare disease that usually presents with cough, chest pain, phrenic nerve palsy or superior vena cava syndrome.

This case represents an unusual presenting feature of an unusual cancer. Although rare, when an infiltrative pituitary process is present, metastatic malignancy should be in the differential diagnosis. Within the wide differential diagnosis of mediastinal mass, rare diagnosis such as thymic SCC should be considered due to its possible favorable prognosis.

**TRANSFORMATION TO ACUTE LEUKEMIA AND SEPSIS IN A PATIENT WITH MYELODYSLASTIC SYNDROME INITIALLY PRESENTING WITH CHRONIC ULCERATIONS**

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**LEARNING OBJECTIVES:** 1. Recognize the clinical and pathological features of myelodysplastic syndrome (MDS), as well as the other common etiologies for dysplasia that must be excluded in making the diagnosis of MDS. 2. Identify the complications of MDS and the risk for conversion to acute myeloid leukemia (AML), with infection being the most common cause of death in these patients.

**CASE INFORMATION:** A 62-year-old male presented with 3 months of non-healing skin ulcers on his legs. His medical history included atrial fibrillation and hypertension. He was taking no medications. He reported dyspnea on exertion and fatigue upon review of systems.

On examination, he was not in distress but was tachycardic and hypertensive. Other vital signs were normal. He was pale and cardiac exam only revealed an irregular heartbeat. The rest of his exam was normal except for mildly exudative superficial skin ulcers on his legs.

Laboratory investigations revealed a WBC count of 800 cells/mm³, hemoglobin 7.0 g/dL (MCV 108 fL), and platelet count 30,000 cells/mm³. Iron, B12, folate, and TSH levels were normal but his ferritin level was elevated. Fecal occult blood testing was negative. Bacterial cultures were negative. HIV, EBV, CMV, and Hepatitis A, B, and C virus testing were all negative. Heavy metal and toxicology panels were also negative.

A blood smear revealed macrocytic red cells, neutropenia, and decreased platelets. A bone marrow biopsy showed hypercellular marrow with 15-20% myeloblasts. Immunohistochemistry and cytogenetics suggested high-grade MDS. Further investigations with plain radiography and a bone scan of his legs excluded any deeper tissue or bone infection. The patient's ulcers improved with antibiotics. He was maintained on prophylactic antibiotics given his neutropenia. He received blood transfusions for his symptomatic anemia. His MDS was treated with azacitidine. He became transfusion-dependent and later unresponsive to further transfusions. He was readmitted 2 months after initial presentation where a repeat bone marrow biopsy now showed 20-25% blasts. The diagnosis of AML was considered given the rise in blasts and he was started on induction chemotherapy. Unfortunately, the patient developed respiratory failure and septic shock due to pneumonia. He died despite intravenous antibiotics, vasopressors, and mechanical ventilation.

**IMPLICATIONS/DISCUSSION:** MDS is a group of myeloid neoplasms characterized by dysplasia and ineffective blood cell production resulting in anemia or other cytopenias with a risk for conversion to acute leukemia. Initially MDS was termed “preleukemia” from case reports of refractory cytopenias evolving into acute leukemia. MDS should be suspected in patients with an unexplained macrocytic anemia and other cytopenias. The symptoms of MDS are non-specific. MDS is rare in young patients but increases dramatically in the elderly. Blood smear abnormalities include macrocytosis, hyposegmented granulocytes, and hypogranular neutrophils. The diagnosis of MDS requires bone marrow testing, with at least 10% dysplasia seen. Other causes of dysplasia must be excluded: B12/folate/copper deficiencies, alcoholism, viral infections, medications, lead/arsenic poisoning, and other primary bone marrow disorders. MDS is categorized by the number of cytopenias and blasts present. Therapy is limited in MDS and prognosis is poor. Treatment includes transfusions, chemotherapy, and allogeneic hematopoietic cell transplant. While chemotherapy is not very effective in MDS, it may help control any disease-related symptoms or complications. Allo-SCT is considered for patients with high risk disease and is the only curative option. Patients with MDS may suffer from symptomatic anemia, infection, bleeding, or progression to acute leukemia. Neutropenia and granulocyte dysfunction are responsible for the high incidence of infection in MDS, which is the primary cause of death. Patients with high risk MDS or transformation to AML have a survival rate of less than 10%. The risk for conversion is highest in patients like ours with refractory anemia with excess blasts. Later, his myeloblasts increased to above 20%, the level required for the diagnosis of AML. Our patient was started on induction chemo upon discovery of leukemic transformation. Unfortunately, he developed infectious complications and died shortly thereafter.

**POTENTIALLY LETHAL ACETAMINOPHEN-WARFARIN INTERACTION**

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**LEARNING OBJECTIVES:** 1. Prevention of adverse interaction between Warfarin and Acetaminophen

2. Recognize an uncommon cause of acute low back pain
CASE INFORMATION: A 74-year-old man on warfarin for chronic atrial fibrillation was admitted following an acute onset of right-sided lower back pain. He had a history of chronic back pain with a recent lumbar spine CT scan two months earlier revealing degenerative changes of disks at multiple levels. The patient described the pain as primarily paraspinal with no radiation, greater in severity than any he had experienced previously. He denies any associated neurological deficit or trauma prior to the onset of pain. Medication included warfarin 2.5 mg daily, fentanyl patch, and acetaminophen 500 mg as needed. He had not recently received any new medications.

On examination, the patient was stable hemodynamically without any acute distress. In addition to mild tenderness at right paraspinal area, the remainder of the examination was normal. There were no neurologic deficits or signs of bleeding diathesis. A lumbar spine radiograph demonstrated multilevel severe degenerative disc disease, and old compression fracture of L1. The international normalized ratio (INR) was elevated at 8.9, and the partial-thromboplastin time was elevated at 65 seconds. Hemoglobin level was stable at 13 mg/dL. Platelet count and basic metabolic panel (BMP) were within normal limits.

The diagnosis of worsening degenerative arthritis of lower lumbar spine with coagulopathy was made. The patient was admitted for pain control and monitoring. Vitamin K was administered for correcting excess anticoagulation. Fifteen hours after his admission, he suddenly dropped his blood pressure to 74/53 mm Hg. Abdominal CT revealed right paraspinal and psoas muscle hematoma extending to retroperitoneum. Repeat hemoglobin was 8.9 mg/dL, and INR was 8.0. He was given fresh frozen plasma and packed red blood cell transfusion. He fortunately recovered without requiring any surgical intervention.

The cause of bleeding was secondary to interaction between Warfarin and Acetaminophen.

IMPLICATIONS/DISCUSSION: Polypharmacy is common in elderly subjects largely due to age-related coexisting diseases. An important consequence of multiple prescribing for old people is the occurrence of drug-drug interactions via alterations in Warfarin absorption or metabolism. Risk of bleeding in elderly patients may result in the lack of realization that some medications especially absorption or metabolism. Risk of bleeding in elderly patients may result in the lack of realization that some medications especially over the counter drugs like Acetaminophen may interact with anticoagulants and failure to mention the use of anticoagulants to their doctors.

Potentially lethal acetaminophen-warfarin interaction in an older adult is an under-recognized phenomenon. Lower doses of Acetaminophen that is less than 2grams in 24 hours should be considered in patients with Warfarin to prevent enzyme induction. In our patient, potential adverse effects of Warfarin and Acetaminophen interaction could have been avoided by checking INR regularly and also by patient education.

SHOULD I WORK-UP AN INCIDENTAL FINDING OF MICROSCOPIC HEMATURIA? Javier Neyra1; Fatima Khalid1; James E Novak1. 1Henry Ford Hospital, Detroit, Michigan.

LEARNING OBJECTIVES: 1. Henoch-Schönlein purpura nephritis (HSPN) and immunoglobulin A nephropathy (IgAN) are considered to be related diseases, since both exhibit similar pathological mechanisms. 2. A history of simultaneous infection other than the well-recognized symphathetic macroscopic hematuria is described in this adult patient.

CASE INFORMATION: A 72-year old man with history of ischemic cardiomyopathy, diabetes, and chronic obstructive pulmonary disease was admitted to the hospital with right foot cellulitis. Physical exam revealed, in addition to the right foot erythema and tenderness, a purpuric rash with palpable lesions, predominantly in the lower extremities. Blood cultures were negative and the patient completed a course of antibiotics. Additional work-up showed microscopic hematuria with 60% dysmorphic erythrocytes and urine cytology negative for malignant cells; mild proteinuria; and baseline estimated glomerular filtration rate (eGFR) of 46 mL/min/1.73m². Skin biopsy of the purpuric lesions confirmed leukocytoclastic vasculitis. Autoimmune assays were negative for antinuclear and anti-neutrophil cytoplasmic antibodies, and complement levels were normal. Erythrocyte sedimentation rate and IgA levels were elevated. During the patient’s hospital stay, his kidney function deteriorated (eGFR decreased to 35 mL/min/1.73m²) and a kidney biopsy was performed. Pathology revealed focal segmental proliferative, crescentic, and sclerosing glomerulonephritis with mesangial IgA deposition, acute tubulointerstitial nephritis, and 14% global glomerular sclerosis. Cutaneous IgA deposits were also confirmed. The patient was treated with oral corticosteroids and his kidney function has remained stable for the last two years.

IMPLICATIONS/DISCUSSION: In contrast to the typical presentation in children, microscopic hematuria and/or proteinuria comprise the most frequent initial presentation of IgAN in adults. Henoch-Schönlein purpura (HSP) is a systemic vasculitis that is characterized by deposition of IgA-containing immune complexes in tissues, including mesangial cells, and thus shares many features with IgAN. Cutaneous HSP is a leukocytoclastic vasculitis and a common extrarenal manifestation of HSPN. Simultaneous infection is reported in one third of HSPN cases. Deposits of streptococcal M protein acting as IgA-binding regions have been identified in the kidneys of patients with IgAN/HSPN and the skin of patients with HSP. Therapy includes angiotensin-converting enzyme inhibitors, corticosteroids, fish oil, and cytotoxic agents. Our case is the first to describe the association of a common infection such as cellulitis with the occurrence of IgAN/HSPN in an adult patient. The early recognition of this disease is critical, since 20-30% of patients develop end-stage kidney disease.

TURNING A BLIND EYE TO THE SINUS Ritu Madan 1; Tsewang Tashi 2; Manu Kaushik 2; Theresa Townley 1; Anna Maio 2; Creighton University, Omaha, Nebraska ; 2Creighton University, Omaha, Nebraska.

LEARNING OBJECTIVES: 1. To recognize cavernous sinus thrombosis as a differential diagnosis of ophthalmoplegia
2. To present fungal mycetoma as a rare cause of cavernous sinus thrombosis.

CASE INFORMATION: A 74 year old female presented with 3 day history of frontal headache and a 1 day history of right eye pain and sudden drooping of right eyelid. She denied past headaches, fever, postnasal drip and cough. She did not have past medical history of diabetes, head trauma, migraine and cancer. Her examination revealed dilated right pupil with absent light reflex and consensual reflex and third, fourth and sixth nerve palsies. Sensations on the face were preserved and fundus was normal.

CT demonstrated complete opacification of sphenoid sinus with bone hypertrophy and anterior bone erosion. CT angiography revealed 3.8 mm calcified aneurysm of supraclinoid portion of left carotid artery and opacified right sphenoid sinus with internal calcifications and thickened walls likely indicating chronic infection. Cerebral angiography revealed diminished filling of right cavernous sinus with respect to the left which was a sign of impending cavernous sinus thrombosis.
Right sphenoidotomy was done for her when a fungal ball was removed from her sphenoid sinus. The fungus had not invaded the sinus walls, so they were left intact. Culture of fungal ball revealed aspergillus fumigatus. Her ptosis and eye movements started improving on post-op day 2. She was discharged on post-op day 3 on voriconazole for 12 weeks.

**IMPLICATIONS/DISCUSSION:** Paranasal sinusitis of fungal etiology is not very common. The presentation often depends on the immune status of the host. While in immunosuppressed individuals, invasive fungal sinusitis is common, in immunocompetent individuals fungal involvement of sinuses often presents as mycetomas. Only 5% cases of fungal sinusitis have isolated involvement of sphenoidal sinus making it a rare entity. Although the association of cavernous sinus thrombosis with sinusitis is well described in literature, it is unclear if it always results from direct spread of infection or can result from non-specific inflammation. It is also uncertain if proximity of sphenoid increases the predilection for cavernous sinus thrombosis compared to other paranasal sinuses. Irrespective, the management hinges on surgical resection of the mycetoma and adding anti-fungal therapy when vascular invasion is likely as with cavernous sinus thrombosis. During surgery finding yellow, black or brown cheesy material that does not invade the mucosa is 100% sensitive and 99% specific. Fungus can be cultured in only 23-50% of cases, Aspergillus species being most common.

**MORE THAN A PAIN IN THE NECK** Elizabeth Ellen Lawler 1; Kurt Pfeifer 2; Gilbert Fareau 1. 1Medical College of Wisconsin, Wauwatosa, Wisconsin; 2Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 11887)

**LEARNING OBJECTIVES:** 1. Distinguish Hürthle cell as an uncommon but aggressive variant of thyroid cancer. 2. Review the standard approach to diagnosis and treatment of Hürthle cell thyroid cancer

**CASE INFORMATION:** A 51-year-old woman presented with a five-year history of goiter that had recently doubled in size over the preceding six months. She reported a two-month history of hoarse voice, but denied any change in her swallowing or breathing. She also denied any symptoms suggestive of hyper- or hypothyroidism. She had no prior history of thyroid disease, no personal history of radiation exposure, and no family history of thyroid cancer. A CT scan of the neck identified a very large, heterogeneous thyroid gland with evidence of significant tracheal deviation. She underwent a total thyroidectomy, the pathology of which was remarkable for an 18.5 cm widely invasive Hürthle cell thyroid cancer. She was subsequently treated with adjuvant radioactive iodine, which showed uptake in the thyroid bed and vertebral spine on post-treatment imaging. She was started on levothyroxine to suppress her thyroid-stimulating hormone below 0.1 IU/ml, and continues to return for ongoing follow up.

**IMPLICATIONS/DISCUSSION:** Hürthle cell carcinoma (HCC) is a relatively rare type of thyroid cancer with a significant potential to for metastasis. Adverse predictors of prognosis include size > 4 cm, degree of invasion, extrathyroidal extension, and nodal or distant metastases. The majority of thyroid cancers present with a nodule. Fine-needle aspiration of the mass is an appropriate initial diagnostic procedure. In order to be classified as a malignancy evidence of capsular invasion or distant metastasis must be present. Ultimately most HCC requires histologic pathology. The treatment includes total thyroidectomy. The treatment includes total thyroidectomy, radioactive iodine therapy, and levothyroxine to suppress the TSH, followed by life-long surveillance for recurrence.

**BLUE INSIDE, BLUE OUTSIDE: A CASE OF RECURRENT ECCHYMOSES** Deborah Leong 1; Deborah Leong 1. 1Beth Israel Deaconess Medical Center, Boston, Massachusetts. (Tracking ID # 11888)

**LEARNING OBJECTIVES:** 1. Recognize the clinical presentation of psychogenic purpura. 2. Recognize the diagnostic difficulties of and limited treatment options for psychogenic purpura.

**CASE INFORMATION:** A 46-year-old Hispanic woman presented to the ED with left thigh pain for 2 days progressing to ecchymosis. She denied trauma, falls, or insect bites; no mucosal bleeding or menorrhagia. She denied use of antiplatelet medications, oral contraceptives, or herbal supplements. She reported numerous similar episodes of spontaneous, painful ecchymoses since age 2 triggered by extreme emotions. She did not require blood transfusions for her two cesarean sections. However, after plasminogen activator inhibitor-1 deficiency was diagnosed 8 years ago with a PAI-1 activity of 2.2 (nl 0-31), she received peripheroperative aminocaproic acid for a total abdominal hysterectomy; this was uncomplicated. She moved to the US from the Dominican Republic at age 14. She has a fiance of 7 years and denies any abuse history. Her parents are second cousins, but her family history is negative for bleeding diathesis. Exam revealed a warm, raised, tender ecchymosis over her left medial thigh and knee. CBC and differential were normal; PT was 15.2. Hematoma presumptively diagnosed hemorrhathosis and started aminocaproic acid. Her lesion resolved, but a new right forearm ecchymosis formed weeks later. MRI showed edema but no hematoma. Repeat hematologic work-up found a PAI-1 activity <6 with normal PAI-1 Ag, euglobulin lysis time, platelet aggregation, WVF Ag and cofactor, and Factors II, V, VII, VIII, X, and XIII. CRP was 6.4; tests for RA, SLE, vasculitis, hereditary angioedema, and Loeys-Dietz syndromes were negative. With no hematoma seen and inclusion of values <6 in the normal PAI-1 activity range, PAI-1 deficiency was felt unlikely. The patient was diagnosed with psychogenic purpura. Psychiatry diagnosed adjustment disorder; she did not meet criteria for a primary disorder. Trials of lorazepam have had equivocal effects on her symptoms. She is uninterested in longer-acting antidepressants or psychotherapy.

**IMPLICATIONS/DISCUSSION:** Psychogenic purpura is a rare disorder. It also known as autoerythrocyte sensitization or Gardner-Diamond syndrome, named after the two physicians who first systematically described this condition in 1955. It is characterized by recurrent, spontaneous episodes of painful ecchymoses usually occurring over the extremities. Localized pain progresses to erythema, warmth, and edema, which progress to ecchymoses over 24 hours. Lesions often regress within 48 hours and resolve within 7 to 10 days. Many patients complain of associated fever, arthralgias, myalgias, headaches, dizziness, and gastrointestinal symptoms. There are case reports of gastrointestinal bleeds, hematuria, and hemorrhathoses. The condition may remit for weeks to years but can recur with emotional provocation. Psychogenic purpura typically affects adolescent to middle-aged females with underlying emotional problems, including depression, anxiety, obsessive compulsive behavior, and hysterical and borderline personality disorders. Factitious disorder and physical abuse must be excluded. The discovery of a hematologic or immunologic abnormality is rare; histopathology is nonspecific. No definitive diagnostic test exists. Intradermal injection of autologous erythrocytes classically reproduces the ecchymotic lesions but with limited sensitivity. Diagnosis is mainly through history, physical, and thorough exclusion of other causes. Numerous medical therapies including psychotropic agents, glucocorticoids, cytotastic drugs, hormonal contraceptives, and beta blockers have not proven effective. Psychotherapy may be beneficial.
LEARNING OBJECTIVES: 1. Understand the presentation and management of acute splenic infarct. 2. Recognize thrombophilia as a cause of recurrent thromboembolic events.

CASE INFORMATION: A 50 year-old woman presented with three days of sudden onset, progressively worsening left upper quadrant pain. The pain was dull, constant, radiated to her left flank, and was associated with nausea and vomiting for two days prior to admission. She denied additional gastrointestinal or genitourinary complaints during the review of symptoms. Her past medical history was significant for two ST elevation myocardial infarctions with clean coronaries seen on cardiac catheterization. Her physical exam was remarkable for stable vital signs and moderate tenderness to palpation in her left upper quadrant without rebound or guarding. There was no splenomegaly or costovertebral angle tenderness. Laboratory testing was significant for WBC 17, hemoglobin 17 and hematocrit 52. CT scan revealed a 4 by 4 cm splenic infarct and a 1 by 1 cm thrombosed splenic artery aneurysm superior to the region of the infarct. Review of old laboratory records disclosed a factor VIII activity level of 250% which was tested during a prior thrombophilia workup. Immediate systemic anticoagulation with dalteparin was initiated.

IMPLICATIONS/DISCUSSION: Splenic infarction is a rare and typically clinically silent entity, thus making its prevalence uncertain, though 80% of symptomatic patients will present with abdominal pain. There are no diagnostic laboratory findings for splenic infarcts, although an elevated white blood cell count is not unusual. Conservatively managing symptoms is preferred, with surgical intervention reserved for patients with persistent symptoms, pseudocyst formation, or hemorrhage. Systemic anticoagulation is not standard of care for patients with isolated splenic infarcts. However, this case necessitated systemic anticoagulation in a patient with splenic infarction and two previous thromboembolic insults in conjunction with factor VIII thrombophilia. Elevated factor VIII levels are a risk factor for venous and arterial thrombosis. Patients with >150% factor activity have a three-fold increased risk of a first thrombotic event, with a 10% increase in risk for each subsequent increase of 10% factor VIII level activity. Prevalence of elevated factor VIII levels range from 11-25%. Factor VIII activity levels greater than 150% account for 16% of all venous thrombotic events, while factor VIII activity levels >123% explain 4% of all arterial events. Lifelong systemic anticoagulation is prudent in any patient with recurrent thromboembolic events. Given the under-diagnosis of splenic infarction and the relatively high prevalence of hypercoagulable states, it is important for Internists to consider thrombophilia as an etiology for unexplained abdominal pain.

ANOMALOUS LEFT MAIN CORONARY ARTERY shreyas saligram 1; Antony Innasimuthu 1; Caridad Hernandez 1. 1University of Pittsburgh medical center, Pittsburgh, Pennsylvania. (Tracking ID # 11894)

LEARNING OBJECTIVES: 1. Treatment of anomalous left main coronary artery 2. Unusual causes of chest pain.

CASE INFORMATION: A 44 year old African American woman was admitted following 2 week history of intermittent chest pain. The chest pain was described as substernal, lasted for less than 1 minute, and radiated to the jaw. It was brought on by exertion and resolved spontaneously. There was no diaphoresis, palpitations, nausea, syncope or loss of consciousness. She had a past medical history of sickle cell trait and was on medications. She never smoked, consumed alcohol or abused recreational drugs. There was no family history of Coronary artery disease or sudden cardiac death. Physical examination revealed a blood pressure of 126/86 mmHg; the remainder of her vital signs was normal. Cardiovascular examination showed normal first and second heart sound with no murmurs and a regular pulse of 60/min and the remainder of her physical examination were normal. An electrocardiogram demonstrated normal sinus rhythm and no evidence of ischemic changes. Chest x-ray was normal with no evidence of cardiomegaly. Laboratory studies, including troponin I level were normal, except for a high D-dimer level of 0.55. A CT scan of the chest with contrast obtained in the Emergency Department revealed no evidence of pulmonary embolism. However, review of her central vessels suggested anomalous origin of the Left main coronary artery (LMCA). She subsequently underwent CT coronary angiogram which revealed anomalous location of the LMCA ostium. The LMCA originated from the right coronary sinus within the aortic root. The ostium was immediately adjacent but separate from the ostium of the right coronary artery. The left main stem then passed between the aortic root and the right ventricular outflow tract, and branched into the left anterior descending and the circumflex branch in a typical location. There was no evidence of atherosclerosis or luminal stenosis in any of the coronary arteries. She underwent single vessel coronary artery bypass with saphenous vein grafting from the aortic root to the distal left main stem.

IMPLICATIONS/DISCUSSION: Anomalous origin of the LMCA from the right sinus of valsalva (RSOV) is a rare congenital coronary anomaly that may cause sudden cardiac death from myocardial infarction. It accounts for 1.3% of all coronary anomalies with an associated mortality of 57%. The origin of the LMCA from the RSOV has four subtypes, 1) anterior free wall course, crossing the anterior surface of the right ventricular outflow tract 2) septal course, intramyocardial within the muscular septum beneath the right ventricular infundibulum; 3) retroaortic course; 4) interarterial course, between the aorta and pulmonary trunk. The interarterial course has been associated with the worst prognosis, and the overall incidence of sudden death is reported to be 27%. Several mechanisms have been proposed to explain the mechanisms of sudden death. First, it could be due to the compression of the LMCA between the aorta and pulmonary trunk during vigorous exercise as these great vessels dilate. Second, the angulation of origin from the RSOV, creating a slit like orifice rather than an oval shape and this combined with exercise-induced aortic distension, may produce further narrowing of the orifice. Third, it may be due to spasm of the LMCA itself or finally congenitally small left coronary system. Coronary angiography remains the “gold standard” diagnostic modality in identifying the anomalous coronary vessel and defining its course. An aggressive therapeutic approach has been advocated owing to the increased risk of sudden cardiac death in patients. Prophylactic coronary artery bypass graft (CABG) surgery has been recommended to prevent sudden cardiac death and exercise-induced symptoms of myocardial ischemia.
2. To recognize the broad differential diagnosis associated with the CT scan findings seen in patients with sarcoidosis and the management dilemma it presents.

**CASE INFORMATION**: A 40-year-old man with no significant medical history presented with three days of non-productive cough, myalgias, vomiting and drenching night sweats. He also reported subjective fevers and chest tightness, but denied hemoptysis. He denied sick contacts or recent travel. Vital signs in the emergency room included a maximum temperature of 102.7, pulse of 109, blood pressure of 135/88 and a respiratory rate of 19. On exam, he was an African American male who was uncomfortable, diaphoretic and coughing. His exam was notable for dullness to percussion and decreased breath sounds in the right lower lung fields. There were no rashes or ocular abnormalities. Once euvoletic, labs were significant for Na 131, Ca 9.6, Hb 11.1, MCV 80, WBC 22.0 (84% granulocytes). Non-contrast CT scan showed bilateral hilar and mediastinal lymphadenopathy, diffuse micronodular airspace opacities, scattered larger nodules, and consolidative airspace opacities within the lungs, most prominent within the upper lobes and right lower lobe. Patient was initially placed on airborne isolation and empiric antibiotic treatment with ceftriaxone and azithromycin was initiated. The patient began improving clinically within 3–4 days. Further testing revealed Fe 22, TiBC 191, %saturation 12, ferritin 1280, ANA negative, HIV negative, ACE 113 (normal: 8–53), and 24-hour urine calcium 63 (normal: 25–300). All cultures were negative including blood, urine and sputum, urine Legionella and S. pneumonia antigens, viral panel, and acid fast bacilli on three induced morning sputum samples. The patient subsequently underwent bronchoscopy with endobronchial biopsy revealing non-caseating granulomas with negative fungal and acid-fast stains. Given the above findings, his overall presentation was consistent with sarcoidosis with community acquired pneumonia and we started a course of steroids for sarcoidosis that was gradually tapered as an outpatient. Tuberculosis and fungal cultures were negative at six weeks.

**IMPLICATIONS/DISCUSSION**: We describe a case of sarcoidosis diagnosed in a previously healthy patient presenting with acute onset of symptoms consistent with pneumonia. Sarcoidosis is a chronic granulomatous disease of unknown etiology most commonly affecting the lungs. Cough and dyspnea are the most common presenting symptoms, but the onset is usually subacute to chronic. Other subacute presentations of sarcoidosis include cutaneous and ocular complaints and it often can be associated with nonspecific constitutional symptoms including fatigue, chills and night sweats. In contrast, acute sarcoidosis generally presents in the form of Lofgren’s syndrome, a triad of erythema nodosum, hilar adenopathy and arthritis and portends a better prognosis. Finally, underlying sarcoidosis is often first detected upon imaging for other acute illnesses.

The differential diagnosis for the CT findings seen in our patient is broad and includes many diseases relevant to the general medical practitioner. Infectious etiologies include atypical, viral, and fungal pneumonias, tuberculosis, and septic emboli. Other interstitial lung diseases such as cryptogenic organizing pneumonia and idiopathic interstitial pneumonia, and environmental exposures such as silicosis and hypersensitivity pneumonitis must be considered as well. Among malignant etiologies, lymphoma, bronchoalveolar carcinoma, other adenocarcinomas, and hematogenous metastases are possible. Due to this extensive differential, our case presented a challenge in definitive diagnosis which delayed onset of immunosuppressive therapy. Thus, the diagnosis of sarcoidosis in the absence of Lofgren’s syndrome requires ruling out infection along with a tissue biopsy of the involved organ with demonstration of non-caseating granulomas negative for fungal and tuberculosis cultures. As steroids are the mainstay of treatment of sarcoidosis, it is essential to rule out infection and malignancy before initiating treatment, which could have devastating consequences.

**RECURRENT COMMON ILIAC VENOUS THROMBOSIS**: Julie Kim 1; Abigail Deyo 2; Kurt Pfeifer 3. 1 Medical College of Wisconsin Affiliated Hospitals, New Berlin, Wisconsin; 2 Medical College of Wisconsin, Milwaukee, Wisconsin; 3 Medical College of Wisconsin Affiliated Hospitals, Milwaukee, Wisconsin. (Tracking ID # 11908)

**LEARNING OBJECTIVES**: 1. Identify patients at high risk for antiphospholipid antibody syndrome (APS) and describe appropriate treatment for acute venous thromboembolism in patient with APS 2. Recognize that lupus coagulant antibodies can falsely prolong INR levels

**CASE INFORMATION**: A 28-year-old woman with Hashimoto’s thyroiditis presented with a one-day history of acute onset of left thigh pain, chest discomfort, left lower rib pain with inspiration and mild dyspnea. Physical exam revealed tachypnea and an erythematous, warm, and swollen left thigh. Her medications were oral contraceptives, but she denied smoking or a family history of clotting disorders. Left lower extremity ultrasound confirmed thrombosis of the left common iliac vein, and ventilation-perfusion scan showed high probability for bilateral multi-subsegmental pulmonary emboli. She was started on warfarin and bridged with dalteparin until her INR was therapeutic. She was discharged home but returned with progressive thigh pain. Left lower extremity ultrasound revealed worsening thrombosis with clot now extending from the left common iliac vein to popliteal vein. She underwent catheter-directed thrombolysis and was restarted on intravenous unfractionated heparin. Venogram revealed no structural cause, such as May-Thurner syndrome, for her recurrent thrombosis. Thrombophilia work-up revealed minimally elevated lupus anticoagulant, partial thromboplastin time and dilute Russell’s viper venom time. She was discharged home on therapeutic-dose dalteparin. Four days later, she returned with onset of new left calf pain. Ultrasound showed a patchy distribution of thrombosis from her femoral vein to her popliteal vein. Repeat catheter-directed thrombolysis and continuous heparin and tissue plaminogen activator were administered, and ultrasound evaluation afterwards showed near resolution of her clot. She was again discharged on dalteparin with hematology follow-up. Antibody screening four weeks later was significant for positive lupus anticoagulant and elevated PTT and DRVVT. She has remained on dalteparin without further recurrence of venous thromboembolism (VTE).

**IMPLICATIONS/DISCUSSION**: Recurrent thrombosis in the setting of therapeutic anticoagulation presents a life-threatening diagnostic dilemma. Possible etiologies include May-Thurner Syndrome, malignancy, warfarin failure, and antiphospholipid antibody syndrome. Warfarin failure can occur secondary to the presence of malignancy or due to variability in the depression of various clotting factors. Specifically, factor II is considered to be most important for warfarin clinical antithrombotic efficacy, but least well represented in the INR. Furthermore, in 10% of patients with lupus anticoagulant, INR may be falsely elevated. Thus, in patients presenting with VTE in the setting of lupus anticoagulant, a factor II level can confirm adequate anticoagulation, especially prior to labeling a patient as a warfarin failure. Individuals presenting with new onset venous or arterial thrombosis in unusual locations should be screened for APS, a rare thrombophilic disorder most commonly observed in females of childbearing age. APS is diagnosed using the Sapporo criteria, which require a thrombosis or pregnancy loss in addition to repeatedly positive lab testing (lupus anticoagulant or antiphospholipid serologies), as tested at least 12 weeks apart. APS patients presenting with venous thrombosis can be managed as outpatients on warfarin with INR goal between 2–3 and should be considered candidates for long-term anticoagulation.
THE CASE OF THE TIRED TEEN Sherwin Hsu1; Jeffrey Miller1; 1University of California Los Angeles Olive View Medical Center, Sylmar, California. (Tracking ID # 11914)

LEARNING OBJECTIVES: 1. General approach to a patient with hypereosinophilia 2. How to properly diagnose and treat FIP1L1-PDGFRalpha associated clonal eosinophilia

CASE INFORMATION: LG is a 25 year old male with no past medical history who presented with several months of generalized fatigue and weakness. He denied any fevers, chills, nausea, vomiting, hematemesis, hematochezia, or weight loss. He completed a course of azithromycin one week prior to admission for a 1 month history of cough. The only other medications he took were occasional doxycycline for acne and zantac as needed for reflux symptoms (mid epigastric burning pain worse after eating) which began about one year ago. The patient went to his college student health center and had some blood drawn. It showed he had anemia and thrombocytopenia, and he was instructed to go to a hospital for further work up. On further questioning, he denied any foreign travel within the last two years, any sick contacts, or any toxic habits (no tobacco, alcohol, or drugs). His family history was significant only for diabetes and hypertension without any cancers. LG was born and raised in California, had mild seasonal allergies, and worked as a sales representative in a metal plating company while also attending a local college. On exam, LG had no lymphadenopathy. His lungs were clear and his heart was in a regular rhythm without any murmurs or signs of volume overload. Abdominal exam was benign and he had no appreciable organomegaly. Labs showed a macrocytic anemia, thrombocytopenia, and hypereosinophilia. Peripheral smear confirmed the CBC results. Pan CT scan showed hepatomegaly, splenomegaly, and patchy ground glass opacities in bilateral lungs. A bone marrow biopsy and EGD with biopsy were done which ultimately showed increased eosinophils with a left shift in the myeloid lineage maturation and eosinophilic esophagitis. FISH analysis of the bone marrow showed a new fusion gene FIP1L1-PDGFRalpha, consistent with a myeloid neoplasm associated with eosinophilia and genetic abnormalities. Imatinib treatment was then started.

IMPLICATIONS/DISCUSSION: Hypereosinophilia is an uncommon condition and should be investigated appropriately. In Western nations, the main causes of eosinophilia are allergic conditions, vasculitides, drugs, bacterial/fungal infections, and nonmyeloid malignancies. In the tropical and subtropical regions of the world, the most common cause is helminth infection. A detailed travel history, medication history, and physical exam are key in the initial evaluation of patients with eosinophilia. Further studies include imaging (chest xray, CT scans), blood tests (fungal or parasitic serologies, peripheral smear, HIV), and stool tests (O&Ps). Once the common secondary causes of hypereosinophilia have been ruled out, further workup should be aimed toward determining if the cause is a myeloid vs lymphoid disorder and if there is any evidence of end organ damage from the hypereosinophilia. Cardiac, pulmonary, cutaneous, and digestive organs are the most commonly affected systems in hypereosinophilia. CT imaging, echocardiography, and EGD are all helpful in assessing the other organ systems. Finally, it is important to do bone marrow biopsy with cytogenetic or FISH analysis to evaluate for any myeloid involvement and clinically relevant clonal evolution. In LG’s case, he had evidence of eosinophilic pulmonary (CT) and esophageal (EGD) involvement. The fusion gene FIP1L1-PDGFRalpha, found on LG’s FISH analysis, codes for tyrosine kinase activity. This gene is the direct target of the tyrosine kinase inhibitor imatinib mesylate, which is considered first line therapy for patients with a FIP1L1-PDGFRalpha associated clonal eosinophilia. The teaching points from this case are how to initiate a hypereosinophilia work up, and how to diagnose and treat/manage a patient who displays FIP1L1-PDGFRalpha associated clonal eosinophilia.

LANCE-ADAMS SYNDROME: A RARE CASE OF POST-HYPOXIC MYOCLONUS, IN THE COURSE OF BRONCHIAL ASTHMA Pradeep Kumar Selvaraj1; Arati Chand 1; Rommel Delrosario1; Todd Bell2; Matt Chu3; 1Texas Tech Univ Health Sci Center, Amarillo, Texas. (Tracking ID # 11930)

LEARNING OBJECTIVES: 1. Post-hypoxic myoclonus (Lance-Adams Syndrome) is a rare (only 125 cases reported) and devastating complication of acute hypoxic respiratory failure. 2. Lance-Adams Syndrome (LAS) has an excellent prognosis if treated early. Sodium valproate, clonazepam, piracetam, and levetiracetam may be recommended as first-line agents to treat patients with LAS.

CASE INFORMATION: A 55 year old African American female with history of bronchial asthma admitted for acute hypoxic respiratory failure secondary to asthma exacerbation. She was intubated and subsequently extubated after 4 days. After 7 weeks, patient presented with generalized myoclonus in the face, trunk, and limbs, accompanied by ataxia, dysarthria and dysmetria. Electroencephalography showed bifrontal polyspikes and complex of polyspikes-slow wave, synchronized with myoclonus. CT and MRI of the brain showed no acute intracranial pathology. We treated the patient with sodium valproate with the loading dose of 1500 mg, followed by 500 mg q8 hours. The patient showed drastic improvement in myoclonus after receiving the loading dose and the myoclonus completely disappeared after getting a total of 3000 mg.

IMPLICATIONS/DISCUSSION: Lance-Adams syndrome (LAS) caused by anoxia of central nervous system, is a rare complication of successful cardiopulmonary resuscitation often presenting as myoclonus and cerebellar ataxia. Generally, this condition occurs with in days or weeks after the anoxic event. The pathophysiology associated with this syndrome is poorly understood; however some studies have shown that loss of neurotransmitters like serotonin, gamma-aminobutyric acid (GABA) within the inferior olive might be an important causal factor. The postulated mechanism might be after ischemia, there is loss of GABAergic inhibition in cerebellar afferent neurons leading to diaschisis of the motor thalamus and reticular formation, which in turn causes enhanced motor excitability and myoclonus. Diagnosis of LAS is made on the basis of clinical features and imaging modalities like PET scan, cranial magnetic resonance spectroscopy, Single photon-emission computed tomography (SPECT) have limited usage. It is important to recognize LAS early because of its excellent prognosis if treated early.

A CASE OF CHRONIC MESENTERIC ISCHEMIA Ohunrweaju Olaoye1; Akintomi Olughbodi1; Anthony Donato1; 1The Reading Hospital and Medical Center, Reading, Pennsylvania . (Tracking ID # 11931)

LEARNING OBJECTIVES: 1. Recognize chronic mesenteric ischemia, also known as intestinal angina, as an uncommon cause of non-specific abdominal pain in the elderly. 2. Discuss management options in intestinal angina.

CASE INFORMATION: An 83-year old woman with history of coronary artery disease, peripheral vascular disease, and cigarette smoking presented with recurrent abdominal pain. The pain was constant, sharp, mostly located in the right lower quadrant and worsened 30-60 minutes after food. She also reported a weight loss of 8 kg over the past
2 months. Abdominal computerized tomography scan showed widespread vessel calcifications, ascending colonic thickening and a right-sided abdominal mass. Right ileorectectomy revealed multifocal thrombotic occlusion of serosal vessels and a large ischemic pseudopolyp. Because of the ischemia and ongoing pain postoperatively with no new imaging explanation, an arteriogram was performed. Occlusion of the proximal superior mesenteric artery and a 90% stenosis at the origin of the celiac artery were demonstrated. Angioplasty and stenting of the celiac artery were successfully carried out. However symptoms continued, and the patient eventually passed away on hospice care.

IMPLICATIONS/DISCUSSION: Chronic mesenteric ischemia is an uncommon cause of abdominal pain and weight loss. It may also be the cause of abdominal pain in 1-2% of elderly patients with acute, severe gastrointestinal disease. It is due to hyperperfusion from a mismatch between splanchnic blood supply and postprandial intestinal demand. This diagnosis should be considered in unexplained abdominal pain in the elderly, especially if common etiologies have been ruled out and significant peripheral vascular disease risks are present.

MITRAL ANNULAR VENTRICULAR TACHYCARDIA: A RARE FORM OF IDIOPATHIC VENTRICULAR TACHYCARDIA

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LEARNING OBJECTIVES: 1. Emphasize clinical recognition of idiopathic mitral annular ventricular tachycardia (MAVT) 2. Recognize the role of ablation in selected patients with sustained symptomatic Mitral Annuar Ventricular Tachycardia

CASE INFORMATION: A 46 year-old white female presented to the emergency room at Creighton University Medical Center with dyspnea and palpitations and was noted to have recurrent runs of sustained wide QRS complex tachycardia (WCT). The duration of these episodes was transient lasting only a few minutes before spontaneously converting to sinus rhythm and blood pressures remained stable. The WCT had right bundle branch block type morphology with monophasic R waves in all preordial leads, at a rate of 225 beats/minute and inferior axis. Prior history was significant for paroxysmal atrial fibrillation (with recent direct current electrical cardioversion), and 1 episode of out of hospital cardiac arrest. Evaluation included normal Doppler echocardiogram and coronary angiograms. An implantable cardiac defibrillator (ICD) was initially considered given her documented arrhythmia and prior history of cardiac arrest. However, Electrophysiology (EP) study confirmed a lateral MAVT and successful catheter ablation was done. At 3 month follow up, patient was asymptomatic and remained free of VT.

IMPLICATIONS/DISCUSSION: Mitral annular ventricular tachycardia is a rare form of idiopathic VT accounting for 5% of all idiopathic VTs. The mean age of occurrence is 55-60 years. Sites of origin on the mitral annulus include Posterior portion (Po) (58%), Anterolateral portion (AL) (11%) and Posteroseptal (PS) (31%). Characteristic EKG findings help in localizing the site of origin of MAVT. Wide QRS with early preordial transition by lead V2 and an R or Rs pattern in V2- V5 is seen in all MAVT’s. Positive QRS polarity in the inferior leads is suggestive of origin from anterior part of mitral annulus, with notchting of R wave indicating anterolateral origin and lack of notchting anteromedial origin. Negative QRS with notchting of Q wave indicates posterior origin while lack of notchting indicates posteroseptal origin. By definition, ischeamic heart disease should be excluded. Though re-entry, and increased automaticity have been implicated, the exact mechanism of origin remains unclear. In the EP lab, MAVT is inducible by isoproterenol infusion but not by programmed ventricular stimulation or ventricular burst pacing. Acute management is based on hemodynamic status. While class IC or III anti-arrhythmic drugs are potentially useful, catheter ablation remains the therapy of choice (Class I) and can successfully eliminate the VT in approximately 95% of cases. Increased awareness and recognition of MAVT and other idiopathic VTs can therefore help avoid ICDs and provides an opportunity for curing VT in selected patients.

SOMETHING SMOLDERING UNDER A STREPTOCOCCUS PNEUMONIA BACTEREMIA

Lydia Madaris Efler1; Teresa Cheng1; 1Boston University School of Medicine, Boston, Massachusetts. (Tracking ID # 11951)

LEARNING OBJECTIVES: 1. Recognize potential underlying cause in Streptococcus pneumonia bacteremia of undetermined source. 2. Expand the differential diagnosis of lower back pain.

CASE INFORMATION: A 63 year old man was admitted with an acute exacerbation of chronic lower back pain. He had a history of resected renal cell carcinoma (RCC), remote IDU, degenerative joint disease, and monoclonal gammapathy of undetermined significance (MGUS). The patient was afebrile in moderate discomfort. Exam was significant for right-sided paraspinl tenderness with a nonlocal neurological exam. Labs were notable for a mild anemia at his baseline, serum protein 10.8, albumin 3.1, and phosphare 7.9. Plain spine films showed degenerative changes. Repeat SPEP/UPEP showed a progressive IgG gammapathy (serum IgG 5.7, urine kappa 6940) but a full skeletal series was negative for lytic lesions. The patient was treated for pain until the third hospital day, when he spiked a fever. Blood cultures were positive for Streptococcus pneumoniae and antibiotics started. Initial physical exam revealed no source; CXR, TTE, and urinalysis were negative, and MRI showed inflammation and possible septic facet joint or synovial infection, without abscess or need for intervention. The following day, pain localized to his arthritic knee, and examination revealed warmth, edema, and effusion. Inflammatory fluid was removed from the joint, followed by full arthoscopic debridement. After a prolonged course of antibiotics, both knee and back pain resolved.

IMPLICATIONS/DISCUSSION: This case reveals a septic knee and possible paraspinal infection with Strept pneumonia as an initial presentation of smoldering multiple myeloma. Bacteremia has previously been documented as an unusual presentation of multiple myeloma (MM), but these patients had signs of progressive disease. Although this patient had a prior diagnosis of MGUS, his immunoglobulin level greater than 3gm indicated advancement to smoldering myeloma. The patient did not meet the criteria for MM as he lacked end-organ damage from plasma cell dyscrasia such as renal failure, lytic lesions, or profound anemia, and declined definitive diagnosis by bone marrow biopsy.

In those cases when MM presented as bacteremia, Strept pneumonia was the most common pathogen, and infection was hypothesized to be from impaired immune function to encapsulated organisms, lower antipneumococcal antibody titers, defective opsonic activity and granulocyte adhesiveness, and inhibition of dendritic cells. It is conceivable that a similar immune deficit may be present in patients with smoldering myeloma. Of note, given normal calcium, PTH, vitamin D, the hyperphosphatemia was attributed to elevated paraproteins failing to deproteinize, thus interfering with the lab result as has been reported in myeloma. In addition to worsening joint disease and musculoskeletal pain, many etiologies of back pain were initially considered including bony metastases in the setting of RCC, spinal abscess from IDU, lytic lesions due to progression to MM, and even secondary gain. However,
his history of DJD with multiple steroid injections and immunocompromised state from smoldering myeloma placed him at risk for inflammatory fluid collection and ultimately bacteremia from encapsulated organisms. Therefore, this case suggests infection and bacteremia might be added to the differential of back pain in patients with any form of monoclonal gammopathy.

ASSOCIATION OF CLOSTRIDIUM SEPTICUM WITH COLORECTAL MALIGNANCY

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LEARNING OBJECTIVES:

1. Recognize the association of Clostridium Septicin with colorectal malignancy.
2. Suspect Clostridium Septicin in septic patients with Colorectal malignancy and initiate treatment in a timely manner to prevent fatal outcomes.

CASE INFORMATION: Clostridium Septicum is a rare infection and mostly associated with colorectal malignancies. We report our experience of Clostridium Septicum infection in a patient with colorectal malignancy who presented with sepsis secondary to tumor perforation. A 60 year old male with no significant past medical history was admitted with two week history of progressively worsening of left lower quadrant pain associated with nausea, vomiting and anorexia. Patient was afebrile, hypotensive tachycardic, and had distended abdomen with tenderness and guarding in the left lower quadrant. CT Scan confirmed a large inflammatory mass containing stool and air encasing the sigmoid colon, which may be the sequel of perforated sigmoid colon due to neoplastic process versus abscess. He underwent an emergency exploratory laparotomy with colon and small bowel resection. During the course of his hospitalization the patient went into septic shock, and was empirically started on vancomycin and metronidazole. Repeat blood culture were positive for Clostridium Septicin. Continued appropriate antibiotics for 2 weeks. Eventually his condition stabilized and he was discharged home.

Histology of the mass subsequently confirmed high grade, necrotic adenocarcinoma of colon.

IMPLICATIONS/DISCUSSION: Clostridium Septicin is a gram positive, spore forming, obligate anaerobic bacterium which causes myonecrosis through the release of exotoxin. The infection is thought to be established by hematogenous spread from the gastrointestinal tract. Clostridium Septicin infections are strongly associated with malignancy. When there is no obvious underlying etiology in patient with Clostridium Septicin infection, there should be high index of suspicion about malignancy, and a colonoscopy may be warranted for those patients. In order to improve prognosis early diagnosis and aggressive treatment is essential. In patient with underlying malignancy showing sign of sepsis the possibility of Clostridium Septicin infection should be borne in mind.

CARE OF THE CANCER SURVIVOR: THE MEMORIAL SLOAN-KETTERING ADULT LONG-TERM FOLLOW-UP PROGRAM EXPERIENCE

Emily S. Tonorezos1; Kevin C. Oeffinger1; 1Memorial Sloan-Kettering Cancer Center, New York, New York. (Tracking ID # 11996)

LEARNING OBJECTIVES:

1. Recognize the unique clinical needs of survivors of pediatric and young adult cancer
2. Identify emerging areas of clinical research in this population

CASE INFORMATION: The Adult Long-Term Follow-Up (ALTFU) Program at Memorial Sloan-Kettering Cancer Center (MSKCC) targets high risk cancer survivors.

1. Clinical Agenda
High-risk cancer survivors are survivors with increased risk of late effects or with multi-organ dysfunction post-therapy. For example, a 40-year-old female survivor of Hodgkin lymphoma treated with mantle radiation has increased risks for breast cancer and coronary artery disease and needs appropriate screening. A 30-year-old male treated with an allogeneic stem cell transplant for AML may have renal dysfunction, restrictive lung disease, hypertension, or hyperlipidemia. Our screening practices follow the Children’s Oncology Group guidelines (www.survivorshipguidelines.org). Our team includes 4 primary care physicians, 3 nurse practioners, 1 nurse, 1 social worker, and 1 psychologist. In 2010, 128 new patients and 458 follow-ups were seen.

2. Research Mission
The MSKCC ALTFU Program focuses on two areas of research: cardiovascular risk following therapy (studies of insulin resistance, dyslipidemia, coronary artery disease, and carotid artery disease) and breast cancer following radiotherapy (studies of estimating risk, a randomized controlled trial to increase surveillance after chest radiation, and building a breast cancer risk prediction model).

3. Educational Curriculum
The MSKCC ALTFU Program is dedicated to the education of clinicians. In July 2011, an MSKCC one-year clinical survivorship fellowship will be initiated. Next year, a two-year research fellowship in survivorship will be launched. Additionally, the ALTFU actively mentors junior investigators in survivorship, and transitional year interns from MSKCC rotate through the practice.

IMPLICATIONS/DISCUSSION: Almost one million long-term survivors of pediatric and young adult cancers are currently living in the United States. With improvements in cancer and supportive therapy, this number can be expected to increase. Many of these survivors see primary care physicians who may be unaware of the risk of late-effects. The ALTFU Program at MSKCC aims to improve care of the cancer survivor through clinical care, research, and education.

THAT’S WHEN YOUR HEARTACHES BEGIN

Garvan Christopher Kane1; 1Mayo Clinic Internal Medicine, Rochester, Minnesota; 2Mayo Clinic Division of Cardiovascular Diseases, Rochester, Minnesota. (Tracking ID # 11997)

LEARNING OBJECTIVES:

1. Recognize chemotherapy as a cause of chest pain and ST elevation.
2. Review treatment of chemotherapy-induced ST elevation.

CASE INFORMATION: A 55-year old Caucasian male with hypertension and recurrent colon cancer was admitted for substernal stuttering chest pain. The pain started 30 hours after initiating continuous infusion of 5-Fluorouracil (5-FU) and persisted for 45 minutes before spontaneous resolution. Associated symptoms included dyspnea, nausea, and diaphoresis. He awoke two hours later to the same pain. An EKG demonstrated new inferior and anterolateral ST elevation which resolved after 15 minutes. Initial troponin was < 0.01 but peaked at 0.12 ng/ml. Initial echocardiogram was unremarkable. The patient was started on Aspirin, Heparin, Nitroglycerin drip, and Morphine. Exercise sestamibi indium ST elevation.

Hypokinesis and medium sized anterior, apical, and inferior defects. Initial echocardiogram was unremarkable. The patient was started on Aspirin, Heparin, Nitroglycerin drip, and Morphine. Exercise sestamibi indium ST elevation.

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ST elevation in the inferior leads. Chest pain and EKG changes resolved with sublingual nitroglycerin and a nitroglycerin drip. He was dismissed from the hospital on Isosorbide mononitrate, Diltiazem, and sublingual Nitroglycerin as needed and the 5-FU was discontinued. Follow up echocardiogram four weeks after discharge demonstrated a 63% ejection fraction with complete resolution of regional wall motion abnormalities.

**IMPLICATIONS/DISCUSSION:** First reported in 1975, cardiotoxicity secondary to antineoplastic antimetabolites is rare but not without significance. Cepetabine, Gencetabine, Cytarabine, and 5-Fluoururacil (5-FU) belong to a class of chemotherapeutic medications called Antineoplastic Antimetabolites Pyrimidine Analogs. These medications are used predominately to treat solid organ cancers including colorectal, stomach, pancreas, head and neck, and breast malignancies. With a 1.6% incidence, 5-FU may cause ischemic events ranging from chest pain to angina to myocardial infarction in severe cases. The pathogenesis for cardiotoxicity with Pyrimidine analogs remains a mystery. Proposed mechanisms include depletion of high energy phosphates, myocardial and endothelial cell apoptosis, direct myocardial toxicity, autoimmune response, and stimulation of coagulation cascade. Cardiotoxicity may occur in patients who have no history of coronary artery disease and few to no traditional risk factors. Appropriate tests include troponin, serial electrocardiograms, echocardiography or radionuclide imaging, and percutaneous coronary angiogram if pre-test probability of Acute Coronary Syndrome is high. No data exist regarding incidence of recurrent toxicity with further dosing. Re-challenge of the chemotherapeutic agent is controversial and may only be appropriate for those patients without alternative options for treatment. The cornerstone of treatment following a suspected ischemic event is to discontinue the offending agent. Although sometimes helpful, anti-anginal agents (e.g. nitrates) and calcium-channel blocking agents (e.g. diltiazem or nifedipine) do not universally prevent or treat anginal symptoms effectively.

**THE APPROPRIATE USE OF MEDICAL FUTILITY IN TREATMENT DECISIONS AT THE END OF LIFE**

Nicole M. LaRue1; Michael K. Paasche-Orlow1; Angelo E. Volandes2; 1Boston University Medical Center, Boston, Massachusetts. 2Massachusetts General Hospital, Boston, Massachusetts. *(Tracking ID # 12039)*

**LEARNING OBJECTIVES:** 1. Assess medical futility in relation to treatment goals near the end of life. 2. Recognize the ethical application of unilateral Do-Not-Resuscitate orders.

**CASE INFORMATION:** A 47-year-old female with metastatic colon cancer presented from home with fever, rigors and weakness. Her examination and work-up was consistent with cholangitis and treatment was initiated with antibiotics and placement of a percutaneous drainage catheter. The patient’s hospital course was further complicated by bilateral hydronephrosis and acute renal failure secondary to tumor progression. Anuria and massive volume overload ensued and the patient developed hypoxic respiratory failure requiring intubation and transfer to the ICU. Sepsis was evolving secondary to fungemia and bladder invasion by the tumor necessitated frequent blood transfusions. The patient was unresponsive and unable to interact with her family or doctors. Given the patient’s advanced disease and multi-organ system failure, the ICU team expressed to the family that in this tragic situation, future escalation of care would be medically futile. The family maintained that the patient had openly communicated her desire to pursue all life-sustaining therapy and to retain a full code status. A younger brother of the patient had wished to maintain life as long as possible, declaring that their faith had led them to hope for a miracle despite the grim prognosis given by the medical team. To withhold treatment was seen by the family as a betrayal of the promise they had made to respect her wishes. Despite the families’ preferences for aggressive care, the ICU team decided that CPR was medically futile, and would only increase suffering without prolonging survival. The patient was administratively made DNR and eight days later she died. The local police were then contacted by family who believed the patient had suffered a wrongful death.

**IMPLICATIONS/DISCUSSION:** The concept of futility is often used to withhold or withdraw care from patients with advanced disease. Medical futility is defined as a clinical action that cannot achieve a stated goal for an individual patient. However, quantitative criteria by which futility can be measured do not exist. Futility is ultimately a value-based determination which cannot be made without first establishing concrete treatment goals. As highlighted in the above scenario, if the patient’s goal is to maintain physiologic life, then CPR may not be a futile intervention. A unilateral decision to withhold life-sustaining measures based on the principle of futility risks imposing religious or subjective values regarding the end-of-life onto patients and their families. Such actions may foster a culture of paternalism and present an opportunity for misuse as providers may try to avoid difficult discussions. Yet, to require that physicians deliver care believed to be ineffective or misguided poses a threat to one’s professional integrity and violates the principle of first doing no harm. Medical futility should not be used as a justification for rejecting a patient or proxy’s preferences, but can be used as a framework for discussing goals of care. A hierarchy in which physician autonomy should take precedence over patients’ self-determination does not exist. When a resolution cannot be reached, hospital ethics teams should be consulted to facilitate mediation and to advocate for both patients and physicians. Ultimately, medical futility is not grounds for unilateral treatment decisions. Case law, state statutes, and professional codes of ethics will be used as examples to exhibit these points.

**VISCERAL SENSATIONS**

Bryan Kovas1; Kurt Pfeifer1; 1Medical College of Wisconsin Affiliated Hospitals, Milwaukee, Wisconsin. *(Tracking ID # 12039)*

**LEARNING OBJECTIVES:** 1. Recognize atypical symptomatic presentations of herpes zoster.

2. Emphasize that visceral outbreaks of herpes zoster can occur without the development of a surface skin rash.

**CASE INFORMATION:** A 60-year-old woman with a remote history of kidney transplantation presented with 2 days of waxing and waning, deep, severe left-sided abdominal pain described by the patient as a “mushroom blooming”. The pain radiated around her left side to the back and also to her proximal anterior left thigh. She complained of moderate nausea when the pain was severe, but denied other associated symptoms (i.e. diarrhea, constipation, fevers, chills or dysuria). The initial exam was unrevealing as no marked tenderness or other physical signs on abdominal examination could be appreciated. The patient’s exacerbations of pain were not well controlled initially despite multiple doses of IV hydromorphone. The following morning the patient noted that she was developing a rash in her left inguinal area. Exam at that time revealed several erythematous papules and a few vesicles in the lower LLQ and inguinal area. The patient was started on valacyclovir and placed in isolation. Her rash persisted for several days and resolved slowly over a week. Eight days later she died. The local police were then contacted by family who believed the patient had suffered a wrongful death.

Throughout her hospitalization, the patient re-iterated that the bulk of
her pain was deep within her abdomen with only minimal pain on her skin. However, abdominal and pelvic CT did not reveal any alternative etiology of the patient’s pain.

IMPLICATIONS/DISCUSSION: Classic herpes zoster is often described as a prodrome of severe surface pain followed by a unilateral, dermatomal, vesicular rash. However, dermatomal pain in the absence of herpetic lesions has been documented in the literature and supported by serologic and PCR evidence of VZV reactivation during acute pain episodes. Furthermore, immunocompromised patients can present with atypical symptoms or have involvement of visceral organs during reactivation. With abdominal organ involvement a patient would be expected to have more visceral than somatic pain as in our patient. Diagnosis of visceral involvement is purely clinical since radiographic findings are usually minimal and nonspecific. Therefore, herpes zoster should be included in the differential early on during a regional acute pain syndrome and should not be dependent on the development of rash if no other etiology for the pain can be found.

CAN YOU CONNECT THE DOTS? AN ASSOCIATION BETWEEN PANCREATITIS, PANNICULITIS, AND POLYARTHRITIS. VISHAL GOYAL; 1 SUSAN MATHEW; 1 Allegheny General Hospital, Pittsburgh, Pennsylvania. 2Allegheny General Hospital, Pittsburgh, Pennsylvania. (Tracking ID # 12061)

LEARNING OBJECTIVES: 1. Identification of polyarthritis and panniculitis as consequence of underlying pancreatic pathology.
2. Recognize resolution of extra pancreatic manifestations with treatment of underlying pancreatic disease.

CASE INFORMATION: We describe a 71 year old caucasian male with Diabetes mellitus type 2, hyperlipidemia and hypertension presented to hospital with abdominal pain. He was diagnosed to have acute on chronic pancreatitis on CAT scan of the abdomen and high level of lipase in serum. His hospital stay was complicated with development of respiratory distress for which the patient was admitted to MICU and intubated. He developed erythema and swelling of his right hip, right knee and right flank along with fever. Patient underwent paracentesis to drain the fluid from the right flank and arthrocentesis of the right hip and right knee. During this time patient developed erythematous nodular lesions on his lower extremities bilaterally. Fluid analysis of abdominal fluid and joint fluid confirmed that it was serous fluid rich in amyelase. As the patient recovered from acute pancreatitis, his joint swelling as well as the nodules faded without any treatment.

IMPLICATIONS/DISCUSSION: PPP is a triad and rare presentation of acute pancreatitis. The significance of reporting this case is twofold. The panniculitis and polyarthritis are consequences of increased concentrations of pancreatic enzymes in blood stream which lead to fat necrosis of affected tissues such as fat deposits in skin and in periarticular tissue. Therefore, these entities resolve without specific treatment and resolution of the underlying pancreatitis. Additionally in literature review, it was found that panniculitis and polyarthritis present before manifestations of pancreatitis, which can delay the diagnosis and increase mortality associated with pancreatitis. In our patient, acute pancreatitis presented first followed by these lesions.

The syndrome usually presents in men with alcohol induced pancreatitis in their fifth decade of life. Abdominal pain is uncommon as presenting complaint. In fact, arthritis is the most common initial symptom. Skin lesions present as erythematous nodules in the subcutaneous tissue often in the lower extremities. The likely pathogenesis is the systemic release of pancreatic enzymes which digest fat in affected regions. A somatostatin analog, Octreotide has shown to prevent occurrence of these lesions. The tendency of certain patients to develop panniculitis and polyarthritis might be explained by low level of proteins which work as scavengers of these enzymes such as alpha 2 - macroglobulin and alpha 1 - antitrypsin. The prognosis in these patients is not good especially in patients with pancreatitis with one or more extra pancreatic manifestations. Therefore this constellation of extra pancreatic manifestations should not be overlooked and the treatment should be directed at the underlying pancreatic disease.

CONGENITAL CORONARY ARTERY ANOMALY shreyas saligram1; sangeetha nathanial2; Antony Innsamithu1; Som Chuaah2; 1University of Pittsburgh medical center, Pittsburgh, Pennsylvania ; 2Sri Ramachandra Medical College, Chennai, N/A ; 3Aintree university hospital, Liverpool, N/A. (Tracking ID # 12062)

LEARNING OBJECTIVES: 1. Presence of multiple congenital coronary artery anomaly 2. Unusual causes of angina

CASE INFORMATION: A 60 year old lady was being followed up in Cardiology department for history suggestive of angina. Her risk factors for cardiovascular disease were well controlled hypertension, hypercholesterolemia, increased BMI and ex smoker. She complained of exertional chest discomfort and breathlessness on moderate physical activity. It was relieved with rest or sublingual nitrates. She denied any other symptoms. Her general and cardiovascular examination was normal. Her 12-lead EKG on admission showed some non-specific T wave changes inferiorly. She underwent exercise stress test which was terminated due to chest pain. There were no EKG changes. She underwent a coronary angiogram. It was difficult to intubate the left coronary system and hence the right coronary artery (RCA) was intubated first and it showed super dominant RCA supplying the Circumflex (Cx) territories of the heart . It was noted that there was congenital absence of Cx and Left anterior descending (LAD) artery arising from the Right sinus of valsalva (RSV). There was no significant coronary artery disease noted. The Left Ventricle (LV) gram confirmed the absence of Cx and showed that there were only RCA and LAD.

IMPLICATIONS/DISCUSSION: Coronary artery anomalies have been reported with an incidence of around 1% in the general population . Coronary artery anomalies may be a part of complex congenital malformation or may be isolated. Few might present with myocardial ischemia, arrhythmias or sudden death.

The absence of Cx artery is rare, incidence is not well documented because of the rarity of the condition. Absence of Cx is usually associated with super-dominant RCA that supplies the Cx territory of the heart, as in our patient. Absence of Cx leaves a large area of heart to be supplied by the RCA making it prone for ischemia on exertion. The incidence of LAD originating from RSV was 0.03%. The LAD in this type of anomaly can take 4 possible courses: anterior to Pulmonary artery (PA), posterior to aorta, in the intraventricular septum and in between aorta and PA . In the absence of significant coronary artery disease the risk of sudden death is low with first 3 courses of the LAD. However, when the LAD courses between aorta and PA the incidence of sudden death is around 27%. Symptoms on exercise are probably secondary to compression of LAD during exercise.

The cause of our patient’s anginal symptoms was probably secondary to a combination of both the absence of circumflex and the origin of LAD from the RSV. On reviewing the literature, our patient is the first patient who has had this complex of both the anomalies together.

A SURPRISING SURVIVAL Lindsay C. Northam; 1 Anna R. Cook; 1 Theresa Townley; 1 Creighton University Medical Center, Omaha, Nebraska. (Tracking ID # 12083)

LEARNING OBJECTIVES: 1. Recognize that saddle pulmonary embolism has a wide range of clinical presentations, often present-
CASE INFORMATION: 52 year old male with a past medical history of mental retardation, epilepsy and chronic immobility presented to the emergency room with tachypnea and tachycardia. Per report from his nursing facility, the patient had had a one day history of abnormal behavior and bluish discoloration of his fingernails. At arrival to the emergency room his oxygen saturation was 94% on room air. Heart rate was tachycardic with rates ranging from 110–120. Respiratory rate was elevated at 22. Physical examination revealed no evidence of elevated jugular venous pressure. Respiratory auscultation was unremarkable. There was a slight increase in circumference of the right leg compared to the left, but distal pulses were palpable and equal bilaterally. Laboratory data revealed a D-Dimer of 4.34, CHF Peptide of 3830 and WBC 23.94 with 10% bands. ABG at arrival showed a pH of 7.44, pCO2 of 32.5, pO2 of 75.5 and a bicarbonate level of 21. Bilateral lower extremity Doppler ultrasound diagnosed acute occlusive DVTs present in the right superficial femoral, popliteal and posterior tibial veins. Chest CT demonstrated a central pulmonary embolism involving the main pulmonary artery. Extension was seen progressing into bilateral pulmonary arteries and the distal arteries of bilateral lungs. Peripheral opacification was seen in bilateral lung fields concerning for pulmonary infarct. Echocardiography revealed an ejection fraction of 50-55% with grade 1 diastolic dysfunction. No elevation of RVSP was seen. The patient was started on therapeutic Lovenox at a dose of 1 mg/kg BID. The patient remained hemodynamically stable with systolic blood pressures maintained above 90 mmHg. Coumadin was started on hospital day 2. The patient was discharged in stable condition on hospital day 7 with a therapeutic INR. 

IMPLICATIONS/DISCUSSION: Saddle pulmonary embolism is a feared diagnosis with a significant mortality, currently estimated to have a 2 week mortality of 5.8%. Common clinical presentations often include hypoxia, chest pain and tachycardia. However, regardless of the often ominous findings seen on CT scan patients frequently remain hemodynamically stable. Hemodynamic instability in saddle pulmonary embolism is presumed to be secondary to hypoxia caused by pulmonary artery obstruction and vasospasm. Elevation in right ventricular pressure is often seen leading to right ventricular dilatation and failure. Decreased right ventricular output can ultimately lead to left sided heart failure. It is estimated that in hemodynamically stable patients, up to 45% will have no evidence of elevation of right ventricular pressure. Often these patients have atypical or asymptomatic presentations. Short term outcomes favor patients without right ventricular dysfunction as right ventricular failure can be associated with a two-fold increase in mortality. In hemodynamically unstable patients current treatment guidelines support the use of thrombolytics and surgical embolectomy. Benefit has also been seen in recent studies supporting the use of thrombolytics in hemodynamically stable patients diagnosed with submassive pulmonary embolism with right ventricular dysfunction. However, management of hemodynamically stable patients with normal right ventricular function is more of an enigma. Recent studies suggest that in this particular subset of patients the benefit of aggressive thrombolytic use continues to remain unclear. Risk versus benefit of thrombolytic use must be considered in this patient population. As the use of thrombolytics has significant side effects physicians must consider anticoagulation as the treatment in this patient subset.
Rapid Reversal of Heart Failure from Acidosis as Evidenced with Noninvasive Imaging. Gautam K Visweswaran1; Edward B Lankford1; 1Penn State Hershey Medical Center, Hershey, Pennsylvania. (Tracking ID # 12090)

Learning Objectives: 1. Need for acidosis to be considered in the differential of the acutely ill patient with cardiac pump failure. 2. Utility of noninvasive imaging in the management of acute myocardial dysfunction.

Case Information: A 43-year-old woman with a history of insulin dependent diabetes mellitus presented with a 2 day history of fatigue, malaise and syncope. Upon presentation she was obtunded requiring intubation for airway protection and respiratory support. Initial arterial pH was 6.75, bicarbonate 5 and anion gap 29. Her acidosis was corrected with aggressive hydration and intravenous insulin. She was extubated after 2 days. On the third hospital day, she became dyspneic. Physical examination revealed a new S3 gallop and pulmonary edema. Serial troponins were normal, and an echocardiogram revealed multiple regional wall motion abnormalities, moderate left ventricular dilation, and estimated EF 30%. Thyroid studies were normal and an infectious workup was negative. Cardiac MRI performed on the eighth hospital day documented complete resolution of the myocardial dysfunction.

Implications/Discussion: Acidosis as a profound myocardial depressant has been extensively researched. The decrease in contractility is mediated via 1) alteration of intracellular Ca²⁺ handling and 2) decreased myofilament sensitivity to intracellular Ca²⁺ and subsequent decreased force generation. Intracellular acidosis longer than 3 minutes causes activation of compensatory mechanisms that cause an increase in the cytosolic and diastolic Ca²⁺ content. The increased cytosolic Ca²⁺ causes activation of the Ca²⁺ - Calmodulin protein Kinase II that has been shown to play pivotal roles via phosphorylation of cellular proteins to help normalize intracellular Ca²⁺ handling and myofilament sensitivity to Ca²⁺. Normalization from the inhibition of excitation-contraction coupling and recovery of myocardial force generation is hastened by aggressive medical management of acidosis.

The long term effects on ventricular myocyte function and remodeling due to repeated or prolonged episodes of acidosis have not been prospectively studied. The effects are likely detrimental. Our case provides imaging evidence documenting the reversible cardiodepressant actions of acidosis and highlights the need for acidosis to be considered in the differential of the acutely ill patient with cardiac pump failure.

MINOCYCLINE INDUCED DERMAL AND SCLERAL MELANOSIS. Daniel Martín1; Nikhil Kalva2; 1University of Illinois Peoria, Peoria, Illinois; 2University of Illinois Peoria, Peoria, Illinois. (Tracking ID # 120092)

Learning Objectives: 1. To educate on the effects of Minocycline long term use. 2. To discuss the differential of melanosis in an elderly female.

Case Information: While approaching a patient with a cutaneous discoloration one should not only suspect systemic diseases such as Hereditary Hemochromatosis or Addison disease but also cutaneous drug reaction. A common class of medications that can cause discoloration of dermis and mucous membranes is the tetracycline class of antibiotics (1). The most common of the tetracyclines to cause pigmentation is Minocycline, an antimicrobial often used not only for antibacterial properties but also for its anti-inflammatory and mild immunosuppressive properties. Here we report a case of extensive generalized hyperpigmentation involving the face, sclera and both the upper and lower extremities caused by prolonged use of Minocycline for control of calcinosis cutis in limited systemic sclerosis.

Case Description: An 86 year old female presented to our institution with fever, chills and altered mental status. A comprehensive workup revealed an Enterococcal UTI and was treated with 10 day course of oral Amoxicillin. Her family reports that she was diagnosed with limited systemic sclerosis roughly 10 yrs ago with development of disabling calcinosis cutis for about 5 years. Minocycline 100 mg daily was prescribed for control of calcinosis cutis involving both upper extremity and trunk with some success. On exam, it was noted she had a diffuse macular bluish black discoloration of her skin involving the face, sclera and distal upper and lower extremities which has been worsening over the last 6–12 months. She also had sclerodactyly with loss of both hand functions with contraction. A thorough exam of the dental and oral mucosa was unremarkable for dental and oral mucosal involvement. There is no itching or pain in the involved areas. She at the time had no other organ involvement.

3 Pictures

Implications/Discussion: Our patient’s bluish discoloration was secondary to long-term use of Minocycline. Various sites are involved such as the sclera, skin, buccal mucosa and teeth as seen in our patient. Minocycline is a lipid soluble antibiotic that is often used in treatment of acne and rosacea. Hyperpigmentation or melanosis is seen in roughly 3–5 percent of the patients with long term use with cumulative dose of greater than 100 grams. Failure to recognize this common manifestation will lead to unnecessary testing for other systemic diseases. Typically Minocycline causes 3 patterns of involvement. Type I is typically blue black macules localized to sites of inflammation and scarring as seen in our patient with involvement limited to the pattern consistent with limited systemic sclerosis. Type II is typically slate gray pigmentation seen in healthy skin primarily arms, shin and ankles. This pattern of involvement was also seen in our patient involving the proximal arms. Type III is a muddy brown hue due to increased melanin production by the basal cell layer. Ocular structures are also commonly seen with prolonged exposure which typically presents as bluish gray discoloration around the Limbus. There usually is no impairment in vision. This was also seen in our patient described. Even though the pigmentation is unsightly, fortunately there are no health related consequences associated with these changes. Our patients medication was continued at her request as she felt it has
strongly controlled some of the disabling calcinosis cutis that she has had in the past

**Atraumatic Left Gastric Artery - Esophageal Fistula: A Rare Cause of Life Threatening Gastrointestinal Bleeding.** Gautam K Visweswaran1; Kaveh Sharzehi1; Brandon Verdoorn1; Nicholas Orme1; 1Penn State Hershey Medical Center, Hershey, Pennsylvania. *(Tracking ID # 121114)*

**LEARNING OBJECTIVES:** 1. Prompt recognition of risk factors and clinical features suggestive of an arterio - esophageal fistula causing life threatening gastrointestinal bleeding

2. Utility of interventional radiological procedures in the management of fistulous gastrointestinal bleeding.

**CASE INFORMATION:** This was a 71 year old male admitted for confusion, hypotension and bradycardia. He had history of Boerhaave's syndrome 2 years prior, leading to the diagnosis of T3NOM0 esophageal adenocarcinoma, for which he underwent primary resection and concurrent chemo radiation. Later, he underwent uncomplicated reconstruction of esophagogastronomy with gastric pull up. He also has had history of ischemic cardiomyopathy with low ejection fraction and left ventricular thrombus needing chronic anticoagulation.

On admission he had a PT of 80.5 seconds, anemia, suspicious lung consolidation and an unremarkable head CT. Objective improvement was noted with aggressive fluid resuscitation. 24 hours into presentation, patient found to have melena with hemodynamic instability. bedside nasogastric lavage returned bright red blood.

Endoscopy demonstrated a pulsatile bleeding protuberance located 3-4 cms proximal to the intact anastomosis. Local epinephrine injection to slow the bleed and a clip placement to mark the bleeding site were undertaken.

Angiography identified the bleeding vessel to be an aberrant left gastric artery with take off from the left hepatic artery which was successfully embolised with gel foam. Patient was discharged home within a few days.

**IMPLICATIONS/DISCUSSION:** Fistulous connections between the aorta or its major branches and the esophagus are a rare cause of catastrophic gastrointestinal bleeding. Risk factors include foreign body ingestion, pressure necrosis from prolonged nasogastric tube/oropharyngeal intubation, ulcerative carcinoma, radiotherapy, suture erosion and ingestion, pressure necrosis from prolonged nasogastric tube/oropharyngeal intubation. Local epinephrine injection to slow the bleed and a clip placement to mark the bleeding site were undertaken.

Angiography identified the bleeding vessel to be an aberrant left gastric artery with take off from the left hepatic artery which was successfully embolised with gel foam. Patient was discharged home within a few days.

**"No Treatment Please": A Challenging Palliative Care Consultation** Melissa Wachterman1; Melissa Wachterman1; 1Beth Israel Deaconess Medical Center, Boston, Massachusetts. *(Tracking ID # 12121)*

**LEARNING OBJECTIVES:** 1. Assess a patient’s medical decision-making capacity 2. Apply the principles of palliative care to a challenging case

**CASE INFORMATION:** A 53 year-old woman with no past medical history presented to the ED with 2 weeks of back pain, difficulty walking, and loss of vision. Head CT revealed multiple brain lesions. Chest CT revealed a 5.5 cm breast mass and a T12 vertebral body metastasis, with associated soft tissue mass that appeared to extend into the spinal canal. She was seen by neurosurgery who recommended brain and spine MRls, a loading dose of dillanatin, and steroids, all of which she declined, citing the burden of undergoing diagnostic procedures or experiencing side effects from medications. She spoke articulate about her awareness that she had metastatic cancer, denied feeling depressed, shared that she was a spiritual person who had an intuitive sense that she would die soon, and asked to speak with someone about hospice. She was seen by social work, palliative care, and oncology. After being told that prognosis in metastatic breast cancer ranges widely from months to years, depending on the type, the patient expressed that even in the best case scenario of having a hormone-responsive tumor, she would not want to be treated with oral tamoxifen or palliative radiation. Throughout several conversations, she consistently expressed her desire to be at home, enjoying time with family, and not undergoing medical treatment. She was discharged to home hospice.

**IMPLICATIONS/DISCUSSION:** A central tenet of palliative care is its focus on engaging with patients and families to understand their goals of care and to provide care that is consistent with these goals. This case brought up the difficult issue of what to do when a patient’s treatment decisions diverge from what we might consider “reasonable”. This case was particularly challenging because there was a realistic possibility that a fairly benign diagnostic intervention (breast biopsy) could reveal a diagnosis (hormone-responsive breast cancer) that could be treated with a well-tolerated therapy (oral tamoxifen). Even if this “best case scenario” were not the case, an MRI of the spine would enable evaluation for spinal cord compression, a highly morbid condition that, untreated, often leads to paralysis, which drastically worsens a patient’s quality of life. Treatment with palliative radiation and steroids often prevents cord compression when it is identified early. Given this, the fact that this patient wanted no further evaluation brought up the issue of capacity. Physicians have an ethical and legal responsibility to assess a patient’s medical decision-making capacity. To have capacity a patient must be able to: 1) communicate a choice 2) understand the relevant information 3) appreciate the situation and its consequences 4) reason about treatment options,1 criteria that we carefully evaluated and which we felt confident she met. Returning to the central tenet of palliative care, whether an intervention is beneficial is based, in large part, on the subjective perception of the patient. Therefore, provided that a patient is informed about prognosis and treatment options and has medical decision-making capacity, honoring his/her wishes is central to the palliative care approach. 1 Appelbaum PS. Assessment of Patients’ Competence to Consent to Treatment. N Engl J Med 2007; 357:1834-40.

**Metastatic Breast Cancer Presenting as Small Bowel Obstruction and New Ascites** Brandon Verdoorn1; Nicholas Orme1; 1College of Medicine - Mayo Clinic, Rochester, Minnesota. *(Tracking ID # 12127)*

**LEARNING OBJECTIVES:** 1. Evaluate new-onset ascites, particularly suspected malignant ascites. 2. Recognize an unusual presentation of metastatic breast cancer.

**CASE INFORMATION:** A 60 year-old woman with a history of breast cancer status-post left mastectomy and axillary lymph node dissection approximately two years prior was admitted to the hospital with nausea/vomiting, abdominal pain, diarrhea, and dehydration. She had a six month history of similar symptoms and had been diagnosed
DEADLY SCRATCH: A CASE OF ENCEPHALOPATHY

Fredy Chaparro-Rojas; Venkat Kulindini;
University of Miami at FAU, Atlantis, Florida. (Tracking ID # 12129)

LEARNING OBJECTIVES: 1. Recognize cat scratch disease (CSD) can present as encephalopathy in addition to lymphadenitis and is detrimental if untreated.

2. Recognize mainstay of diagnosis of cat scratch disease is Bartonella henselae serology and most often times imaging studies do not help in diagnosis.

CASE INFORMATION: A Fifty six year old, Hispanic male, was referred to our Hospital from a regional medical center due to altered mental status. As per his wife, he was in his usual state of health until three weeks before his presentation, when he started noticing a small, round, erythematous and tender mass in his left axillary region which progressively became more edematous and tender, now associated with subjective fevers and chills. Patient’s wife stated that they had two cats at home. On day of presenting to the hospital his symptoms started with forgetfulness and disorientation and worsened to stupor, short term memory loss with worsening confusion. Examination revealed well demarcate local induration and a palpable hard mass in left axilla, no purulent drainage was evident. The rest of his physical exam was unremarkable. Complete blood count and comprehensive metabolic panel were both within normal limits. A CT scan of the head showed scant bilateral round cortical calcifications without perilesional edema, suggestive of a healed case of cysticercosis; a lumbar puncture was performed showing one WBC, 33 RBCs and a mildly elevated protein (83 mg/dl) with a normal glucose (72 mg/dL). The gram stain was negative for microorganism, as well as the AFB and Fungal evaluation. The cultures were negatives. An MRI/MRA of the brain was unremarkable. An electroencephalogram showed generalized slowing consistent with toxic or metabolic encephalopathy. Arboviral serologies, HSV PCR in cerebrospinal fluid and HIV ELISA were all negative. Biopsy of the axillary mass was consistent with a necrotizing abscessiform granuloma suggestive of an infectious etiology. Gram stain, AFB smears, fungal stains and cultures were all negatives. He was started on empiric Azithromycin and serologies for Bartonella henselae, as well as PCR in biopsy specimen for Bartonella and Warthin-Starry stains. His mentation gradual improved to baseline by day five of therapy.

IMPLICATIONS/DISCUSSION: Cat scratch disease (CSD) is characterized by self-limiting regional lymphadenopathy. Wide arrays of neurological manifestations are seen in patient with CSD, including encephalopathy, transverse myelitis and cerebellar ataxia. Encephalopathy usually starts between 1 and 6 weeks after the initial presenting adenopathy. CT scan of the brain usually is normal; 20-30% can have mild CSF pleocytosis and generalized slowing on the EEG (1). CSD can result from a cat scratch or bite and also flea bite. At least 3 of 4 of the following criteria are necessary to establish the diagnosis of CSD (2) :(A) Cat or flea contact regardless of the presence of an inoculation site lesion. (B) Negative serology for other causes of adenopathy; sterile pus aspirated from a node; a positive Bartonella PCR assay (C).Positive serology for B. henselae enzyme immunoassay [ELIA] with a titer ratio of >1:64. (D) Biopsies showing granulomatous inflammation or a positive Warthin-Starry stain. IFA IgG titers of Bartonella >1:256 strongly suggest active or recent infection. IgM is usually very brief and suggests acute disease (3). Our patient had exposure to cats, high ELIA IgG titer of 1: 2560 and biopsy findings of sterile pus and granulomatous inflammation confirming CSD. The presence of lymphadenitis and an altered mental status must alert the clinician about a possible case of CSD. In cases of encephalopathy, antibiotics are strongly recommended. The most widely studied medication for this condition is Azithromycin. Ciprofloxacin, clarithromycin and doxycycline are also useful (4). Ref: (1)Neurologic complications of Bartonella henselae infection. Curr Opin Neurol. 1995;8(3):164-9. (2)Recent Advances in Diagnosis and Treatment of Cat Scratch Disease. Curr Infect Dis Rep. 2000;2 (2):141–146. (3)Serological response to “Rochalimaea henselae” antigen in suspected cat-scratch disease. Lancet. 1992;339
LEARNING OBJECTIVES: 1. To recognize Superior Mesentric Vein thrombosis a rare but serious etiology of intestinal ischemia and to stress upon the importance of early surgical intervention.
2. none

CASE INFORMATION: A 64 yr old Caucasian male with a past medical history of diabetes mellitus type 2, hyperlipidemia, bladder cancer under remission, splenectomy 30 years back secondary to trauma, presented with gradually worsening right hypochondrium and epigastric pain for five weeks. It was associated with nausea and vomiting. No association with food or any other aggravating or relieving factors could be identified. He had noted a decrease in urine output and dark colored urine for the past two days. On examination, abdomen was diffusely tender, without any rigidity or rebound. Hypoactive bowel sounds and dullness to percussion in the flanks was noted. Laboratory investigation was significant for leukocytosis of 32000/ml, acalasia and lactic acid of 6 mg/dl. Abdominal X-ray showed air fluid levels suggestive of partial small bowel obstruction. Computed Tomography (CT) scan of abdomen showed complete occlusion of the superior mesenteric vein (SMV) by a thrombus which was extending into the portal vein. Thickening of the wall of terminal ileum was also evident on the CT scan. Tests for hypercoagulability revealed a heterozygous mutation in prothrombin gene. He was initially managed conservatively with maintenance intravenous fluids, empiric antibiotics and heparin anticoagulation. Worsening of his symptoms led to exploratory laparotomy resulting in resection of fifty centimeters of infarcted ileum. Once stable, heparin was reinitiated and later changed to warfarin prior to discharge.

IMPLICATIONS/DISCUSSION: Mesenteric venous thrombosis accounts for 5 to 15 % of all mesenteric ischemic events and usually involves the superior mesenteric vein; the inferior mesenteric vein is involved only rarely. Risk factors for the development of SMV thrombosis include hypercoagulable states, portal hypertension, abdominal infections, blunt abdominal trauma, rectal bleeding, splenectomy, and malignancy. Thrombosis causes venous congestion in the superior mesenteric vein resulting in bowel wall edema, fluid efflux into the bowel lumen leading to systemic hypotension and decreased arterial flow resulting in bowel infarction. The clinical manifestations depend largely on the extent of the thrombus, the size of the vessel or vessels involved, and the depth of bowel-wall ischemia. When ischemia is restricted to the mucosa, the manifestations consist of abdominal pain and diarrhea; transmural ischemia leads to necrosis, with gastrointestinal bleeding, perforation, and peritonitis. This patient had multiple risk factors for SMV thrombosis including inherited hypercoagulable state (prothrombin gene mutation), splenectomy and a history of bladder cancer. Inherited thrombophilic disorders - factor V Leiden, mutation G20210A of prothrombin [PTHR A20210], and mutation T7677 of methylene tetrahydrofolate reductase [MTHFR C677T] have been identified and associated with increased risk of venous thrombosis. Prothrombin gene mutation, which leads to higher plasma prothrombin levels, occurs in approximately 9 percent of individuals with a history of venous thrombosis, and in 2 percent of healthy controls. The identification of the inherited thrombophilias is important for correct management as these patients often need lifelong anticoagulation.

APPARENT STEMI IN A YOUNG MAN

Christopher Mueller1; Kurt Pfeifer1; 1Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 12133)

LEARNING OBJECTIVES: 1. Distinguish acute myopericarditis from acute coronary syndrome in patients who present with chest pain, elevated cardiac enzymes, and ST elevation on electrocardiogram.
2. Recognize the importance of patient characteristics when evaluating the patient presenting with acute chest pain.

CASE INFORMATION: A 21-year-old man with no previous medical problems presented with substernal, sharp, chest pain that progressed in severity over the previous two days. The pain was worsened by exertion, inspiration, and supine positioning and was not relieved with aspirin. Review of systems was significant for sore throat, subjective fever, and a non-productive cough over the past week. His physical exam was remarkable for a bicuspid pericardial rub, and labs revealed an elevated troponin of 21.5 ng/mL, CK-MB of 23.5 ng/mL and white blood cell count of 14,600/uL. Initial electrocardiogram showed 2 mm ST segment elevation in leads V2-V6 and II; 1 mm ST segment elevation in leads I, III, and AVF; and 0.5 mm PR segment depression in lead I. Chest radiograph was essentially normal. Echocardiogram showed a trace pericardial effusion, normal right ventricle, and normal size left ventricle with systolic dysfunction (left ventricular ejection fraction of 33%). The patient was admitted with a diagnosis of acute myopericarditis and treatment was started with aspirin, colchicine, carvedilol and lisinopril. His chest pain markedly improved, and he was discharged home three days later. Limited echocardiogram three weeks after hospitalization showed normal left ventricular size with improvement of left ventricular ejection fraction (55%). During subsequent follow up visits, the patient noted complete resolution of chest pain and no symptoms of heart failure.

IMPLICATIONS/DISCUSSION: The triad of chest pain, elevated cardiac enzymes and ST elevation on electrocardiogram causes immediate concern for acute coronary syndrome. However, this triad is not necessarily specific for acute coronary syndrome, as it may also be present in acute myopericarditis. Myopericarditis refers to a process in which there is inflammation of both the myocardium and pericardium. The inflammatory response is usually the result of tissue damage from cardiotoxic viruses. Alternatively, damage from cardiotoxic viruses may induce an immune response that is responsible for continued injury even after the virus has been cleared. Distinguishing myopericarditis from acute coronary syndrome requires attention to other patient characteristics, symptoms and signs. First, young patients with no risk factors for coronary disease are more likely to have myopericarditis as a cause of this type of presentation. Recent upper respiratory tract infection symptoms and subjective fever are historical elements suggestive of a possible infectious trigger to myopericarditis. Further, chest pain that is positional is more consistent with pericardial inflammation. The presence of a pericardial friction rub, diffuse ST segment elevation, and pericardial effusion on echocardiogram are also more consistent with myopericarditis. Treatment of myopericarditis is usually aimed at controlling symptoms by decreasing inflammation with non-steroidal anti-inflammatory agents. Caution should be used when considering high dose non-steroidal anti-inflammatory agents in cases with significant myocardial involvement as they may not be effective and may actually increase mortality as shown in some animal models. The lack of a reliable, non-invasive diagnostic test for myopericarditis makes natural history of the disease difficult to discern. However it seems that the prognosis is generally good with most patients regaining normal cardiac function within one year.

MENINGOCOCCEMIA WITHOUT MENINGITIS

Coral Parikh1; Danit Arad1; 1Montefiore Medical Center,Bronx,New York. (Tracking ID # 12141)

LEARNING OBJECTIVES: 1. To review the spectrum of clinical manifestations of Neisseria meningitidis 2. To recognize an unusual presenting feature of meningococcemia
CASE INFORMATION: A 26-year-old man presented with one-day of fever and sore throat. He had no prior medical conditions and a review of systems was unremarkable. The patient was monogamous with his wife and he reported no history of sexually transmitted diseases. He was in college but did not live in a dormitory. The patient was febrile to 101.6 degrees Fahrenheit but appeared well and had an otherwise normal exam. He was admitted 2 days later due to blood cultures positive for Gram-negative diplococi.

Three days after the onset of symptoms, he noted swelling of multiple joints but no headache, nuchal rigidity, vomiting or photophobia. He remained febrile, coherent and had no focal neurological deficits. The neck was supple. The left shoulder and right elbow joints were warm and tender; range of motion was limited by pain and joint effusions were present. A similar finding was noted on the right third proximal interphalangeal joint. No skin lesions or urethral discharge was present.

The white blood cell count was 20 K/uL. No organisms were found on urethral culture. Treatment with ceftriaxone was initiated. The organism was subsequently identified as Neisseria meningitidis. The patient was asymptomatic by the 6th day of his illness and was discharged to complete a course of antibiotics.

IMPLICATIONS/DISCUSSION: Neisseria meningitidis is most commonly known as the second leading cause of bacterial meningitis in adults. However, the clinical manifestations of meningococcemia can be quite varied. Although meningococcal bacteremia may occasionally be transient and asymptomatic, in most individuals it is associated with fever, chills, nausea, vomiting, and myalgias. Adult patients with N. meningitidis bacteremia often have respiratory tract disease including pneumonia, sinusitis, tracheobronchitis and conjunctivitis. Approximately 10-30% of patients with meningococcal disease have meningococcemia without clinically apparent meningitis. The above patient had a favorable outcome, however, it is important to recognize that the absence of meningitis has been associated with increased mortality risk, possibly due to a delay in seeking medical treatment or a delay in the time of diagnosis. The clinical features of meningococcemia most strongly associated with a fatal outcome are shock, a purpuric or ecchymotic rash, a low or normal blood leukocyte count, an age of 60 years and older, and coma.

Arthritis, as the presenting sign, was shown to occur in only 2% of patients though 10% of patients eventually developed arthritis. Initially, a monoarthritis may raise concern for a primary purulent arthritis while other uncommon manifestations include pericarditis, endocarditis and urethritis (reported in individuals who practice oral sex). Finally, chronic meningococcemia can present as a rare syndrome of endocarditis and urethritis (reported in individuals who practice oral sex).

Recognizing the broad clinical spectrum of N. meningitidis is imperative especially because fatal disease is not always associated with the well-known meningitis.

ORAL CONTRACEPTIVE PILL INDUCED TTP Saugmesh Jabshetty1; Nanditha Malakkla2; Vinod Khatri2; Harvey Friedman2. 1SAINT FRANCIS HOSPITAL, Evanston, Illinois. 2Saint Francis Hospital, Evanston, Illinois. (Tracking ID # 12142)

LEARNING OBJECTIVES: 1. To recognize that common drugs like OCP can be a cause of serious life threatening entity like TTP-HUS like syndrome.
2. To suspect TTP-HUS syndrome early in its phase, particularly so if it has atypical presentation.

CASE INFORMATION: A 36 year old Caucasian female presented to her PMD’s office with sudden onset of weakness and numbness in the right upper extremity which lasted for 20 minutes. The patient denied weakness in other extremities, headache, visual problems, or fever. She was sent to the ER for further evaluation. In the ER the patient was alert and oriented to time, place and person and did not have focal neurological deficits. The remainder of her physical examination was normal as well. Vitals were normal. A CT scan of the head was negative for any acute intracranial pathology. Laboratory results were significant for creatinine of 3.5 mg/dl and platelets of 125 k. Her creatinine was normal 4 months ago. The next day after admission, the creatinine increased to 4.8 mg/dl and platelets dropped further to 108 k, however, there was no change in the neurological status. The patient denied taking any medications prior to admission. The following day, the platelets further dropped to 88 k and creatinine increased to 5 mg/dl. Ultrasound of the kidney did not show any obstruction, but showed increased echotexture and decreased corticomедullary differentiation. ANCA, Antiphospholipid antibody, Protein C and S were negative. The peripheral blood smear did not show schistocytes or bite cells, but the LDH was 857 and haptoglobin was decreased. UA showed 1+ proteinuria, no casts. At this point we suspected she had TTP and did renal biopsy which showed intracapillary glomerular thrombi, supporting the diagnosis of TTP. On further questioning she revealed that she was taking birth control pills, which she thought was irrelevant to disclose. The patient was started on plasma exchange therapy and recovered uneventfully.

IMPLICATIONS/DISCUSSION: Thrombotic-thrombocytopenic purpura (TTP) is a syndrome that occurs mainly in adults with multorgan microvascular thrombosis consisting of thrombotic thrombocytopenia, microangiopathic hemolytic anemia, neurologic symptoms, renal failure, and fever. The female to male ratio is 3:2, and peak incidence occurs in the 3rd decade of life. Clinical signs are the consequence of hyaline thrombosis and occlusion of capillaries and arterioles. Literature review shows that women in particular are at an increased risk during pregnancy and during the use of OCPs. Our case did not present with the classic pentad, which signifies that we should be vigilant in suspecting this elusive entity. This case also highlights the importance of detailed history taking.
HYPERTENSIVE CRISIS DURING MICTURITION: THE RESULT OF A BLADDER PARAGANGLIOMA
Joseph D Thomas1; David Walsh1; Walter Brzezinski1. 1Medical University of South Carolina, Charleston, SC.

LEARNING OBJECTIVES: 1. Recognize that paragangliomas are rare extra-adrenal catecholamine secreting tumors that present with the same type of symptoms as a pheochromocytoma. Rarely these tumors present in the bladder and patients may only have symptoms during micturition.

2. Recognize that diagnosis of Pheochromocytoma/Paraganglioma is often times difficult and one definitive test for diagnosis does not exist. When clinical suspicion is high, several diagnostic tests are often required to confirm a diagnosis

CASE INFORMATION: A 57 year old female with a history of diabetes, hypertension, hypothyroid presented to her PCP for headache, sweating, palpitations, dizziness, and flushing. The patient had recently been hospitalized for chest pain, and during her hospitalization she was noted to be hypertensive with systolic blood pressures in the 200’s after micturition. A pheochromocytoma was suspected, so a 24-hour urine collection was done during her hospitalization. The results showed a very minimal elevation of urinary fractionated catecholamines and urinary fractionated metanephrines. Specifically her urinary norepinephrine level was 48 (normal 0-45) and her urinary normetanephrine level was 438 (normal 0-400). Upon follow up with her primary care physician the patient continued to complain of headache, diaphoresis, and palpitations during micturition. Therefore a resting serum metanephrine and catecholamine level was measured and showed a very minimal elevation in her plasma normetanephrine level (0.90, normal 0-0.88) and a normal norepinephrine level of 253. These levels were then compared to post-micturition levels of catecholamines and metanephrines, which were markedly increased. Her serum norepinephrine level rose from 253 before micturition to 1959, and its metabolite normetanephrine rose from 0.9 to 2.6. Her dopamine and epinephrine levels however remained within normal limits pre and post-micturition.

An I-MIBG scan of the adrenals was subsequently performed but was non-diagnostic as the adrenals appeared normal and the bladder could not be evaluated because of poolning contrast. Due to continued high clinical suspicion of a catecholamine secreting tumor, an MRI of the pelvis was done which revealed a 2.3 cm x 2.1 cm x1.6 cm well circumscribed, non-enhancing mass in the posterior inferior aspect of the right bladder wall. The patient was subsequently referred to endocrinology and urology for further management. The patient eventually had the tumor resected and her symptoms resolved.

IMPLICATIONS/DISCUSSION: Pheochromocytomas are catecholamine secreting tumors most commonly found within the adrenal gland or in the trunk of the para-aortic nerve. They are rare neuroendocrine tumors derived from chromafin cells of the adrenal medulla and sympathetic nervous system. They are generally benign with only 10-15% of the tumors being malignant. Some pheochromocytomas arise outside the adrenal gland and are termed paragangliomas. Paragangliomas of the bladder comprise less than 1% of all pheochromocytomas, and are typically diagnosed in the 4th or 5th decade of life. The most common symptoms include micturitional attacks of headache, syncope, palpitations, blurred vision, hypertension, or sweating. Diagnosis of these tumors can be challenging, and historically, many institutions relied upon measurements of 24-hour urinary excretion of catecholamines and metanephrines as a sole method of diagnosis. More recently however, measurement of plasma metanephrines has been proposed as being a superior test. A multi-center cohort study published in 2002 found that measurement of plasma metanephrines is the best test for confirming or excluding pheochromocytoma. When applying this to a paraganglioma of the urinary bladder however, the pre and post micturition levels of plasma metanephrines and catecholamines should be compared. This is essential, as the elevated levels of the catecholamines may only be detected during bladder contraction. Once a biochemical diagnosis of the tumor is made, an I-MIBG scan, CT, or MRI can be used for tumor localization. An I-MIBG scan is a good screening tool for extra adrenal tumors, however because the radioactive tracers are excreted in the urine, bladder lesions may not be visualized. CT scans may detect large bladder tumors, however MRI is superior due to the typical bright appearance of the tumors on T2 weighted images. Once the tumor is localized, the definitive treatment of bladder paranganglioma is excision with partial cystectomy.

A CASE OF SILICONE PNEUMONITIS
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LEARNING OBJECTIVES: 1. Recognize the pulmonary complications of silicone injections.

CASE INFORMATION: A 40 year-old transsexual female presented with shortness of breath which began 4 days prior to admission when she...
had buttocks silicone injections. She described pleuritic chest pain associated with a non-productive cough. The patient had a history of HIV (recent CD4 600), no prior hospital admissions and had been taking antiretrovirals. She had a surgical history of breast implants and rhinoplasty. She denied smoking, alcohol and illicit drug use.

On presentation, her vitals were T 98 F, P 99, BP 108/75, R 30 and O2 saturation 94% on 2L O2. She had rhonchi on lung exam. WBC was elevated at 13.6. ABG: PH 7.47, pCO2 30, pO2 65, HCO3 21 with O2 saturation 93%. CXR showed bilateral hypoventilatory change versus developing infiltrates. CT Angiogram was negative for PE and showed bilateral infiltrates. She was admitted to the wards and started on PCP treatment with trimethoprim/sulfamethoxazole and prednisone. Levofloxacin was initiated for CAP. Vancomycin was added on HD2 given recent injections, although there was no cellulitis or abscess at the injection site. Blood cultures and respiratory cultures were negative. Due to worsening respiratory status on HD3, patient was transferred to the ICU. Repeat ABG: PH 7.46, pCO2 23, pO2 53, HCO3 16 with O2 saturation 90% on 40% venti-mask. CT Thorax showed severe alveolar infiltrates. She improved with BIPAP and was transferred to the wards on HD5. Treatment for PCP was discontinued as patient’s symptoms were more likely due to silicone pneumonitis given reported history of sudden onset after silicone injections and negative infectious work-up. She had also been on antiretrovirals and had a high CD4. At the time of discharge on HD8, infiltrates had cleared on CXR and patient’s symptoms had resolved.

**IMPLICATIONS/DISCUSSION:** The case described is one of silicone pneumonitis after silicone injections for cosmetic reasons. Silicone is a liquid polymer, commonly used because of its durability, noncarcinogenic nature and lack of immunogenicity. However, pathological consequences have been reported with its use, including alveolar hemorrhage and damage, granulomatous hepatitis, silicone mastitis, lymphadenopathy, splenomegaly, acute febrile systemic reaction, neurologic dysfunction and even death. Four histological patterns have been described for silicone lung injury including the presence of silicone emboli, congestion and alveolar hemorrhage, acute pneumonitis and diffuse alveolar hemorrhage. Acute and latent forms of pneumonitis following silicone injections have been described. The acute form occurs immediately to a few days post-injection. Patients present with sudden onset of shortness of breath, fever, hypoxemia and tachycardia. Radiographs show a bilateral alveolar pattern with patchy areas of consolidation. In contrast, the latent form appears up to 6 months after the last injection and patients present with localized swelling at the injection site and only mild respiratory symptoms. The localized cell-mediated inflammation that occurs with the influx of neutrophils, eosinophils and alveolar macrophages plays an important role in the pathogenesis of silicone emboli syndrome. An inflammatory response is produced, activating endothelial cells, increasing capillary permeability and modulating immunoregulatory responses in the alveoli. The diagnosis of silicone embolism syndrome is confirmed by embolic vacuoles on lung biopsy specimen. Management is supportive. There is no consensus regarding corticosteroid treatment. Patients usually fully recover, but pulmonary fibrosis has been described in those who survive an acute event.

Clinicians should be aware of the complications of silicone injections. Silicone injections for cosmetic purposes should be considered a high risk procedure.

**PULMONARY ACTINOMYCOsis: A DIAGNOSTIC DILEMMA** Pragya Dhaubhadel1; Frances Charlene P. Briones2; John S Schicchi2; 1Harlem Hospital Center, New York, New York; 2Columbia University, New York, New York. (Tracking ID # 12150)

**LEARNING OBJECTIVES:**
1. To recognize pulmonary actinomycosis, a rare condition with clinical presentation and radiological findings mimicking other lung diseases and posing a diagnostic dilemma.
2. To diagnose pulmonary actinomycosis with definitive test and initiate timely treatment.

**CASE INFORMATION:** A 56 year old man with no significant past medical illness presented with a five month history of cough productive of whitish sputum and low grade fever associated with chills, night sweats, weight loss and loss of appetite. He was an active smoker and emigrated from Mexico. Based on clinical grounds, immigration status and chest X-ray(CXR) findings of left upper lobe opacity with nodularity, he was started on treatment for pulmonary tuberculosis (PTB) with quadruple therapy-Rifampicin, Isoniazid, Pyrazinamide and Ethambutol (RIFPE) at a New York City Department of Health (NYCDOH) clinic, even though sputum was negative for acid fast bacilli (AFB). Chest computed tomography (CT) showed spiculated opacities with a cavitory lesion in the apex suspicious for malignancy which necessitated further evaluation with bronchoscopy. Bronchoalveolar lavage (BAL) and tissue biopsy were negative for fungal or bacterial pathogens and malignancy. Serum HIV antibody test was negative. Video-assisted thoracoscopic surgery was planned. However, after seven months on PTB treatment, he presented with hemoptysis with an interval increase in size of the left upper lobe opacity on CXR. The possibilities of malignancy, multi-drug resistant PTB, fungal infections were considered but repeat bronchoscopy was again negative for AFB, fungi, malignancy, including mycobacterial polymerase chain reaction. He had persistent high grade fever, chills, and productive cough and was treated for pneumonia with no clinical response to Levofloxacin. Sputum sent for AFB, Nocardia and Actinomyces were negative. Due to frequent admissions and progression of the left upper lobe cavitory lesion, open thoracotomy with left upper lobe lobectomy was done. Lung biopsy showed pulmonary actinomycosis with characteristic granules on hematoxylin and eosin (H&E) and silver stain. PTB medications were discontinued and the patient received intravenous Penicillin for 3 weeks and was discharged home on Amoxicillin.

**IMPLICATIONS/DISCUSSION:** Pulmonary actinomycosis remains a diagnostic dilemma despite advancements in serologic and imaging studies. Early and accurate diagnosis prevents considerable morbidity associated with the delay of missed diagnosis. Incidence of all forms of actinomycosis has declined markedly. It is now a rare infection particularly in developed countries with the pulmonary form comprising only 14% compared to 50-60% of the cervicofacial form. It is caused by Actinomyces spp. a gram-positive, anaerobic, slow growing bacterium. The disease shares many characteristics similar to a host of suppurative lung infections like tuberculosis and lung abscess. Because of its tendency to colonize in devitalized tissues, several cases reported finding Actinomyces spp. within necrotic neoplasms of lung, making differentiation from lung cancer difficult. The common complaints that patients present with are nonspecific and include cough, sputum production and chest pain with weight loss, fever and malaise indicative of disseminated disease. Laboratory tests and CXR are nonspecific. CT is superior to radiography showing air-space consolidation with adjacent pleural thickening but is not definitive. Fiberoptic bronchoscopy is not diagnostic and cultures sent from BAL and sputum is inadequate for diagnosis because of low yield and may represent colonization. Lung biopsy is the gold standard but should be undertaken in the least invasive way possible. If the diagnosis is suspected, special staining should be employed. As in this case, demonstration of the characteristic sulfur granules on H&E stains from the infected tissue yield the definite diagnosis.

This should therefore be considered in the differential diagnosis in any patient with long-standing pulmonary infiltrates and timely tissue
sampling should be utilized to expedite the diagnosis of this highly treatable condition.

**SWEET’S SYNDROME IN ACUTE PROMYELOCYTIC LEUKEMIA**

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**LEARNING OBJECTIVES:** 1. Sweet’s syndrome (SS) or “acute febrile dermatitis”, might occur in malignancies, a drug-induced process, or both. We report a rare case of acute myeloid leukemia with SS during therapy with all-trans retinoic acid, while the patient was responding. 2. SS presents with fever, neutrophilia and a skin infiltrate of mature neutrophils in the upper dermis. It has been rarely associated with AML in isolated case reports, and it is even less common when the patient is neutropenic on therapy.

**CASE INFORMATION:** We describe the case of a 48-year-old male, presented with a cellulitis on his buttocks for the previous 2 weeks. No skin rash was seen at presentation. His labs showed pancytopenia with blasts and neutropenia (ANC 0.21 K/uL); therefore the patient was started on antibiotics and admitted for further management. Flow cytometry suggested AML of promyelocytic phenotype and fluorescent in-situ hybridization (FISH) revealed 94% of interphase cells with the translocation (t15;17) PML/RARA gene rearrangement consistent with a diagnosis of AML-M3. Bone marrow biopsy showed 68% promyelocytes with marked decrease in normal hematopoietic elements. Induction chemotherapy with ATRA, cytarabine and daunorubicin was promptly started (Table 1). The clinical course was complicated with a skin rash on day 15 of treatment that started as tender purple papules on extensor surface of his upper extremities (Figure 1) and quickly disseminated to his face, particularly on his ears (Figure 2) displaying erythematous plaques with a severely swollen pinna and almost occluded external meatus. A skin biopsy was reported as neutrophilic infiltration compatible with SS. The patient started (Table 1). The clinical course was complicated with a skin rash on day 15 of treatment that started as tender purple papules on extensor surface of his upper extremities (Figure 1) and quickly disseminated to his face, particularly on his ears (Figure 2) displaying a severely swollen pinna and almost occluded external meatus. A skin biopsy was reported as neutrophilic infiltration compatible with SS. The patient started all-trans retinoic acid, while the patient was responding. 2. SS presents with fever, neutrophilia and a skin infiltrate of mature neutrophils in the upper dermis. It has been rarely associated with AML in isolated case reports, and it is even less common when the patient is neutropenic on therapy.

**IMPLICATIONS/DISCUSSION:** 1. Sweet’s syndrome (SS) or “acute febrile dermatitis” might occur in malignancies, a drug-induced process, or both. We report a rare case of acute myeloid leukemia with SS during therapy with all-trans retinoic acid, while the patient was responding. 2. SS presents with fever, neutrophilia and a skin infiltrate of mature neutrophils in the upper dermis. It has been rarely associated with AML in isolated case reports, and it is even less common when the patient is neutropenic on therapy.

**HOW TO MEND A BROKEN HEART—USING CARDIAC MRI TO DIAGNOSE A CASE OF TAKOTSUBO’S CARDIOMYOPATHY**

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**LEARNING OBJECTIVES:** 1. Recognize Takotsubo’s cardiomyopathy as a cause of a suddenly depressed ejection fraction (EF) with otherwise mild symptoms of Acute Coronary Syndrome (ACS), especially in female patients with severe acute illness. 2. Distinguish myocardial stunning/hibernation seen in Takotsubo’s cardiomyopathy from myocardial infarction on cardiac MRI.

**CASE INFORMATION:** The patient is an 83-year-old female with a history of paroxysmal atrial fibrillation, carotid stenosis, and COPD secondary to chemical exposure, who presented to an outside hospital with complaints of dyspnea, productive cough, and chills for 4 days. On arrival, the patient quickly developed respiratory failure requiring intubation and was admitted to the ICU for further management. Admission labs were significant for a WBC of 12.5 and a troponin of 0.4. Initial EKG showed atrial fibrillation with no ST segment changes. The patient was managed for COPD exacerbation overnight. On hospital day 2, the patient’s troponin increased to 2.18. Repeat EKG showed sinus rhythm with first degree AV block and T wave inversions in leads II, III, aVF, and V3-V6. ACS protocol was initiated and a TTE was performed, demonstrating a moderately depressed EF, a moderate size apical aneurysm, and hypokinesis of the LV apex, apical septum, apical inferior, anterior, and lateral walls, all consistent with “apical ballooning syndrome”. That evening the patient developed hypotension to 70/40, which responded to IV fluids and pressors. Given this development, the patient was transferred for further management of the NSTE MI.

On transfer, the patient was intubated without complication. Labs were notable for a downtrending troponin and repeat TTE demonstrated an EF of 25-30% with persistent apical hypokinesis and akinesis. The dyskinetic myocardium was thought to be secondary to either hibernating/stunned myocardium or infarction. A cardiac MRI (CMRI) was performed to evaluate cardiac viability. Results showed normal perfusion and confirmed “apical ballooning” with associated mid-apical edema, but showed no delayed enhancement to suggest myocardial fibrosis, infarction, or inflammation. Based on this imaging, the patient’s presentation appeared most consistent with Takotsubo’s cardiomyopathy.

**IMPLICATIONS/DISCUSSION:** Takotsubo’s cardiomyopathy (TC) is a transient myocardial dysfunction occurring in the absence of obstructive coronary disease. It is characterized by apical akinesia and basal hyperkinesis (apical ballooning) with most cases preceded by an acute stressor: TC predominantly affects postmenopausal women and ranges in presentation from chest pain to cardiogenic shock or, as in our case, is discovered while managing acute non-cardiac illness. The pathogenesis of TC is unknown but is thought to involve catecholamine-related myocyte dysfunction after stress. Though traditionally related to emotional stress, a recent study of 136 TC patients attributed 42% of cases to physiologic stress (Sharkey 2010). In a smaller study, 82% of cases followed acute medical illness or surgery (Lee 2010). Relevant to our case, studies have also shown a strong association between acute respiratory failure and the development of TC, particularly in postmenopausal women.

Clinically, TC can mimic myocardial infarction (MI). It is important to distinguish the two, as TC resolves over time and unnecessary interventions may pose risk to the patient. CMRI used to assess myocardial viability is an excellent non-invasive way to make this distinction. In MI, the dyskinetic area of infarction shows delayed enhancement indicating fibrosis and may also reveal abnormal perfusion or edema in an arterial distribution. In contrast, the dyskinetic myocardium in TC is stunned but viable and CMRI will show normal perfusion, diffuse edema, and no delayed enhancement, as was the case in our patient.

Our patient was medically managed for CHF with expected recovery of her EF. On further discussion with the patient and family, neither was able to identify an emotional or physical stressor prior to the event. It remains likely that the stress of a COPD exacerbation and respiratory
failure precipitated the development of Takotsubo’s cardiomyopathy in this patient.

THYROTOXIC HYPOKALEMIC PERIODIC PARALYSIS [Rosana Ayoub] 1; Nasser Mikhail 2; 1Olive View Medical Center, Rolling Hills, California; 2Olive View Medical Center, Sylmar, California. (Tracking ID # 12155)

LEARNING OBJECTIVES: 1. Although most common in Asian males, thyrotoxic hypokalemic periodic paralysis also occurs in frequently in members of the Hispanic population 2. Definitive management of thyrotoxic hypokalemic periodic paralysis involves radioactive ablation, but this may take weeks to become effective.

CASE INFORMATION: 35 year old Hispanic male with no past medical history presented to the ED after experiencing bilateral lower extremity weakness after awakening in the morning. The patient reported that he had been having similar symptoms for 3 years, with usual onset shortly after awakening in the morning. He denied any loss of sensation in the affected extremities, eating a high carbohydrate meal, alcohol use, heavy exercise prior to presentation, or palpitations, but reported that he had been experiencing tremors, a 40 pound weight loss, hyperreflexia, and anxiety in the past year. Upon physical examination, he had 3/5 strength in bilateral lower extremities and tremors, without any decrease in sensation, lid lag, ptosis, stare, thyroid bruit, thyroid nodules, or goiter. His TSH was below normal with an increased free T4, and a K of 0.2. His K was repleted with a total of KCl 40 mEq PO and 40 mEq KCl IV, and upon discharge he was given Methimazole 20 mg PO BID with Propranolol 20 mg PO BID. Four days later, this patient presented to the ED complaining of identical symptoms as his first admission, and his K was found to be 1.6, with persistently low TSH and elevated free T4. He was given a total of 120 mEq KCl (80 PO and 40 IV) with resolution of his symptoms, and was discharged with Methimazole 20 mg BID, Propranolol 40 mg PO TID, KCl 20 mEq PO BID, and a referral for thyroid uptake scan and radioactive iodine ablation. The thyroid uptake scan was performed and findings were consistent with Grave’s disease, and patient received 9.7 mCi of sodium iodide. Less than 3 weeks later, the patient returned to the ED with similar symptoms, and K was found to be 2.7, with undetectable TSH and increased free T4. Patient received KCL 80 mEq PO and 20 mEq IV, and resolution of symptoms occurred. He was discharged with a regimen of Methimazole and instructed to return to the ED for any recurrence of symptoms.

IMPLICATIONS/DISCUSSION: This case represents thyrotoxic hypokalemic periodic paralysis as an initial presentation of hyperthyroidism in a patient later found to have Grave’s disease. Although Grave’s disease is much more common in females, thyrotoxic hypokalemic periodic paralysis is three times more common in males, especially in the Asian population. The mechanism of this disorder has not been well established, but it thought to result from a potassium shift to the intracellular space as a consequence of increased activity of the Sodium-Potassium pump and β-adrenergic hypersensitivity. In effect, the Potassium causes depolarization of the resting cell membrane which in turn renders the sarclemma unable to be electrically excitable and paralysis ensues. Most cases of THPP occurring during periods of sleep, after consumption of excessive amounts of alcohol, after carbohydrate-rich meals, or after exercise. The diagnosis of THPP can be made clinically, with evidence of muscle weakness especially in the lower extremities, and by laboratory evidence of hypokalemia and hyperthyroidism. Treatment of THPP involves correcting the hypokalemia to resolve the paralysis, and initiating use of a β blocker, such as propranolol, to prevent further attacks until the hyperthyroidism is managed. Although these measures represent acute treatment, there exists a high recurrence rate of hyperthyroidism, and thus radioactive ablation is encouraged, and was the case in our patient.

LEVAMISOLE-INDUCED AGRANULOCYTOSIS AND VASCULITIS: A REPORT OF 2 CASES AND REVIEW OF LITERATURE [Asha Shrestha] 1; Salaheldhin Elhamamsy 1; Abdullah Chahin 1; Iulia Grillo 1; 1Memorial Hospital of Rhode Island, Pawtucket, Rhode Island. (Tracking ID # 12157)

LEARNING OBJECTIVES: 1. Identify levamisole-adulterated-cocaine-induced complications.
2. Learn appropriate work-up for agranulocytosis and vasculitis.

CASE INFORMATION: Wediagnosed two cases of Levamisole-induced agranulocytosis and vasculitis at Memorial Hospital of Rhode Island. The first case was a 49-year-old woman with a history of hepatitis B and crack cocaine abuse. She was diagnosed to have neutropenia six months prior to the hospital admission. She was referred from infectious disease clinic for skin lesions on bilateral fingers and severe fatigue. Review of system was negative except diffuse joint pains, oral mucosal lesions, and weight loss.

Physical examination was unremarkable except ulceration in the oral cavity and right 5th finger periungual area. Laboratory findings showed neutropenia, microcytic anemia, high sedimentation rate, and positive pANCA.

The second case was a 60-year-old woman with past medical history of Hepatitis C and depression, who presented with upper and lower extremities painful rash for 6 days. Review of system was otherwise negative. Physical examination revealed tachycardia, high blood pressure, and necrotic skin plaques. Laboratory findings were positive for leucopenia, mainly neutropenia, ANCA, ANF, elevated C1 esterase, and high sedimentation rate. Biopsy of the skin lesions showed necrotizing-geukocytic vasculitis.

IMPLICATIONS/DISCUSSION: Levamisole is an imidazothiozole anti-helminthic cholinergic agonist and immunomodulatory agent, previously used as an adjuvant treatment to various malignancies. Levamisole has shown to increase number of circulating natural killer (NK) cells, expression of membrane CD25 (IL2 receptor) and serum levels of soluble IL2 receptors. In vitro, it modulates NK cell-mediated tumor lysis, tumor cell MHC class I expression and IL12-dependent Th1 immune responses. Levamisole was withdrawn from US and Canada in 2000 and 2003 respectively due to evidence of serious side effects. However, it was found in ~69% of cocaine samples seized by the US Drug Enforcement Administration was found to be adulterated by Levamisole. Our cases fit the clinical picture of Levamisole-induced agranulocytosis and vasculitis. Upon extensive work-up, no other causes of agranulocytosis wereidentified and skin biopsy was highly suggestive of vasculitis due to levamisole. Both patients showed improvement after cessation of cocaine use and supportive therapy. Due to increasing number of the reported cases levamisole-adulterated-cocaine-induced complications, physicians have become aware of different possible clinical presentations in patients using cocaine.

EVERYTHING BY THE BOOK...OR SO YOU THOUGHT [Sona Bhatti] 1; Jags Lee 1; 1MCWAH, Milwaukee, Wisconsin. (Tracking ID # 12158)

LEARNING OBJECTIVES: 1. Identify, diagnose, and treat limited presentations of Wegener’s granulomatosis.
2. Recognize that absence of anti-neutrophil cytoplasmic antibody does not exclude Wegener’s granulomatosis.

CASE INFORMATION: A 26-year-old Caucasian woman presented with two weeks of chest pain that was worse while lying flat and with inspiration. She also reported dyspnea on exertion, non-productive cough, fevers, and chills. She had a history of international travel, most
recently to Morocco where she participated in spelunking, and camping. Her laboratory evaluation was negative except for an elevated D-dimer. Chest CT then revealed multiple pulmonary nodules with surrounding areas of hemorrhage. CT-guided biopsy was non-diagnostic, and she was started on empiric amphotericin and levofloxacin. Her symptoms persisted and subsequent chest CT showed worsening lung nodules with hemorrhage. Bronchoscopy with bronchoalveolar lavage was non-diagnostic. Further labs, including both protoplasmic-staining and classical anti-neutrophil cytoplasmic antibody (ANCA), continued to be non-diagnostic for infection, vasculitis, or malignancy. Finally, a video-assisted thoracic surgery was performed for lung biopsy, and the pathology showed necrotizing granulomatous inflammation consistent with Wegener’s granulomatosis. The patient did not exhibit extra-pulmonary manifestations of disease. She was started on prednisone and rituximab with improvement in symptoms and lung nodules on chest radiography.

IMPLICATIONS/DISCUSSION: Wegener’s granulomatosis is a rare disease characterized by granulomatous vasculitis of upper and lower respiratory tracts with glomerulonephritis. The prevalence is 3 per 100,000 and has an equal male-to-female ratio. However, the limited form, involving only the upper respiratory tract or the lung, occurs in one-fourth of cases, and these patients tend to be younger with a female predominance. These patients also develop chronic, recurrent disease and are ANCA-negative in 40% of cases. Lung involvement typically appears as multiple, bilateral, nodular cavitory infiltrates. It is important to make the diagnosis early, because it can be life-saving or organ sparing. Diagnosis is made by evidence of necrotizing granulomatous vasculitis on tissue biopsy, and treatment is with steroids and cyclophosphamide. This case demonstrates that the absence of ANCA does not exclude the diagnosis of Wegener’s granulomatosis, and further evaluation with tissue biopsy is needed in cases with a higher index of suspicion.

DO NO HARM : AN ALARMING CAUSE FOR TAMPOADNE Pei Chen 1; Kristin Remus1; Beth Israel Deaconess Medical Center, Boston, Massachusetts. (Tracking ID # 12162)

LEARNING OBJECTIVES: 1. To recognize medications that can lead to drug-induced lupus 2. To recognize clinical manifestations and laboratory findings of anti-TNF-induced lupus

CASE INFORMATION: 61 year-old female with Crohn’s disease and crystal arthropathy presented with worsening chest discomfort, dry cough, and persistent low grade fever up to 100.1 F. Since she has been on infliximab for the last 11 months, she has experienced recent unprovoked DVT, new anorexia, and unintentional weight loss requiring TPN. Of note, she was recently discharged with presumed pneumonia treated with antibiotics and with pseudogout flare in the shoulder treated with allopurinol and colchicine. At that time, she was also found to have a small-to-moderate pleural effusion and pericardial effusion without evidence of cardiac tamponade on imaging. Given stable hemodynamics without pulsus paradoxus, she was treated with furosemide and fluid restriction. She re-presented 10 days later with similar symptoms, including a “tugging sensation” in her chest. A repeat echocardiogram showed increased pericardial effusion and evidence of cardiac tamponade. Subsequently, she developed atrial fibrillation with RVR. She underwent cardiac catheterization, which showed equalization of pressures in the RA, PCWP, and pericardial pressure at 20 mmHg, and underwent pericardiocentesis of 450 mL of serosanguinous fluid with pericardial drain placement. Pericardial fluid cytology, cultures, and additional imaging were negative for infection and malignancy. Her RF of 18, ANA titer of 1:1280, positive anti-ds DNA, anti-histone antibody of 2.7 U, as well as her constitutional symptoms, arthritis, pleural effusion and cardiac tamponade suggest the diagnosis of infliximab-induced lupus. Infliximab was discontinued. Her pericardial effusion resolved and did not recur. Four months later, rheumatoid factor and anti-ds DNA were negative.

IMPLICATIONS/DISCUSSION: Drug-induced lupus is a rare adverse effect that can develop after months to years of exposure to the offending medication. In this case, infliximab, an anti-TNF-alpha, is the cause of this patient’s clinical presentation. A wide variety of medications have been reported, with definitive agents being procainamide, hydralazine, minocycline, diltiazem, etc. The prevalence of clinically significant infliximab-induced-lupus is up to 1%. Currently, the mechanisms involved in drug-induced lupus are incompletely understood, but it is certain that there is genetic predisposition and enhanced autoimmunity. Diagnosis can be difficult since there are no perfect diagnostic tests or set criteria. However, based on available data, infliximab induced lupus is associated with development of ANA, anti-dsDNA antibodies, and anti-histone antibodies. Despite the presence of autoantibodies, there are often no clinically symptoms. When symptoms occur, they resemble SLE and arise with constitutional symptoms, myalgia, arthralgia, arthritis, and pleuropneumocardiitis. Infliximab-induced lupus is associated mostly with skin manifestation and pleuropneumocardial abnormalities. It is often complicated by infections. This patient had symptoms including anorexia, unintentional weight loss requiring TPN, fever, and significant arthritis. Her course was further complicated by pleural effusion, pneumonia, as well as clinically dangerous cardiac tamponade requiring emergent decompression. Fortunately, the treatment for drug-induced lupus is the discontinuation of the offending medication, in this case, infliximab. In severe cases, steroid and/or immunosuppressive therapy may be required.

A CASE OF CARDIOBACTERIUM HOMINIS SUBACUTE BACTERIAL ENDOCARDITIS PRESENTING AS SUSPECTED OCCULT MALIGNANCY Jessica Prange1; Kurt Pfeifer1; Medical College of Wisconsin Affiliated Hospitals, Milwaukee, Wisconsin. (Tracking ID # 12176)

LEARNING OBJECTIVES: 1. Recognize and treat Cardiobacterium hominis subacute bacterial endocarditis 2. Identify patients who would benefit from early valve repair or replacement versus medical therapy alone

CASE INFORMATION: A 66 year old Caucasian gentleman, who has not sought medical care in over twenty years, presented for evaluation of a twenty-five pound un-intentional weight loss over the past six weeks. This was associated with drenching night sweats, fatigue, and progressive dyspnea on exertion. He denied any ill contacts or past medical history with the exception of a heart murmur diagnosed in childhood not thought be associated with rheumatic fever. Two months prior to presentation he had dental bridge work done without prophylactic antibiotics. Examination revealed a pale afebrile gentleman with a 3/6 holosystolic blowing apical murmur that radiation to the axilla. No Janeway lesions, Osler’s nodes, palpe Betachaine, splinter hemorrhages, lymphadenopathy, JVD, lower extremity edema, or prostatic abnormalities were appreciated. Laboratory evaluation showed a normal leukocyte count and differential, microcytic normochromic anemia, elevated C-reactive protein and erythrocyte sedimentation rate. Prostate specific antigen, HIV, CEA, TSH, and hepatic function tests were normal. CT of the chest, abdomen, and pelvis revealed spleno-megalgy without lymphadenopathy. Transesophageal echocardiogram showed a severely dilated left atrium, thickened mitral valve with bileaflet prolapse and severe regurgitation along with a large echodensity on the posterior leaflet. Coloscopy was performed which revealed three tubular adenomas and was otherwise unremarkable. Empiric
antibiotic coverage was initiated with vancomycin, ceftriaxone, and gentamicin. Subsequently, blood cultures from admission and daily grew *Cardiobacterium hominis*. Antibiotic therapy was tailored to ceftriaxone alone for a six week course. He underwent coronary angiography that showed mild luminal irregularities in all major vessels along with 60% stenosis of the second obtuse marginal. He was not felt to need urgent valve repair or replacement, and was discharged to subacute rehab.

**IMPLICATIONS/DISCUSSION:** *Cardiobacterium hominis*, a member of the HACEK group of organisms, is an exceedingly rare cause of endocarditis accounting for 0.1% of all cases. It can commonly mimic signs and symptoms of an occult malignancy which makes the diagnosis particularly challenging. Medical management alone is not inferior to surgical intervention in patients with valvular abnormalities unless significant complications including decompensated heart failure, S. aureus infection, paravalvular complications, or valvular perforations are present.

**STALKED BY THE WOLF** Sarah Turner¹; Carlos Ventura²; Sheetal Chhaya²; Thomas Ardiles²; ¹St. George’s University SOM, Scottsdale, Arizona. ²Maricopa Integrated Health System, Phoenix, Arizona. (Tracking ID # 12180)

**LEARNING OBJECTIVES:** 1. To recognize a link between radio-frequency ablation and pulmonary renal syndrome in patients with undiagnosed SLE.
2. none

**CASE INFORMATION:** GS, a 62-year-old Hispanic female with a PMHx of HTN, presented with abdominal bloating associated with intermittent constipation, early satiety, decreased appetite and weight gain. She also reported multiple episodes of lower GI bleeding, and mild orthopnea for 2 months. On admission she was hypertensive, afebrile, and in no acute distress. She had sublingual icterus, bibasilar rales, a distended, tender abdomen, and mild pedal edema. Lab results showed slight transaminases and normal creatinine, and urinalysis was significant for hematuria, 2+ protein and positive leukocyte esterase. CXR showed mild effusions, but no infiltrates. Abdominal CT showed evidence of cirrhosis, ascites, and a complex mass in the liver.

Further work up was negative for Wilson’s Disease, Primary Biliary Sclerosis, Sclerosing Cholangitis, Auto-immune Hepatitis, Hemochromatosis, or infectious causes of cirrhosis. Endoscopy and colonoscopy were also negative. Liver biopsy was consistent with Hepatocellular Carcinoma (HCC). Radiofrequency ablation (RFA) was performed and 6 days later she developed progressive dyspnea and hypoxemia, rapidly progressing to respiratory failure. She was intubated and transferred to the Medical ICU; she was found to have acute renal failure, and CXR showed bilateral alveolar infiltrates. Bronchoalveolar Lavage (BAL) demonstrated diffuse alveolar hemorrhage. Pulmonary-Renal Syndrome (PRS) was suspected and she was started on high dose steroids. Renal biopsy revealed focal sclerosing glomerulonephritis with immune complex deposition. Further serology showed elevated ESR and CRP, decreased C3-C4 levels, positive ANA and dsDNA, and negative ANCA, confirming a diagnosis of SLE. In addition to steroids, she was started on Mycophenolate Mofetil and diuretics. Renal function, pulmonary infiltrates and clinical condition all improved. She was extubated and transferred out of the ICU after 5 days. The patient continues immunosuppressive treatment and outpatient follow up.

**IMPLICATIONS/DISCUSSION:** We present this case of newly diagnosed SLE, which presented with Pulmonary-Renal Syndrome (PRS) after Radio-frequency ablation (RFA) therapy for Hepatocellular Carcinoma (HCC). Although PRS is not a specific entity, it is a syndrome that suggests a broad differential diagnosis, and thus requires a specific sequence of testing for confirmation of the etiology. The pulmonary and renal pathology consists of a small- vessel vasculitis involving arterioles, venules, and alveolar capillaries in the lungs, and a form of focal glomerulonephritis (GN) in the kidney. In order to establish this diagnosis, concomitant destructive pulmonary disease or coagulopathy should be excluded. Bronchoalveolar lavage can be used to help confirm the diagnosis of diffuse alveolar hemorrhage in patients with pulmonary infiltrates and suspected GN. Definitive diagnosis, however, may require renal biopsy with findings of GN secondary to antibody deposition. PRS is most commonly seen as a manifestation of an underlying autoimmune disorder, such as Goodpasture’s Syndrome, Wegener’s Granulomatosis, Microscopic Polyangiitis, SLE and other connective tissue disorders. Our patient progressed to PRS shortly after treatment with RFA, and was subsequently found to have SLE, confirmed by serologies. There has been abundant research demonstrating a link between Interferon-alpha (IA) and the production of autoantibodies in SLE. IA is normally released by a variety of cells in response to viral infections or in the presence of tumor antigens, and has shown to play an important part in the body’s antitumor immune response. During RFA, the immune system is exposed to tumor antigens and cellular debris, which we hypothesize, in our patient’s case, resulted in the immunologic cascade of increased IA, up-regulated production of autoantibodies, and the consequent unmasking of her previously undiagnosed SLE.

**THE DIZZYING TRUTH CONFIRMED BY MRI** Jewel Ahmed¹; Michael Ryan¹; Roger D Smalligan²; 'Texas Tech University HSC, Amarillo, Texas. (Tracking ID # 12182)

**LEARNING OBJECTIVES:** 1. Recognize that the vestibular nerve can be seen on a contrast MRI in vestibular neuritis.
2. Treat acute vestibular neuritis with IV methylprednisolone with success.

**CASE INFORMATION:** A 49-year-old white male with a long history of heavy alcohol intake presented with a two week history of double vision, vertigo and difficulty walking. He saw double mostly when he looked to the right. On standing and walking he wobbled and swayed to the left. He had no recent head trauma, fever, viral symptoms or other illness and had abstained from alcohol for over a month (while in jail). He was on no medications. On physical exam he was alert and oriented and his vital signs, lungs, heart and abdomen were normal. On neurologic exam, extra-ocular movements were intact except that he had nystagmus when he looked to the right, no hearing deficit, normal speech, normal strength, a wide based and unsteady gait, evident dysmetria on heel-to-shin test and slight dysmetria on finger-to-nose. The remainder of the neurologic exam was normal. Labs were normal except for the CSF which showed 24 WBCs (lymphocytes), protein 102 mg/dl and glucose 41 mg/dl. CSF cultures, VDRL, West Nile virus antibody. Herpes Simplex PCR and oligoclonal bands were all negative. Myelin basic protein level was mildly elevated. A contrast MRI of the brain showed enhancement of the vestibular nerve on the right as well as findings consistent with chronic alcoholism such as patchy hyper-intensities in the centrum semiovale, corpus callosum, internal capsule, brain stem and cerebellum. He was diagnosed with acute vestibular neuritis superimposed on an alcohol-induced neurologic syndrome. He was started on IV methylprednisolone along with thiamine, folic acid and multivitamins. By day 3 of steroid treatment the patient had no more diplopia and significant improvement of his vertigo, nystagmus and unsteady gait.

**IMPLICATIONS/DISCUSSION:** Vertigo is a common presenting symptom of patients in both the emergency room and in the clinic. When accompanied by nystagmus, intense nausea and vomiting along with gait disturbance, in the absence of other neurologic findings, acute vestibular neuritis is the most likely diagnosis. However, when other neurologic findings are present, as in our patient, advanced neuroima-
A RARE CASE OF PROTON PUMP INHIBITOR INDUCED HYPO-MAGNESEMIA

Sangmesh Jabshetty; Vinod Khatri; Nanditha Malakka; Harvey Friedman; SAINT FRANCIS HOSPITAL, Evanston, Illinois. Saint Francis Hospital, Evanston, Illinois. (Tracking ID # 12184)

LEARNING OBJECTIVES: 1. To be aware that widely used prescription drugs, like PPIs, can cause hypomagnesemia in long term users.
2. High index of suspicion is warranted for diagnosing electrolyte abnormalities in PPI users when they present with nonspecific symptoms like fatigue.

CASE INFORMATION: A 52 year old Hispanic female was seen in our outpatient clinic for management of hypertension and diabetes of seven years. She was currently on Hydrochlorothiazide, lisinopril, and metformin. She was diagnosed with GERD around two years back and has been taking omeprazole for the last 14-16 months. At this point, she did not have any major complaints except that she felt fatigued and weak for the past few months. Her last contact with any medical care was about 8 months ago. At this visit her physical examination was within normal limits, potassium was 3.0 mg/dl, and calcium was 8 mg/dl. After reviewing the complete blood count was within normal limits, and magnesium was 0.6 mg/dl. We discontinued the diuretic and put her on oral magnesium supplementation, and asked her to follow up in two weeks. In her next visit, the repeat magnesium was 0.7 mg/dl, which led us to believe it was something other than hydrochlorothiazide which was causing her problem. Next we suspected that it was the PPI which was causing hypomagnesemia, so we discontinued it and repeated magnesium levels after two weeks which had increased to 2.1 mg/dl. The patient said she felt much better with magnesium supplementation, but promptly corrected upon discontinuation of omeprazole. She was lucky that she did not suffer from fatal cardiac arrhythmias. The mechanism of PPI induced hypomagnesemia is elusive. The most likely hypothesis is that it is secondary to gastrointestinal loss in genetically susceptible individuals. Renal excretion of magnesium is not defective in these patients. Literature review showed about ten case reports. We also learn from this case that a widely used, benign drug like PPI can also have serious complications.

HIV OR NOT HIV?

Kanza S Abbas; Salman Jamaluddin Bandeali; Lee Lu; Baylor College of Medicine, Houston, Texas. Baylor College of Medicine, Houston, Texas. (Tracking ID # 12190)

LEARNING OBJECTIVES: 1. Review conditions associated with false positive HIV ELISA and indeterminate Western blot.
2. Discuss the association of hepatitis B and T-Cell Lymphoma.

CASE INFORMATION: A 55-years-old African American male with CAD and HTN presented initially with progressive leg and scrotal edema and dyspnea on exertion for 2 weeks. At that time, he denied having constitutional symptoms. Exam revealed diffuse shotty lymphadenopathy (LAD), truncaural rash, and scrotal and 3+ pitting leg edema. Laboratory studies were significant for positive HIV (ELISA) with a CD4 count of 153, albumin 2, total protein 5.4, LDH 241, and positive Hepatitis B with PCR showing 5900 copies. Echocardiogram showed EF 60-64%. CT revealed centemric mediastinal, axillary, abdominal, and pelvic LAD with splenomegaly. With diffuse LAD and positive HIV, an acute HIV infection was considered. However, his last sexual contact was one year ago, and he had a recent negative HIV test. HIV-1 Western blot finally returned to be indeterminate with negative p120, gp 41, p24 and undetectable HIV viral load, making HIV less likely. Further studies showed normal beta 2 microglobulin, normal SPEP, and UPEP. He was started on furosemide with resolution of edema but decided to leave against medical advice prior to excisional lymph node (LN) biopsy. One month later, patient developed glove and stocking neuropathy, foot drop, 40 lbs weight loss, fever and night sweats. He was readmitted and underwent an excisional axillary LN biopsy. The pathology was consistent with angioimmunoblastic T-cell lymphoma. Nerve conduction studies revealed a severe, asymmetrical, predominantly axonal, sensorimotor neuropathic process affecting distal nerves with ongoing denervation and early reinnervation seen in the tibial nerve. His neuropathy was thought to be secondary to Hepatitis or T-cell lymphoma. Repeat HIV (ELISA) was negative. EBV-LMP (latent membrane protein 1) was negative. Patient’s final diagnosis was angioimmunoblastic T-cell lymphoma associated with Hepatitis B. Hematology and hematology recommended concurrent lamivudine treatment for his Hepatitis B with modified CHOP.

IMPLICATIONS/DISCUSSION: The ELISA test is used to screen for HIV. However, false-positive HIV-ELISA can be associated with autoimmune diseases, renal failure, cystic fibrosis, multiple pregnancies and transfusions, liver disease, hemodialysis, vaccinations for hepatitis B, rabies, or influenza. As for indeterminate Western blot, causes include the “window period,” cross reaction to HIV-2 infection, and antibody reaction such as lymphoma, liver disease, or autoimmune disorders. In cases with positive HIV ELISA and indeterminate Western blot, tests should be repeated in 30 days. In our case, our patient’s initial HIV test results were likely due to an antibody reaction due to hepatitis B and lymphoma which initially perplexed the diagnosis. As for hepatitis B, 350 million people worldwide are infected with it. Numerous extra-hepatic manifestations of HBV infection have been reported with polycystic nodosa. Although rare, chronic HBV infection is a predisposing risk for non-hodgkin’s lymphoma (NHL). The mechanism of lymphomagenesis is postulated to involve chronic...
stimulation of B cells in the setting of sustained liver infection. In previous years, this association was demonstrated in various small retrospective cohorts but recently, a large prospective study from South Korea showed the increased risk of NHL with hepatitis B.

Concomitant treatment of hepatitis in addition to the T-cell lymphoma assists in slowing or halting the progression of viral illness and from further damaging the liver. Prognosis is poor with a median overall survival of 1–3 years with chemotherapy. Hence, initial manifestation of hepatitis B associated NHL might mimic an acute HIV infection with a false positive HIV ELISA and an indeterminate Western blot.

**OH MY ACHING BACK! A CLASSIC DIAGNOSIS OF MULTIPLE MYELOMA.** Veerawat Phongtankuel1; Lawrence Ward1; 1Temple University Hospital, Philadelphia, Pennsylvania. *(Tracking ID # 12191)*

**LEARNING OBJECTIVES:**
1. Generate an appropriate differential diagnosis for back pain.
2. Recognize the common diagnostic features of Multiple Myeloma.
3. Appreciate the current therapeutic options for Multiple Myeloma.

**CASE INFORMATION:** A 54 year old male with hypertension, diabetes type II, right adrenal adenoma s/p adrenalectomy, and anxiety presented with 2 months of worsening back pain. The pain was localized to the thoracic region and described as sharp, constant, and worse with movement. The patient also reported a 10 pound weight loss over the past 6 weeks. He denied numbness, weakness, or incontinence and no neurological deficits were elicited on physical exam. Initial laboratory findings revealed a calcium level of 16.2 mg/dL, a creatinine of 3.3 mg/dL, and a serum albumin to protein ratio of 3.3 to 12.3 gm/dL. The PSA was normal at 1.0 ng/mL. A CT of the thorax, abdomen and pelvis findings revealed a calcium level of 16.2 mg/dL, a creatinine of 3.3 mg/dL, and a serum albumin to protein ratio of 3.3 to 12.3 gm/dL. The PSA was normal at 1.0 ng/mL. A CT of the thorax, abdomen and pelvis revealed diffuse lytic lesions of all the visualized bones, including a moderate compression fracture at T8. Additional workup included a SPEP and UPEP, which demonstrated a gamma spike of 4.5 gm/dL and 79 mg/dL respectively. The serum immunofixation revealed an IgG monoclonal band. Although a blood smear appeared normal, a bone marrow biopsy showed kappa chain restricted plasmacytosis which confirmed our diagnosis of IgG kappa multiple myeloma. The patient was treated with IV fluids and pamidronate to correct his hypercalcemia. His calcium and creatinine levels returned to normal levels. The patient was started on bortezomib and dexamethasone and completed his first cycle before being discharged home.

**IMPLICATIONS/DISCUSSION:** Back pain is a common complaint encountered in the primary care setting. The differential diagnosis for back pain is broad and can be categorized into musculoskeletal pain, infection, rheumatologic diseases, neurologic disorders, and malignancy. Obtaining a comprehensive history and physical exam is critical for diagnosis. In this case, given our patient’s age, recent weight loss, and worsening back pain despite conservative management, further evaluation was appropriate. When we learned that the patient had osteolytic bone lesions, hypercalcemia, and renal failure, we initiated the work up for multiple myeloma.

Multiple Myeloma is a plasma cell dyscrasia that affects 4 to 5 out of every 100,000 people in the US. The neoplastic proliferation of monoclonal plasma cells in the bone marrow can lead to anemia and immunosuppression. Upregulation of osteoclastic activity and downregulation of osteoblastic activity results in hypercalcemia and osteolytic bone lesions. In addition, light chain deposition can cause renal impairment; however monoclonal heavy chains or entire immunoglobulins may be contributing factors. Symptomatic disease requires treatment and treatment involves either chemotherapy alone or chemotherapy with hematopoietic cell transplantation (HCT). Candidacy for HCT is based on multiple factors which include age, performance status, and underlying comorbid conditions. Chemotherapy is typically initiated and followed by early or delayed autologous HCT. This has showed to be associated with the best survival rates.

**NOSOCOMIAL MALASSEZIA FURFUR FOLLICULITIS IN IMMUNOCOMPROMISED PATIENTS** Mohanad Ali Alfaqih1; Mohammad Alhyari1; Raid Abu-awwad2; Moh’d Khushman3; Hiren Pokharna1; Marcus Zervos4; 1Henry Ford Hospital, Detroit, Michigan; 2Henry Ford Hospital, Detroit, Michigan; 3Henry Ford Hospital, Detroit, Michigan; 4Henry Ford Hospital, Detroit, Michigan. *(Tracking ID # 12201)*

**LEARNING OBJECTIVES:** 1. Malassezia Furfur appears to be inadequately appreciated as a cutaneous mycosis that may cause confusion with more serious disease processes.

2. The routine performed skin biopsy specimens and cultures should obviate any possibility of misdiagnosing this disease entity with other bacterial and fungal skin infections.

**CASE INFORMATION:** 27-year-old male patient whom was recently transferred to Henry Ford Hospital with respiratory distress and stridor. CT scan revealed a large cystic mass centered around the right tracheoesophageal groove resulting in severe narrowing of the subglottic airway. He underwent rigid bronchoscopy with laser ablation and mechanical debulking of the tumor. Pathology revealed an immature teratoma. During his stay in the ICU he received methylprednisone for the respiratory distress but was discontinued prior to his discharge.

After discharge, the case was discussed at the multidisciplinary tumor board and hemilyrangentomy was recommended. He was scheduled for rib graft harvest surgery with implantation of the rib graft into the forearm in preparation of a future teratoma excisionand reconstruction. However on admission, it was noted the patient had diffuse folliculitis of the torso within fever, chill or other systemic manifestations and the operation was cancelled. Dermatology and Infectious disease teams were consulted to rule out an infectious process and he was placed empirically on vancomycin to cover MRSA given his prior hospitalization. Dermatology performed a bedside biopsy and culture of the lesions which were thought to likely be a bacterial folliculitisand on discharge, vancomycin was switched to doxycycline. After his discharge, the biopsy showed acute Malassezia furfur folliculitis and accordingly, doxycycline was switched to itraconazole and the folliculitis improved and he pursued his scheduled surgical plan.

**IMPLICATIONS/DISCUSSION:** Malassezia furfur may develop in patients with immunosuppression resulting from diabetes, leukemia, Hodgkin’s disease, steroid treatment, bone marrow transplantation, AIDS, and organ transplantation. Nosocomial Malassezia furfur folliculitis in immunocompromised patients in the setting of steroids therapy is an infrequent nosocomial infection that was first reported in 1999 by Carla Archer-Dubon, MD. Misdagnosis this disease entity with other bacterial and fungal skin infections can be eliminated by routine performance of skin biopsy and cultures.

Treatment with topical application of atazanavir or selenium sulphide is usually effective in the immunocompetent host. However, in cases with extensive or recalcitrant lesions and immunocompromised individuals, systemic antifungal treatment with fluconazole or itraconazole is recommended.

**DERMATOMYOSITIS IN A PATIENT WITH METASTATIC CHOLANGIOCARCINOMA** Melissa Bachhuber1; Melissa Bachhuber1. 1San Francisco VA Medical Center, San Francisco, California. *(Tracking ID # 12206)*

**LEARNING OBJECTIVES:**
1. Identify the clinical signs and symptoms of dermatomyositis.
2. Recognize the diagnostic criteria and treatment strategies for dermatomyositis, including paraneoplastic dermatomyositis.
CASE INFORMATION: A 60 year old man was diagnosed in January 2009 with advanced extrahepatic cholangiocarcinoma. He underwent chemotherapy with gemcitabine-oxaliplatin, external beam radiation, and stereotactic radiosurgery completed in September 2009. Surveillance imaging did not show evidence of tumor recurrence at regular interval follow up. In November 2010, the patient presented for evaluation of erythematous puritic skin lesions. He denied fevers, chills, night sweats, weight loss, oral or genital lesions, muscle weakness, or new medications. Physical examination revealed various nontender erythematous plaques on his right neck with mild erosions and crusting. The bilateral upper extremities had generalized erythema and mildly dusky plaques with central scaling and negative Nikolsky’s sign. A single ulcerated lesion on the lower lip was noted. There were no ocular or genital lesions. Abdominal and neurologic exams were normal. Laboratory evaluation was notable for AST 49, ALT 33, WBC 9.1, Hgb 38, normal TSH, alkaline phosphatase, bilirubin, and creatinine. Blood cultures and skin viral cultures were negative. Skin biopsy was performed and was initially suspicious for erythema multiforme. The patient received Trimcinolone ointment, empiric Acyclovir, and oral corticosteroids were initiated when he failed to improve. At three week follow up, the patient had developed pruritic papules on his DIP and PIP joints, proximal muscle weakness, and dysphagia. Laboratory results revealed AST 88, creatine kinase 167, lactate dehydrogenase 267, and ANA 1:320. Dermatologic biopsy was rereviewed and determined to be consistent with dermatomyositis. An intraabdominal surgical pathology specimen confirmed metastatic cholangiocarcinoma. Treatment with palliative Ceftazobime and concomitant corticosteroids resulted in significant improvement in the patient’s muscle weakness, dysphagia, and skin lesions.

IMPLICATIONS/DISCUSSION: Dermatomyositis is one of the idiopathic inflammatory myopathies. Its pathogenesis involves activation and deposition of complement causing lysis of endomysial capillaries and muscle ischemia. Dermatomyositis is associated with various malignant cancers, including ovarian, lung, pancreatic, stomach, colorectal, and non Hodgkin lymphoma. As this case demonstrates, the onset or relapse of dermatomyositis warrants further evaluation for malignancy.

Diagnosis of dermatomyositis is based on clinical, histopathologic, and laboratory findings. The most common clinical sign is symmetric proximal muscle weakness. Various cutaneous manifestations include the heliotrope rash, Gottron's papules, periangual telangiectasias, erythrodema, and a scaly alopecia. Esophageal dysfunction, interstitial lung disease, and cardiac involvement may also be present. The serum creatine kinase is usually elevated up to ten times the upper limit of normal and a positive ANA is present in the majority of cases. Skin biopsy confirms the diagnosis, with lesions typically demonstrating atrophy of the epidermis and perivascular lymphoid infiltrate. EMG and muscle biopsy are also important diagnostic tests if the skin biopsy is nondiagnostic.

Recently described myositis specific autoantibodies including anti-Jo, anti-M2, and anti-SRP may occur in some patients with dermatomyositis, however, they are less likely in paraneoplastic disease. Importantly, detection of anti-SSA, anti-SSB, anti-Smith, or anti-RNP antibodies suggests an overlap of myositis with a connective tissue disease.

Treatment of dermatomyositis involves early initiation of corticosteroids targeting improvement in clinical symptoms. For refractory cutaneous disease, methotrexate, azathioprine, or intravenous immunoglobulin can also be considered. Paraneoplastic dermatomyositis may respond to successful treatment of the underlying malignancy.

LEARNING OBJECTIVES: 1. Recognize the impact of chronic lymphedema on the pathogens potentially causing a soft-tissue infection
2. Recognize Shewanella putrefaciens as an unusual gram-negative pathogen in susceptible patients

CASE INFORMATION: A 53-year-old gentleman with severe chronic lymphedema presented with several days of malaise and low-grade fevers. He had no history of diabetes mellitus or systemic immunocompromise. Exam noted bilateral lower-extremity elephantiasis with focal soft-tissue maceration, erythema, and distinctive “rotting fish” odor at the lateral calf. The patient was diagnosed with cellulitis and empirically initiated on intravenous vancomycin.

Despite adequate vancomycin levels, the patient rapidly developed sepsis. Piperacillin-tazobactam treatment was added. CT imaging found no evidence of abscess or necrotizing fasciitis, but multiple blood cultures isolated Shewanella putrefaciens. The patient’s cellulitis and bacteremia eventually resolved with piperacillin-tazobactam therapy, and he recovered without additional incident.

IMPLICATIONS/DISCUSSION: Shewanella putrefaciens is a gram-negative bacillus ubiquitous in marine environments, where it causes spoilage and the “rotting fish” odor of decaying seafood [1]. In humans, the organism most often causes only benign colonization. However, multiple published reports document its potential to cause both local and systemic illness, including: cellulitis; necrotizing soft-tissue infections; intra-abdominal disease; pneumonia; and bacteremia [2–11]. The majority of such cases involve patients with underlying uremia, hepatobiliary disorder, or malignancy.

Chronic lymphedema, regardless of the originating etiology, causes abnormal local anatomic changes [12]. Such abnormalities predispose to chronic ulceration, dermatological pathology, and infection [13]. Importantly, gram-negative bacteria and unusual organisms may be involved in soft-tissue infections in such patients, even in the absence of systemic immunocompromise.

This case is a dramatic reminder that clinicians must consider empiric coverage against gram-negative organisms, as well as closely monitor for potential complications, when treating cellulitis in patients with chronic lymphedema.

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GETTING TO THE HEART OF STROKES: Namrita Gogia1; Swapna Banuri1; Claire Hunter1; 1Creighton University Medical Center, Omaha, Nebraska. (Tracking ID # 12211)

LEARNING OBJECTIVES: 1. Recognize the association between migraines, cryptogenic stroke (CS) and Patent Foramen Ovale (PFO)
2. Management of cryptogenic stroke associated with PFO

CASE INFORMATION: A 41 year old Caucasian female presented to the emergency room with three day duration of worsening migraine headaches, dizziness, nausea and vertigo. She has a history of typical migraine headaches with visual aura for the last twenty years. Home medications include progesterone only contraceptives. Neurologic examination revealed left facial droop with associated sensory loss and negative gag reflex. Upper and lower extremity strength, sensation and deep tendon reflexes were intact bilaterally. Heart and lung examination were normal. She received aspirin after a negative brain CT scan. Subsequently an MRI revealed infarct in the territory supplied by the left Posterior-inferior cerebellar artery. MRA revealed no significant occlusive lesions. TEE revealed a PFO and atrial septal aneurysm (ASA). Lower extremity dopplers were negative for DVT. Her hospital course was...
uneventful; she was discharged to home on full dose aspirin. On subsequent follow up she opted for elective percutaneous closure. Literature search revealed an association of cryptogenic stroke with PFO and migraine with aura which were interestingly present in our patient.

**IMPLICATIONS/DISCUSSION:** Cryptogenic strokes occur in patients less than 55 years without identifiable etiology and constitute 20% of all ischemic strokes. A higher prevalence of PFO (40-50%) was noted in these patients as compared to 20% in the general population. Small emboli can travel from legs to the right atrium across the PFO and travel to the brain and cause a stroke during straining activities. The existence of this mechanism was documented in studies by the detection of thrombus lodged in the PFO in patients with embolic events. Interestingly it was noted that patients with migraine and associated aura are four times more likely to have a PFO than the general population. It is unclear if there is a causal relationship or mere coexistence. One hypothesis suggests that passage of blood directly from the right to left atrium, bypassing the lungs, allows higher concentrations of serotonin, nitric oxide, kinins or other migraine precipitating chemicals to reach the brain and trigger migraine attacks.

In patients with cryptogenic strokes due to PFO, the annual rate of recurrence is reported to be between 1.5-12%. The size of the septal separation seen on TEE, presence of atrial septal aneurysm contributes to the increased risk. The four major treatment modalities include medical therapy (antiplatelets, anti-coagulants), percutaneous device closure and surgical closure. As per the ACC/AHA recommendations, for patients with an ischemic stroke or TIA and a PFO, antplatelet therapy is reasonable to prevent a recurrent event. Warfarin is indicated in high-risk patients with underlying hypercoagulable states or history of deep vein thrombosis. PFO closure may be considered for patients with recurrent cryptogenic stroke despite optimal medical therapy. The optimal management remains unclear due to the lack of randomized trials, which are currently in progress.

**PRIMARY HODGKIN’S LYMPHOMA: A RARE CAUSE OF SOLITARY PULMONARY NODULE.** Sangmesh Jabshetty1; Nanditha Malakkal2; Arun Jose1; Arun Jose1; 1Saint Francis Hospital, Evanston, Illinois; 2Saint Francis Hospital, Evanston, Illinois; 3St. Francis Hospital, Evanston, Illinois. (Tracking ID # 12214)

**LEARNING OBJECTIVES:** 1. Primary pulmonary Hodgkin’s is a rare clinical entity and often diagnosed incidentally on imaging.

2. - It is important to diagnose and treat the diseaseearily on its stage as it could be curable.

**CASE INFORMATION:** A 71 year old male presented to the outpatient clinic with exertional shortness of breath and chest pain. His past medical history was significant for hypertension, diabetes, and coronary artery disease. The patient denied any cough, fever, weight loss. On evaluation, he had a positive stress test. Subsequently the patient underwent coronary angiogram which revealed triple vessel disease. He was advised to undergo CABG. During his pre-operative evaluation, his chest x-ray showed a nodule in the upper lobe of the right lung. His physical exam was essentially normal, as was his complete blood count and basic metabolic panel. CT scan of the chest revealed a 3.3 x 4.5 cm spiculated nodule in the right upper lobe suspicious of malignancy considering his age and significant smoking history. The patient’s CT of abdomen and pelvis did not reveal any metastasis, lymphadenopathy, hepatomegaly or splenomegaly. Along with his CABG, the patient also underwent excisional biopsy of the nodule. Surgical pathology report came back as Hodgkin’s lymphoma (mixed cellularity type) associated with granulomatous inflammation. Classical Reed-Sternberg cells were readily identified which were strongly positive for CD-15, CD-30 and fascin, diagnostic of the disease. Post biopsy patient also underwent PET scan, which did not reveal any residual tumor in the body. Since he did not have any B symptoms and the tumor was localized, he did not receive any radiotherapy or chemotherapy. Currently the patient is cured of Hodgkin’s disease and he is doing well.

**IMPLICATIONS/DISCUSSION:** Primary pulmonary Hodgkin’s lymphoma (PPHL) is extremely rare. At an extranodal location such as the lung this lymphoma is likely to be confused with the more commonly occurring carcinomas at this site. In fact, when we first noticed the nodule we thought it was lung cancer, because he had a significant smoking history. This lymphoma affects women more frequently than men, and typically involves the superior portions of the lungs. Radiologically, it appears as a solitary mass or multinodular disease: inhomogeneity or cavitations of these lesions are also common. Since the presentation of this disease is non-specific, and as noninvasive tests are rarely revealing, diagnosis requires an open thoracotomy and lung biopsy. Factors which correlate with a poorer prognosis include “B” symptoms, bilateral disease, multilobe involvement, penetration of the pleura, and cavitations. The staging and treatment of these lymphomas according to the extent of pulmonary involvement are recommended, as radiotherapy or combination chemotherapy may be effective in appropriately selected patients. If diagnosed early in its stage surgery itself may be curative.

**ARDS AS A POTENTIALLY AVOIDABLE COMPLICATION OF EHRLICHIOSIS INFECTION** Arun Jose1; Arun Jose1; 1Johns Hopkins University School of Medicine, Baltimore, Maryland. (Tracking ID # 12217)

**LEARNING OBJECTIVES:** 1. Review the clinical and laboratory manifestations of Human Monocytic Ehrlichiosis (HME) 2. Recognize the increasingincidence of Ehrlichiosis, and ARDS as a dangerous but potentially avoidable complication of HME

**CASE INFORMATION:** A 25 year old male with no past medical history presented with a one week history of fever, severe headache, and myalgias. He was well until two weeks prior to admission, when he began experiencing drenching night sweats and fatigue. The patient lives in rural Southern Maryland and recalled extensively rewiring the outside of his home the previous month, but did not recall any tick or insect bites. The patient denied taking any medications. Upon admission the patient was febrile to 101.3 degrees, tachycardic at 115 bpm, and eventually requiring 100% NRB to maintain oxygen saturation at 94%. He did not have any wounds or rash and the remainder of the physical exam was unremarkable. An ABG done on 4LNC showed a pH of 7.46 and PO2 of 78. Initial laboratory tests revealed pancytopenia with WBC of 2.4 K, H/H 10.9/31.4, Platelets 89 K, as well as elevated transaminases and INR. A Chest CT revealed patchy infiltrates in the right upper and lower lung fields and left base, as well as small bilateral pleural effusions. The patient’s PaO2/FIO2 ratio was calculated as 236, which taken in the context of rapidly worsening hypoxia and radiological evidence suggested an evolving pulmonary process. Given the high suspicion for an infectious etiology, blood was sent for CMV, RSV, EBV, HAV, HBV, HIV RNA, HCV, Babesia Ab, Histoplasma antigen, Ehrlichia PCR and E. Caffeensis IgG, Leptospirosis Ab, Lyme Ab, mononucleosis screen, and blood cultures. Given the possibility of lymphoma, a peripheral smear analysis was ordered. Treatment was started empirically with IV vancomycin, piperacillin/tazobactam, and because he lives in a tick-endemic area, doxycycline. The patient steadily improved, and by the second day of treatment he was afebrile, normoxic, and no longer pancytopenic. All microbiology tests came back negative except an E. Caffeensis IgG positive at 1:512. Thus, the patient was discharged home the previous month, but did not recall any tick or insect bites. The patient did not have any B symptoms and the remainder of the physical exam was unremarkable. The patient was discharged home on oral doxycycline the following day.

**IMPLICATIONS/DISCUSSION:** Human Monocytic Ehrlichiosis (HME) is caused by the bacteria Ehrlichia Caffeensis, and is transmitted from its animal reservoir to humans via the Lone Star tick. It is most
prevalent in the Southeastern and Mid-Atlantic states, and the highest incidences typically occur between May and August. Reported cases have been increasing annually from under 200 in 2000 to almost 600 in 2006. Symptoms manifest 7–10 days after the tick bite and include fever (97%), headache (80%), myalgias (57%), and arthralgias (41%). A nonspecific rash is uncommon in adults (22%). Cough and pulmonary infiltrates on radiographic studies are also sometimes present (40%). Laboratory abnormalities include leukopenia, transaminemia, and occasionally bone-marrow suppression resulting in pancytopenia. The diagnosis is primarily clinical, and confirmed by either PCR or IFA. Most disease is self-limited and mild, effectively treated with Doxycycline, but if left untreated can lead to DIC, ARDS, sepsis, and an overall mortality of 3%. In immunocompetent hosts, control of bacteria involves a vigorous immune response and granuloma formation, especially in the lungs. ARDS from Ehrlichiosis can begin with worsening hypoxemia in the setting of an initially clear CXR, which rapidly progresses to the classic presentation of bilateral infiltrates, pulmonary edema, severe hypoxemia, and death. While there have been few reported cases of Ehrlichiosis leading to pulmonary abnormalities and ARDS, this case highlights the importance of empiric antibiotic coverage of Ehrlichiosis in a patient with fever, rapidly evolving respiratory disease, and possible tick exposure. As this case demonstrates, empiric therapy with Doxycycline may be effective in preventing the evolution of lung injury in Ehrlichiosis and possibly reducing ARDS-associated mortality, an especially important concern given the rising number of Ehrlichiosis cases in the past decade and the high mortality associated with ARDS.

A 67-YEAR-OLD MAN WITH WEIGHT LOSS AND DIARRHEA: Vaishali Patel1; Bryan Balmadrid1; 1Duke University Medical Center, Durham, North Carolina. (Tracking ID # 12218)

LEARNING OBJECTIVES: 1. Recognize isolated retroperitoneal lymphadenopathy as an overlooked presentation of Whipples Disease.
2. Recognize key principles of evaluation of late-onset Whipples Disease from the perspective of an internist to enable faster diagnosis and initiation of treatment.

CASE INFORMATION: A 67-year-old man presented to his primary care doctor with three months of poor appetite, weight loss, and persistent nonbloody diarrhea. He complained of fatigue and intermittent chest pain with a chronic nonproductive cough. He denied fevers, chills, or night sweats. He denied any allergies. He took no medications. He had a remote smoking history (eight pack years), but quit thirty years ago. He denied alcohol or illicit substance abuse. He lived on a farm with his wife along with cattle, goats, and several dogs and cats as pets. Travel and family history were unremarkable. Physical exam was notable for cachetic body with proximal muscle atrophy. An exhaustive outpatient workup including stress test, colonoscopy, and stool studies revealed no abnormality. He experienced severe depression and marked impairment of activities of daily living. He was admitted to the hospital nine months after onset of symptoms due to failure to thrive and altered mental status. An abdominal CT-scan revealed only retroperitoneal and mesenteric lymphadenopathy without evidence of malignancy. He ultimately underwent upper endoscopy which was macroscopically normal. A duodenal mucosal biopsy revealed small round cells of the lamina propria stained densely and coarsely for PAS. Rod shaped bacilli were seen on electron microscopy. Both findings are diagnostic of Whipples Disease.

IMPLICATIONS/DISCUSSION: Late onset Whipple’s disease is extremely rare. Between 1907 and 1987 there were 696 reported cases; the annual incidence since 1980 has been approximately 30 cases per year internationally. It has a predilection for males of European ancestry, farmers, or people with exposure to soil and animals. It is a systemic disease which may present only with cardiopulmonary symptoms or neurologic symptoms in more advanced cases, though it usually presents with weight loss and diarrhea. In our patient, the presentation is atypical with isolated retroperitoneal lymphadenopathy on CT. Though lymphadenopathy can be seen in up to half of the cases of Whipples disease, it is a frequently overlooked manifestation. This leads to a delay in diagnosis as duodenal mucosa may appear normal on upper endoscopy and mesenteric lymphadenopathy may be the only diagnostic tissue available at time of clinical presentation. If a PAS stain is not specifically investigated on duodenal or lymph node biopsy, the disease can go unrecognized and prove fatal. Malignancy, infections, sarcoidosis and other inflammatory conditions may present with retroperitoneal lymphadenopathy and can be ruled out by biopsy. Whipples disease should be considered with the clinical syndrome of chronic diarrhea, weight loss and retroperitoneal lymphadenopathy on imaging. Given the severity and chronicity of his symptoms, earlier hospital admission with a more efficient evaluation may have proven medically and fiscally beneficial for our patient. Faster diagnosis dramatically reduces mortality associated with Whipples Disease as symptoms regress within a few weeks of treatment initiation with antibiotics and the overall prognosis for patients is excellent.

AN UNUSUAL PRESENTATION: SHOCK LIVER WITHOUT SHOCK. Parthiv R Amin1; Sumit Kalra2; Vijay Ramu3; Thomas Roy3. 1East Tennessee State University, Johnson City, Tennessee. 2ETSU, Johnson City, Tennessee. (Tracking ID # 12222)

LEARNING OBJECTIVES: 1. To consider the diagnosis of Shock liver in patients with arterial hypoxemia even in the absence of circulatory shock.
2. To learn how to make a clinical diagnosis of Shock liver or Hypoxic Liver Injury, which is common entity in critically ill patients.

CASE INFORMATION: A 60 year old male, known case of chronic obstructive pulmonary disease, atrial fibrillation and ischemic cardiomyopathy was admitted with respiratory discomfort. On admission to intensive care unit, he was hemodynamically stable but was noted to have severe arterial hypoxemia. He was diagnosed with acute exacerbation of COPD with respiratory failure. By day 3 of admission, his aminotransferases increased rapidly up to 100 times the normal with a rise in creatinine. Hypoventilation and acute heart failure were absent. Other causes of liver failure were excluded. His worsening respiratory failure was treated with mechanical ventilation and supportive measures. He began to improve clinically and his underlying respiratory failure was resolved. He was discharged 20 days after admission with normal laboratory values.

IMPLICATIONS/DISCUSSION: Shock liver or Hypoxic liver injury (HLI) is defined as a massive, but transient increase in serum transaminase levels due to an imbalance between hepatic oxygen supply and demand in the absence of other acute causes of liver damage. Low perfusion is not an absolute criterion for HLI. In some reports only approximately one-half of patients with HLI had shock. The most common cause for HLI is insufficient hepatic perfusion secondary to any form of shock or hemodynamic instability. It can also occur in focal hypoperfusion of liver as in sickle cell anemia as well as in patients with severe respiratory failure, systemic hypoxemia, and obstructive sleep apnea.

The typical biochemical picture is rapid rise in aminotransferase levels, up to 25 to 250 times the normal occurring within 1–3 days. It is associated with early rapid rise in serum LDH level and the ratio of serum ALT to LDH is usually less than 1.5. Aminotransferases start to decline rapidly after 7–10 days of the initial insult which distinguishes it from the other causes of acute hepatitis. It may be associated with a rise in serum bilirubin up to 4 times, alkaline phosphatase up to 2 times the normal and slight elevation in prothombin time. Accompanying evidence of end-organ hypoperfusion, especially acute tubular necrosis of the kidney favors a diagnosis of HLI.
It is imperative to distinguish HLI from other causes of acute hepatitis and other causes of liver injury which require etiology oriented management. Management of HLI is directed to treatment of the underlying precipitating factor and restoration of cardiac output to improve perfusion to liver to reduce mortality and morbidity. HLI is a common condition affecting about 50 percent of patients in some degree during their stay in intensive care unit. However it is frequently underdiagnosed especially in rare cases like ours where patient presents with arterial hypoxemia as precipitating factor in absence of hemodynamic instability.

AN ALL-CONSUMING CASE Jonathan Thompson1; Kurt Pfeifer2; Michael Kron2; Shahryar Ahmad1; 1Medical College of Wisconsin, Germantown, Wisconsin ; 2Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 12223)

LEARNING OBJECTIVES: 1. Recognize patients at risk for intracranial tuberculomas based on their risk factors and clinical presentation. 2. Treat patients with intracranial tuberculomas quickly to prevent morbidity and mortality.

CASE INFORMATION: A 44 year old male with a history of incarceration presented with a 2 week history of headache, fever, and night sweats. He had progressive dyspnea on exertion for a month, and experienced weight loss of 30 lbs over 4 months. He denied cough and hemoptysis. He had no recent sick contacts, travel or known tuberculosis exposure. His chest X-ray on admission showed diffuse bilateral pulmonary interstitial nodular opacities. A CT chest demonstrated diffuse bilateral interstitial nodularity with biapical bullae. He was initially admitted and treated with ceftriaxone and azithromycin for community acquired pneumonia, however, he continued to have fevers as high as 104 F. Bronchoscopy with BAL and left upper lobe transbronchial biopsy were performed. BAL AFB smear was negative, cultures failed to grow organisms, and cytology was negative for malignancy. The biopsy results simply showed acute lung injury. However, a serum quantifier-TB test was positive. Tests for Histoplasma, Blastomyces, Pneumocystis carinii, CMV, and HIV were all negative. Given his imaging findings, clinical picture and positive quantifier-TB test, he was started on 4-drug therapy (isoniazid, rifampin, ethambutol and pyrazinamide) on hospital day 6. Despite treatment, he continued to have high fevers and his headache acutely worsened. CSF studies from a lumbar puncture revealed: WBC 85 with 9% lymphs and 88% PMNs, protein of 70 mg/dL, and glucose of 47 mg/dL. MRI of the brain showed innumerable supra and infratentorial 3–6 mm ring enhancing lesions with surrounding edema, consistent with tuberculomas. The patient was started on IV dexamethasone for intracranial tuberculomas, and his headache resolved. The patient was discharged on hospital day 16 with the diagnosis of miliary tuberculosis with intracranial tuberculomas. Directly Observed Therapy was initiated upon discharge. His BAL cultures eventually grew Mycobacterium tuberculosis 16 days after collection.

IMPLICATIONS/DISCUSSION: CNS tuberculosis occurs in only 1% of TB cases, but it causes a significant amount of morbidity and mortality. TB meningitis accounts for the great majority of the cases of CNS TB. Although most patients who develop CNS TB are immunocompromised, up to 10% of immunocompetent patients with TB will develop CNS involvement. The pathogenesis of CNS TB involves hematogenous spread of bacilli with formation of tubercles in the CNS (Ritch focus). The focus can subsequently rupture, causing meningitis, tuberculoma or abscesses depending on the original location of the tubercle. In children, tuberculomas tend to be infratentorial, while in adults, tuberculomas are typically supratentorial. In one third of patients, there are multiple tuberculomas. Patients with tuberculomas typically present with headache, seizures, and papilledema. The presentation can be subacute, taking weeks or months to manifest. The PPD skin test is positive in 85% of patients, and 30-80% of patients will have chest X-rays indicative of pulmonary TB. CSF studies are generally unremarkable, showing increased protein. On CT and MRI of the head, the classic appearance for tuberculoma is a lesion with central calcification and peripheral ring enhancement. There may also be mass effect and surrounding edema, particularly early in the infection. Treatment for intracranial tuberculosis consists of 4-drug anti-tuberculosis chemotherapy. Surgery is reserved for medical failure or uncontrollably elevated intracranial pressure. There can be a paradoxical growth of tuberculomas after the initiation treatment; however, complete resolution of tuberculomas typically occurs within three months of treatment. Mortality was as high as 85% prior to modern-day anti-tuberculosis medications. With current medication options, mortality has dropped below 10%. Recently, studies have also indicated that steroids may improve outcomes in CNS tuberculosis.

CELIAC ARTERY ANEURYSM Arun Kanmanthareddy1; Arun Kanmanthareddy1; 1Crozer Chester Medical Center, Upland, Pennsylvania. (Tracking ID # 12228)

LEARNING OBJECTIVES: 1. Celiac artery aneurysm is a potentially fatal aneurysm with a mortality rate of 40-100% 2. Selective repair of aneurysms >2 cm with endovascular repair carries low risk versus emergent repair after rupture.

CASE INFORMATION: We present this interesting case of a 87 year old male who was admitted to the hospital for shortness of breath. Patient’s comorbidities were end stage renal failure, asbestosis, atherosclerosis, coronary artery disease and atrial fibrillation. Patient was hypoxic and lung sounds were decreased on the left side. Chest X-ray showed a large left sided pleural effusion and pleural plaques. CT thorax showed a large left pleural effusion and incidental finding of celiac artery aneurysm (CAA), which was 1.9 cm in size, also present was aneurysm of the infrarenal abdominal aorta and bilateral iliac artery aneurysms. Patient did not have any symptoms of abdominal pain or mesenteric ischemia. He did not have any history of pancreatitis or endovascular infections. Atherosclerosis and smoking were the only risk factors for this patient having aneurysms. The pleural effusion was drained and empirically treated with antibiotics. He was asymptomatic from the aneurysm and the size of the aneurysm remained stable compared to his previous CT scan, therefore the patient was conservatively managed and no intervention was done on the celiac artery aneurysm and continued follow up was recommended as out patient.

IMPLICATIONS/DISCUSSION: CAA is an extremely rare form of visceral artery aneurysm, its prevalence varies between 0.005% to 0.01% in the general population. Infection, congenital and developmental defects, trauma and atherosclerosis are believed to be the most common etiologies for CAA. Patients are mostly asymptomatic or present with epigastric pain, when rupture occurs they present with abdominal pain and shock. Rupture can occur into peritoneal cavity, retroperitoneum or thorax. Dissection of the celiac artery aneurysm can rarely occur and can present as end organ infarction. Pancreatitis can result from compression of the pancreatic duct; gastric varices can result from extrinsic compression of the splenic, hepatic and portal vein occlusion. Risk for rupture is directly related to the size of the aneurysm; 5% for aneurysms between 15–22 mm and 50-70% for sizes greater than 32 mm. Mortality has reported to vary between 40–100%. Before the widespread availability of CT scan, majority of the cases presented as ruptured aneurysms or were seen at post mortem. Currently majority of these aneurysms are diagnosed incidentally because of increased cross sectional imaging. Ultrasound, CT scan and MRI are commonly used to diagnose these aneurysms, however arteriography remains the gold standard for diagnosis. Surgery is recommended for all symptomatic, rapidly expanding aneurysms and asymptomatic ones greater than 2 cm in diameter. Elective intervention is preferred over
emergent repair; a variety of grafts, anastomosis and stents are used for the repair of CAA. Considering the high risk of rupture and subsequent high mortality associated with it, the patients need continuous follow up. CT scan has been most commonly used to follow up these aneurysms.

**PITUITARY APOPLEXY IN A YOUNG PATIENT WITH CHRONIC HEADACHES**

Vrinda Agrawal1; Jaya Kothapally1; Andjela Drincic1; Vinod Khatri1; Krishna Khatri1; Sangmesh Jabshetty1; Gaurav Dagar2; Meenu Singh 1; Harvey Friedman1; 1St. Francis Hospital, Detroit, Michigan; 2Henry Ford Hospital, Detroit, Michigan.

**LEARNING OBJECTIVES:** 1. To emphasize the selective use of magnetic resonance imaging (MRI) in patients with headaches as a tool to solidify diagnosis and to aid further management.
2. To review the management of pituitary apoplexy and identify role of conservative management in neurologically intact patients.

**CASE INFORMATION:** A 19 year old white female with past medical history of asthma, taking oral contraception presented with the complaint of severe headaches for the past six years. She described them as throbbing, bitemporal and occurring at the frequency of one to two times per week sometimes lasting unto the second day. They were associated with visual floaters and photophobia. She had been taking acetaminophen as needed for headaches without significant relief and noticed increasing frequency and intensity of these headaches for a few months before presenting to the clinic. These headaches were then diagnosed as migraine and patient was started on sumatriptan and amitryptiline. A MRI of brain was obtained that showed sub-acute hemorrhage in the posterior adenohypophysis likely into a pre-existing pituitary adenoma. She denied any other complaints and physical examination was normal. A complete laboratory work up was done with the following results: TSH 3.01 mIU/mL (normal 0.34-5.60), FT4 0.88 ng/dL (0.6-1.6), prolactin 14 ng/mL (3.3-26.7), ACTH 23 pg/mL (6-58), cortisol 28.5 mcg/dL, somatomedin C 239 ng/mL (128–488), LH 1.2 mIU/mL (1.2-103), FSH 1.5 mIU/mL (1.8-22.5) and estradiol 18 pg/mL (24-534). Given absence of any neuro-ophthalmic signs and other complaints, conservative management was adopted. She was started on cabergoline 0.25 mg twice weekly and taken off oral contraception. Repeat pituitary function tests, in a month, remained in the normal range.

**IMPLICATIONS/DISCUSSION:** Pituitary apoplexy is a rare clinical syndrome caused by sudden hemorrhage or infarction of the pituitary gland, usually within a pre-existing pituitary adenoma. Estrogen therapy has been reported to be a precipitating factor. MRI is an essential technique to help ascertain volume and extension of the tumor, adjacent tissue compression and to determine the age of hemorrhage. Earliest and the most common symptom is headache, however, in absence of any other neurological symptoms like visual disturbances or signs of pituitary insufficiency, can be easily missed for alternative diagnosis. Patients who remain neurologically intact can be followed conservatively.

**MULTI-LOCULATED SPONTANEOUS PNEUMOTHORAX: A RARE COMPLICATION OF PULMONARY WEGENER’S GRANULOMATOSIS (WG)**

Vinod Khattri1; Krishna Khattri1; Sangmesh Jabshetty1; Gaurav Dagar2; Meenu Singh 1; Harvey Friedman1; 1St. Francis Hospital, Evanston, Illinois ; 2Medical College of Wisconsin, Milwaukee, Wisconsin.

**LEARNING OBJECTIVES:** 1. Spontaneous pneumothorax in Wegener’s Granulomatosis (WG) is a relatively rare complication and is attributed to rupture of a subpleural cavitary nodule. 2. Multiple loculations of pneumothorax might be a result of effective immunosuppressive therapy leading to fibrotic resolution of chronic inflammation.

**CASE INFORMATION:** 65 years old female was admitted with worsening shortness of breath and increasing swelling of her bilateral lower extremities. Her past medical history included hypertension, dyslipidemia, CAD, CHF, aortic stenosis (s/p mechanical valve replacement) & DVT. She was also diagnosed to have Wegener’s Granulomatosis (WG) about four months prior to this admission & was on immunosuppressive therapy with cyclophosphamide and prednisone. On examination in the emergency room her vital signs revealed Temp-97.8 F, P-87/min, RR-24/min, BP-211/78 mm Hg, and O2 saturation-97%. Her chest was clear to percussion, air-entry was equal on both sides, and fine basilar crackles were heard bilaterally. Cardiac exam revealed, JVD, normal S1, mechanical valve click +, no murmur. Her extremities had bilateral pitting pedal edema.

On evaluation EKGs showed NSR, cardiac enzymes were negative for myocardial ischemia, chest x-ray showed pulmonary vascular prominence and she had elevated BNP. The patient was initially treated for acute decompensation of congestive heart failure. On day three of admission the patient became progressively short of breath and her chest X-ray revealed multi-loculated spontaneous pneumothorax on right side. A tube thoracostomy with a small chest tube (6 F) was done but her lung failed to expand completely. Adequate lung expansion could only be achieved after placement of a larger chest tube (14 F). Subsequently she continued to have persistent air leak in spite of chest tube suction. A Heimlich valve was attached to the chest tube for this and she was discharged to a rehabilitation facility. Three weeks later the chest was removed successfully without any further complications.

**IMPLICATIONS/DISCUSSION:** Wegener’s Granulomatosis (WG) is a form of systemic vasculitis which mainly involves the respiratory tract & kidneys and is characterized by necrotizing, granulomatous inflammation. Pulmonary lesions can present as single or multiple nodular infiltrates. Spontaneous pneumothorax in WG is relatively rare and is generally attributed to rupture of a subpleural cavitary nodule. Multiple loculations seen in this case may be a result of effective immunosuppressive therapy leading to fibrotic resolution of chronic inflammation. Tube thoracostomy is the preferred treatment and leads to lung expansion & cessation of the air leak in most patients. Failure of the pneumothorax to resolve should prompt the initiation of suction. For patients who have a persistent air leak and whose lung is less than 90 percent expanded, the preferred procedure is video assisted thoracoscopy (VATS). Stable patients who have a persistent air leak but good lung expansion may be discharged after attaching a Heimlich valve to the chest tube with essentially no morbidity.

**EXPLORING EDEMA**

Raid Abu-Awad1; Mohanad Ali Alfaqih2; Mohammad Alhyari2; Moh’d Khushman2; Kelly Caverzagie2; 1Henry Ford Hospital, Detroit, Michigan; 2Henry Ford Hospital, Detroit, Michigan.

**LEARNING OBJECTIVES:** 1. Understanding the pathophysiology of edema in adults is apowerful skill that is needed by every internist to diagnose and treat this common entity.
2. The central nature of the hypothyroidism as a diagnostic clue for hypothyrtutism.

**CASE INFORMATION:** 47 year old male patient, with a past medical history of morbid obesity, obstructive sleep apnea and hypertension, presented with gradually progressive bilateral pitting lower extremity edema over the last few months. The edema was associated with exertional dyspnea, fatigue and weight gain. Examination showed no evidence of jugular venous distension, clear chest to auscultation, unremarkable cardiac exam and symmetrical, bilateral, lower extremity edema. Chest X ray showed no vascular congestion or pleural effusion. 2D echocardiogram showed a preserved ejection fraction and pulmonary artery pressure of 10 mmHg. Kidney function test showed no evidence of renal failure and urinalysis was negative for protein. Liver ultrasound showed no evidence of cirrhosis and lower extremity Doppler ultrasound showed no evidence of deep venous thrombosis. After excluding common causes of edema, thyroid function test was done and it showed findings consistent with
central hypothyroidism. Further evaluation of the pituitary gland showed normal prolactin and low adrenocorticotropic hormone (ACTH), Cortisol, follicular stimulating hormone (FSH) and luteinizing hormone (LH). Accordingly, brain magnetic resonance imaging (MRI) was done and showed pituitary macroadenoma. Visual field was evaluated by the ophthalmology team and was intact. Neurosurgery team recommended elective trans-sphenoidal resection of the pituitary adenoma. The patient was started on prednisone followed by levothyroxine and he started to lose weight gradually and his edema improved.

**IMPLICATIONS/DISCUSSION:** Myxedema occurs in severe hypothyroidism and may be generalized. It results from infiltration of the skin with glycosaminoglycans with associated water retention and low to normal lymphatic flow. The diagnosis is established by thyroid function test, and the treatment is hormone replacement as opposed to diuretics. In this case, we illustrate how understanding the pathophysiology of edema along with comprehensive work up was successful to diagnose and treat this common clinical entity. Moreover, the central nature of the hypothyroidism was a key to diagnose hypopituitarism which did not present itself through the other hormonal deficiencies.

**AN UNUSUAL ETIOLOGY OF PERSISTENTLY ELEVATED PANCREATIC ENZYMES** Ashish Moonat1; Akshra Verma2; Davendra P Ramkumar3; 
1Southern Illinois University, Springfield, Springfield, Illinois; 2University of California, San Francisco, San Francisco, California; 3University of California, San Francisco, San Francisco, California. (Tracking ID # 12249)

**LEARNING OBJECTIVES:** 1. To recognize unusual etiologies of persistent pancreatic enzymes elevation. 
2. To promptly treat these etiologies since causes such as peripapillary cancer, once metastasized, have a high mortality and are not amenable to a definitive treatment.

**CASE INFORMATION:** A 79-year-old Caucasian woman presented to the emergency room with two week history of progressively increasing nausea, vomiting and retching. She denied any abdominal pain, fever, acid reflux, heartburn, hematemesis, diarrhea or constipation but her appetite had remarkably decreased. Her surgical history included three cesarean sections, hysterectomy and a normal colonoscopy 20 years ago. Significant medications included alendronate for osteoporosis, daily aspirin and naproxen as needed. She denied any smoking or alcohol use. Her physical examination was completely normal. Laboratory investigations revealed a normal complete blood count and comprehensive metabolic panel. Her amylase and lipase were elevated at 391 units/L and 2520 units/L respectively. Computerized tomography (CT) scan of abdomen demonstrated mild fat stranding around the tail of the pancreas and dilated pancreatic duct. Ultrasound revealed no gallstones or dilatation of common bile duct (CBD). She was managed conservatively with nil-per-oral status and intravenous fluids for six days but elevations in amylase and lipase persisted and mild elevation of bilirubin (1.8 mg/dL) was also noted. Magnetic resonance cholangio-pancreatography (MRCP) was then performed that showed a prominent pancreatic duct with a filling defect at the ampulla of vater. Endoscopic retrograde cholangio-pancreatography (ERCP) was then planned next. On endoscopy, an ulcerated mass was noted in the second part of the duodenum which on biopsy was found to be a peripapillary adenocarcinoma with some duodenal glands. CT chest, performed for staging revealed lung nodules and mediastinal lymphadenopathy. The lymph nodes were biopsied and found to have adenocarcinoma of gastrointestinal origin, thereby confirming metastatic disease. ERCP with CBD stent placement was performed. She also underwent stent placement in the duodenum to relieve gastric outlet obstruction. She was then started on chemotherapy with gemcitabine.

**IMPLICATIONS/DISCUSSION:** Peripapillary tumors are relatively rare neoplasms with an incidence of approximately 0.5% of all gastrointestinal tract malignancies. They arise in the vicinity of the ampulla of Vater and originate from the pancreas, duodenum, distal CBD, or the structures of the ampulla of Vater complex. Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute indicates adenocarcinoma is the most frequently identified histology for ampullary cancer. These tumors obstruct the flow in the pancreatic duct and CBD causing their dilatation and elevation of amylase/lipase, bilirubin and alkaline phosphatase. Management of these tumors involves surgical resection (Whipple’s procedure) or chemotherapy. Hepatic metastasis, serosal implants, ascites, lymph node involvement outside the resectional field, and major vessel invasion all are contraindications to surgical resection. Our patient’s tumor appeared to be primary ampullary cancer based on the biopsy findings but definite diagnosis required surgical resection. However, she had metastatic disease and was not a surgical candidate and therefore underwent chemotherapy.

**THE GATHERING STORM: A CASE OF FEVER AND NECK PAIN** Seth Berkowitz1; Kara Bischoff2; Stephanie Remk2; Niraj Sehgal2; UCsf, San Francisco, California; 2University of California, San Francisco, San Francisco, California. (Tracking ID # 12256)

**LEARNING OBJECTIVES:** 1. Diagnose an unusual complication of endocarditis
2. Recognize how different etiologies of thyrotoxicosis affect management

**CASE INFORMATION:** A 47-year-old man with a history of ulcerative colitis (UC) was admitted for malaise, fever, and neck pain. On arrival he was ill-appearing, febrile (39.2°C), hypotensive (80/63 mmHg), and tachycardic (163 bpm) with an exam notable for anterior neck tenderness and diffuse thyromegaly. Of note, the patient was hospitalized the previous month for UC-related hemorrhagic proctitis, during which time he had a peripherally inserted central catheter (PICC) placed and then removed prior to discharge. Initial management focused on volume resuscitation, initiation of broad-spectrum antibiotics, and urgent evaluation for sources of infection. CT neck showed an enlarged, heterogeneous thyroid. He had a TSH of 0.08 mIU/L (0.4-4.4) and a free T4 of 47 pmol/L (9-24). Blood cultures grew methicillin-resistant Staphylococcus aureus (MRSA), which prompted an echocardiogram revealing vegetations on the aortic valve. He was diagnosed with acute suppurative thyroiditis, likely a result of septic emboli to his thyroid from MRSA endocarditis. His recent PICC line was a key risk factor. On hospital day three he developed new altered mental status and hypertension. Repeat free T4 was above the assay maximum. His presentation was now most consistent with thyrotoxic crisis, which resolved after treatment with corticosteroids and propranolol. Though he improved clinically, a thyroid ultrasound done for persistent leukocytosis showed an abscess. This was successfully managed with percutaneous drainage and did not require surgical intervention. The patient ultimately developed hypothyroidism requiring oral replacement therapy, but he recovered well and was discharged to a skilled nursing facility for reconditioning.

**IMPLICATIONS/DISCUSSION:** Acute suppurative thyroiditis is a bacterial infection of thyroid tissue, most commonly caused by Staphylococcus aureus. Though it more often occurs in children with congenital connections between the thyroid and oropharynx, it is also recognized as an uncommon complication of bacteremia. Inflammation causes release of pre-formed thyroid hormone in a TSH-independent manner and in rare cases this leads to thyrotoxic crisis. Because the hormone is pre-formed, thyrostatic medications are unnecessary. While traditionally treated with surgical debridement, recent case series demonstrate that conservative management with antibiotics and percutaneous drainage can be successful. Hypothyroidism is a common late complication.
THE GATHERING STORM: A CASE OF FEVER AND NECK PAIN Seth Berkowitz 1; Kara Bischoff 1; Stephanie Remneke 2; Niraj Sehgal 3; UCSF, San Francisco, California. 1University of California, San Francisco, San Francisco, California. (Tracking ID # 12256)

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THE SECRET TO THE ABDOMINAL PAIN IS IN THE SMEAR! Manuel Lam 1; Kaveh Mojahed 1; David Oh 2; Lisa Shieh 2. 1Stanford Hospital & Clinics, Stanford, California; 2Stanford Hospital & Clinics, Mountain View, California. (Tracking ID # 12261)

LEARNING OBJECTIVES: 1. Recognize anchoring heuristic as a common cause of diagnostic error. 2. Review the role of serotonin release assay, platelet aggregation assay and the solid phase ELISA for heparin-dependent antibodies

CASE INFORMATION: A 88 year old female status post left knee replacement presents from rehab with a one day history of ascending weakness and numbness in the lower extremity. Numbness started in her right toes and ascended to the level of the ankle over five minutes. A similar sensation
developed moments later in the left foot. Associated symptoms included weakness with dorsiflexion of the feet and pain in the region of numbness. Patient denied other weakness or numbness, headache, vision changes, recent trauma, febrile illness or vaccination. Medications at rehab include Percocet, Lovastatin, and Fragmin. Examination revealed a temperature of 101, pulse of 110, and blood pressure of 130/80. Neurological examination of the lower extremity revealed profound weakness with dorsiflexion of the feet bilaterally, normal sensation to light touch, temperature, with decreased sensation to pinch bilaterally. Patellar reflexes were brisk while Achilles were absent bilaterally. The upper extremity neurological examination was normal. Cranial nerves II-XII were intact. Lower extremity was found to be cool to touch with absent dorsalis pedis, popliteal and femoral pulses bilaterally. Laboratory data revealed hematocrit of 30.2, white blood cell count of 9.6, platelets of 55, INR, PTT, renal function, liver function, and electrolytes were normal. Given the low platelet count and concern for HIT, all heparin products were held, heparin induced antibodies were measured and Argatroban was initiated. CTA of the chest, abdomen, pelvis, and lower extremity was performed and showed thrombus in the aorta, with flow down both iliac arteries, occlusion of the abdomen, pelvis, and lower extremity was performed and showed thrombus in the aorta, with flow down both iliac arteries, occlusion of the common femoral artery on the right, and popliteal artery on the left. Vascular surgery performed a thrombectomy of the left and right lower extremity thrombi. Heparin dependent antibodies later returned positive with an optical density of 2.895. The patient had a full recovery of sensation and function of her lower extremity.

**IMPLICATIONS/DISCUSSION:** Heparin induced thrombocytopenia (HIT) can often be a challenging diagnosis. One studied method of calculating the pretest probability of HIT is the 4 T score. This score is based upon 1) the degree of thrombocytopenia and percent decline in platelet count 2) the timing of platelet decline to heparin exposure 3) thrombosis and 4) presence of other causes of thrombocytopenia. Based on this score patients fall into low, intermediate, and high probability for HIT. Testing for HIT should be performed on those with intermediate and high pretest probability of HIT. Diagnostic tests include: the serotonin release assay (SRA), platelet aggregation assay and the solid phase ELISA. The gold standard diagnostic test for HIT is the SRA with both specificity and sensitivity greater than 95%. However, this test is costly, technically difficult and results often take as long as a week to be reported. The solid phase ELISA determines the presence of heparin-dependent antibodies and results are reported much more rapidly than the functional assays (i.e. SRA, platelet aggregation assay). The ELISA has a sensitivity of >97 percent giving it an excellent negative predictive value. A positive test is often difficult to interpret as the test has a low specificity (74 to 86 percent). Warkentin et al showed that the strength of the ELISA result measured as an optical density can be helpful in predicting the likelihood of HIT. An optical density (OD) greater than 2.0 is associated with a positive serotonin release assay in 89 to 100 percent of patients. While an OD of 1.4 to <2.0 had a positive serotonin release assay of only 19 to 46 percent. Because the functional assay results are delayed the diagnosis of HIT should be considered established in patients with intermediate or high pretest probability and positive heparin induced antibodies. Optical density can be used to predict the likelihood of positive SRA and guide clinical decision making in a timely manner.

**WILL VACCINATIONS DO AWAY WITH LUMBAR PUNCTURES? A CASE OF PNEUMOCOCCAL MENINGITIS**

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**LEARNING OBJECTIVES:** 1. Recognize the decreased competency of internists performing procedures, which may directly effect patient care

**CASE INFORMATION:** A 55 year-old female smoker presented with 5 days of cough, fever, and worsening confusion. On initial exam, she was confused and agitated. Her vital signs showed a temperature of 39.5 C, oxygen saturation of 87% on room air, heart rate of 150 beats per minute, and a blood pressure of 133/77 mmHg. Lung exam revealed rhonchi on the right. Neurologic exam was non-focal. A chest x-ray showed a dense right upper lobe infiltrate. She had a significant leukocytosis. The initial diagnostic impression was pneumonia and sepsis. She was started on moxifloxacin, piperacillin-tazobactam, and vancomycin. Shortly after arriving in the ICU she became unresponsive, and was intubated. The admitting team felt that a lumbar puncture (LP) was indicated given her significant altered mental status. However, this was overnight, and the house-staff involved were not credentialed for the procedure, and the attending physician did not feel confident in their LP skills and no other specialists were available for the procedure. It was determined that since the patient was being treated empirically with antibiotics, it was not an emergent procedure. The following morning, after a normal CT scan, a LP was performed. The aspirate was grossly purulent. Cerebral spinal fluid studies were consistent with bacterial meningitis. The gram stain showed 1+ gram-positive diplococci and her streptococcus pneumoniae antigen was positive. Her antibiotics were changed to high dose ceftriaxone and vancomycin. The following day, blood cultures grew streptococcus pneumoniae. It was resistant to penicillin and ceftriaxone, but sensitive to moxifloxacin and vancomycin. The ceftriaxone was changed back to moxifloxacin. The patient slowly improved over a 12-day hospital course. She did have some cognitive deficits at hospital discharge, however at 3 months, she had subjectively returned to baseline and back to work full-time.

**IMPLICATIONS/DISCUSSION:** The incidence of streptococcus pneumoniae meningitis has decreased 30% since the introduction of the pneumococcal conjugate vaccine in 2000. Since 2003, the rate of antibiotic resistance among the isolates has increased. Organisms that have seeded the CSF from a primary pneumonia are more likely to be resistant. This patient received appropriate empiric antibiotic coverage for pneumonia and sepsis, but not for meningitis. The most recent Infectious Disease Society of America guidelines recommend vancomycin, a third generation cephalosporin, and ampicillin for age >50, with much higher doses than the standard for pneumonia. A LP performed earlier in this patient, may have resulted in appropriate antibiotics sooner. However, the multiple attending physicians in the hospital did not feel comfortable performing this procedure. A decrease in the incidence of bacterial meningitis has lead to a decreased need for LPs. A survey of internists in 2004 showed that the number of procedures performed decreased by 50% since 1986. Specifically, the percentage of internists who performed LPs decreased from 73% to 26%. The American Board of Internal Medicine (ABIM) has significantly reduced the procedural competency requirements for residents. LPs are one of many that are no longer required. Although many institutions have sub-specialists available to perform procedures, this may not be true for all hours of the day or in rural settings. Some procedures may be delayed in these setting without internists who are credentialed, directly impacting patient care as outlined in this case. Some residencies have tried to address this gap with curricular changes to improve procedural competency, but others have not. Without an ABIM requirement, procedure skills by internists will likely continue to be widely variable. Solutions are still needed to ensure that necessary procedures can be provided to patients, regardless of location or time of day.
LEARNING OBJECTIVES: 1. Pseudohyperkalemia is a phenomenon whereby the invivo serum potassium concentration exceeds by \(\geq 0.4\) mmol/L its invivo level. Causes are, mechanical, ischemic, centrifugation-related, and rarely familial.

2. Improved diagnostic yield occurs by avoiding fist clenching, specimen acquisition in heparinized tubes, gentle specimen handling and notification of laboratory personnel.

CASE INFORMATION: An 82 year old female with an aggressive Non-Hodgkin’s, B-cell lymphoma, severe leukocytosis (206.3 x 10^9/L), and normal platelets was admitted for an initial cycle of chemotherapy. Severe hyperkalemia was evident (10.6 mmol/L). Medicaltherapy was begun and the serum potassium level was confirmed twice. Yet, thepatient was asymptomatic with normal vital signs. The electrocardiogram (EKG) revealedno peaked T waves or QRS complex widening. Because of the persistent hyperkalemia, intensive care unit monitoring wasinitiated with consideration for hemodialysis.

Pseudohyperkalemia was suspected from the absence of EKG criteria and extreme leukocytosis. To establishthis diagnosis, three separate venous specimens were obtained with 10 minutes of each other. The first, delivered to the laboratory by a pneumatic tubesystem to maximize specimen agitation, was analyzed within 10 minutes; thesecond, hand-delivered sample, was analyzed within 30 minutes; and the third, heparinized specimen was analyzed within 30 minutes. The two, non-heparinized samples demonstrated potassium levels of 10.6 and 11.4 mmol/L, respectively. The heparinized sample yielded plasma potassium of 3.3 mmol/L. Following chemotherapy, the magnitude of pseudohyperkalemia decreased, concordant with areduction in leukocytosis.

IMPLICATIONS/DISCUSSION: With severe thrombocytosis or leukocytosis decreased, concordant with a reduction in leukocytosis.

LEARNING OBJECTIVES: 1. Approach to a case of undetermined acute hepatitis.

2. Recognize the presentation of mycoplasma pneumonia hepatitis.

CASE INFORMATION: A 27 year old white female presented with a week history of acute right upper quadrant abdominal pain associated with nausea, fatigue, anorexia, myalgias and arthralgias in extremities. On exam she has RUQ tenderness along with signs of arthritis, joint swelling in all the extremities. Labs showed an elevated LFTs with AST of 1242, ALT of 672, Alanine phosphatase of 208 and Total bilirubin of 1.0. Amylase and Lipase were normal. CBC showed pancytopenia with WBC of 2.2, HGB 10.9, Platelets of 89 with neutropenia and lymphopenia indicating bone marrow depression.

US of RUQ revealed fatty liver without any evidence of cholelithiasis or choledocholithiasis. Subsequent MRCP revealed the same. X rays of knee and elbow showed small joint effusions suggestive of synovitis. Work up of noninfectious hepatitis with Anti Smooth muscle, actin, dsDNA antibodies, Rheumatic factor, Anti-CCP, Anti Mitochondrial antibodies, Iron studies with TIBC/Fe ratio were negative. Ferritin was elevated at 804 so a Hemochromatosis work up with C282Y, H63D, S65C gene mutations was ordered which was negative. ESR, CRP, Cold Agglutinins, Cryoglobulins, complement levels were normal. Acute Viral Hepatitis screen for A, B, C; Hep C PCR, Antibodies to Parvovirus, CMV, West nile were negative. Fungal etiology work up with Histoplasma, Cryptococcus antigen were negative. Bacterial infectious etiology with Q fever phase I and Phase II antibodies, quantiferon gold test for TB were negative. Finally IgM antibody Mycoplasma Pneumonia was ordered which was strongly positive. Subsequently a CT guided biopsy was ordered to exclude any other etiologies. Biopsy showed acute centrlobular cholestasis without any evidence of autoimmune hepatitis. Thus a diagnosis of Acute hepatitis secondary to Mycoplasma Pneumonia was made with a secondary reactive arthritis. She was started on antibiotics and steroids. Her Pancytopenia improved completely along with improving liver function tests at the time of discharge.

IMPLICATIONS/DISCUSSION: Mycoplasma pneumonia is a major cause of respiratory infections in children. Most M. pneumoniae infections in adults involve the respiratory tract presenting with mild fever and nonproductive cough to severe pneumonia. Extrapulmonary manifestations of M. pneumonia infection involves the cardiovascular, neurologic and hematologic systems. Until 2002 M. pneumoniae associated cholestatic hepatitis has been reported only in children. Concomitant liver disease is extremely rare in adults. The pathogenesis of extrapulmonary disease in M. pneumonia infection is not well known and possible mechanism includes infection of hepatocytes as well as immune-mediated damage by antibodies. We are reporting this unusual presentation of a common bacterial infection presenting with acute hepatitis and hematologic involvement without any pulmonary manifestations. The diagnosis is based on positive IgM antibodies to M. Pneumonia and clinical improvement after institution of the antibiotic therapy. Our clinical case suggests that the differential diagnosis of unexplained acute hepatitis should include M. pneumonia infection.

MYCOPLASMA INFECTIONS- NOT JUST YOUR WALKING PNEUMONIA.
Ngoyo Iroez 1, Ngozi Iroez 1. 1University of California Los Angeles, Los Angeles, California. (Tracking ID # 12269)

LEARNING OBJECTIVES: 1. To broaden our differential of a patient presenting with pneumonia and hemolytic anemia 2. To highlight the presentation and management of a case of extrapulmonary manifestation of mycoplasma infection.

CASE INFORMATION: This is a 49 year old female with a history of asthma presenting with worsening shortness of breath, fevers and cough for the past 1 week. She denied chest pain, endorsed orthopnea but no PND or peripheral edema, no hemoptysis, no vomiting or diarrhea. She had no TB risk factors and no sick contacts. She had a prior history of mild asthma and did not require any medications or inhalers. She was a non smoker, no history of alcohol or illicit drugs. Her physical examination showed a mildly obese female in respiratory distress unable to speak in full sentences. She was afebrile with a BP of 102/62, P 131, RR 36 and pulse oximetry of 82% on RA. She had sceral icterus. Her lung exams was notable for coarse breath sounds bilaterally with no crackles, heart sounds were tachycardic with no noted extra heart sounds, no elevated JVP and no peripheral edema. CXR showed bibasilar atelectasis with slight vascular congestion and a CT angiogram chest showed patchy consolidation in both lower lungs with hiliar
adenopathy no evidence of pulmonary embolism. Labs showed a WBC of 129 with bands, metamyelocytes and myelocyte and no blasts, hemoglobin of 8.2 and platelets of 606. Serum creatinine was 0.5; LFT’s showed a total bilirubin of 6.5, direct bilirubin of 2.4, Alkaline phosphatase of 187, AST of 124 and ALT of 45, showed LDH of 2496, recticulocyte count of 6.6. An infectious work up included negative HIV screen, c.difficile, histoplasma, mononucleosis, legionella and blood cultures. A direct coombs test was positive for anti c3b and neg for IgG with elevated cold agglutination of 1:160. Peripheral smear showed erythrophagocytosis. Mycoplasma titers were notable for elevated IgG at 1:256 and IgM at 1:32 indicating recent infection. Given these findings she was diagnosed with mycoplasma related cold agglutinin hemolytic anemia. She received plasmapheresis for 5 days for clearance of IgM given persistent hemolysis and was treated with a 10 day course of azithromycin.

**IMPLICATIONS/DISCUSSION:** Mycoplasma infections present as pneumonia in about 3-10% of case, of these about 25% go on to develop extrapulmonary complications. One of the more severe manifestations of extrapulmonary mycoplasma infection is cold agglutinin hemolytic anemia (CAHA). The diagnosis of CAHA is based on a positive direct coombs test in the presence of cold agglutinins. Mycoplasma associated CAHA is confirmed by evidence of an acute Mycoplasma infection by serologies. Mycoplasma is a fastidious organism and is difficult to grow in culture. The mechanism of hemolysis is not well understood but has been thought to be an autoimmune process resulting from mycoplasma- receptor complexes that cause agglutination. Hemolysis is a result of complement mediated destruction of the membrane of erythrocytes. In this case the robust leukemoid reaction seen was thought to be secondary to the bone marrows’ response to rapid hemolysis of the erythrocytes by releasing early precursors from the hematopoetic stem cell line which included early precursors to the neutrophils. Malignancy was thought to be less likely the cause of the leukemoid reaction given the absence of blasts in the peripheral smear and the resolution of her symptoms. The treatment of choice for Mycoplasma infections are Macrolides such as Azithromycin and Tetracyclines such as Doxycycline. Studies have also shown the use of IVIG in the inhibition of further hemolysis. In refractory cases other agents such as corticosteroids, azathioprine, interferon, alkylating agents, have been used. Although most of the management of cold agglutinin hemolytic anemia is supportive care, studies have shown that treating the underlying infection is associated with a more rapid resolution of hemolysis.

**FIRST IS THE WORST** Dandan Liu 1; Alvin Rajkomar 1; Sumant Ranji 1; Sumana Kesh 1, 1University of California, San Francisco, San Francisco, California. (Tracking ID # 12270)

**LEARNING OBJECTIVES:** 1. Recognize the limits of laboratory data in diagnosing acute pancreatitis 2. Review treatment of hypertriglyceridemic pancreatitis (HTGP)

**CASE INFORMATION:** A 23 year old man with no significant medical history presented to the emergency department with sudden onset abdominal pain and six episodes of nonbloody emesis along with new polyuria and polydipsia. He had abstained from alcohol for two years and denied any ingestions or history of abdominal pain. On initial exam, he had a soft abdomen that was nontender. Labs revealed glucose of 321 mg/dL, anion gap of 29, normal lactate, and lipase of 59 units/L. He was treated with IV fluids and insulin drip for presumed new onset diabetic ketoacidosis (DKA) as well as pain control. Overnight, patient was noted to have increasing pain medication requirements, and his abdomen was increasingly distended with reproducible tenderness in the epigastric region. An abdominal CT with contrast confirmed diagnosis of pancreatitis with no evidence of gallstones. The patient’s blood was noted to be lipemic. Morning labs showed elevated triglyceride 7470 mg/dL and elevated lipase 143 units/L. He was continued on an insulin drip for management of hypertriglyceridemia induced acute pancreatitis (HTGP) and concomitant DKA. By hospital day 3, his triglycerides decreased to 720 mg/dL, and he was transitioned to subcutaneous insulin. His GAD and islet cell antibodies were negative. He was discharged on hospital day 6 with minimal abdominal pain, tolerating food, with plans for close outpatient follow-up for his diabetes and hypertriglyceridemia.

**IMPLICATIONS/DISCUSSION:** Acute pancreatitis is most commonly precipitated by gallstones or alcohol, although HTGP, with triglycerides >1000 mg/dl, accounts for 2-10% of cases. Serum lipase is a specific test for pancreatitis (spec 82-97%) with sensitivity ranging 67-85%. While there is not much literature on the reliability of lipase in lipemic samples, serum amylase levels are known to be spuriously low in lipemic blood. DKA itself can conversely cause nonspecific elevations in amylase and lipase apart from pancreatitis in approximately 10% of cases. When the history and lab findings are incongruent with an evolving exam, the diagnostic “gold standard” should be ordered: a contrast enhanced CT.

The mechanism of HTGP is not clearly defined, but there is likely secondary hydrolysis of triglycerides by lipase in pancreatic arteries, leading to release of free-fatty acids that are toxic to the capillaries or acinar cells. A capsule of capillary ischemia then promotes activation of trypsinogen and thus pancreatitis. Management is fairly uniform despite etiology. Most commonly, insulin infusion is used, as it is thought to induce lipoprotein lipase activity. Heparin infusion can also be used, although it ultimately leads to a decrease in lipolytic activity. If refractory, plasmapheresis, lipid perhesis, and extra-corporeal lipid elimination are possible, although there are no direct comparisons between these treatment methods, and they are not readily available. Long-term treatment of hypertriglyceridemia is aimed to reduce levels <1,000 mg/dL to decrease the likelihood of pancreatitis. Dietary restriction with <20% of calories from fat is the first step to reduce cholemicon-mediated contribution to elevated triglycerides. Pharmaceuticals including niacin, fibrates, and fish oil can also be employed, although each carries its own set of side effects and costs. This case, with close outpatient follow-up and patient adherence to dietary restrictions should illustrate the adage “first is worst.”

**WERNICKE’S ENCEPHALOPATHY: MORE THAN JUST AN UNSTEADY GAIT** Sandy Tam 2; 1; Sandy Tam 1, 1Stanford University, Menlo Park, California. (Tracking ID # 12271)

**LEARNING OBJECTIVES:** 1. Recognize the clinical features of Wernicke’s encephalopathy 2. Diagnose and treat Wernicke’s encephalopathy.

**CASE INFORMATION:** A 55 year old male with hypertension, hepatitis C, syphilis status post treatment 30 years ago, and alcohol abuse presents with an unsteady gait, recurrent falls, and confusion. His wife was concerned about his recent inability to walk and disorientation; she related that he often thought it was night when it was day and vice versa, with short term memory loss. His wife denied seizures, syncope, changes in medications, and recent illness. The patient denied symptoms such as dizziness prior to his falls. His last drink was reported to be more than one week prior to admission; he reportedly drank 3 half pints of vodka nightly for the past 30 years. Vital signs and physical exam were unremarkable. He was oriented to name and hospital. His neurological exam revealed no nystagmus, intact cranial nerves, 5/5 strength in the upper and lower extremities, postural
tremor, no pronator drift, intact sensation and coordination, wide-based gait, normal reflexes, and down-going toes on Babinski. His laboratory studies were notable for mild anemia, normal metabolic panel, normal B12, folate, thiamine, and TSH, and a negative HIV screen. Toxicology screen was positive for benzodiazepines. Head CT revealed no acute changes, a low density focus in the left lentiform nucleus, possibly an old lacunar infarct, and mild periventricular low density, likely chronic small vessel ischemia. Head MRI revealed abnormal T2 hyperintensity in the caudate head, putamen and globus pallidus bilaterally. An echocardiogram was unremarkable. A lumbar puncture was attempted, but unsuccessful. The patient was started on thiamine for empiric treatment of Wernicke’s encephalopathy. Thiamine 500 mg was given intravenously three times daily for the first 2 days then once daily for the next 3 days. After 2 days of thiamine, the patient was able to slowly ambulate with a walker and after 5 days, without a walker. His mental status and orientation improved as well. The patient was discharged with oral thiamine.

IMPLICATIONS/DISCUSSION: The triad of clinical manifestations in Wernicke’s encephalopathy includes gait ataxia, encephalopathy (disorientation, indifference, inattentiveness), and oculomotor dysfunction (nystagmus, lateral rectus palsy, conjugate gaze palsies). All three features are present in only 30% of patients with Wernicke’s encephalopathy. Ataxia usually occurs first and precedes the other features by a few days to weeks.

Wernicke’s encephalopathy is diagnosed clinically and a response to treatment with thiamine supports the diagnosis. The Caine criteria can be helpful in diagnosing Wernicke’s encephalopathy in chronic alcohol users. Patients meet the criteria when they have two of the four: dietary deficiency, oculomotor abnormalities, cerebellar dysfunction, and either altered mental status or mild memory impairment.

Treatment of Wernicke’s encephalopathy includes high-dose thiamine administered intravenously. One recommended regimen includes thiamine 500 mg intravenously three times daily for two days, then once daily for another five days. Another proposed regimen includes thiamine 500 mg three times daily for three days, then 250 mg daily for an additional five days or until an improvement is made clinically. Glucose administration without thiamine can precipitate or worsen Wernicke’s encephalopathy. Of note, dietary requirements for thiamine are only 1 to 2 mg daily, but the absorption and utilization of thiamine are unpredictable. Patients should be discharged with thiamine 100 mg orally once daily until they can reliably consume an adequate amount from the diet.

A DEADLY HEART ATTACK FOLLOWING CORONARY ARTERY BYPASS GRAFT Islam Al-Howaidi, 1 Theresa Townley2. 1Creighton University School of Medicine, omaha, Nebraska ; 2Creighton University School of Medicine, Omaha, Nebraska. (Tracking ID # 12275)

LEARNING OBJECTIVES: 1. Discuss the risk of myocardial infarction following coronary artery bypass graft (CABG).
2. Discuss management of post CABG myocardial infarction.

CASE INFORMATION: A 44 year old Caucasian male experienced a ground level fall after he blacked out. He lost consciousness for 30 seconds. Patient has been complaining of worsening shortness of breath with minimal activity over the last six months. He denied any previous syncopal episodes, palpitation or chest pain, but he tends to have heartburn and reflux symptoms with activity. EKG on admission showed sinus tachycardia with heart rate of 100, and ST-T wave changes in the anterolateral leads. Cardiac enzymes were negative. Transthoracic echocardiography showed severe concentric left ventricular hypertrophy, with normal estimated ejection fraction, and severe aortic stenosis with a valvular area of 1 cm, and maximum pressure gradient of 67mmhg. CAT scan of the head was negative. CT angiogram showed 75% blockage of the right ICA, and 60% occlusion of the left ICA. Subsequently, he had coronary angiography which showed left anterior descending artery with 90% disease. LCX has 70% lesion. Cardiothoracic surgeons were consulted and they operated on the patient firstly with right ICA stent, followed by aortic valve replacement with a biologic valve, and two vessel CABG with LIMA to LAD. Patient did well after that and was discharge home after one week. Two weeks later, patient was found unresponsive and was unable to be resuscitated. Autopsy was done upon the request of the family, which showed a 6 cm left ventricular myocardial infarction aged 5–10 days. This has been identified as the cause of death in Mr. X case. An area of hyperemia extending the length of the left ventricle, interventricular septum, and papillary muscle. No fibrotic areas of the myocardium. And the replaced aortic valve was intact with no abnormalities.

IMPLICATIONS/DISCUSSION: Perioperative myocardial infarction occurs in up to 4-5% of patients following CABG, and is most commonly due to coronary artery occlusion distal to the new graft. The diagnosis of perioperative MI may be difficult to make after CABG, since cardiac enzyme elevations occur as a result of the surgical procedure and since ERG changes may reflect postoperative pericardial inflammation. The incidence of MI is less in low-risk patients and higher in those with one or more of the following risk factors: Cardiomegaly, Long time on cardiopulmonary bypass. Repeat CABG, or CABG combined with other cardiac surgery. Our patient had two out four, cardiomegaly, and the aortic valve surgery which put him at a higher risk for complications. In order to make a diagnosis, A recommendation has been made to get preprocedural and postprocedural ECG with routine measurements of serum CK and CK-MB. Patients with increased serum CK-MB of five-fold or more above the upper limit of normal should be treated as having an MI, especially in the presence of a technical complication of the procedure. Elevations of less than five-fold are uncertain, although any evidence of clinical instability should prompt caution in discharge and activity.

In our patient, it was unfortunate, that it was late to resuscitate him, but the management for these is revascularization if anatomy is appropriate. The optimal revascularization strategy for early graft occlusion is not known. Repeat CABG is one approach, while balloon angioplasty with and without stenting has been performed immediately after surgery and for treatment of fresh anastomoses. If stents are to be employed, we proceed with usual measures for the prevention of thrombosis, including GP IIb/IIa inhibitors and clopidogrel loading, and are prepared to treat bleeding complications if needed.
in the right coronary artery. Abciximab, clopidogrel, aspirin, metoprolol, simvastatin, and captopril were initiated peri-procedure. The patient was admitted to the coronary care unit and extubated successfully. On hospital day six the patient developed acute shortness of breath, followed by a cardiac arrest requiring advanced cardiac life support and intra-aortic balloon pump placement for hemodynamic support. Electrocardiogram revealed ST-elevations similar to admission. Immediate coronary catheterization demonstrated stent thrombosis, requiring thrombectomy. Clopidogrel was switched to prasugrel and the patient underwent emergent coronary artery bypass graft (CABG) surgery. The patient made a successful recovery.

**IMPLICATIONS/DISCUSSION:** Stent thrombosis (ST) is a rare but potentially catastrophic complication of coronary artery stenting that almost always presents with a large myocardial infarction or death. The overall incidence is only two percent of stent placements and oftentimes diagnosis is only made post-mortem. The definition of ST by the Academic Research Consortium incorporates timing and diagnostic certainty. Timing is categorized as acute (within 24 hours), sub-acute (within 30 days), late (after one year) or very late (more than one year). The majority of ST occurs within 30 days of deployment, with approximately 80 percent of BMS thrombosis occurring in the first 48 hours. The pathophysiology of ST is multifactorial and includes stent factors, patient factors, lesion characteristics, and procedural factors. The single most predictive factor for ST is the absence or premature discontinuation of anti-platelet therapy, particularly clopidogrel, at the time of event. Given the multifactorial etiology, despite appropriate dual anti-platelet therapy with aspirin and clopidogrel, ST may still occur. Clopidogrel metabolism and efficacy is affected by genetic variations of the P450 hepatic enzyme CYP2C19 allele and drug-drug interactions with commonly co-administered drugs such as proton pump inhibitors, calcium channel blockers, warfarin, and lipophilic statins. Patients undergoing ST while on clopidogrel are recommended to switch to prasugrel, another member of the thienopyridine class of ADP receptor inhibitors not affected by CYP2C19, and continuing dual therapy with aspirin for one year. Emergent PCI to restore vessel patency is the treatment of choice for stent thrombosis, and is successful in over 90 percent of cases. Urgent CABG is recommended for the remainder of patients. Given the high morbidity and mortality, appropriate primary prevention along with prompt recognition and management of ST is essential to patient survival.

**ADVERSE DRUG REACTION OF EMU OIL**

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**LEARNING OBJECTIVES:** 1. Recognize Rhomboencephalitis as a rare manifestation of Listeria infection. 2. Treat Listeria Rhomboencephalitis.

**CASE INFORMATION:** A previously healthy 19-year-old female presented with one week of malaise, fevers, headache with nausea, vomiting and photophobia. Neurological exam was nonfocal and labs showed leukocytosis of 20,000 k/uL. CT scan of the head was unremarkable. CSF analysis showed protein of 118 mg/dL, normal glucose and 784 WBCs (78% Neutrophils). Gram stain was negative. Treatment was started empirically with Ceftriaxone, Vancomycin and Ayclovir. The patient did not show signs of clinical response, and her mental status gradually declined with the development of right spastic hemiparesis, left 6th nerve palsy and dysarthria. Ampicillin was added empirically to cover for Listeria based on clinical suspicion. MRI scan showed findings compatible with rhomboencephalitis. CSF showed no growth in bacterial cultures, and was negative for viral, fungal and acid-fast cultures. CSF was also negative for oligoclonal bands. Vasculitis work-up was negative. Few days later, patient started to improve clinically. Listeria antibodies by complement fixation in the serum were positive at 16, thus confirming diagnosis. Ampicillin treatment was continued for 4 weeks with resolution of the neurological deficits.

**IMPLICATIONS/DISCUSSION:** Listeria monocytogenes meningitis usually occurs in neonates, elderly and immunocompromised patients. Cerebritis and Rhomboencephalitis are rare manifestations of Listeria infection with high mortality. Listeria rhomboencephalitis was first
described in 1957, and most of the reported cases were in immunocompetent adults. Presentation is usually biphasic, with a prodrome of headache, vomiting and fever followed by asymmetrical cranial nerve palsies, hemiparesis and cerebellar signs. CSF Gram stain and bacterial cultures are only positive in 40% of cases. Early initiation of specific therapy results in survival rate greater than 70% but about two thirds of survivors have neurological sequela.

PULMONARY LYMPHANGITIC CARCINOMATOSIS IN METASTATIC RENAL CELL CANCER - AN UNUSUAL FORM OF METASTATIC SPREAD Diwakar Davar 1; Leonard JA Appelman 1. 1University of Pittsburgh Medical Centers, Pittsburgh, Pennsylvania. (Tracking ID # 12307)

LEARNING OBJECTIVES: 1. To recognize that pulmonary lymphangitic carcinomatosis is an exceedingly uncommon mode of spread in metastatic RCC. 2. To appreciate that pulmonary lymphangitic spread in metastatic renal cell cancer treated extensively with vascular endothelial growth factor signalling inhibitors may reflect a means of tumor escape phenomenon.

CASE INFORMATION: The first patient presented with localized renal cell cancer (RCC) and underwent a radical nephrectomy and was disease-free for five years before relapsing. Sorafenib therapy started after a trial of interferon-alpha failed and continued for 7 months before the patient developed pulmonary complications.

The second patient presented with metastatic disease at the outset and initially received interleukin-2. However, he progressed and then received 30 months of sunitinib followed by bevacizumab and finally sunitinib again before developing pulmonary complications. Both patients had hypoxemia requiring the use of supplementary oxygen.

The first patient had no clubbing or cyanosis but fine crepitations were noted on auscultation bilaterally. The second patient also had no clubbing or cyanosis but he had poorly heard breath sounds bilaterally with faint Velcro-like crepitations heard over both lung fields. The rest of the physical examination including HEENT,cardio-vascular, abdominal and neurological systems revealed no abnormalities in both patients.

Contrast enhanced computer tomography (CT) of the thorax in both patients revealed nodular opacities and distension of the secondary level septa and new bilateral glass lung infiltrates.

Post-mortem pathologic examination revealed extensive lymphangitic spread of tumor cells in the lungs with neoplastic infiltration of small and medium-sized pulmonary vessels in both patients.

On developing pulmonary complications, both patients were evaluated extensively but no evidence of infectious or inflammatory etiologies were found. They rapidly developed clinical progression with increased fatigue, weakness, and requirement for supplemental oxygen and succumbed within several months from when lymphangitic carcinomatosis was diagnosed.

IMPLICATIONS/DISCUSSION: Pulmonary lymphangitic carcinomatosis (PLC) is a distinct, interstitial pattern of metastatic cancer growth within the lung parenchyma that is seen with many tumor types, but has rarely been reported in association with renal cell carcinoma (RCC). Recent reports have attempted to explain resistance to the antiangiogenic effects of vascular endothelial growth factor (VEGF)-signalling inhibitors observed in the clinical setting. We hypothesize that the interstitial cancer growth pattern characteristic of PLC developed in these patients as an adaptive response to inhibition of tumor neo-vascularization by blockade of VEGF-signalling.

In this era of multiple therapeutic agents targeting VEGF and other mediators of tumor angiogenesis, PLC may be seen more commonly in patients with RCC as a mechanism of acquired resistance to treatment.

CARIOMYOPATHY: A RARE COMPLICATION OF LEGIONELLA INFECTION Mouhamad Mansour 1; Michael Hudson 1; Prasant JGIM Lingam 1; Mohammad Zaidan 1; Maryam Sharifi 1; Henry Ford Hospital, Detroit, Michigan. (Tracking ID # 12308)

LEARNING OBJECTIVES: 1. Recognize Cardiomyopathy as a rare complication of Legionella infection.

2. Treat Legionella infection.

CASE INFORMATION: A 54-year-old Caucasian female with no prior history of heart disease presented with 3-day history of dyspnea, cough, and fevers/chills. Physical examination revealed hypotension, tachycardia, tachypnea and fever. On cardiac examination, there was a normal S1 and S2 without added heart sounds or jugular venous distension. Lung auscultation was marked for diminished basilar breath sounds. Chest X-Ray showed an infiltrate in left base, whereas electrocardiogram showed sinus tachycardia with new left bundle branch block.

Initial lab analysis showed leukocytosis (19.1 k/uL) with 94% neutrophils, hyponatremia (131 mmol/L), hypocalcemia (6.9 mg/dL) and elevated cardiac troponin 1 at 1.69 ng/mL. She was admitted to ICU and treated with ceftriaxone, vancomycin, and azithromycin for community acquired pneumonia. She received aggressive IV fluid resuscitation and sepsis “early goal directed therapy” with worsening oxygenation and bilateral pulmonary edema on exam and Chest X-Ray.

2D transthoracic echocardiogram revealed left ventricular ejection fraction of 20% with global hypokinesis and anterolateral akinesis. Cardiac catheterization was performed showing no significant or moderate coronary artery stenosis plus reduced cardiac output (3.7 L/min) and index (1.7 L/min/m2).

Blood, sputum, and nasopharyngeal cultures were persistently negative. Urine Legionella Antigen was strongly positive so patient was prescribed 14 day course of IV/PO Moxifloxacin. She improved with supplemental oxygen, IV antibiotics, dobutamine, and isotropic support. Urine Legionella antigen was negative on repeat testing.

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CASE INFORMATION: A 63-year-old man with hypertension and no prior abdominal pathology presented with a three-month history of a growing, painful mass in the left lower quadrant (LLQ) of the abdomen. In the week prior to presentation, the pain had increased significantly. The patient denied any fevers, chills, nausea, vomiting, melena, hematochezia, changes in stool quality, or anorexia. He did endorse a 25-pound weight loss over the last year. Examination revealed a firm mass in the LLQ of the abdomen without any associated erythema, warmth, fluctuance, or drainage. The mass was minimally tender to palpation. A computed tomography scan of the abdomen showed the mass, measuring 2.9 x 5.5 centimeters (cm), in the abdominal wall of the LLQ.

When the patient followed up in the Surgical Oncology clinic one week later, the mass had grown to 10 cm in its largest diameter. Approximately 40-50 milliliters of purulent, hemorrhagic material was aspirated from the lesion. Biopsy of the lesion showed features consistent with an abscess, including many neutrophils, granulation tissue, and bacteria. Cytology showed no malignant cells; it did reveal, however, the presence of *Actinomyces* on multiple stains.

Six days later, the patient was started on amoxicillin-clavulanate. Nine days after this, because of continued growth and new spontaneous purulent drainage from the lesion, the patient was admitted to the hospital for incision and drainage of the abscess and was discharged on long-term amoxicillin.

IMPLICATIONS/DISCUSSION: Actinomycosis is a rare diagnosis, and primary abdominal wall actinomycosis is particularly uncommon, only 20 cases having been reported in the English literature to date. The bacteria normally colonize the mouth, gastrointestinal tract, and female genital tract. What leads to an active infection is some breakdown of the mucosal barrier. This inciting event may be, among many other causes, appendicitis, cholecystitis, diverticulitis, etc. or placement or removal of an intrauterine device, though, despite thorough history-taking, no cause may ever be identified in some cases (as in ours).

The distinguishing feature of an actinomycotic infection, as opposed to infections caused by other more common bacteria, such as some streptococcal or staphylococcal species, is a slow-growing, chronic phase of infection (which can begin to develop months or even years after the initial mucosal breakdown). This distinguishing feature is, unfortunately, the same characteristic that frequently leads to misdiagnosis, as the lesions are assumed to be malignancy and not infection. For this reason, some have called actinomycosis "the most misdiagnosed disease".

Generally, medical treatment of actinomycosis with high-dose penicillin or amoxicillin is considered the best approach. Unfortunately, in many cases, by the time the diagnosis is made, extensive surgery has already been done. Though removing the infection may be helpful from a therapeutic standpoint, surgery has its own attendant risks and can leave the patient permanently disfigured. In cases of discrete, firm, indurated abscesses, as in our patient, drainage may be needed in addition to antibiotic therapy and may lead to quicker resolution of disease. Actinomycosis is an important diagnosis to consider in cases of slow-growing masses, since the patient may be spared extensive surgery if the diagnosis is made in a timely fashion.

I WISH I HAD HELLP! Premal D Lulla 1; Kelty Baker 2. 1Baylor College of Medicine, Houston, Texas; 2Baylor College of Medicine, Houston, Texas. (Tracking ID # 123312)

LEARNING OBJECTIVES: 1. Recognize that prolongation of both prothrombin (PT) and activated partial thromboplastin time (aPTT), represent an abnormality of the final common pathway, containing factors X, V, II and fibrinogen. 2. A 1:1 mixing study is a quick test to differentiate acoagulation factor deficiency from a factor antibody, both with distinctive therapeutic approaches.

CASE INFORMATION: A 69-year-old male underwent an elective repair of an abdominal aortic aneurysm. A pre-operative basic coagulation profile was normal. An INR on post-op day 6 was 1.1 with an aPTT of 32 s. On the 14th post-operative day, he developed hemoptysis, epistaxis and bleeding from the surgical site. Coagulation tests were as follows: PT: 100 s, aPTT: >150 s, INR: 9.4. Thrombin and reptilase times were normal. Fibrinogen was elevated...
to 721 mg/dl. He was not on anticoagulants and had no prior history of coagulopathies. A peripheral blood smear was normal except for a normocytic normochromic anemia. An acquired inhibitor of the final common coagulation pathway was suspected when a 1:1 PT and aPTT mixing study did not correct. Amongst the factor levels tested for in the final common pathway, factor V levels were undetectable. An inhibitor specific for human factor V was identified through serial dilutions of plasma. It was measured at 14 Bethesda Units (BU). This inhibitor had no cross-reactivity with bovine factor V, suggesting no prior exposure to bovine thrombin. The acute bleeding was managed with aggressive blood transfusions, activated factor VII (Novoseven®), μ-aminocaproic acid, plasmapheresis and platelet transfusions (to replete with platelet bound factor V). Bleeding arrested by post-operative day 15. Inhibitor elimination therapy with corticosteroids, plasmapheresis and Rituximab was initiated. By post-operative day 21 his INR gradually trended down to 5.94 and aPTT to 64 s. On post-operative day 34 he was discharged home with an INR of 1.4, aPTT of 39 s, Factor V levels of 45% and an undetectable factor V inhibitor.

IMPLICATIONS/DISCUSSION: Factor V is essential for the generation of thrombin, and congenital or acquired deficiencies of factor V lead to marked prolongation of PT and aPTT. Acquired Factor V inhibitors are rare, although strongly associated with bovine thrombin exposure during vascular surgeries. This occurs due to antibody sensitization to bovine factor V found as a contaminant in commercial bovine thrombin (fibrin sealants). Spontaneous factor V inhibitors are also known to develop, associated in case reports and case series with collagen vascular diseases, exposure to antibiotics or more commonly post-surgery. It is interesting that through yet unknown mechanisms, not all acquired factor V inhibitors cause clinical bleeding. Unlike the more common factor VIII inhibitors, these factor V inhibitors have been reported to disappear spontaneously in approximately 3 months. As internists, it is important to recognize the various steps involved in determining the cause of a coagulopathy including the importance of performing a 1:1 mixing study to rule out factor inhibitors.

**ABSTRACTS**

**THE DEFICIENT B-VITAMIN, CAUSING A “VERY-VERY” BIZZARE PRESENTATION** Premal D Lulla, Lu Li. 1Baylor College of Medicine, Houston, Texas. (Tracking ID # 12334)

LEARNING OBJECTIVES: 1. Recognize the constellation of findings associated with adult Beri-Beri.
2. Understand that severe malnourishment from any cause including depression can cause adult Beri-Beri.

CASE INFORMATION: A 34-year-old female with no significant past medical history, endorsed 3 months of gradually progressive anemia, ataxia, visual blurring, hallucinations & a 40 lb. weight loss. She had first noted numb feet progressing proximally associated with tingling, burning & weakness of her legs. Subsequently, she noticed that she was forgetting newly learnt information, described as “nothing sticks anymore” . She had a repeating visual hallucination of a “woman throwing gas at her” , not vivid, but occurred before sleep and waking routinely for the past 1 month. This would cause her to have “panic attacks” and a “racy heart” . Her mother, endorsed a 3 month history of a progressive decline in her daughters mood. She was not communicating her thoughts and that she would frequently skip meals. On a review of systems, she had not had a period in 4 months, and more recently had developed alopecia spontaneously. Except for a hypophosphatemias (1.9 mg/dl), her electrolytes and blood counts were normal. Estrogen, FSH, LH and prolactin levels were normal. An MRI and an LP were unremarkable. An electromyogram revealed mild slowing in bilateral lower extremity nerve conduction velocities, with an axonal pattern. A neuropathy work-up which included an ANA, Vitamin B12 level, RPR, TSH, ESR & a heavy metal screen were normal. Fundoscopy demonstrated bilateral disc edema. Psychiatry made a provisional diagnosis of atypical depression with psychotic features & began

**BACTERIOIDES FRAGILIS PRESENTING AS NONVALVULAR INVOLVEMENT WITH INFECTED LEFT VENTRICLE THROMBI** Vishal Goyal, Susan Mathew. 1Allegheny General Hospital, Pittsburgh, Pennsylvania; 2Internal Medicine, Pittsburgh, Pennsylvania. (Tracking ID # 12331)

LEARNING OBJECTIVES: 1. Identifying anaerobic bacteria as an uncommon but important cause of endocarditis and recognize likely source.
2. Recognize management strategies, predisposing conditions, and complications that evolve from anaerobic infections particularly in endocarditis.

CASE INFORMATION: We describe a 44 year-old Caucasian male with history of inflammatory bowel disease presented with fever, chills, generalized weakness, and foot pain with cyanotic discoloration. He was admitted in critical condition, and TTE proved to show 3 echodensities. The first infected thrombi was attached to the interventricular septum and the other two were attached to the apex. His EF was 25% with global hypokinesis. This lead to TEE which confirmed the findings. Blood cultures were positive for Bacteroides Fragilis, a gram negative anaerobic organism. Right foot pain was secondary to right foot ischemia most probably due to emboli from the vegetations in the left ventricle. This right foot ischemia converted to dry gangrene for which the patient would undergo debridement in future. A colonoscopy was done which showed multiple fistula openings in colon at multiple levels which quickly became an obvious source of bacteremia. After medically stable and appropriate de-escalation of antibiotics to metronidazole, he received a proctocolectomy with ileostomy. Biopsy of the colon confirmed that the patient had Crohn’s disease. With appropriate management and intervention, he had complete resolution of his acute illness.

IMPLICATIONS/DISCUSSION: Anaerobic bacteria are an important cause of infection. Based on recent literature reviews, Infective endocarditis from anaerobic bacteria account for only 2-16% over the last 30 years. There are also resistant patterns with anaerobic infections which have made and continue to make treatment difficult. Bacteroides is an anaerobic non spore forming gram negative bacilli which can be found in colon, vagina and nasopharynx, which hence account for most source of this infection including this patient. It has high mortality rate, is usually related to resistance and delays in time to detection of this organism. Since the advent of metronidazole, which is one of the bactericidal agents affective against anaerobic bacteria, there has been decrease in mortality rates. Bacteroides Fragilis also produces haptoglobinase which may explain high rate of thromboembolic phenomenon in patients with this subtype of endocarditis. Complications associated with anaerobic endocarditis are valvular destruction, mycotic aneurysms, septic emboli, aortic ring abscess and aortitis, cardiogenic shock, dysrhythmias and septic shock. Major differentiating points between common organisms causing endocarditis and Bacteroids endocarditis are lower incidence of pre-existing valvular heart disease, large vegetations and extensive valvular destruction more than streptococcus organisms but less than staphylococcus, higher incidence of peripheral embolization and high mortality rates. Since delay in diagnosis of endocarditis due to anaerobic organisms can lead to severe complications and high mortality one can consider adding coverage against anerobes especially if there are risk factors for development of anaerobic bacteremia.
Devor2. 1UCSD/ VA, San Diego, California ; 2San Diego Veteran visits, her heart rate had been 100-130/min in sinus rythym, an Echocardiogram showed an ejection fraction of 70% as a result of a high-output state. As part of an amnesia work-up a serum Vitamin B1 level was low: 0.6 micro-g/L (Normal 4–20). A diagnosis of adult Beri-Beri was made which was managed with oral thiamine with a dramatic improvement in her memory, neuropathy, tachycardia & resolution of hallucinations & visual symptoms over a 4 month period.

**IMPLICATIONS/DISCUSSION:** Glucose is dependant on thiamine as a co-enzyme for ATP production vital to the nerves and heart. Historically, thiamine deficiency was described as Beri-Beri among Asian populations that subsisted on polished rice. More recently, Beri-Beri has been noted among post-bariatric surgery patients (Towbin et. al, 2004) and those dependant on parenteral nutrition not supplemented with thiamine (Hahn et. al 1998). Adult Beri-Beri involves the nervous system, causing amnesia, peripheral neuropathy and hallucinations (dry), but in rare more severe cases cause high output heart failure manifesting as persistent tachycardia, with a wide pulse pressure and edema (wet). A more acute form coupled with a simple carbohydrate deficiency is seen in alcoholics as the more common Wernicke’s encephalopathy (Lonsdale D, 2006). Internists must recognize that Beri-Beri is a rare diagnosis among Western populations but malnourishment from any cause is a risk factor, including severe anorexia associated with depression.

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**AN UNUSUAL CASE OF ORTHOPNEA** Ramin Motarjemi 1; Michelle Devor2. 1UCSD/ VA, San Diego, California ; 2San Diego Veteran’s Administration System, San Diego, California. (Tracking ID # 12335)

**LEARNING OBJECTIVES:** 1. Using Incliner Sleep Wedge device to relieve Dyspnea and hypoxemia caused by a large Hiatal Hernia 2. address a chronic problem with a simple home intervention

**CASE INFORMATION:** 76 year old male with past medical history of Coronary Artery Disease, Diabetes Mellitus, hypertension, Hiatal Hernia who is being followed by Home based Primary care program. Patient has been complaining of mild shortness of breath for the last year. Shortness of breath is mild at rest, worse with physical activity and laying supine. Symptoms worsen when he tries to go to bed and sleep. Sitting up relieves the shortness of breath. He has no chest pain, cough or leg swelling. No evidence of congestive heart failure was seen in home visit. On physical exam, vital signs are normal. Oxygen saturation drops to below 85% when he lays supine. No lung crackles, jugular venous distention or lower extremity swelling was noted. He had a soft protuberant abdomen, no mass felt. Pulmonary Function Test result was suggestive of a mild restrictive process. Cardiac Perfusion scan failed to show any evidence of coronary insufficiency. Echocardiogram showed EF of 61% with mild left ventricular diastolic dysfunction. A Incliner Sleep Wedge device was ordered for him to use when supine and at night. His symptoms improved drastically and was able to sleep at night without waking up short of breath. His O2 saturations was 92% on room air in supine position with the wedge.

**IMPLICATIONS/DISCUSSION:** Patient had work-up for his symptoms, but the work-up failed to point to a specific cause for his symptoms. He had no clinical findings suggestive of heart failure, but would have a significant drop in his oxygen saturation with change in position. We suspected that his hiatal hernia is causing his symptoms. We prescribed an Incliner Sleep Wedge device for him to use when he goes to bed at night to sleep. In follow-up visits, he reported that his nightly symptoms are almost gone and he can sleep without shortness of breath.

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**BLASTIC PLASMACYTOID DENDRITIC CELL NEOPLASM PRESENTING AS FOREARM SOFT TISSUE SWELLING** Jatin Rana 1; Javier Munoz 1; Nalini Janakiraman 1; Kedar Inamdar 1; David Nathanson 1. Henry Ford Hospital, Detroit, Michigan. (Tracking ID # 12344)

**LEARNING OBJECTIVES:** 1. Blastic plasmacytoid dendritic cell neoplasm is a rare disease presenting frequently with cutaneous involvement. We report an interesting case in which a patient presented with left forearm soft tissue swelling. 2. The use of immunohistologic staining in the work up of a patient’s differential diagnoses is useful to detect and confirm the presence of rare malignancies.

**CASE INFORMATION:** We describe a case of a sixty-six-year-old female, who presented with tender left forearm soft tissue swelling for two months duration (Figure 1). One month later a routine screening mammogram revealed a new 4 mm mass in the left breast in addition to left forearm ultrasound finding of a 6.5x1x3.6 cm soft tissue mass which was also confirmed by magnetic resonance imaging (Figure 2 and 3). Subsequent left breast needle biopsy and left forearm fine needle aspiration favored an undifferentiated malignant neoplasm of hematolymphoid origin with markers CD4+/CD56+. Positron emission tomography (PET) scan showed activity in the left forearm (Figure 4) and left breast with extension to bilateral pleura, liver, spleen, portocaval lymph nodes and omental caking. A bone marrow biopsy was negative for malignancy and shortly thereafter the patient underwent induction therapy with cytarabine and idarubicin. Following progression of metastatic disease on PET scan, the patient received reinduction chemotherapy with mitoxantrone, etoposide, and cytarabine (MEC). Medical course was complicated with new onset seizures with subsequent imaging showing an intracranial mass thus biopsy had to be performed to rule out malignant involvement albeit the biopsy ultimately revealed benign meningioma. Following removal via left sided craniotomy, the patient suffered multiple complications including septic shock with Enterobacter cloacae bacteremia, disseminated intravascular coagulopathy, and pulmonary embolism. Seven months after the initial presentation, the patient was placed under hospice care and shortly thereafter passed away.

**IMPLICATIONS/DISCUSSION:** BPDCN is a rare malignancy formerly recognized as CD4+/CD56+ hematodermic neoplasm and is suggested to have derived from plasmacytoid dendritic cells. It typically presents in middle-aged or elderly patients initially with skin or soft tissue manifestations with concurrent aggressive disseminating disease and poor prognosis. The importance of accurate immunohistologic evaluation is highlighted because BPDCN represents a diagnostic challenge while sharing overlapping pathological features with acute myeloid leukemia, lymphoblastic lymphoma, NK/T cell lymphoma, myelomonocytic and monocytic leukemias. BPDCN expresses CD4, CD56, CD123 (interleukin-3 receptor alpha chain) and BDCA-2 (blood dendritic cell antigen 2) while expression of TCL1 is helpful when the tissue displays weak expression of above mentioned markers. BPDCN behaves as an aggressive acute leukemia thus survival is poor with a mean survival.
time near 12 months in the isolated cases found in the literature. The treatment regimen usually involves first-line multi-agent chemotherapy followed by subsequent stem cell transplantation for best outcomes. Unfortunately our patient showed dismal response to chemotherapy and the originally intended stem cell transplantation could not be instituted due to poor performance status and the multiple complications that the patient faced after the surgical resection of her meningioma.

ACUTE HIV INFECTION PRESENTING AS MENINGOENCEPHALITIS

Colleen Ford 1; Eileen Reynolds1. 1Beth Israel Deaconess Medical Center, Boston, Massachusetts. (Tracking ID # 12345)

LEARNING OBJECTIVES: 1. Recognize the neurologic symptoms of acute HIV 2. Recognize the benefits of early HIV diagnosis and treatment.

CASE INFORMATION: A 45 yo male presented with fevers, headache and flu-like illness. He was in good health until 3 weeks prior when he developed fevers, nausea, vomiting, diarrhea, dizziness, diaphoresis, night sweats, arthralgias and myalgias. He presented to a local emergency department, was told he had an acute viral illness and was sent home with reassurance. He saw his PCP several days later and was found to have fever, headache, dizziness, and flu-like illness. He was in good health until 3 weeks prior when he developed fevers, nausea, vomiting, diarrhea, dizziness, diaphoresis, night sweats, arthralgias, and myalgias. He presented to a local emergency department, was told he had an acute viral illness and was sent home with reassurance. He saw his PCP several days later and was found to have fever, headache, dizziness, and flu-like illness. He was in good health until 3 weeks prior when he developed fevers, nausea, vomiting, diarrhea, dizziness, diaphoresis, night sweats, arthralgias, and myalgias. He presented to a local emergency department, was told he had an acute viral illness and was sent home with reassurance. He saw his PCP several days later and was

IMPLICATIONS/DISCUSSION: We describe a case of hepatic echinococcal cyst rupture with subsequent hypersensitivity rash and peritonitis. Cystic echinococcosis is caused by the parasitic tapeworm 

A BODY-BUILDER AND HIS SURREPTITIOUS STEROID USE

Sonica Bhatia 1. 1New York Presbyterian Hospital/ Weill Cornell Medical Center, NY, New York. (Tracking ID # 12372)

LEARNING OBJECTIVES: 1. Recognize increasing prevalence of anabolic-androgenic steroid use among non-elite athletes in primary care settings. 2. Recognize signs and symptoms of anabolic-androgenic steroid (AAS) use.

CASE INFORMATION: A 31 year-old male with PMH asthma and obstructive sleep apnea, presents at a primary care doctor’s office for follow-up of multiple episodes of palpitations, flushing, chest discom-
A NOT SO RETRO VIRUS

Jason Halperin1;2, Lauren Richer1, Tulane University Department of Internal Medicine, New Orleans, Louisiana; Tulane University Department of Infectious Diseases, New Orleans, Louisiana. (Tracking ID # 12377)

LEARNING OBJECTIVES: 1. Recognize the Central Nervous System manifestations of acute HIV infection. 2. Review the Fiebig stages of acute HIV infection. 3. Discuss the advantages and disadvantages of treating acute HIV infection.

A 33 year old woman presents with a one day history of myoclonus. She describes diffuse muscle contractions lasting only minutes but with frequent recurrence. In addition, she has had two episodes of bladder incontinence. She denies any change in consciousness, lip smacking, headache, neck stiffness or aura preceding her attacks. She denies recent fevers, night sweats or chills. She smokes one pack of cigarettes daily, and denies ever using illicit drugs. She reports a recent unprotected sexual contact. Her past medical history is significant only for pelvic inflammatory disease diagnosed two weeks ago.

The physical examination was unremarkable with the exception of painful bilateral generalized muscle contractures lasting approximately thirty seconds and occurring every ten minutes. Our patient was able to converse and track her physician through these episodes. Diagnostic testing revealed a metabolic acidosis with acute renal failure. Further, laboratory testing demonstrated an elevated creatinine kinase at 36,725 and an elevated lactic acid at 2.7. CT scan and MRI of the brain were unrevealing. EEG was normal. CSF analysis was significant for an aseptic meningitis with elevated protein and 19 white blood cells with 92% lymphocytes. Blood culture, RPR, CSF gram stain and culture, HSV PCR, as well as West Nile antibody screen were all negative. HIV ELISA was positive. Her HIV viral load by RNA PCR was 1.5 million copies. Her western blot was positive but absent for the HIV p31 band, demonstrating acute HIV infection.

IMPLICATIONS/DISCUSSION: Acute HIV infection (AHI) most commonly presents as mononucleosis-like illness with fever, rash, headache, lymphadenopathy and pharyngitis. Yet, the clinical picture is broad and up to 75% of symptomatic AHI may be missed at the first medical encounter. Aseptic meningitis is the most common CNS presentation. In our patient, the classic signs of meningitis were absent. Other less common presentations of CNS involved AHI include encephalopathy, ataxia, seizure and coma. AHI is easy to test and must be considered for a wide spectrum of presentations involving the CNS.

In 2003, Fiebig et al. classified primary HIV-1 infection into six distinct stages. Stage I is the sole presence of viral RNA with a mean cumulative day from infection of 15 days. Stage II is p24 antigen positive, with a mean cumulative day from infection of 22 days. Stage III is when the ELISA is positive with a mean cumulative day from infection of 25 days. Stage IV is western blot positive or negative but without p31 antigen with a mean cumulative day from infection of 31 days. Stage V is western blot positive but p31 antigen negative with a mean cumulative day from infection of 101 days. Stage VI is western blot positive including p31 antigen and is open-ended and no longer acute HIV infection. Our patient was Fiebig stage V demonstrating infection most likely occurred 3–4 months before hospitalization. Patient confirmed an exposure consistent with this timeframe. Early initiation of anti-retroviral treatment (HAART) during AHI remains unknown. The benefits include decreasing the severity of AHI, decreasing the incidence of opportunistic infections, slowing the progression to AIDS and decreasing transmission by rapidly suppressing the viral load. The disadvantages include drug toxicity, difficulty with lifelong adherence, and the risk of drug resistance. Further research is urgently needed and until then starting HAART during AHI will remain a case by case decision.
painless nodules have been more prominent when supine and less prominent upon standing. She had a past medical history of head trauma after a fall from a moving truck. She had sustained subarachnoid hemorrhage, diffuse axonal injury and traumatic neuropathy in right eye. She underwent ventriculostomy for relief of hydrocephalus, later retroperitoneal shunt for refractory hydrocephalus. Post hospitalization course was uneventful, later developing hypertension. 2 years later ventriculoperitoneal shunt was replaced secondary to infection and persistent headaches. A year later, she noticed subcutaneous nodules along her shunt on abdominal wall, was reassured that it was a normal scarring after a ventriculoperitoneal shunt. Initially painless, but later became painful and prominent while standing also. Patient was treated for cellulitis for persistent nodules, soft tissue ultrasound was done which showed right breast mass with nodules along the shunt. Breast biopsy showed invasive papillary carcinoma of right breast and was ER/PR positive. HER-2 was negative. Later evaluation by computerized tomogram revealed lesions in her spleen as well as soft tissue mass along ventriculoperitoneal shunt in the abdomen with peritoneal carcinomatosis. Initially chemotherapy was started on Femara but progression was seen on imaging studies. Peritoneal masses were also seen which have increased in size. She also had evidence of tumor in the pelvis. Chemotherapy was changed to weekly Taxol but poor response was seen. Subsequent workup suggested likely peritoneal or ovarian primary with tracking along ventriculoperitoneal shunt presenting as subcutaneous nodules. Later chemotherapy was changed to Gemcitabine and carboplatin to which patient responded.

IMPLICATIONS/DISCUSSION: This case presents a unique presentation of intrabdominal tumors. Subcutaneous nodules are continuously being treated as cellulitis but has not been considered as tumors from abdominal malignancy tracking along ventriculoperitoneal shunt in patients with shunt placement. Metastasis through ventriculoperitoneal shunt has been seen as Germinoma that metastatized to the peritoneal cavity and ovarian cancer that developed iatrogenic leptomeningeal involvement of the lateral ventricle. These rare presentations of tumours or complications of shunts should be considered in the differential diagnoses.

AN INTERNISTS ROLE IN THE RESPONSE TO THE EARTHQUAKE IN HAITI IN JIMANI, DOMINICAN REPUBLIC Theresa Townley1; 1Creighton University, Omaha, Nebraska. (Tracking ID # 12389)

LEARNING OBJECTIVES: 1. Provide insight into the role of an internist in a humanitarian disaster such as the earthquake in Haiti through the review of some some common medical problems encountered after the earthquake in Haiti. 2. Provoke discussion about the common therapeutic, diagnostic and management dilemmas faced in a disaster in a low resource setting and Discuss essential medicine and supplies required in a low resource setting to adequately respond to such a disaster

CASE INFORMATION: On January 12, 2010 an earthquake struck Port-au-Prince (PAP)causing massive damage including the death of approximately 300,000 and disabling injuries to another 250,000. Although the primary need initially was for surgeons, patients suffered severe injuries which required non-surgical physicians to provide quality medical care despite resource limitations. Patient #1-A 35 yo f who was pulled from the rubble and had a suspected unstable pelvic fracture as well as a right femur fracture. She had an external fixator placed on her right leg, a foley placed secondary to urinary retention and was on bed rest. On day #8 post-earthquake, she developed the acute onset of shortness f breath. On exam, she was dyspneic and had a hard time speaking more than a few words at a time. On exam, she was tachycardic with a heart rate of 100 but no murmurs, rubs or gallops. Chest sounds were clear. How do you proceed?

Patient #2 Patient was found under rubble, a large piece of mortar had landed on his leg and he developed extensive skin necrosis. He required multiple debridings and was found to have a large foul smelling wound. What antibiotics would you use to supplement the debridement?

Patient #3- A 32 yo f who was found underneath rubble. After being pulled out of the rubble, she was unable to move her legs. No other injuries were apparent. She was placed on a cot. When patient could not find care in PAP, she was transported to the hospital in Jimani. She was evaluated by the medical team approximately 6 days after the quake. A foley catheter was placed. What other measures need to be done? What should be done for other similar patients?

Case #4 21 yo f suffered a severe crush injury to her foot which requires placement of an ex-fix and multiple debridments which are excruciatingly painful. How would you proceed with dressing changes?

IMPLICATIONS/DISCUSSION: Complex humanitarian disasters such as earthquakes in low resource settings require the rapid mobilization of trained medical professionals equipped with adequate supplies and medications. Although, surgeons are in high demand, there is also a need for skilled internists with attention to medical problems likely to develop in this setting as well as attention to supply chain and

IS THE PATIENT REALLY “DYING” FROM THIS? AGGRESSIVE MANAGEMENT AND GOALS OF CARE IN INTRACTABLE SPINAL INFECTIONS Rachel D.A. Hayver1; Molly L. Olsen 1; Keith M. Swetz1.

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LEARNING OBJECTIVES: 1. Recognize the importance of delineation of goals and aggressive symptom control in intractable spinal infections 2. Distinguish phases of dying as active and acute versus chronic yet impending

CASE INFORMATION: A 56-year-old woman with brittle type 1 diabetes mellitus and end-stage renal disease developed an infected dialysis graft and ensuing methicillin-resistant Staphylococcus aureus (MRSA) endocarditis. Subsequently, debilitating back pain developed leading to a diagnosis of multi-drug resistant, multilevel, MRSA thoracic osteomyelitis (T9-T11) and epidural abscess (T5-T12). The infection progressed despite several antibiotics and led to paraplegia. Pain remained intractable despite several methods of analgesia including opioids and adjuvants, which led to significant delirium. Multiple comorbidities precluded operative treatment; however, palliative drainage was attempted with no improvement in pain or neurologic status. Due to the progressive and incurable nature of the condition and her severe symptoms, several goals of care discussions were had that delineated the major goal of maximal survival, but also a goal of improved pain control. Despite palliative sedation with mechanical ventilation did provide some improvement in her pain. Ongoing discussions as to whether the patient was “dying” led to varying opinions. Though the patient was not fulminating septic and actively dying, her prognosis was limited and overall grim. Several discussions allowed for maximal medical measures to continue as long as possible, but with maximal pain control concurrently. She was ultimately discharged to a swing bed with antibiotics and ongoing dialysis until her death one month later due to progressive infection.

IMPLICATIONS/DISCUSSION: Non-tuberculous bacterial spinal infections can involve the spinal column or the epidural space, with or without diskitis or osteomyelitis. Spinal infections are a rare but serious cause of back pain, and pain is the presenting symptom in roughly 75% of cases. Symptoms often improve with successful treatment of the infection, including combined systemic antibiotic therapy and surgical debridement.
Spinal infections can be treated with antibiotics alone when surgery is declined or contraindicated due to perioperative risk. Unsuccessful treatment may lead to complications including disseminated infection or neurologic complications including paralysis, spasticity, or severe pain. In these cases, prolonged and significant morbidity without definitive treatment options may occur, but prognosis may not be significantly shortened. However, when multiple comorbidities exist or infection is difficult to treat due to allergies or emerging resistance, overall survival may be reduced. Though spinal infection may be able to be suppressed to variable degrees, potential complications including long-term pain and symptom management, and eventual death, may need to be discussed. Care providers need to be aware that progressive spinal infection may indeed be a terminal disease, particularly when other comorbid conditions coexist, even if the patient is not septic. Generalists involved longitudinally in the care of these patients should adequately ascertain patient decision making and delineate goals of care early and iteratively to ensure the best possible quality of life for these patients.

**LEARNING OBJECTIVES:**
1. To present a case of essential thrombocythemia (ET) presenting with digital ischemia
2. To review the signs and symptoms of the rare disorder of essential thrombocythemia

**CASE INFORMATION:**
A 52-year-old woman was sent to the hospital by her vascular surgeon for pain and dry gangrene at the tip of the right second digit. Two weeks prior her symptoms began with a burning sensation, mild ache and a slight blue discoloration. This progressed to a dark finger tip with worsening pain mildly relieved by holding her finger up to an air conditioner. There was no trauma to the finger, fevers or local infection. She is an active smoker with a medical history of right breast lumpectomy for a benign mass in 1992. Her only medication is or local infection. She is an active smoker with a medical history of right breast lumpectomy for a benign mass in 1992. Her only medication is

**DON’T COUNT ON THE AMYLASE**

**LEARNING OBJECTIVES:**
1. Recognize the uniquely low sensitivity of serum amylase level in hypertriglyceridemia-induced pancreatitis
2. Review different aspects of the third leading cause of acute pancreatitis

**CASE INFORMATION:**
A 25-year-old man presented with a several hour history of abdominal pain. The pain was severe, diffuse, and radiated to his back. He had never experienced similar pain and reported no known past medical conditions or alcohol use. Vital signs were unremarkable. Serum glucose was 290 mg/dl and hemoglobin A1c was 10.7%. Serum amylase was 160 u/l but serum lipase was 1030 u/l. Triglycerides were approximately 4000 mg/dl. Thyroid function tests were within normal. An abdominal sonogram revealed a normally distended gallbladder without a shadowing stone. Computed tomography scan of the abdomen revealed peripancreatic fluid and stranding surrounding the pancreatic body and head, consistent with acute pancreatitis. The patient was treated conservatively for acute pancreatitis and hyperglycemia. In addition, he was given oral Gemfibrozil 600 mg twice a day. After achieving glucose control and initiation of the antilipemic agent, a repeat level of triglycerides was approximately 200 mg/dl.

**IMPLICATIONS/DISCUSSION:**
A serum amylase assay is most frequently ordered to diagnose acute pancreatitis due to its technical simplicity, easy availability, and high sensitivity. The exact sensitivity is difficult to assess because an elevated amylase is often used to make the diagnosis. When the estimation of amylase is early in the course of the disease and there is no history of chronic pancreatitis, a normal level would usually exclude the diagnosis of acute pancreatitis with the exception of hypertriglyceridemia-induced pancreatitis. A possible mechanism is that hypertriglyceridemia interferes with the laboratory measurement of amylase by preventing the calorimetric reading of the assay endpoint. Serum triglyceride concentrations greater than 1000 mg/dl may precipitate acute pancreatitis, whereas a level less than 200 mg/dl is associated with a reduction of recurrences. The pathophysiology of hypertriglyceridemia-induced pancreatitis is unclear. It is thought that the release of excess free fatty acids from triglyceride hydrolysis results in toxic injury to acinar cells and capillary
endothelia. Hereditary dyslipidemia syndrome best defines the association between pancreatitis and hypertriglyceridemia, with up to a 40% incident rate of acute pancreatitis in homozygous children for lipoprotein lipase or apoprotein-CII deficiency. Most adults with hypertriglyceridemia have either a mild form of inherited dyslipidemia or an acquired condition that raises serum lipids. Some of these conditions include alcohol abuse, hypothyroidism, pregnancy, estrogen therapy, glucocorticoid excess, nephrotic syndrome, medications, and as in the above patient, obesity and diabetes mellitus. When the clinical pretest probability is high for acute pancreatitis, but the amylase level is normal, it is important to proceed with further testing to determine hypertriglyceridemia as a possible cause.

**MEDIASTINAL CLUTTER CAN MAKE YOUR HEART FLUTTER** Vinod Khatri 1; Krishna Khatri 1; Sangmesh Jabshetty 1; Harvey Friedman1.

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**LEARNING OBJECTIVES:**
1. Lymphoma presenting as mediastinal mass can cause pressure symptoms on the heart.
2. This elevated mediastinal pressure may lead to atrial flutter/fibrillation.

**CASE INFORMATION:**
73 yrs old gentle man with past medical history significant for indolent lymphoma presented to hospital with one month history of progressive dysphagia, three week history of dyspnea on exertion & three day history of bilateral lower extremity edema. He denied any constitutional symptoms such a fever, night sweats or weight loss. On examinations his vital signs were temp 97.7 F, pulse 65/ min regular, blood pressure 157/76 mmHg, respiratory rate 20/min and 96% on room air. His neck exam revealed a mobile, rubbery about 2.5 cm lymph node in ant cervical group on left side. Chest exam showed decreased breath sound at both base with rest of lung fields clear to auscultation, Cardiac exam revealed regular rate & rhythm, normal S1S2, with no murmurs. Abdomen was soft, mildly distended, no organomegaly, bowel sounds normal, Bilateral lower extremities revealed 3+ bilateral pitting edema. On evaluation his CT scan of chest abdomen and pelvis showed extensive bulky mediastinal & mesenteric lymphadenopathy. Mediastinal lymph nodes were causing mass effect on right side of heart. He underwent mediastinoscopy mediatied lymph node biopsy which was consistent with marginal zone lymphoma. While in hospital patient developed an episode of Atrial flutter with 2:1 block which subsequently converted to sinus rhythm after amiodarone infusion. Pt had another episode of Atrial fibrillation with rapid ventricular response during the course of hospitalization which was treated successfully with amiodarone again.

**IMPLICATIONS/DISCUSSION:** Lymphomas are known present as mass lesions both above & below the diaphragm. In this case extensively bulky mediastinal lymph nodes were causing mass effect on right side of heart leading to atrial flutter/fibrillation. On review of literature there are few case reports of primary or secondary cardiac lymphoma causing atrial brady and tachyarrhythmias many of which were a result of chemotherapy for lymphoma. Lymphomas have also been reported to invade the pericardium and cause cardiac tamponade as a result of mass effect, but till date no case of lymphoma been reported to cause atrial flutter/fibrillation as a result of mass effect on right side of heart.

**AN INTERESTING ENTITY: PRES (POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME)** Partthiv R Amin 1; Adel El Abbassi 2; Bhuvana Guha 2; Thomas Roy2.

1East Tennessee State University, Jonesborough, Tennessee; 2ETSU, Johnson City, Tennessee. (Tracking ID # 12412)

**LEARNING OBJECTIVES:**
1. Clinicians should have high suspicion of PRES in appropriate clinical scenario.
2. Early diagnosis and treatment of PRES results in dramatic reduction in mortality and morbidity.

**CASE INFORMATION:** A 65 year old male, known case of hypertension and diabetes mellitus presented with fever and dyspnea. He was diagnosed with methicillin resistant Staphylococcus aureus (MRSA) pneumonia and later on developed ARDS and renal failure. He was put on mechanical ventilation. On day 4 of admission, he was weaned off of ventilator. He developed persistent confusion later and all the metabolic etiologies were excluded. His blood pressure was recorded to be 190/110 mm hg with bilateral Babinski sign. He later on became agitated and complained of 7/10, constant, generalized headache.

He was started on nitroprusside for blood pressure control. Metabolic and infectious factors were ruled out. His computed tomography of brain showed subcortical edema in parieto-occipital region suggestive of PRES. The patient improved over a course of 7 days with better blood pressure control. His MRI repeated later was suggestive of resolving PRES.

The patient was discharged after 3 weeks of admission with resolved PRES and MRSA pneumonia. The patient thus had multiple risk factors for PRES namely, accelerated hypertension, renal failure and sepsis; which resolved on blood pressure control.

**IMPLICATIONS/DISCUSSION:** Posterior Reversible Encephalopathy Syndrome (PRES) is defined as a clinico-radiology entity characterized by presentation of headache, seizures, encephalopathy and visual disturbance accompanied by presence of reversible focal vasogenic edema on magnetic resonance imaging (MRI) of brain. The exact incidence of PRES is not known and it has been diagnosed in all age groups.

The syndrome is most commonly associated with hypertensive disorders including pre eclampsia and eclampsia, renal failure, sepsis, use of immunosuppressants and occasionally autoimmune diseases. Various theories proposed for the underlying pathophysiology include loss of cerebral autoregulation and endothelial dysfunction.

Seizures are often the presenting symptom in PRES. It is usually associated with constant and non localized headache; altered sensorium ranging from mild somnolence, confusion and coma and visual disturbances in the form of hemianopia, visual neglect, auras, hallucinations and cortical blindness. Physical examination usually reveals hypertension, exaggerated deep tendon reflexes and bilateral Babinski sign.

MRI is considered to be the modality of choice for imaging and typical findings include symmetrical punctate or confluent areas of increased signal on proton density and T2-weighted images affecting particularly parieto-occipital region. Diffusion weighted images are used to distinguish PRES from top of the basilar stroke. The anatomical extent of radiological finding correlates with the outcome.

The treatment of PRES usually encompasses management of precipitating factor. Control of hypertension using parenteral short acting agents like labetalol and nitroprusside is paramount.

Most of the patients usually recover in 2 weeks; however deaths have been reported due to progressive cerebral edema. Control of hypertension usually produces dramatic improvement in patients and it is imperative to recognize this syndrome early in order to reduce the associated morbidity and mortality.

**THE MANY FACES OF ADRENAL INSUFFICIENCY** Julia Durrant 1; Deepa Malaiyandi 1; Jennifer Mackinnon1. 1Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 12414)
Learning objectives: 1. Recognize adrenal insufficiency in patients who, despite massive bilateral adrenal hemorrhage and low cortisol levels, fail to develop the classic symptoms of hypotension and electrolyte abnormalities after weeks of significant hormone deficiency. 2. Assess patients with vague abdominal complaints who are anticoagulated post-operative after surgery for adrenal hemorrhage.

Case information: A 67-year-old woman presented post-operative day (POD) 18 from subacute rehab (SAR) for nausea, vomiting and vague abdominal pain following a right total knee arthroplasty. Anticoagulation with Coumadin 5 mg daily and 2 doses of Heparin 5,000 units for 1 day was started. Aside from an episode of hypotension (BP 78/57), low urine output and emesis on POD 2, her course was uneventful and discharged to SAR POD 3.

On POD 8, she returned with 4 days of vomiting, abdominal pain and constipation. Right upper quadrant ultrasound was normal. INR was 2.1 and no other abnormalities were noted. She was diagnosed with postoperative ileus. On POD 12, she returned to the ED with sharp abdominal pain and multiple episodes of emesis. Last bowel movement was noted to be the day prior. Given her recent ED visit she was discharged on scheduled bowel regimen despite sodium of 128 and anion gap acidosis.

Due to ongoing anorexia and nausea, she was admitted to the hospital on POD 18. Labs revealed anion gap of 18, INR 3.9, lipase 67 and urine ketones. Oral intake and new medications begun at SAR were stopped. Labs and symptoms normalized the next day, however symptoms recurred with advancement of diet and improved once she was NPO. On POD 23, an endoscopic exam demonstrated atrophic gastritis, thickened antral folds and wide-open lower esophageal sphincter. A CT obtained to evaluate extralumal GI tract demonstrated massive bilateral adrenal hemorrhage.

The patient was transferred to intensive care unit for observation with ongoing ileus and severe reflux. The presumed diagnosis was ascribed to ongoing ileus and severe reflux. The presumed diagnosis was not reevaluated following lack of resolution of symptoms. Acute decompensation due to adrenal failure may occur several days after the hemorrhagic event; review of the literature failed to highlight other cases of severe bilateral adrenal hemorrhage with low cortisol and normal laboratory findings several weeks after injury. Therefore a high degree of suspicion for PAI should be maintained in postoperative patients with tenacious, unexplained symptoms.

A rare case of multiple system atrophy (MSA) in a 28-year-old woman

Case information: A 28-year-old right-handed female with past medical history of depression and anxiety under good control on no medications presented with progressive loss of balance while walking and lower extremity pain on POD 21. She was initially diagnosed with postoperative ileus. On POD 23, she returned to the ED with sharp abdominal pain and constipation. Given her recent ED visit she was referred to neurology. Forty months after her initial presentation, she demonstrated micrographia, saccadic pursuit movements, dystaesthesia, increased tone, extensor plantar response, loss of coordination and dysmetria. MRI showed an early “hot cross bun” sign consistent with MSA. The patient was lost to follow-up and no further information on patient’s functional status could be obtained.

Implications/discussion: MSA is a rare neurological condition of undetermined etiology characterized by dysfunction in any combination of extrapyramidal, pyramidal, cerebellar and autonomic systems. It often presents similarly to Parkinson’s disease (PD) and other neurodegenerative diseases affecting the white matter and can lead to difficulties in diagnosis. It usually presents in individuals older than 50 and affects men more than women with mean age at presentation 50 years. The median survival is less than 10 years and 10% of patients with a diagnosis of PD are found to have MSA at autopsy. The clinical differentiation of PD and MSA is extremely difficult given the frequent occurrence of parkinsonian symptoms in MSA. The “hot cross bun” sign on MRI is pathognomonic for MSA. Patients with MSA have poor response to chronic levodopa therapy, more autonomic features, severely affected speech, absence of dementia, absence of levodopa-induced confusion and early falls. This case demonstrates that MSA should not be dismissed as a differential diagnosis in a young patient presenting with parkinsonian symptoms given the rapid progression of disease.

An unusual case of pyelonephritis

Learning objectives: 1. To describe the clinical presentation and diagnosis of renal infarction. 2. To describe the etiology and differential diagnosis of renal infarction.

Case information: A 48-year-old woman presented with one week of right flank pain that radiated to her back and two days of fever. She denied gastrointestinal or genitourinary complaints. The pain was not related to eating. She is married and monogamous; she has never
had a sexually transmitted disease. Past history was significant for a total abdominal hysterectomy five months prior. Her temperature was 101.0°F and pulse was regular. Exam showed costovertebral angle tenderness on the right side and a systolic murmur that was three out of six, late peaking, crescendo-decrescendo in the aortic position with radiation to the carotids; she had normal carotid upstrokes.

Urinalysis showed pyuria. The patient was initially treated in the emergency department observation unit for presumed pyleonephritis. However, her fever and her pain persisted and she was transferred to the General Medical Floor.

Urinary culture showed no growth. Computed tomography (CT) scan revealed a wedge-shaped area of low attenuation in the midpole of the right kidney. There was no evidence of renal artery stenosis on an ultrasonogram. A trans-esophageal echocardiogram revealed a heavily calcified aortic valve but no vegetations, patent foramen ovale (PFO) or intracardiac thrombus. Antinuclear and anti-neutrophil cytoplasmic antibodies were negative. Partial thromboplastin time was normal. The patient was diagnosed with an idiopathic renal infarct. She was started on anticoagulation.

IMPLICATIONS/DISCUSSION: Renal infarcts mimic many diseases commonly encountered by internists. The presentation of renal infarcts is non-specific and frequently includes flank pain, nausea, vomiting and fever. Because the presentation is non-specific, it is often misdiagnosed as renal colic, pyelonephritis, urinary tract infection or even acute abdomen.

The absence of urinary symptoms or bacteriuria and characteristic findings on contrast-infused CT scan ("cortical rim sign") readily distinguish it from pyelonephritis. Lactate dehydrogenase is also useful as a highly sensitive marker for renal infarction. Given their ease of use, availability, and diagnostic accuracy, contrast-enhanced multi-detector CT is the standard for diagnosis of renal infarction.

Renal infarction is caused by cardioembolic phenomena or renal artery thrombosis. Cardioemboli can originate from the left atrial appendage, the left ventricle, the valves, the aorta or the venous circulation via a PFO. Renal artery thrombi occur in the setting of trauma, renovascular disease, renal artery dissection, medium vessel vasculitides such as polyarteritis nodosa, and hypercoaguable states such as the antiphospholipid syndrome. Up to 60% of cases are idiopathic. Therapeutic guidelines for idiopathic renal infarcts are not well established, but anticoagulation for three to six months is generally recommended.

Renal infarction should be considered in atypical presentations or courses of common intra-abdominal pathology and is readily diagnosed by CT scan.

SCEDOSPORIUM APIOSPERMUM CAUSING BLINDNESS Agnel rajani Raparthi 1; Darren Thomas2. 1University of Oklahoma-Internal medicine, Tulsa, Oklahoma; 2St John Medical Center, Tulsa, Oklahoma.

LEARNING OBJECTIVES: 1. Scedosporium apiospermum is an emerging; potentially life-threatening fungal pathogen. It has become an important cause of opportunistic invasive fungal infection and accounts for 25% of all non-aspergillus mold infections.

2. Scedosporium is clinically and histologically indistinguishable from Aspergillus, but is typically resistant to amphoterican B making culture imperative to ensure effective pharmacotherapy.

CASE INFORMATION: A 65-year-old female with non-insulin-dependent type-2 diabetes mellitus and chronic headache was transferred to our hospital for management of acute renal failure. After admission she had sudden onset of complete blindness in her left eye. The patient had a five month history of intractable left sided temporal headaches with associated double vision; she had been treated for temporal arteritis with steroids as an outpatient, though her temporal biopsy had been negative. Head computerized tomography without contrast showed an increased soft tissue density in the left orbital apex. Magnetic resonance imaging was not performed because the patient had a pacemaker. After resolution of renal failure computed tomography of orbit and sella with and without contrast revealed soft tissue mass in the left orbital apex which was contiguous with the abnormal soft tissue mass within the sphenoid and ethmoid sinuses. Sphenoidectomy revealed moist, fungal debris filling the sphenoid and to a lesser degree posterior ethmoids. Histopathology revealed multiple dense clusters of fungal hyphae, branching and focally separte. Scedosporium apiospermum was isolated on culture. She was treated with voriconazole. Despite treatment she had progression with eventual stroke and death.

IMPLICATIONS/DISCUSSION: 1) Invasive fungal sinusitis is more common in patients with hematological malignancies, bone marrow transplantation, chemotherapy induced neutropenia, solid organ transplantation, advanced HIV infection, diabetes and corticosteroid treatment.

2) Chronic invasive fungal sinusitis is associated with high mortality due to advanced disease by the time of diagnosis.

3) The lack of early clinical suspicion for fungal etiology may delay accurate diagnosis and treatment leading to increased mortality.

4) Chronic invasive fungal sinusitis should be considered in diabetic patients with chronic sinusitis and orbital symptoms.

5) Aspergillus and Mucor are more common pathogenic fungal sinus infections and with less common organisms being Bipolaris, Curvularia, Alternaria, and Scedosporium.

6) Scedosporium apiospermum is an emerging; potentially life-threatening fungal pathogen commonly found in soil and polluted water.

7) It has become an important cause of opportunistic invasive fungal infection and accounts for 25% of all non-aspergillus mold infections in organ transplant recipients.

8) Early endoscopic evaluation should be conducted for both diagnostic biopsy and for debridement.

9) Scedosporium is clinically and histologically indistinguishable from Aspergillus, but is typically resistant to amphoterican B making culture imperative to ensure effective pharmacotherapy.

10) Appropriate earlier antifungal therapy combined with surgical debridement and restoration of immune function leads to decreased mortality.

NEGATIVE PRESSURE PULMONARY EDEMA MOHAMMAD ALMIANI 1; MOHAMMAD ALMIANI 1; Priscilla Hoang 2; Wilson I Gonsalves 3; Scott Turner 3; Timothy Griffin 3. Creighton University Medical Center, Omaha, Nebraska; 2CUMC, Omaha, Nebraska; 3Creighton University School of Medicine; Department of Internal Medicine, Omaha, Nebraska.

LEARNING OBJECTIVES: 1. To recognize the uncommon pulmonary complications after extubation. 2. To recognize the importance of early treatment of negative pressure pulmonary edema.

CASE INFORMATION: A 45-year-old Caucasian female with no significant past medical history was admitted for septoplasty for nasal septum deviation. Physical exam and chest X-ray prior to the surgery were unremarkable. The patient underwent septoplasty under general anesthesia. The induction and the procedure were uneventful. The surgery lasted for 2 hours after which the patient was extubated. Within 5 minutes after extubation, the patient developed transient stridor followed by respiratory distress manifested by tachypnea, cyanosis and oxygen desaturation (70%) for which she required urgent reintubation. Upon reintubation, no laryngeal edema was noted. Pink, frothy secretions were noted in the endotracheal tube. Physical exam revealed bilateral rales over the lungs. Arterial blood gases showed hypoxic respiratory failure. Chest X-ray showed bilateral interstitial infiltrates.
The patient was started on mechanical ventilation (assist/control mode with PEEP of 5 cm H2O) and was given one does of intravenous furosemide. Chest X-ray after 6 hours showed complete resolution of the pulmonary edema and the patient was extubated with no complication. Diagnosis of negative pressure pulmonary edema secondary to laryngospasm was made.

IMPLICATIONS/DISCUSSION: Negative pressure pulmonary edema (NPPE) is uncommon but an important cause of postoperative noncardiogenic pulmonary edema. The etiology of NPPE is related to the generation of high negative intrathoracic pressure. Forceful expiration against a closed glottis, such as laryngospasm, can result in markedly negative intrathoracic pressure. With such negative pressure, the venous return to the right heart increases leading to an increase in the pulmonary bed hydrostatic pressure with subsequent increase in catecholamine release and elevated pulmonary and systemic pressures with subsequent increase in the afterload which further exacerbates the interstitial and alveolar edema.

The incidence of NPPE is 0.05-0.1% of all procedures involving intubation and general anesthesia. Risk factors include obesity, the presence of airway lesions, short neck, obstructive sleep apnea, patients undergoing nasal, oral or pharyngeal surgery (all of which can cause laryngospasm). Young healthy athletes are also at increased risk because of their ability to generate significant negative intrathoracic pressure. Clinical presentation starts with transient upper airway obstruction (mostly laryngospasm), which is followed by respiratory distress within minutes after extubation. Pink, frothy respiratory secretions are characteristic for NPPE. Management is supportive with positive pressure ventilation (e.g. CPAP) and oxygen supplementation. Some patients require reintubation. Most cases resolve in a relatively short period of time (less than 24 hours). No intervention is proven to prevent NPPE, however, avoiding laryngeal irritation by using topical laryngotracheal anesthesia may reduce the occurrence of NPPE. Delayed recognition of NPPE may increase the mortality rate to 30-40%. Therefore, early recognition is important to decrease the morbidity and mortality in these patients.

ACUTE VISION LOSS AND LACTIC ACIDOSIS

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LEARNING OBJECTIVES: 1. Recognize the clinical features of metformin-associated lactic acidosis

2. Treat metformin-induced lactic acidosis

CASE INFORMATION: A 55 year old male with a known history of diabetes mellitus and hypertension presented to the emergency department (ED) for abdominal pain and vision loss. He had increased his metformin dose 1 week before to 850 mg four times a day after stopping using his insulin due to symptoms of hypoglycemia. In the ED, the patient had a temperature of 32.6 °C (90.7°F), a heart rate of 84 beats per minute, a blood pressure of 140/54 mmHg, and a respiratory rate of 15, with a pulse oximeter reading of 95% on room air. On neurologic examination, he was lethargic but able to answer questions. Patient’s pupils were midsized and slow to react. His fundoscopic exam findings were unremarkable; patient had no visual acuity nor were his visual fields intact. Lab results revealed a severe lactic acidosis with a pH of 6.755 and a lactic acid of 14.2 mmol/L. Creatinine concentration was 8.0 mg/dL. His baseline creatinine was 1.3 mg/dL. Formic acid, ethylene glycol, and methanol concentrations were negative. His sodium concentration was 126 mmol / L. Results of the head computed tomographic scan showed evidence of osmotic demyelination in the pons without mass effect. The patient underwent dialysis and experienced resolution of his metabolic acidosis and a full return of his vision. His electrolyte abnormalities corrected as well. Treatment of the acidosis was effective in correcting the hypothermia and restoring vision in this patient.

IMPLICATIONS/DISCUSSION: Metformin associated lactic acidosis (MALA) has rarely been described with sudden complete loss of vision. Chu et. al in 2003 and Kreshak et. al in 2010 both described a case of MALA associated with transient complete loss of vision. Similar to our patient who presented with pH of 6.75, the patients in these cases presented with pH of 6.64-6.65. The mechanism of vision loss in patients with metformin-associated lactic acidosis is not fully understood at this time. Animal studies have previously shown that retinal cell function is pH sensitive. This may serve as an explanation for vision changes, but further study in humans will be necessary to substantiate this theory. The deleterious effect of acidosis on visual acuity is reversible. In each patient, treatment of the acidosis resulted in the improvement of vision. This case demonstrates a rare symptom of metformin-associated lactic acidosis. Early detection and therapy are essential to achieving favorable outcomes.

INTERESTING CASE OF WEGENER’S GRANULOMATOSIS

Abby Gass; Anne Drabkin1. 1Medical University of South Carolina, Charleston, South Carolina. (Tracking ID # 124449)

LEARNING OBJECTIVES: 1. Recognize the clinical features of Wegener’s granulomatosis. 2. Institute appropriate acute and chronic management of Wegener’s granulomatosis.

CASE INFORMATION: GA is a 36 year old Hispanic male who presented to the ED with painful bilateral ankle and foot swelling. The patient had recently been hospitalized and diagnosed with reactive arthritis 10 days prior. Upon presentation, he reported severe bilateral ankle and foot swelling, fevers for 8-9 days, a progressively worsening sore throat with mouth and nasal ulcers, hematuria, progressive shortness of breath, painful rash on his bilateral lower extremities, conjunctivitis, and decreased urine output. His past medical history was significant for reactive arthritis, horseshoe kidney, and hypertension. A creatinine during the previous hospitalization was 0.9, but upon admission was 8.9 mg/dl with a BUN of 67. An extensive rheumatologic workup revealed a positive C-ANCA titer of greater than 1:1280, PR3 positivity, RF positive, ANA negative, HIV negative, hepatitis B and C negative, ESR 83, CRP 23, C3 and C4 normal, and anti-GBM negative. Urine microscopy revealed sheets of red blood cells, few white cells, few granular casts, no red cell casts, and dysmorphic red blood cells. A renal biopsy revealed extensive crescentic glomerulonephritis, segmental fibrinoid necrosis, lymphoplasmocytic infiltrate, few eosinophils, and pauci-immune immunofluorescence. Skin biopsy of the palmpable purpura revealed leukocytoclastic vasculitis consistent with C-ANCA vasculitis. CT of the chest revealed patchy consolidation within the upper lobes concerning for infection versus hemorrhage. The results from the renal biopsy, coupled with the positive C-ANCA with PR3 positivity and clinical presentation, suggested Wegener’s granulomatosis. The patient was started on pulse-dose steroids for 3 days, which was subsequently decreased to 1 mg/kg/day. He received one gram of cyclophosphamide, 7 days of hemodialysis, and 13 days of plasmapheresis. Upon discharge the patient was no longer requiring HD, the creatinine was stable at 3, and the arthralgias, dermatologic changes, and oral ulcers had improved.

IMPLICATIONS/DISCUSSION: Wegener’s granulomatosis is a vasculitis that typically affects older adults, but has been reported at all ages, which is associated with anti-neutrophil cytoplasmic antibodies (ANCA).
Patients present with constitutional symptoms including fever, migratory arthralgias, malaise, anorexia, and weight loss. The most commonly affected sites include the ear, nose and throat; pulmonary disease; renal disease; and cutaneous manifestations. Recognition and prompt treatment are paramount to a successful disease; renal disease; and cutaneous manifestations.

MEDICALLY HOMELESS? THE IMPORTANCE OF CONTINUITY OF CARE AND THE MEDICAL HOME Tadeo Alejandro Diaz Balderrama 1; Tadeo Alejandro Diaz Balderrama 2; 1Medical College of Wisconsin, Wauwatosa, Wisconsin. (Tracking ID # 12452)

LEARNING OBJECTIVES: 1. Recognize the importance of the medical home in identifying complications
2. Identify the consequences of a fragmented medical care and the lack of communication among providers

CASE INFORMATION: A 79-year-old man presented emergently with suprapubic pain and generalized weakness after falling from a commode. Medical history was complex including benign prostatic hypertrophy (BPH), hypertension, diabetes mellitus, chronic kidney disease, and coronary artery disease. Status of his current medical problems was unknown by the patient and his wife. He reported care from multiple providers including a primary care physician (PCP), nephrologist, two cardiologists, otolaryngologist, and a urologist. Although his kidney disease was followed closely by his nephrologist, he had not been evaluated by a PCP in the past 2 years. Assessment revealed ECG suspicious for anterior wall myocardial infarction, CR of 18,000 mg/dl and elevations in troponin and brain natriuretic peptide. His initial care focused on treating rhabdomyolysis and evaluation for acute coronary syndrome. Echocardiogram revealed anterior wall motion abnormalities and a low left ventricular ejection fraction. Further investigation revealed he had been avoiding oral intake, including medications, to prevent worsening of urinary retention. Additionally, he had been taking laxatives, prescribed by his nephrologist, multiple times during the day for constipation and was also found to be on lovastatin and niacin for hyperlipidemia. Review of records kept by the wife provided laboratory reports and a negative cardiac workup. Outside records revealed a previous echocardiogram without abnormalities, baseline creatinine of 2 mg/dl and bilateral renal stent placement in 1998. Over the course of several days, his rhabdomyolysis resolved and his cardiac function stabilized. We surmised that the combination of diuretics, poor oral intake and laxatives use lead to dehydration and weakness causing the patient’s fall; the prolonged physical struggle after the fall along with lovastatin led to rhabdomyolysis. Discontinuation of medications most likely worsened his urinary retention due to BPH causing his suprapubic pain.

IMPLICATIONS/DISCUSSION: This patient presented with a complex medical history managed by multiple providers, and although this is not a rare occurrence, the progressive complications could have been identified with closer follow-up. While the patient’s wife worked to maintain records, they were still unaware of the current status of the patient’s medical problems. The establishment of a medical home via a primary care physician can help patients synthesize results and understand the status of their medical conditions. The medical home, as defined by the American College of Physicians, is a team based approach lead by the PCP who provides continuous and coordinated care throughout a patient’s life to maximize health outcomes. Additionally, the medical home provides an efficient means of obtaining information relevant to patient care at times of worsening medical problems.

AN UNUSUAL PRESENTATION OF ACUTE KIDNEY INJURY: SIMULTANEOUS SEVERE ATN AND RAPID CONVERSION FROM MEMBRANOUS TO CRESCENTIC GLOMERULONEPHRITIS Tejpreet Singh Lamba 1; Heidi Goedicke 2; Abby Spencer 2; Barbara Clark 2; 1ALLEGHENY GENERAL HOSPITAL, Pittsburgh, Pennsylvania; 2Allegheny General Hospital, Pittsburgh, Pennsylvania. (Tracking ID # 12455)

LEARNING OBJECTIVES: 1. Recognize early clinical and laboratory indications to guide in the appropriate timing of kidney biopsy in patients with underlying lupus nephritis in the setting of acute tubular necrosis.
2. Recognize the implications of transformation of membranous lupus nephritis into the more severe form of crescentic glomerulonephritis.

CASE INFORMATION: A 25 year old African American male with past medical history of systemic lupus erythematosus (SLE), stage V lupus nephritis, non-Hodgkin lymphoma, on chronic low dose steroids who developed vomiting, diarrhea and hypotension secondary to viral gastroenteritis. In spite of adequate resuscitation and establishment of hemodynamic stability patient’s renal function continued to worsen. Preadmission, his baseline creatinine was 0.9 mg/dL, however during hospital course his creatinine dramatically worsened daily to 11.6 mg/dL on day 7. Urine sediment revealed granular casts and renal epithelial cell casts consistent with diagnosis of acute tubular necrosis (ATN). In light of worsening kidney function with a background of lupus nephritis a renal biopsy was done on day 7. Biopsy revealed crescentic glomerulonephritis with diffuse global proliferative - sclerosing and membranous lupus nephritis (stage IV-S (A/C) and stage V) consistent with rapidly progressive glomerulonephritis. Components of severe acute tubular necrosis and acute interstitial nephritis were also seen on biopsy specimen. Management was redirected after biopsy results, and he was placed on high dose steroids and cyclophosphamide. Unfortunately patient’s creatinine did not improve; in fact he developed oliguria and uremic symptoms despite above treatment. His creatinine peaked at 14.15 mg/dL and BUN 134 mg/dL at which point hemodialysis was initiated. Hemodialysis resulted in improvement of his symptoms and he was shortly thereafter discharged home to follow up with his outpatient nephrologist.

IMPLICATIONS/DISCUSSION: Renal involvement is seen in approximately half of all patients with systemic lupus erythematosus. Lupus nephritis is classified into six subtypes. Progression of one subtype of lupus nephritis to another is estimated to occur in approximately half of all patients as per a report from one institution. Distinguishing progression of lupus nephritis from other more common causes of acute kidney injury is important both in regards to management and prognosis. The current indications for repeat renal biopsy in lupus nephritis include an acute rise in serum creatinine, emergence of active sediment, or worsening of
proteinuria despite treatment. The presentation of ATN can at times overshadow the critical transformation of membranous glomerulonephritis into crescentic glomerulonephritis. It is important to keep a broad differential diagnosis in the setting of acute kidney injury. Early biopsy in dramatic worsening of baseline renal function in patients with lupus nephritis is crucial to guide management. Rapidly progressive glomerulonephritis generally responds to high dose corticosteroids and agents such as cyclophosphamide. However in combined diffuse proliferative and membranous lupus nephritis more intense therapy such as mycophenolate mofetil plus tacrolimus should also be considered. This case provokes further investigation of ATN as a possible triggering mechanism into the pathogenesis for progression of lupus nephritis to the more rapidly progressive glomerulonephritis. There is minimal literature available discussing the interactions between ATN and crescentic glomerulonephritis.

SYSTEMIC, LIFE-THREATENING CHROMOBACTERIUM VIOLACEUM INFECTION IN A US MARINE CORPS RECRUIT AFTERT WOUND EXPOSURE TO STAGNANT WATER  

Patrick Daly 1; Jason Maguire2.  

1Naval Medical Center Portsmouth, Norfolk, Virginia; 2Naval Medical Center Portsmouth, Portsmouth, Virginia. (Tracking ID # 12471)

LEARNING OBJECTIVES: 1. Recognize importance of early detection and management of wound infections. 2. Recognize that C. violaceum is endemic to the Southeastern United States and should be in differential for febrile illness following exposure to soil or water source.

CASE INFORMATION: An 18-year-old active duty US Marine Corps recruit assigned to Paris Island US Marine Corps Recruit Training Center, South Carolina developed acute onset fever, nausea, abdominal pain, and loose stools in his 12th week of training. During the previous week, he noted exposure of a left knee abrasion to stagnant water during a training exercise. Soon thereafter, a painful, erythematous, purulent lesion developed and drained clear fluid. He presented four days into his illness for care with a fever of 105°F. Upon evaluation for presumed acute appendicitis, abdominal computed tomography (CT) demonstrated multiple hepatic abscesses and the patient was managed for sepsis in intensive care and he received intravenous antibiotics over the first 72 hours which included piperacillin/tazobactam, levofloxacin, tobramycin, gentamicin and meropenem. His initial left ventricular ejection fraction (LVEF) was 25% by transthoracic echocardiogram (TTE). After blood cultures grew C. violaceum, he completed an additional two weeks of intravenous gentamicin and meropenem. He improved clinically and was transitioned to oral levofloxacin to complete a six month course of antimicrobial therapy. Repeat TTE revealed a normal LVEF of 55% after 1 week of therapy. Serial CT scans demonstrated resolution of the liver abscesses.

IMPLICATIONS/DISCUSSION: Chromobacterium violaceum is a saprophytic organism that causes sepsis and metastatic abscesses after percutaneous inoculation through non-intact skin from stagnant water or soil, and infection carries a high mortality rate. Although more commonly reported in tropical and sub-tropical locations in Southeast Asia, the organism is endemic in the Southeastern United States, and disease has been increasingly reported in this region, primarily Florida. This disease had not previously been reported from South Carolina.

In this patient with C. violaceum sepsis and liver abscesses, early recognition and broad-spectrum antibiotics and later, targeted antibiotics, contributed to his survival from this potentially fatal infection. This infection has not been previously reported in the literature from South Carolina. Although the exact source cannot be definitively identified, the patient reported exposure of an open skin lesion to stagnant water during amilitary training exercise is consistent with the known mechanism of infection. This case emphasizes that C. violaceum, endemic to the Southeastern United States, should be considered in the differential for acute or subacute febrile illness, especially when history reveals exposure to a possible soil or watershed. As percutaneous exposure is the common route of infection, guidance should be given to military trainees and their care providers as to appropriate skin care during training in outdoor environments and early recognition and management of wound infections. Additionally, the case raises awareness that military outdoor training locations should be monitored for conditions that would increase the likelihood of exposure to C. violaceum and measures taken to reduce the risks of exposure.

LOWER EXTREMITY EDEMA, COULD IT BE CANCER? Mary b Tadros1; Krati Chauhan1. 1Creighton University Medical Center, Omaha, Nebraska. (Tracking ID # 12490)

LEARNING OBJECTIVES: 1. Recognize the association between lung cancer and nephrotic syndrome 2. Recognize a different presentation of lung cancer

CASE INFORMATION: This is a 73 years old male with severe, oxygen dependent COPD presented to his primary care physician for routine follow up. At that time, he complained of lower extremity edema and unintentional weight loss which was felt to be secondary to his severe chronic disease. The lower extremity edema was thought to be due to multiple treatments of prednisone for COPD exacerbation. Patient was advised to elevate legs and maintain low sodium diet, however, with worsening symptoms. Urine analysis obtained for investigation showed greater than 600 mg/dL, 24 hour urine protein revealed 22 g/day. Renal ultrasound was normal and renal function remained stable.

Several tests including pANCA, cANCA, Serum kappa/lamba light chains, HIV, Hepatitis B and C, syphilis were all negative; serum complement was normal. Renal biopsy showed diffuse subepithelial deposits, consistent with Membranous Glomerulopathy. Prior to initiation of treatment with immunosuppressive therapy, patient was hospitalized for an expedite cancer screening. In the mean time, lisinopril and lasix were initiated to help reduce the proteinuria. CT of the chest revealed multiple pulmonary nodules, which were all positive for squamous cell carcinoma upon biopsy.

IMPLICATIONS/DISCUSSION: Membranous Nephropathy (MN) is the most common cause of the nephrotic syndrome in nondiabetic adults. It is glomerular basement membrane (GBM) thickening with little or no cellular proliferation or infiltration. Often idiopathic, although it has been associated with hepatitis B and C, autoimmune diseases, thyroiditis, malignancies, and the use of certain drugs such as gold, penicillamine, captopril, and NSAIDs. Up to 5 to 20 % of adults with MN, particularly older than 65 years of age, have been reported to have a malignancy, most commonly a solid tumor (colon and lung). Cancer is presumed to be etiologically associated, when removal of the tumor led to gradual remission of the proteinuria. Mechanism proposed is that deposition of tumor antigens in the glomeruli promotes antibody deposition and complement activation, leading to epithelial cell and GBM injury, and consequently proteinuria.

This case illustrates a very interesting presentation of lung cancer as a nephrotic syndrome. We also hope to emphasis the importance of complete physical exam and review of system with every office visit, as it is easy to overlook acute problems in the midst of the severe chronic illnesses.

FUO: STILL’S WORTH CONSIDERATION Andrea Porrovecchio 1; Andrea Porrovecchio2; 1Montefiore Medical Center, Bronx, New York. (Tracking ID # 12491)
LEARNING OBJECTIVES: 1. Recognize Adult Onset Still’s Disease as part of the differential for fever of unknown origin. 2. Recognize utility of ferritin as a useful tool in diagnosis and following disease course.

CASE INFORMATION: A 24-year-old man presented with 3 weeks of fevers, sore throat, and rash. One week prior to admission, his symptoms progressed to include myalgias, fatigue, and polyarthritis. He had no past medical history and nothing significant in his social, travel, or medication history. His temperature was 39.3°C and he was ill appearing with tender submandibular lymphadenopathy. He had no exudates on his oropharynx. He had hepatosplenomegaly, erythematous macular rash on upper extremities and trunk that became more prominent when his fever spiked, and synovitis that was diffuse and symmetric. White blood cell count was 25 x 10⁹ /µl, hemoglobin was 11.3 g/dL, albumin was 2.3 g/dL, serum glutamic oxaloacetic transaminase was 957 U/L, and the serum glutamic pyruvic transaminase was 608 U/L. The lactate dehydrogenase was 1163 U/L. The ferritin was as high as 150,000 ng/mL. Infectious, rheumatologic, and neoplastic work up was negative.

He was diagnosed with Adult Onset Still’s Disease (AOSD) and treated with IV steroids initially with 1 mg/kg daily. He clinically improved over the next 24 hours and was transitioning to prednisone. His lab abnormalities resolved over the following few weeks.

IMPLICATIONS/DISCUSSION: AOSD is a rare systemic inflammatory disorder of unknown etiology that often presents as a fever of unknown origin. AOSD’s incidence is estimated to be 0.16 in 100,000 persons with an equivalent distribution between genders. It has a bimodal age distribution: ages 15–25, and then ages 36–46. Yamaguchi’s criteria, which require 5 criteria, at least 2 major, have been shown to be the most sensitive diagnostic criteria. Major criteria include fever greater than 39°C for one week, arthralgias for 2 weeks, macular/maculopapular rash on trunk and extremities, and leukocytosis greater than 10 x 10⁹ ul. Minor criteria include sore throat, lymphadenopathy, hepatomegaly, or splenomegaly, abnormal liver function tests and lactate dehydrogenase, and negative anti nuclear antibodies and rheumatoid factor. Infection, malignancy and rheumatic diseases must be excluded. Our patient met all criteria. More recently, Fautrel et al have proposed a new set of criteria that includes ferritin and its glycosylated fraction. Ferritin, an acute phase reactant, is elevated in this setting often to very high levels, and is used to monitor disease activity. However, the glycosylated fraction of ferritin is more specific. In healthy subjects, typically greater than 50% of ferritin is glycosylated, but in an inflammatory disease process, the glycosylation mechanisms are saturated, and the clearance of non-glycosylated proteins is less effective, so the level can decrease to less than 20%. Taken with clinical features, a five fold increase in ferritin has a sensitivity of about 80% but a specificity of only 41%. However, when taken together with a decreased glycosylated ferritin level, the specificity is increased to 93%. Fever of unknown origin is often a diagnostic dilemma for internists. In the appropriate clinical setting, internists must consider Still’s disease in the differential. An elevated ferritin and its percent glycosylation may lead you to this rare diagnosis.

CASE OF FOREIGN BODY GRANULOMATOUS PANNICULITIS AFTER UNLICENSED COSMETIC SILICONE FILLER INJECTION Bassam Yaghmour 1; Geoffrey Potts 2; George Yaghmour 1; Sean Drake 3. 1Henry Ford Health System, Detroit, Michigan; 2Wayne State University System, Detroit, Michigan. (Tracking ID # 12519)

LEARNING OBJECTIVES: 1. Recognize foreign body granuloma and panniculitis presenting after silicone filler injection
2. Distinguish the differential and management of panniculitis and foreign body granuloma

CASE INFORMATION: A 30-year-old healthy female presented to the emergency department with two weeks of subcutaneous nodules on her thighs and buttocks associated with pain, fever, and fatigue. Three years prior, she had silicone injected into her buttocks by an unlicensed practitioner. She was treated for cellulitis with trimethoprim-sulfamethoxazole and later cephalaxin due to lack of response but was later admitted for cellulitis and treated with IV vancomycin due to low-grade fever, tachycardia, and increasing number of erythematous and indurated nodules on her bilateral thighs and buttocks. Biopsy of the largest lesion on the right thigh showed lobular panniculitis with features of silicone granuloma. Blood and tissue cultures for bacteria, fungi, and mycobacteria were negative. CT scan showed nodules...
consistent with foreign material while chest X-ray ruled out sarcoidosis. Tuberculin test, ANA, and HIV were negative. The erythema resolved on a week of vancomycin. A week after discharge, minocycline significantly flattened the nodules. The patient was switched to tetracycline on a tapered six-month dose.

**IMPLICATIONS/DISCUSSION:** Foreign body granuloma and panniculitis are rare inflammatory complications of permanent cosmetic fillers, but other delayed complications such as hypersensitivity and lymphoedema can present years after injection [2]. Silicone granulomas are often sterile with an abundance of lymphocytes, but other fillers may form biofilms [1].

The differential diagnosis of a granuloma with panniculitis would include cellulitis, lipoma, hypersensitivity, or autoimmune [1]. Care should be taken in documenting all prior fillers injected. Workup should include imaging to rule out other causes of granulomas. Stains and cultures should be used to rule out common and rare infectious agents.

**DIAGNOSIS AND MANAGEMENT OF EMBOLIC STROKE IN A PATIENT WITH PATENT FORAMEN OVALE AND ATRIAL SEPTAL ANEURYSM** Patrick Daly1; Kevin Zawacki2; Kevin Sumption3. 1Naval Medical Center Portsmouth, Norfolk, Virginia; 2Naval Medical Center Portsmouth, Norfolk, Virginia; 3Naval Medical Center Portsmouth, Portsmouth, Virginia; 3Naval Medical Center Portsmouth (now at Richmond Veterans Affairs Medical Center), Portsmouth, Virginia. (Tracking ID # 12521)

**LEARNING OBJECTIVES:**
1. Diagnosis and management of embolic stroke in patients with PFO. Recognize that ongoing studies are comparing effectiveness of PFO closure to medical therapy alone for prevention of stroke recurrence.
2. Demonstrate that PFO closure has role in patients for whom anticoagulation therapy is incompatible with their career or way of life.

**CASE INFORMATION:** A 30-year-old male without significant past medical history presented to the Emergency Department after awakening with diffuse left-sided paresthesias and hyperesthesias. The day prior to presentation he experienced onset of severe headache and left-sided numbness. His headache was partially relieved with motrin, but persisted through his arrival to the Emergency Department. He also noted lightheadedness, confusion and disorientation. Magnetic resonance imaging (MRI) of the patient’s brain revealed abrupt termination of the right posterior cerebral artery at the P2 segment. The appearance of this lesion was consistent with an embolic phenomenon. The patient underwent a trans-thoracic echocardiogram (TTE) with agitated saline contrast study which demonstrated PFO with ASA and abundant intra-atrial shunting. These findings were confirmed on trans-esophageal echocardiogram. Multidisciplinary development of patient’s plan of care involved cardiology and neurology physicians. It was noted that lifelong coumadin therapy would be disqualifying for future military service. The patient chose to undergo percutaneous closure of the PFO. He tolerated this procedure well and echocardiogram intra-procedure and post-procedure day one demonstrated absence of intra-atrial shunting. He was placed on six months of clopidogrel and aspirin as well as spontaneous bacterial endocarditis (SBE) prophylaxis with plan for lifelong aspirin therapy.

**IMPLICATIONS/DISCUSSION:** Embolic stroke in the setting of patent foramen ovale (PFO) and atrial septal aneurysm (ASA) is a condition involving substantial morbidity in young and previously healthy, asymptomatic patients. The embolic sources in these patients are thought to be small platelet or fibrin aggregates crossing from the right to left heart during transient increases in right atrial pressure that lead to intra-atrial shunting and cerebral embolism. Although PFOs are present in 30% of all adults, the incidence of stroke in these patients remains relatively uncommon. There is limited available literature for the optimal therapy of patients with cardio-embolic stroke from PFO and ASA. Concomitant PFO and ASA portends a four-fold increased risk of stroke. Two primary options exist for secondary prevention of stroke: medical therapy with antiplatelet agents or anticoagulants versus surgical or percutaneous closure of the defect. A French PFO-ASA study supported the use of aspirin therapy with a statistically significant decrease in incidence of a recurrent stroke on aspirin. The preliminary results of the CLOSURE I trial have demonstrated that percutaneous closure of a PFO using the Starflex device is not superior to best medical therapy for preventing recurrent stroke. Existing retrospective studies show that combined PFO/ASA anatomy poses increased risk for recurrent stroke. Additional patient characteristics including occupation and comorbidities should be used to assist patients and their providers in choosing optimal therapy. PFO closure has been performed successfully at our institution for patients in very highly trained specialties including divers, for whom this procedure has been career-saving.

**PICA IN THE PIEDMONT** Lee Merchen1; Jonathan Lawson1. 1Medical College of Georgia, Augusta, Georgia. (Tracking ID # 12522)

**LEARNING OBJECTIVES:**
1. 1. Emphasize the role of the psychosocial history taking
2. 2. Understand that patient culture impacts health care
3. Pica has adverse associations, but white clay may also offer some benefit

**CASE INFORMATION:** Ms. TR, a pleasant middle aged African American woman, presented for evaluation of a recent DVT and severe iron deficiency anemia, hemoglobin 6.4, MCV 70. During the course of her medical history she mentioned that she had anemia for which she took daily iron supplements upon further questioning specifically about cravings of non-food items Ms. TR revealed that she ate large quantities of chalk daily. The substance that she referred to is kaolin, commonly known in Central Georgia as white dirt, white clay or chalk. Kaolin is a clay mined in the Piedmont area of Georgia for use in the production of ceramics and glossy paper. It is also used in medicines such as kapectate syrup. Ms. TR reported that she eats on average of 10 to 20 ounces of kaolin per day. She began eating kaolin regularly during her early 20’s when she became pregnant with her second child. Her cravings for the clay during that pregnancy persisted and became a life long behavior. Though she says at times she has eaten less chalk, she has had a steadily increasing appetite for it over the past year. She describes: it tastes like a light rain on a dirt road when you are driving a long with the windows down. Other members of Ms. TR’s family also eat kaolin, including her mother and daughter and she described growing up watching mostly female members of her family and community consume this clay. Although this patient’s experience illustrates the importance of cultural and family factors with this form of pica, there is a stigma attached to the practice. Ms. TR acknowledged that although she knows others who eat chalk, it is rarely openly discussed and it not widely socially accepted practice.

**IMPLICATIONS/DISCUSSION:** Pica is the ingestion of non-nutritive substances and has long been associated with pregnancy and iron deficiency anemia. Geophagia and pica can lead to iron deficiency anemia, and yet interestingly, there may some health benefits. Certain clays also have the ability to bind plant toxins so that if otherwise poisonous plants are prepared with small amounts of the clay they become edible. Also, a recent study indicates that Mycobacterium vaccae, a bacteria commonly found in soil, helps with complex problem solving skills and reduces anxiety levels. Though understanding of the causes and motivations behind Kaolin pica is still incomplete, this behavior can be the underlying cause of significant medical pathology. It
is important for physicians to be aware of regional cultural influences and practices such as pica in order to obtain more complete and accurate medical histories and to identify the underlying cause for medical maladies such as anemia in these individuals such as Ms. TR.

A MAN WITH GENERALIZED FATIGUE AND MALAISE  
Dusan Stanojevic; Andrew Gregory De Nazareth; Tammy Wichman. 
Creighton University, Omaha, Nebraska. (Tracking ID # 12530)

LEARNING OBJECTIVES: 1. With globalization and mass world migration the exclusion of certain diagnosis based on geographic location might be the wrong thing to do in an acute setting.  
2. When the diagnosis is not clear history is key.

CASE INFORMATION: A 67-year-old male presented with a 10-day history of worsening nausea, diarrhea, fevers, chills, joint pain, and rigrors. His past medical history was significant for diabetes, atrial fibrillation and hypertension. Patient was on appropriate medications and no recent new medications. He reported picking and eating wild mushrooms about the time of the onset of symptoms, as well as working with cattle, and eating cooked oysters. Vital signs: Temperature 101°F; heart rate 87; respiratory rate 31; blood pressure 105/76 mm HG; oxygen saturation 98% on room air. A physical examination revealed a shaking patient who appeared to be in moderate distress. Chest: clear to auscultation. Cardiac: irregular heart sounds without murmurs. Gastrointestinal: tender without hepatosplenomegaly. Extremities had traces of edema. Neurologic examination showed tremors and unstable gait. Skin: petechiae present on his lower extremities and feet. WBC count was 2,850 cells/μL (37% bands). Platelets of 50,000 cells/μL and hemoglobin 12.4 g/dL. His electrolytes were within normal limits. His BUN and Cr were elevated 33 mg/dL and 1.6 mg/dL respectively. AST 264 U/L, ALT 88 U/L and Alkaline Phosphatase 127 U/L, INR 1.0. Stool studies, blood cultures, influenza PCR test, and Hepatitis panel were negative. Rocky Mountain Spotted Fever titer was negative. Patient underwent bone marrow biopsy with preliminary analysis consistent with Myelodysplastic syndrome. On Day 3 he was transferred to ICU for progressive multi organ failure and worsening pancytopenia. Upon further questioning his wife reported that he has had recent tick bites on his farm located in northwestern Iowa. The patient was started empirically on Doxycycline. His clinical picture started to improve within twelve hours. He was discharged on day 9 with after significant clinical improvement. The serum titers confirmed infection with both E. chaffeensis and A. phagocytophilum, and bone marrow genetic studies were negative for MDS

IMPLICATIONS/DISCUSSION: Ehrlichial infections are common in the Southern parts of the U.S. however CDC data shows that cases of ehrlichial infections have not been reported in Nebraska or Iowa. In our case Ehrlichiosis was rejected as a possibility by the infectious diseases service and they were not seen in Nebraska or Iowa. Due to its mild presentation, less than 7% of reported cases required admission, however ehrlichiosis can cause serious illness as well. It may present with meningoecephalitis, respiratory failure, or pancytopenia. Mortality does occur due to failure to initiate appropriate therapy, doxycycline remains the drug of choice.

"There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don’t know. But there are also unknown unknowns. There are things we don’t know we don’t know.” No matter what you think of former secretary Rumsfeld, his quote could not be more applicable to today physicians. We will encounter more and more things that we are not used to seeing as the world becomes smaller and smaller due to global traveling. For a physician, there is no bigger fear than when a seriously ill patient is not responding to treatment and all of the differential diagnoses are falling short. From medical school through residency we are always taught to look for common things first, but the question is: in today’s world does the same rule apply in a more acute setting?

The symptoms and signs that are present in ehrlichial infection are very nonspecific and can produce a picture that is consistent with wide variety of etiologies. The key to diagnosis is going back to fundamentals, such as additional history, which was essential in treatment of our patient. In today’s society regional division and thinking are losing their meaning; thinking outside the box and going against what we were thought is sometimes necessary when we are dealing with sick patients. Sometimes, we have to think of zebras as well

INNOVATIONS IN PRACTICE MANAGEMENT

THE JC-ICU: CLOSE FOLLOW UP FOR AMBULATORY PATIENTS  
Rose Kakoza; Joy Lewis; Andrew Ellner; Lori Wiviott Tishler. 
Brigham and Women’s Hospital, Roxbury Crossing, Massachusetts; Brigham and Women’s Hospital, Boston, Massachusetts. (Tracking ID # 7272)

STATEMENT OF PROBLEM OR QUESTION: Resident clinics create a challenging practice environment that can result in fragmented patient care and leave residents with a discouraging impression of primary care.

DESCRIPTION OF PROGRAM/INTERVENTION: The Phyllis Jen Center for Primary care is a faculty/resident clinic at the Brigham & Women’s Hospital that serves 40,000 patients/year and provides 800 urgent care visits/month. Urgent care doctors include residents and faculty. Many patients seen in the Jen Center are medically and psychosocially complex, often from disadvantaged communities. The JC-ICU is a virtual ICU into which residents and faculty refer patients at risk for hospitalization, inappropriate ED use or exacerbation of an acute or chronic condition. The JC-ICU team includes 3 nurses, the referring physician and the primary care physician. After referral, a care plan is determined and graduation criteria defined. The JC-ICU nurse learns about the patient via the medical record and implements the care plan via phone encounters with the patient and emails with the provider. Once the patient achieves the goal, they graduate from the ICU. Patients may re-enroll.

OBJECTIVES OF PROGRAM/INTERVENTION: Using a team-based model, the JC-ICU will 1. Provide short-term case management for at risk patients 2. Provide continuity and flow of information between patient and provider and 3. Improve the primary care experience of residents

FINDINGS TO DATE: Patient Outcomes: Preliminary data have shown:1. 90% of patients (90/100) have been able to meet their goal. ED visits have been significantly reduced in key patients with a history of frequent ED visits. 2. Patient Experience: a. Some patients have stated that they appreciate the follow up calls and reminders. b. Patients have formed a relationship with the JC-ICU nurse and feel comfortable reaching out with questions or concerns. c. Patients receive a timely report of test results if their referring physician is away from the clinic. 3. Team Member Experience: a. Residents and faculty feel comfortable delegating titration of medications within certain parameters to the JC-ICU nurse. b. Residents feel more supported in their delivery of primary care to complex patients. c. Nurses feel more engaged with patient care. d. Nurses feel they are using more of their skill set than was required of them prior to the start of the program

KEY LESSONS LEARNED: We have successfully implemented an ambulatory ICU that uses a team-based approach to address the significant issue of fragmented care that often plagues resident clinics. 1. Preliminary data support that the Jen Center ambulatory ICU may significantly improve service utilization, and patient and provider experience. 2. This model may also be successful in other residency clinics nationwide. 3. In a predominantly revenue neutral way, we can successfully build capacity among existing nursing staff in order to transition to team-based patient care interventions.
**PAGING EFFECTIVENESS: A MODEL FOR PAGER COMMUNICATION AT A LARGE ACADEMIC MEDICAL CENTER**  
Jeffrey Chi, Lisa Shieh, Joseph Hopkins, Stanford School of Medicine, Menlo Park, California; Eric Dunham, McGaw Medical Center of Northwestern University, Chicago, Illinois.

**STATEMENT OF PROBLEM OR QUESTION:** Communication and patient care at large academic medical centers are negatively affected when care providers are unable to identify and reach the appropriate physician.

**DESCRIPTION OF PROGRAM/INTERVENTION:** Patient Safety Network (PSN) is an in-house reporting system of adverse events at our institution. A 7 month review showed an average of 5 incidents per month due to paging errors. A survey of 250+ nurses revealed difficulties related to identifying the correct physician to page. A survey of 78 physicians also showed a significant volume of pages in error. A Paging Effectiveness Committee consisting of administrators, physicians, and nursing staff was formed to implement a uniform method for paging at our institution. Despite variable team structures across numerous services, proxy service pager numbers were assigned to each hospital service. A standardized protocol was implemented, requiring each service to forward a designated service pager number to a covering physician’s personal pager at all times. Service pager numbers were also assigned to each patient in our electronic medical record at admission.

**OBJECTIVES OF PROGRAM/INTERVENTION:** Develop a paging communication and escalation protocol to be implemented hospital-wide in order to decrease the number of adverse events related to miscommunication.

**FINDINGS TO DATE:** A subsequent audit of service pagers has shown nearly full compliance in the hospital. PSN reports following implementation of the new paging protocol have also demonstrated a decrease in adverse events related to paging error.

**KEY LESSONS LEARNED:** Assigning a dedicated proxy pager number to services at large academic medical institutions reduces the need to interpret complex physician call schedules and reduces the number of paging errors.

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**ADVERSE EVENT REPORTING IN THE GENERAL MEDICINE OUTPATIENT CLINIC: REVIEW OF DATA FROM THE OPPORTUNITY TO IMPROVE SAFETY (OTIS) DATABASE**  
Amy M Gordon, Daniel Dunham, Evan McGaw Medical Center of Northwestern University, Chicago, Illinois; Yeh JunYen, Northwestern University Feinberg School of Medicine, Chicago, Illinois.

**STATEMENT OF PROBLEM OR QUESTION:** A mechanism for adverse event reporting in the outpatient general medicine clinic should be available for practitioners and staff and be used to detect patterns of error to improve the practice.

**DESCRIPTION OF PROGRAM/INTERVENTION:** The OTIS database was established from June 2003 through September 2010 for staff to report adverse events observed in the ambulatory medicine clinic. Data collected on each entry included occupation of reporter, whether the event was related to a specific patient, whether patients had complex and/or chronic health problems, familiarity with patient’s condition, severity of harm caused to a patient, and when and how often the event occurred.

**OBJECTIVES OF PROGRAM/INTERVENTION:** 1. To log and categorize adverse events in the outpatient medicine clinic as reported by practitioners and staff. 2. To establish systems to reduce errors when patterns of events are discovered.

**FINDINGS TO DATE:** A total of 326 entries were collected, 75% of which were system-based events. Most frequent system-based events were environment & supplies (63), laboratory testing (49), and patient flow & scheduling (38). Attending physicians report the most events. Resident physicians report the least. Most events reported relate to a specific patient. In events related to a specific patient, the patient is most frequently not well known to reporter and has a chronic health problem. Very few reported events caused patients harm, and if harm was caused, it was often judged by the reporter as the least severe. Knowledge-based events were more frequently associated with events that caused harm to a patient, more than any subtype of system-based event. Events occurring over once a month are reported most frequently. Thirty-one percent of most frequent events are knowledge-based errors. Of first time events, 44% are knowledge-based errors and occur more frequently than any sub-group of systematic errors.

**KEY LESSONS LEARNED:** Most adverse events reported were system-based errors, suggesting improving systems for delivery of care rather than improving workers' knowledge is fundamental to reducing adverse events. Reporters of events involving a specific patient frequently do not know the patient well, suggesting that having few care providers for a patient, as is a goal of medical homes and managed care teams, may reduce adverse events. Patients with chronic health problems may be more vulnerable to adverse events. Developing systems to close gaps in collective knowledge is necessary. Gaps in clinic workers' personal knowledge also exist and are more difficult to remedy. Reporting of adverse events over seven years slightly decreased after two years of event logging, suggesting reporting fatigue of the practitioners and staff. Very few adverse events led to patient harm, which is reassuring. Self reporting was rare, suggesting people might have been reluctant to admit mistakes.

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**COLLABORATION OF PHARMACISTS AND HOSPITALISTS TO INCREASE USE OF ADA RECOMMENDED INSULIN REGIMENS IN INTERNAL MEDICINE PATIENTS: IMPLEMENTATION OF A PILOT PROGRAM**  
Sanjeev Suri, Katie Jeff, Yeh JunYen, Cleveland Clinic, Cleveland, Ohio.

**STATEMENT OF PROBLEM OR QUESTION:** There is increased use of sliding scale insulin (SSIM) and limited use of ADA recommended regimens of basal-mealtime-supplemental (BMS) insulin regimens in hospitalized diabetic patients.

**DESCRIPTION OF PROGRAM/INTERVENTION:** This was a prospective, randomized, open label, parallel group trial in diabetic patients admitted in a 1400 bed tertiary care academic hospital. Hospitalist physician-led medical teams were randomized to study intervention (INV) or usual care (UC). In the INV group, hospital pharmacists evaluated BG control daily along with the nutritional intake of hospitalized patients. They made recommendations, as needed, to the medical team using a weight-based insulin dosing algorithm as well as established ADA guidelines. Physicians in the UC group prescribed insulin according to their usual practice. Results were also compared to a historical cohort (HC) consisting of diabetic patients admitted on the hospitalists' services for up to 1 year prior to the start of the randomized trial. These patients were also on UC.

**OBJECTIVES OF PROGRAM/INTERVENTION:** We evaluated a collaborative program involving hospital based pharmacists and hospitalist physicians for its effectiveness in increasing the implementation of ADA recommended regimens and on attainment of ADA glycemia targets in hospitalized patients.

**FINDINGS TO DATE:** 188 UC and 181 INV subjects were enrolled over 29 weeks. 96 patients were studied in the HC. Mean daily blood glucose was 194 mg/dl HC, 176 mg/dl UC and 179 mg/dl INV (p<0.001).

**KEY LESSONS LEARNED:** Collaborative efforts between the hospitalists and pharmacists can increase the use of ADA recommended BMS
regimens as well as use of basal insulin while decreasing use of SSII and risk of hypoglycemia in hospitalized diabetic patients. Non-scientific survey of the hospitalists showed that they valued the input of the hospital pharmacists in managing the insulin regimen of their patients.

A TOOL TO HELP PROVIDERS FIND PRESCRIPTION DRUG ABUSERS
Alan Weiss1; Patrick Robert2. 1The Cleveland Clinic Foundation, Cleveland Heights, Ohio; 2The Cleveland Clinic Foundation, Cleveland, Ohio. (Tracking ID # 9188)

STATEMENT OF PROBLEM OR QUESTION: Prescription drug abuse is increasingly prevalent and difficult to find. We created a reporting tool to allow providers to monitor their controlled substance prescriptions to find drug abusers.

DESCRIPTION OF PROGRAM/INTERVENTION: Three years of outpatient CS prescriptions were analyzed to create reports for each provider showing the top CS medications, the patients receiving them and the number of times the patient either asked for prescriptions too early or had received dangerous medication amounts (overlaps and excesses). These reports were distributed to family medicine, but not to internal medicine to create a control group. Our goal was to see if these kinds of reports could help reduce prescription drug abuse.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. Discuss the dangers of prescription drug abuse. 2. Explore the concepts of prescription overlaps and excess medications. 3. Demonstrate how reports of these concepts can find at risk patients.

FINDINGS TO DATE: We found that, at the Cleveland Clinic, 8% of patients were getting their CS prescriptions too early and up to 9.25% were getting excess CS amounts. The author used his report to change his prescribing on 13 of his top 20 patients, 5 of which were terminated from his practice for violating CS agreements. He wrote 20.4% fewer CS prescriptions, on 18.5% fewer patients, had 10.5% fewer prescription overlaps but excess CS medications did not change. These reports were given to 48 family medicine physicians. Their CS prescription habits were compared to internal medicine at the same locations, looking at the three months before and after intervention. Family medicine improved more than internal medicine for all analyses: the number of scripts decreased (21.1% vs. 17%); the number patients receiving CS scripts declined (8.3% vs. 7.2%); the overlapping prescriptions fell (34.8% vs. 34.1%); excess medications also dropped (12.3% vs. 11.4%).

KEY LESSONS LEARNED: Our reporting tool helps clinicians monitor their controlled substance prescription habits, eliminate drug abuse and improve prescription safety. We feel that the color-coded, interpretive, graphical nature of our reports is essential to help providers make clinical decisions about their controlled prescriptions. State-wide controlled substance monitoring programs in the US have been established with similar goals; we think our reports would be a good adjunct to these programs. There are a number of drawbacks to our research. First, the patient populations in family and internal medicine have different prescription needs. We hoped to address this issue by examining practices at the same locations. Second, we analyzed data 3 months after the reports were distributed, likely too early to judge long term success. Finally, we await additional data to compare our intervention to other internal medicine practices and the rest of the health system.

IMPLEMENTING Protocols AND RISK STRATIFICATION FOR CHRONIC OPIOID MANAGEMENT IN PRIMARY CARE PATIENTS WITH NON-CANCER PAIN Robin Canada1; Susan Corson Day1; Craig Wynne1; Danae Nicole DiRocco1. 1University of Pennsylvania, Philadelphia, Pennsylvania. (Tracking ID # 9244)

STATEMENT OF PROBLEM OR QUESTION: Chronic non-cancer pain and related opioid therapy are difficult to manage in an academic resident primary care practice.

DESCRIPTION OF PROGRAM/INTERVENTION: A rise in regular opioid prescriptions, administrative burden, disruptive behavior, and variation in prescribing patterns prompted the institution of a workgroup to address these issues. Literature on best practices for pain/opioid management in primary care was reviewed and pain and addiction specialists consulted. Strategies identified: 1)Identification of an accountable prescribing physician and continuity attending for resident patients 2)Standardize EMR documentation: including a division-wide controlled medication agreement and use of a uniform pain diagnosis on the problem list 3)Utilize patient registries to facilitate proactive management, assure PCP continuity and adherence to guidelines Providers received an educational intervention regarding these elements and a monthly opioid/pain management Care Conference has begun to allow primary care providers to present difficult cases and questions to pain specialists.

OBJECTIVES OF PROGRAM/INTERVENTION:
1. Identify best practices for opioid management in chronic pain
2. Determine if risk stratification of patients results in improved outcomes
3. Educate and evaluate providers

FINDINGS TO DATE: Findings to date show significant increases in UDS screening (from 28% to 34%, p < 0.005), pain diagnosis in problem list documentation (from 17% to 24%, p < 0.001) and designation of continuity provider compliance (from 81% to 89%, p < 0.0001).

KEY LESSONS LEARNED:
- Improving opioid management and reducing aberrant behavior requires interventions at multiple points of practice operation.
- Implementing protocols which require changes in physician, patient and staff behavior requires education and frequent reinforcement.
- Achieving provider consensus on documentation and practice protocols is necessary, but challenging.
- Initiating a Pain Management conference has provided a site for open dialogue on difficult patients and issues.

MOTIVATIONAL INTERVIEWING TO FACILITATE PATIENT-CENTERED NAVIGATION IN PRIMARY CARE: A PILOT STUDY
Tracy A Battaglia1; Sarah E Lane1; Samantha S Murrell1; Lois McCloskey2; Hannah Jong4; Ariel Childs4; Kelly Walker4; Edward Bernstein3; Judith Bernstein3. 1Boston University Schools of Medicine, Boston, Massachusetts; 2Boston University School of Public Health, Boston, Massachusetts; 3Boston University School of Medicine, Boston, Massachusetts. (Tracking ID # 9245)

STATEMENT OF PROBLEM OR QUESTION: Successful patient navigation programs traditionally target a specific disease, such as breast cancer, without taking into account competing medical morbidities or patient health priorities.

DESCRIPTION OF PROGRAM/INTERVENTION: Primary care-based breast health navigators were trained to screen for chronic conditions using B-MI communication techniques. Participants were English-speaking female primary care patients age 51 to 70 with > 18 months since last documented mammogram. Navigators contacted patients by phone using existing protocols and invited them to participate in this study. The intervention included a broader B-MI-based conversation around smoking status, depression, obesity, and/or patient health concerns in addition to mammography screening. Per existing protocols, navigators facilitated appointment scheduling, conducted telephone outreach to remind participants of upcoming appointments, and addressed any barriers to attending that appointment. Qualitative interviews with participants...
(n=11), providers (n=6), and navigators (n=5) were also conducted to evaluate their experience with enhanced navigation.

OBJECTIVES OF PROGRAM/INTERVENTION: This mixed-methods study evaluates the feasibility of expanding a primary care breast navigation program to address additional chronic diseases and allow patients to set their own priorities for action using brief motivational interview skills (B-MI).

FINDINGS TO DATE: 109 (60%) eligible participants consented to participate. Overall, 88 (81%) had at least one positive screen for smoking, obesity, or depression, and 52 (48%) of participants named smoking obesity, and/or depression as a health priority. 102 (94%) scheduled mammography screening appointments and 80 (78%) attended a mammography appointment within 30 days of the initial scheduled appointment. Seventy-seven (71%) scheduled a primary care appointment through the navigator, and 59 (77%) attended a primary care appointment within 30 days of the initial scheduled appointment. Navigators reported that use of B-MI skills resulted in more personalized interactions, and providers responded most positively to the participants’ listing of their health priorities. All participants interviewed responded positively to the enhanced navigation.

KEY LESSONS LEARNED: Our findings suggest that patient-centered navigation which aims to address multiple chronic conditions is feasible. Participants are willing to discuss personal health concerns with navigators, and this model leads to improvement in both mammography adherence and primary care follow up to address health priorities.

INTEGRATION OF HEALTH LITERACY SCREENING IN AN ELECTRONIC HEALTH RECORD April Barbour 1; Amber Wobbekind 1. 1George Washington University, Washington, District of Columbia. (Tracking ID # 9277)

STATEMENT OF PROBLEM OR QUESTION: Though health literacy has been shown to be a strong determinant of health outcomes, physician knowledge of health literacy and screening for health literacy in the primary care setting is inadequate.

DESCRIPTION OF PROGRAM/INTERVENTION: A simple, three question template was created to assess health literacy based on validated screening questions by Benjamin J. Powers, MD, MHS et al published July 2010. A pre-intervention survey was done to assess prior educational sessions on the topic of health literacy, knowledge of health literacy, and attitudes toward health literacy. After the survey, a didactic session was done on the topic of health literacy which highlighted the importance of screening for health literacy, effect on health outcomes, and methods to improve care for patients with low health literacy followed by a demonstration of the health literacy template in the electronic medical record. In six months, the same physicians will be surveyed again to evaluate if there has been a change in knowledge or attitudes about health literacy.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. Assess current knowledge of health literacy in physicians and methods for screening for health literacy2. Educate resident and attending physicians about health literacy3. Implement a simple, three question health literacy screening template to the electronic medical record

FINDINGS TO DATE: On pre-intervention survey, preliminary data shows that the majority of physicians I surveyed did not have prior education on health literacy, though the majority thought it moderately to greatly affected health outcomes. According to the results, none of the physicians were screening for health literacy at the time of the survey with an accepted tool such as S-TOFHLA or REALM, though some attendings had developed their own tools to assess health literacy such as writing instructions and having patients read them back.

KEY LESSONS LEARNED: Health literacy is a very important determinant of health outcomes, though assessment for health literacy is uncommon due to time-intensive tools like S-TOFHLA and REALM. Screening for health literacy with 3 questions, however, is very easy to implement in a primary care setting. Creating a health literacy screening template can be done easily in an electronic medical record template.

PATIENT CARE COORDINATORS AND RESIDENT WORK ENVIRONMENT Geraldine Menard 1; Michelle Guidry 1; Isolde Butler 1. 1Tulane University School of Medicine, New Orleans, Louisiana. (Tracking ID # 9409)

STATEMENT OF PROBLEM OR QUESTION: This irb-approved study utilized patient care coordinators to decrease residents’ indirect patient care responsibilities, improve resident ward experience, and decrease 30 day readmission rate.

DESCRIPTION OF PROGRAM/INTERVENTION: Two PCCs assisted four academic hospital medicine teams by completing tasks such as scheduling appointments, obtaining referral forms for discharge, faxing discharge summaries, and obtaining outside medical records. PCCs and residents communicated through the electronic secure resident patient sign-out, phone, email, and in person. We hypothesized that utilization of the PCCs would improve the residents ward experience, increase resident teaching, and increase patients discharged before 11 am, a target time in our hospital bed utilization program. A ten question anonymous survey was sent to all internal medicine residents prior to implementation of the program and at one year post implementation.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. Residents would participate in more educational activities and teaching while on the medical wards with implementation of the program.2. Discharge process would improve.

FINDINGS TO DATE: The response has been overwhelmingly positive from the residents to the PCCs. Using PCCs to handle indirect patient care needs led to an improvement in the patient workload for residents and increased time for resident-directed teaching. In the era of residency work hour restrictions and the desire to improve learner environments, physician extenders decrease indirect patient care and should be considered for academic hospital programs. The results are as noted above in the measures of success section. Limits of the study include small percentage of respondents.

KEY LESSONS LEARNED: Implementation of PCCs to coordinate indirect patient care activities can improve the resident clinical ward experience and time dedicated to teaching as well as improve the discharge process. This program will continue at our institution, and we are beginning to utilize PCCS in assisting the medicine teams in targeting high-risk patients to reduce readmissions.

CREATING A CORE CURRICULUM FOR NEW COLLEAGUES: AN ORIENTATION PROGRAM FOR PRIMARY CARE IN AN ACADEMIC MEDICAL CENTER Lori Wiviott Tishler 1; Reema Alshirawi 1; Joseph Frolikis 1; Stuart Pollack 1. 1Brigham and Women’s Hospital, Boston, Massachusetts. (Tracking ID # 9437)

STATEMENT OF PROBLEM OR QUESTION: Creating a cohesive primary care workforce is challenging in a geographically-distributed AMC with an established hospitalist program, leading to problems with physician satisfaction and retention.

DESCRIPTION OF PROGRAM/INTERVENTION: Over the past fifteen years, primary care at the Brigham has grown from a single on-site practice to 12 practices, many of which are some distance from the
hospital. Anecdotaly, many physicians felt that an initial orientation was lacking. A survey of new faculty confirmed this, with particular concerns about making the transition from residency training to practice (for newer graduates), referral patterns, and using our electronic record. As part of a comprehensive overhaul of our primary care orientation, we developed the Core Curriculum. This course meets monthly from September to June of the physician’s first year, and is mandatory. Topics include “transition to practice,” “meet the administrators,” “LMR tricks and tips,” and “managing difficult patients,” among others. The format varies with the topic, but is generally an open discussion with limited didactics and significant opportunity for networking and sharing of experiences.

OBJECTIVES OF PROGRAM/INTERVENTION: The core curriculum provides: (1) Practical information about functioning within our system (2) Networking opportunities between new faculty as well as between junior and senior faculty (3) Improved retention and physician satisfaction

FINDINGS TO DATE: Participants have been enthusiastic about the program. This is our first cohort and we've only met 3 times at this writing. In our first feedback results, participants expressed a desire for more discussion and less didactics. We also learned that new doctors were confused about the roles and responsibilities of various members of our team. On a 1–5 Likert Scale, feedback from our initial session with a scale of 1(definitely) and 5 (definitely not) showed: Was the discussion helpful to you? 1.5; Was the discussion relevant to you? 1.3; Were all your questions addressed? 2; Was the information presented at an appropriate level? 1.8; Would you recommend this session to your peers? 1.3.

KEY LESSONS LEARNED: 1. Becoming a new PCP is an underexplored academic and professional transition. 2. New primary care doctors crave structure and opportunity to network and form collegial relationships as they become part of a practice and a larger hospital system. 2.5 New PCPs need a “safe” and confidential place to discuss issues they don’t feel comfortable discussing with their immediate colleagues and supervisors. 3. Developing a core curriculum is a relatively straightforward, revenue limited project that has the potential to create dividends over time, particularly in the areas of staff satisfaction and retention. 4. The focus on developing a core curriculum for new PCPs gives increased visibility—both academic and clinical—to onsite clinical and all off-site faculty.

PROJECT ECHO: AN INNOVATIVE CAMPUS-COMMUNITY PARTNERSHIP FOR MANAGING RESISTANT HYPERTENSION

Christopher Masi 1; Kristine Bordenave 1; Andrew Davis 1; Brenda Perea 1; Stephen Brown 1; Tamara Hamlish 1; George Bakris 1; Daniel Johnson 1. 1University of Chicago, Chicago, Illinois. (Tracking ID # 9498)

ABSTRACTS

DESCRIPTION OF PROGRAM/INTERVENTION: Using a model developed by the University of New Mexico to assist rural PCPs care for patients with hepatitis C, we created a videoconference network among 6 urban Federally Qualified Health Centers (FQHCs) and the University of Chicago (UC) to support Project ECHO (Extension for Community Health Outcomes), a 6-month educational program designed to teach state-of-the-art management of resistant hypertension to FQHC providers. FQHC PCPs use the network to present cases of patients with resistant hypertension to a specialist at UC every 2 weeks. Each session begins with a 20 minute lecture on one aspect of the causes and management of resistant hypertension. The specialist then leads an interactive discussion across the 6 sites, and participants learn from each others cases. This ‘mini-fellowship’, case-based approach improved hepatitis C outcomes managed locally in rural New Mexico and we hypothesize it will improve care of resistant hypertension in urban Chicago.

OBJECTIVES OF PROGRAM/INTERVENTION: The objectives of Project ECHO are to 1) increase primary care provider (PCP) hypertension management self-efficacy and knowledge, 2) enhance the ability of PCPs to manage resistant hypertension and therefore reduce the number of referrals of these patients to hypertension specialists, and 3) significantly reduce systolic blood pressure (SBP) among the patients discussed during a 6-month, case-based videoconference curriculum.

FINDINGS TO DATE: Of the 19 providers who completed the precurriculum surveys, 8 were male and 11 were female. Eleven of the PCPs were family practitioners, four were internists, and four were either physician assistants or advanced practice nurses. The mean summary score on the baseline hypertension management self-efficacy scale was 5.25 out of 7 (range 3.8 to 7, S.D.=1.04) and the mean summary score on the hypertension management knowledge questionnaire was 13.57 out of 26 (range 8 to 18, SD=2.85). The correlation between hypertension management self-efficacy and knowledge was low (r=0.24), suggesting that baseline hypertension management self-efficacy did not reflect baseline hypertension management knowledge.

KEY LESSONS LEARNED: Despite being confident in their ability to care for patients with hypertension, primary care providers at six FQHCs scored poorly on a baseline test of hypertension management skills. Previous studies have demonstrated disparities in self-efficacy and knowledge regarding treatment of chronic diseases. Six months after completing our Project ECHO curriculum, we will conduct follow-up surveys to determine whether hypertension management self-efficacy and knowledge improve and are more closely correlated. We will also determine whether referrals to hypertension specialists decrease and whether SBP declined among the patients reviewed as part of the curriculum. Improvement in these areas will indicate that the Project ECHO videoconference model can be used to link community PCPs with university specialists to improve management of resistant hypertension, as well as other complex, chronic diseases in urban health care settings.
A VISIT PLANNER TO COORDINATE AND IMPROVE CARE IN AN ACADEMIC GENERAL MEDICINE CLINIC Erin Elizabeth Van Scoyoc 1; Robert Malone 1; Kim Young-Wright 1; Shaun McDonald 1; Thomas Miller 1; Carmen L. Lewis1; 1University of North Carolina at Chapel Hill, Chapel Hill, North Carolina. (Tracking ID # 10114)

STATEMENT OF PROBLEM OR QUESTION: To improve care in an academic general internal medicine clinic by prioritizing preventive and chronic disease care, coordinating tasks, and evaluating improvements in delivery processes and outcomes.

DESCRIPTION OF PROGRAM/INTERVENTION: The Visit Planner is a paper document generated at check-in that prompts care providers to address needed screening and chronic disease care. Initially developed for use with diabetic patients, we now use the Visit Planner for all established patient visits. The Visit Planner tasks are generated by a patient registry and are customized for each patient based on billing, lab, and EMR data. There are three sections of prompts: for the front desk, for the nursing staff, and for the physician or mid-level provider. The front desk prompts include ordering an A1c and/or lipids if indicated. Nursing staff and providers address up to three prioritized prompts. Examples of nursing staff prompts include: screening for depression, tobacco abuse, and domestic violence, as well as diabetic preventive care. Examples of physician prompts include: colorectal cancer screening, follow-up on positive depression screens, contraceptive education, and follow-up on positive foot exams.

OBJECTIVES OF PROGRAM/INTERVENTION: 1) To develop a system for prioritizing reminders for evidence-based care among standards of preventive and chronic disease care. 2) To effectively distribute and coordinate tasks between the front desk, the nursing staff, and physicians or mid-level providers. 3) To provide feedback on performance to staff members and measure clinical care outcomes.

FINDINGS TO DATE: The Visit Planner was successfully incorporated into clinic workflow. The front desk completed 83% of 369 prompts in April 2010, and 86% of 363 prompts in October 2010 (p=0.351). Prompts addressed by nursing staff increased significantly over six months from 79% of 2708 prompts to 87% of 3021 prompts (p<0.001). Prompts addressed by providers increased significantly over six months from 66% of 1534 prompts to 73% of 1361 prompts (p=0.002). This included a significant increase over six months in the response to: colorectal cancer screening from 43% of 457 prompts to 71% of 275 prompts (p<0.001), tobacco cessation counseling prompts from 47% of 118 prompts to 69% of 72 prompts (p=0.002), positive depression screening follow-up prompts from 62% of 341 prompts to 75% of 293 prompts (p<0.001), contraceptive education prompts from 35% of 37 prompts to 61% of 61 prompts (p=0.001), and high-risk foot exam follow-up prompts from 60% of 167 prompts to 77% of 119 prompts (p=0.002).

KEY LESSONS LEARNED: We developed a system for improving care planning, coordination, and performance measurement in our clinic. The Visit Planner was able to be successfully incorporated into the clinic workflow, prioritizing and distributing screening tasks among the front desk, the nursing staff, and providers. In the future we plan to measure the reliability of prompt completion by nursing staff and providers and then measure its effect on clinical outcomes. In addition, we continue to add new prompts and refine existing ones to continually improve this tool.

AN ANALYSIS OF PROVIDER RESPONSES TO ELECTRONIC COMMUNICATIONS REGARDING TRANSITIONS OF CARE AND ACTIONS FOR CARE COORDINATION FOR PATIENTS IN A PATIENT CENTERED MEDICAL HOME Scott V. Joy 1; Kathleen Waite2. 1Duke University, Chapel Hill, North Carolina ; 2Duke University, Durham, North Carolina. (Tracking ID # 10622)

STATEMENT OF PROBLEM OR QUESTION: How can electronic notifications of patients receiving transitional care be integrated into clinical work flow, and what actions are taken in response to notices of hospital admissions?

DESCRIPTION OF PROGRAM/INTERVENTION: A process for monitoring patients who have been evaluated in the ER, UC, and/or admitted to the hospital is critical for a PCMH. We sought to evaluate our current electronic processes related to these transitions of care. An e-mail is generated and automatically sent to our practice by a central scheduling system when a patient in our practice of 8 physicians is seen in a transitional setting. This inbox is monitored daily by clerical staff, and messages are converted to a task that is put into the electronic health record. Tasks are reviewed daily by the responsible physician, and the
following actions can be taken: 1. Complete without comment 2. Complete with comment 3. Forward to a RN care manager. In November 2010, all e-mails received were collected, the electronic tasking system was reviewed to see if a task had been created from the e-mail, the history of the task was reviewed, and the action taken was recorded.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. Create a process for a PCMH General Internal Medicine practice to receive electronic notification when a patient receives care at a transitional site such as Urgent Care (UC), ER, or hospital admission. 2. Create a process for a general internist to review electronic notifications of this care, and to electronically respond to the notification. 3. Measure the actions taken in response to notices about patient hospitalizations.

FINDINGS TO DATE: A total of 279 electronic tasks were created by the data management team and reviewed by providers, with 5 e-mails not being converted to an electronic task. 42% of the tasks were for Urgent Care Visits, 27% were for ER Visits, and 31% were for hospital admissions. Actions taken by physicians in regards to notifications of hospital admissions were as follows: An average of 40% of notifications of hospital admissions were Reviewed without Comment, range 0% to 88%. An average of 24% of notifications of hospital admissions were Reviewed with Comment, range 0% to 100%. An average of 44% of notifications of hospital admissions were Sent to Manager, range of 0% to 100%.

KEY LESSONS LEARNED: Many patients assigned to a PCMH receive care in transitional settings in a given month. Existing IT systems can be leveraged to create new processes for electronic notifications to be received regarding transitions of care within a PCMH. This provides a mechanism to track care received outside of the medical practice and opportunities to reduce or improve services based on patient needs. Variability exists amongst individual providers regarding the actions taken in response to electronic notifications of patient hospital admissions. The effectiveness of forwarding the tasks to care managers in regards to efficiency of scheduling follow-up appointments and reducing hospital readmission rates and medication errors remains to be determined.

WISH: IMPROVING WOMEN’S HEALTH THROUGH SERVICE INTEGRATION AND EDUCATION Mitra Razzaghi1; Rita Lee2.

1University of Colorado, Aurora, Colorado; 2University of Colorado Denver, Aurora, Colorado. (Tracking ID # 10626)

STATEMENT OF PROBLEM OR QUESTION: Fragmentation in the health care system and lack of knowledge regarding recommended preventive and healthy living measures result in patients’ non-adherence with preventive and chronic illness care.

DESCRIPTION OF PROGRAM/INTERVENTION: The Women’s Integrated Services in Health (WISH) clinic at the University of Colorado provides collaborative and comprehensive care. WISH is a primary care clinic staffed by internists with women’s health training and family medicine physicians providing age-specific preventive health services, outpatient gynecologic care including procedures, and a concierge-type service for coordination of specialty care. Convenient one-stop preventive care appointments are offered. WISH coordinators who are clinical administrative staff have access and authority to directly schedule with multiple specialty clinics. The educational outreach program includes screening recommendation cards mailed annually during the patients’ birth month and quarterly e-newsletters with information on women’s health topics. Further educational programs such as mother-daughter educational events, series of classes, and webinars are in development.

OBJECTIVES OF PROGRAM/INTERVENTION: 1) To develop a comprehensive range of gender-specific, clinically coordinated services for women from young adulthood throughout their lifespan. 2) To improve adherence with preventive and therapeutic recommendations. 3) To improve women’s knowledge of their health care needs.

FINDINGS TO DATE: A survey of 200 women presenting to the WISH clinic resulted in a 78% (N=156) response rate. Average satisfaction of the overall services rated 9.28 out of 10. Of the 41% who used the coordination of care service, 95% had good (22%), very good (35%), or excellent (38%) experiences. Forty percent of patients who did not use the coordination of care were not aware of this service. Patients who were aware but decided not to use coordination of care service either preferred to schedule their appointments themselves (40%) or felt that they did not need it (60%). E-mail surveys (average of 1200 per year) demonstrate a 96.5% satisfaction rate. Baseline clinical metrics reveal rates of screening for cervical, breast, and colon cancer to be below national average. These metrics will be reassessed after a set intervention period.

KEY LESSONS LEARNED: Achieving a true integrated service requires a network of participating specialists and the infrastructure for service coordination (access to schedules, registries, and organizational support for personnel and education resources). Novel concepts such as educational programs and concierge-type services can only be successful when patients are aware these resources exist.

VIEWING OF CHRONIC PAIN DECISION AIDS IN A MULTIDISCIPLINARY PAIN PROGRAM AND PATIENT REPORTED OUTCOMES Joseph M. Bumgarner1; Leslie Stewart2; Shaun McDonald3; William C. Andrew2; Timothy J. Ives2; Paul R. Chelminski2; Michael Pignone2; Carmen L. Lewis2. 1Division of General Internal Medicine and Clinical Epidemiology, University of North Carolina, Chapel Hill, NC, Durham, North Carolina; 2Division of General Internal Medicine and Clinical Epidemiology, University of North Carolina, Chapel Hill, NC, Chapel Hill, North Carolina. (Tracking ID # 10723)

STATEMENT OF PROBLEM OR QUESTION: To determine if providing chronic pain Decision Aids (DA) increases patient engagement in care and improves patient reported pain and psychosocial outcomes.

DESCRIPTION OF PROGRAM/INTERVENTION: The GMPS is a multidisciplinary program for patients with nonmalignant chronic pain. The goals of the GMPS are to reduce daily pain, improve participation in activities of daily living, and address overlying symptoms such as sleep and/or mood disorders through pharmacological and non-pharmacological means. At the conclusion of a 30 minute enrollment visit, we asked patients to view a DA produced by The Foundation for Informed Medical Decision Making, "Living with Chronic Pain," which is designed to provide evidenced-based methods for the management of chronic pain. In addition to the DA, patients were also given a pain booklet and pre and post questionnaires. Using this approach viewing rates of the DA were less than 30%. We then extended the enrollment visit to 60 minutes and required all new chronic pain patients to read and complete the DA pre-questionnaire, watch the DA, and complete the DA post-questionnaire on computer stations in each exam room prior to the visit.

OBJECTIVES OF PROGRAM/INTERVENTION: Objective 1: To increase viewership of a chronic pain DA video in patients enrolled in the General Medicine Pain Service (GMPS) at The University of North Carolina Internal Medicine Clinic. Objective 2: Determine if viewing the chronic pain DA influences intent to discuss non-pharmacologic treatment options for chronic pain with the patient’s healthcare practitioner. Objective 3: Determine if viewing the DA results in improved pain or psychosocial measures.
FINDINGS TO DATE: Viewership of the DA increased 46% with our intervention. Of those who completed the DA mean age was 47.2 vs. 49.2 for non-viewers, (p=0.48). 41% who viewed the DA were male vs. 50% for non-viewers (p=0.43). 73% who viewed the DA were Caucasian vs. 67% for non-viewers (p=0.53). Time to first follow-up was 28.5 days for those who viewed the DA vs. 27.4 days for non-viewers (p=0.85). For those who watched the DA, 80%, 60%, 53%, and 41% had tried pain medication, relaxation, physical activity, and improved sleep respectively. Intent to discuss improved sleep and physical activity increased 19% and 16% respectively after viewing the DA. Those who watched the DA had greater improvement in concentration (0.30 vs. -0.20, p=0.18), energy (0.16 vs. -0.40, p=0.02), and appetite (0.36 vs. 0.30, p=0.08) vs. non-viewers. Pain scores for those who watched the DA improved in all categories with greater improvement in worst (-0.37 vs. -0.20, p=0.16) and average (1.11 vs. 0.07, p=0.02) vs. non-viewers.

KEY LESSONS LEARNED: By increasing visit length, our intervention integrated a DA into chronic pain management and fostered a broader conceptualization of this chronic condition among patients. Patients who viewed the chronic pain DA reported an increase in their intent to discuss improved sleep and physical activity with their healthcare practitioner after watching the DA. Patients who viewed the chronic pain DA also demonstrated a trend toward better psychosocial measures and pain scores overall. Specifically, these patients display a significant improvement in energy and average pain scores at follow-up after viewing the DA when compared to patients who did not view the DA. These findings indicate that the Chronic Pain DA increases patient engagement and has the potential to improve the clinical outcomes of pain relief and psychosocial health. A randomized intervention using the DA is needed to provide greater insight into its impact on clinical outcomes.

TREATING HEPATITIS C IN THE HOMELESS: A MODEL THAT WORKS  Cheryl Ho 1; Charles Preston 1; Kim Fredericks 1; Sara Doorley1. 1Valley Homeless Healthcare Program, San Jose, California. (Tracking ID # 10827)

STATEMENT OF PROBLEM OR QUESTION: Access to Hepatitis C evaluation and treatment is often limited in patients with a history of mental illness, addiction, and/or unstable living conditions.

DESCRIPTION OF PROGRAM/INTERVENTION: The Valley Homeless Healthcare Program (VHHP) is a FQHC primary care medical home in San Jose, California whose patient population has a high prevalence of infection with the Hepatitis C Virus. While most of the patients with HCV desire evaluation and treatment for their infection, few qualify for treatment in a traditional specialty clinic setting because of the difficulty in co-managing mental illness, substance use disorders, while balancing unstable living conditions. At VHHP, the processes of medical evaluation, psychosocial assessment, patient education, treatment monitoring, peer support, and self-efficacy development are all conducted in a single setting of a multidisciplinary group model within primary care. Primary care physicians co-lead a weekly group visit with Psychologists for patients who are contemplating Hepatitis C treatment, currently in treatment, and who have completed treatment, all in one group together.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. To improve health-care access to Hepatitis C evaluation and treatment in patients with a history of mental illness, addiction, and/or unstable living conditions. 2. To streamline processes in HCV treatment of patient education, medical evaluation, psychosocial assessment, and treatment monitoring into a weekly multi-disciplinary group clinic. 3. To achieve outcomes of HCV treatment compliance rates and viral response rates in a socially vulnerable population that rival published standards.

FINDINGS TO DATE: A total of 28 patients have undergone treatment through this multidisciplinary group treatment model. 4 patients stopped treatment early due to intolerable side effects. 10 out of 18 (55%) patients with HCV Genotype 1 achieved a sustained viral response, or clearance of the Hepatitis C virus at 6 months compared with the published standard of approximately 50%. 8 out of 10 patients (80%) with Genotypes 2 or 3 achieved a sustained viral response, compared with 70-80% nationally.

KEY LESSONS LEARNED: Patients with a history of mental illness, substance use disorders, and unstable living conditions can be successfully treated for Hepatitis C within the primary care context of a multidisciplinary group clinic model, with treatment completion rates and sustained viral response rates that rival published literature rates.

REDUCING EMERGENCY DEPARTMENT FREQUENT USE BY INVESTIGATING RECURRENT ABDOMINAL PAIN Alan Weiss 1; Alan Weiss 2; Maged Rizk2. 1The Cleveland Clinic Foundation, Cleveland Heights, Ohio; 2The Cleveland Clinic Foundation, Cleveland, Ohio. (Tracking ID # 10903)

STATEMENT OF PROBLEM OR QUESTION: Frequent emergency department users account for a high fraction of ED visits. By analyzing patients with abdominal pain, we discovered factors which can reduce recurrent ED visits.

DESCRIPTION OF PROGRAM/INTERVENTION: We created a database from the Cleveland Clinic Health System (CCHS) electronic medical record, with 10 EDs, and 2.1 million visits on 570,000 patients. A cohort of 146 patients was identified who had been to any CCHS ED at least 50 times, with at least two of those being for abdominal pain. A retrospective chart review of 1595 ED visit notes and tests was performed. We asked:
1. Was there any reference to past ED visits or results?
2. What were patient complaints and requests?
3. What ED procedures and tests were done?
4. In the reviewer’s opinion, did the patient come to the ED for a medical, psychological, or social problem?
5. Was the patient admitted, observed or discharged home?
6. Did the patient receive prescriptions or follow-up appointments?
7. Did the patient get a toxicology screen?
8. Did the patient appear to be faking or exaggerating symptoms?

OBJECTIVES OF PROGRAM/INTERVENTION:
Discuss the problem of ED frequent users in terms of costs, society impact and the dangers they face from poor health outcomes. Demonstrate how a system wide database can find frequent ED users and illustrate their pattern of ED use. Identify factors which contribute to provider and patient decision making in terms of the care the patients receive, mechanisms to decrease repeated testing and factors which reduce how often the patients return to the ED.

FINDINGS TO DATE: The ED notes mentioned prior ED visits or tests on 27% of the current ED visits. Making that reference decreased the ordering of x-rays and all radiological tests, by 25% and 20% respectively, but increased the use of IV fluids, labs and narcotics by 21%, 9% and 25% respectively. The time interval between visits decreased if the patient was sent home by 5.3 days, or received narcotics prescriptions (by 8.2 days). The time interval between ED visits increased if the patient was admitted (by 7.3 days), had labs (by 3.6 days), had radiological tests, or had nothing done (by 7.1 days). Scheduling follow-up appointments had no influence on ED recurrence.
Patients exaggerating or faking symptoms occurred on 4% of the visits, but 21% of the cohort patients performed that behavior on at least one. This subgroup was more likely to request narcotics, have more one ED visit on the same day and have illegal substances on toxicology screening.

**Key Lessons Learned:** While our study is limited by what ED providers actually document, we feel that good medical decision making is often accompanied by appropriate documentation. In that respect, this retrospective cohort study significantly adds to the ED frequent user literature. The recognition of recent ED use by providers changes their perspective from an episode of care to that of a continuum. That view decreases radiology tests, but, paradoxically, may actually lead patients to return to the ED more often. At the very least, acknowledging that a patient recently was in the ED and ordering lab tests prevents them from returning as frequently. Drug seeking behavior, common in the cohort, could have been reduced with more liberal use of toxicology screens, which, while only used on 9% of visits, were found to have illegal substances on one third. Prospective studies are needed to confirm our results.

**IMPROVING THE CONSISTENCY OF ORAL ANTICOAGULATION IN A SKILLED NURSING FACILITY: UNDERSTANDING BARRIERS TO PATIENT SAFETY IN LONG TERM CARE**

Karen Glasser Scandrett 1; Brian Joyce 1; Linda Emanuel1. 1Northwestern University, Chicago, Illinois. (Tracking ID # 10945)

**Statement of Problem or Question:** Achieving consistency in oral anticoagulation is particularly difficult in nursing homes, with reports in the literature of therapeutic values achieved only 50% of the time.

**Description of Program/Intervention:** We convened a QI process at a local, 189-bed for-profit nursing facility at which one investigator is associate medical director. After obtaining administrative approval, a team comprised of the director of nursing, two nursing managers, two staff nurses, and representatives from pharmacy, laboratory and nutrition services met every two weeks in order to map the anticoagulation process and identify key areas for quality focus. We identified relevant tools, including a communication mnemonic, a dosing algorithm, and nutritional and pharmacy support tools, and incorporated them into a new protocol. A multimedia invoice was developed and conducted with all nursing staff over a two week period. Reminders of the revised protocol were posted at each nursing station and in the medical chart of each resident receiving anticoagulation therapy.

**Objectives of Program/Intervention:** To use quality improvement (QI) methods to improve anticoagulation consistency at a local skilled nursing home in the following manner:
1) Develop a local team to establish oral anticoagulation goals and map the current process;
2) Conduct quality improvement cycles, measuring time-to-therapeutic and percent time in therapeutic range;
3) Improve nurse-physician communication about the anticoagulation process.

**Findings to Date:** Data from the three months prior to the intervention were compared with data from the three months after the intervention. A total of 458 INR draws were performed on 69 patients pre-intervention, and 560 INR draws were performed on 66 patients post-intervention. Average time to therapeutic INR was 26 days pre-intervention and 25 days post-intervention. The percentage time in therapeutic range did not change significantly. Pre-intervention, 57.6% of INR draws were within therapeutic range, while 48.3% of post-intervention INR values were therapeutic.

Data collection is ongoing and a second intervention phase is planned, which will include: 1) a revised series of in-services focusing on nurse-physician communication, using an INR reporting case-study for role-play, and 2) a physician mailing regarding appropriate Coumadin dosing and introduction of the dosing algorithm.

**Key Lessons Learned:** The project was initially well-received, but lost momentum due to several factors known to thwart QI efforts in nursing homes, including high staff turnover and lack of leadership and/or organizational capacity for change. Turnover was a pervasive issue; the facility administrator was replaced early in the project, delaying project start and precluding plans to collect communication data. Nursing presence on the project team was inconsistent. Three team members left the facility and two new managers were assigned to the team, without ‘owning’ the problem. Facility-wide nursing staff turnover was ~50% during the project. The director of nursing lacked experience with and knowledge about QI methodology, and there was insufficient local championing of the project. Efforts were further degraded due to competing clinical needs related to high staff turnover. Finally, delays in data analysis slowed the momentum to make protocol adjustments.

**TRANSITION OF CARE FROM ACUTE HOSPITALIZATION TO THE PATIENT CENTERED MEDICAL HOME: A ELECTRONIC HANDOFF INTERVENTION**

Nicholas Moy 1; Edgar Perlius 2; Karen Glasser Scandrett 1; Edgar Perlius 2. 1San Francisco VA Medical Center, San Francisco, California. 2University of California, San Francisco, San Francisco, California. (Tracking ID # 11091)

**Statement of Problem or Question:** Transitions of care between the hospital and the patient centered medical home (PCMH) is a high risk period for patients, even with an electronic medical record (EMR).

**Description of Program/Intervention:** Incorporating the key components required by the stakeholders in a handoff communication, we created an electronic tool in the San Francisco VA’s EMR that communicates critical information sent by housestaff physicians in the hospital to the PCMH teams. The tool contains provider contact info, discharge date, follow-up appointments, pending labs/tests/imaging, homecare services, and other free text information deemed important by housestaff physicians. It is simple, efficient, self-explanatory, quick to fill out and easy to read so that it may be used clinically where primary care follow-up is delivered.

**Objectives of Program/Intervention:** 1. Determine the critical information needed by key stakeholders during the hospital to outpatient transition of care
2. Implement an easy to use EMR handoff tool that communicates critical clinical information between stakeholders
3. Evaluate the impact of the handoff tool via focus groups, questionnaires, and quantitative outcomes listed below

**Findings to Date:** Outpatient: A focus group of RN case managers (10) was conducted. Response was generally positive. They appreciated the alerting function the note served when the patient was discharged. The note prompted the discovery of missing follow-up appointments and long wait times >1 month. The clinic staff was then able to intervene to correct these issues.

Inpatient: A focus group of housestaff (7) was conducted. Response was overwhelmingly positive. Six of the housestaff had readily adopted the tool without any formal training. They reported taking less than 2 minutes to complete the handoff, felt more reassured that patients for whom the note was completed would have appropriate follow-up and that important clinical information was being communicated. When directly asked about any negative aspects of the tool the housestaff had no comments.
Currently, the handoff is also being adopted by the Home Based Primary Care service and another PCMH clinic outside of the SFVAMC network.

**KEY LESSONS LEARNED:** 1. Implementing simple tools that improve the ability to deliver good care while not imposing excessive burdens on stakeholders can have rapid uptake and may be spread effectively.
2. Although EMRs and discharge summaries are comprehensive in nature, meaningful clinical communication depends on efficiently delivering the “need to know” pieces of information.

**WHERE DID THE DAY GO?** Andrew Schutzbank 1; Christine Sinsky2.
1Beth Israel Deaconess Medical Center, Boston, Massachusetts; 2Medical Associates Clinic and Health Plans, Dubuque, Iowa. (Tracking ID # 11118)

**STATEMENT OF PROBLEM OR QUESTION:** Clinicians in primary care clinics frequently feel harried and disorganized. We present a method to measure, at the most granular level, how these clinicians spend their day.

**DESCRIPTION OF PROGRAM/INTERVENTION:** During a 1 week elective with Dr. Sinsky asked Dr. Schutzbank to determine how much time was spent undistracted with patients in her day. In-room time logging into the computer, hunting for information or supplies was poorly spent and to be minimized. We describe both the method created to collect this data and report our findings.

Dr. Schutzbank observed Dr. Sinsky, her nurses and reception for 1 morning to develop action categories, then spent 4 days in 30 minute periods collecting data.

Observations were coded at a resolution of 1 per 10 seconds to provide enough detail to guide change. We used an iPad with a metronome app to cue 10 seconds via headphone and an app called Tallymander 2 to tally the observations in a non-obtrusive fashion. For example, every 10 periods collecting data.

**OBJECTIVES OF PROGRAM/INTERVENTION:** - Develop a method to accurately and efficiently capture and code in-room activities in real time, to better understand current workflow patterns, identify time sinks, and redesign of office processes for improved quality of care
- Create a methodology to compare pre- and post- workflow interventions within an individual practice
- Compare how clinicians spend their time across different practices, with an emphasis on undistracted time.

**FINDINGS TO DATE:** Methods findings: We were able to develop a non-obtrusive method to categorize, record, and analyze clinician activity throughout their day, especially while in the patient room. Unlike previous forays into this area, we were able to inexpensively see “under the hood” of primary care, with the ability to record observations that accommodates the rapid task shifting common to primary care, while remaining easily customizable for different providers or practices. Data collection and data entry occur simultaneously, minimizing error and allowing for rapid analysis in spreadsheet format, and providing immediate feedback to the observed practices.

Practice findings: At Dr. Sinsky’s practice, initial findings suggest that she spends between 49-60% of her time in a clinic session as undistracted patient time, approximately 4% (15 minutes per 6 hour session) logging into her computer, 11% documenting the clinic note and another 4% of the session in downtime.

**KEY LESSONS LEARNED:** -With the right technology, we can gain direct, in-room insight into the mechanics of a primary care practice. Data recording can be rich, granular, and analyzed quickly.

-This method can be used to answer any question related to how physicians spend their time with a limited investment of time and energy.

-We anticipate this methodology will be useful in analyzing efficiencies associated with individual innovations in office organization, workflow and task distribution.

**TITRATION OF INSULIN USING A TELEPHONE PROTOCOL IN A VETERANS AFFAIRS PRIMARY CARE CLINIC** Amy R Schwartz 1; Christopher Miniter 2; Luz Vasquez 2; Johanna Giovannello 2; Donna Vogel 2; 1VA Connecticut Healthcare System, New Haven, Connecticut; 2VA Connecticut Healthcare System, West Haven, Connecticut. (Tracking ID # 11124)

**STATEMENT OF PROBLEM OR QUESTION:** Barriers to insulin titration may include lack of process standardization, including an algorithm for titration and a method of communicating regarding home finger-stick blood glucose [FSBG] results.

**DESCRIPTION OF PROGRAM/INTERVENTION:** We sought to efficiently titrate insulin using a simple algorithm and weekly telephone contact. Patients with Type 2 Diabetes on NPH or Glargine Insulin are eligible for the protocol. Patients monitor FSBG and report their readings to the APRN case manager via weekly telephone calls. The case manager evaluates for hypoglycemia, provides diabetes education, and instructs the patient regarding insulin titration, using a titration protocol adapted from Riddle et al. 2003 (1):

1. Riddle MC et al. The treat-to-target trial. Randomized addition of glargine or human NPH insulin to oral therapy of type 2 diabetic patients. Diabetes Care 2003;26:3089–3096.

**OBJECTIVES OF PROGRAM/INTERVENTION:** 1. Learn standardized methods to facilitate titration of insulin in a primary care setting.
2. Understand the risks and benefits of insulin titration protocols

**FINDINGS TO DATE:** 16 patients (15 Male, 1 Female) were enrolled in the pilot phase of the protocol. Patients were 64 years (SD 8) on average. At protocol entry, the mean Hemoglobin A1c (HbA1c) was 9.8% (SD 1.5) and patients were prescribed mean 52 Units (SD 52) of insulin. Patients have been enrolled for 2 to 19 months, with 2 patients discharged due to lack of need for further titration or support. Current or discharge HbA1c averages 8.9% (SD 2.2), and current or discharge insulin dosage is 99.6 Units (SD 63.8). Four patients experienced hypoglycemia during titration and seven required deviation from the protocol, either due to hypoglycemia or to reduce risk for hypoglycemia.

**KEY LESSONS LEARNED:** Insulin can be efficiently titrated in primary care clinic patients, using a simple algorithm and weekly telephone contact. However, a subset of patients require protocol deviation to avoid or respond to hypoglycemia. This is not surprising, as hypoglycemia is a known consequence of insulin titration. We plan to modify the titration protocol to decrease the risk of hypoglycemia.

**IMPROVING COMMUNICATION ABOUT PATIENTS WITH RESIDENT AMBULATORY CARE TEAMS** Lauren A Pecoralea 1; Lawrence Ward 2; James Stulman 1; Ira Helenius 1; Alex Federman 1; Deborah Koreren 1; David C. Thomas 1; Mount Sinai School of Medicine, New York, New York; Temple University School of Medicine, Philadelphia, Pennsylvania. (Tracking ID # 11196)

**STATEMENT OF PROBLEM OR QUESTION:** Continuity of care in Internal Medicine (IM) resident clinics is often suboptimal. Residents rely on covering physicians to care for their patients and communication about issues is often subpar.
DESCRIPTION OF PROGRAM/INTERVENTION: Our program was instituted at two urban academic medical centers for IM residents. We developed Ambulatory Care Teams (ACTs) to promote patient continuity with a small group of providers. ACTs consisted of 5 to 7 IM residents and one supervising attending. Residents were instructed to refer patients for visits with their team members when they were personally unavailable. Teams were encouraged to communicate via the electronic medical record (EMR) and/or email. Front desk and call center staff were instructed to schedule follow up visits within the ACTs. Teams met biannually to discuss issues in caring for and improving the care of their shared patients.

OBJECTIVES OF PROGRAM/INTERVENTION: The goal of our resident primary care practice redesign was to create resident teams to enhance coverage for patients and improve communication between residents about shared patients.

FINDINGS TO DATE: On average, residents perceived seeing their own clinic patients 61% of the time and patients of their team members 30% of the time. Residents reported communicating with their team members about 8 times per month (mode) about patient care issues. In addition, 61% of residents felt their team helped to coordinate care for their patients some or most of the time. Strengths of the teams included: residents knowing a small subset of their colleagues’ patients and patients’ exposure to a smaller group of physicians. One resident noted “keeping patients care limited to fewer people who know my style is easier for patients.” Some residents also reported an appreciation for team camaraderie and communication. One resident said, “the preceptors know the patients and it’s easier to communicate between residents.”

KEY LESSONS LEARNED: Findings Continued: Weaknesses included: suboptimal communication within the team, difficulty scheduling with team members and lack of cohesion of team members. One resident wrote, “I have to do primary care work on patients I don’t know, and it’s hard to get in touch with [team] residents.” Another said “[teams are a] poor substitute for real continuity of care with a provider.”

Key Lessons Learned: The ACT teams may help to enhance coverage of IM residents’ primary care patients and promote communication between residents about those patients. However, the teams have only a modest impact on residents’ perceptions of continuity and communication and may not be sufficient for meeting goals of patient centered care in academic primary care practices.

RESIDENT AND FACULTY ATTITUDES TOWARDS USING PATIENT FEEDBACK IN AN ACADEMIC INTERNAL MEDICINE OUTPATIENT PRACTICE Mitesh Patel 1; Danae Nicole DiRocco 2; Lucas Marzec 1; Susan Corson Day2; 1Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania; 2University of Pennsylvania, Philadelphia, Pennsylvania

STATEMENT OF PROBLEM OR QUESTION: Patient feedback has been hypothesized to play a valuable role towards quality improvement in the outpatient setting. Physician attitudes are unknown.

DESCRIPTION OF PROGRAM/INTERVENTION: We conducted a prospective cohort study among internal medicine faculty and residents at three outpatient practices at the University of Pennsylvania. Our study was conducted at a federally qualified community health center that serves a primarily Latino population (81%) that is largely uninsured (41%) or on Medicaid or Medicare (56%). Patients (N=47) received test message prompts for blood sugar readings 3x weekly for 3 months and appointment reminders 7, 3, and 1 day(s) prior to appointments. A software platform, the Patient Relationship Manager (PRM), displayed patient test message responses and identified out of bounds glycemic readings. A registered nurse dedicated 0.2 FTE to contacting patients with out of bounds readings and transferring patient readings to our medical record.

OBJECTIVES OF PROGRAM/INTERVENTION: To evaluate the feasibility of engaging diabetic patients in cell phone based text message interactions through blood sugar prompts and appointment reminders.

PROMOTING CHRONIC DISEASE MANAGEMENT THROUGH MOBILE TECHNOLOGY Henry Fischer 1; Henry H Fischer 2; Susan L Moore 2; David Ginosar 2; M Joshua Durfee 2; Cecilia Rice-Petersen 2; Thomas D MacKenzie 2; Raymond O Estacio 2; Andrew Steele2; 1Denver Health Medical Center, Denver, Colorado; 2Denver Health Medical Center, Denver, Colorado. (Tracking ID # 11180)

STATEMENT OF PROBLEM OR QUESTION: Patients and providers express frustration with the traditional approach to managing chronic disease through the 20-minute provider-driven visit.

DESCRIPTION OF PROGRAM/INTERVENTION: The study was conducted at a federally qualified community health center that serves a primarily Latino population (81%) that is largely uninsured (41%) or on Medicaid or Medicare (56%). Patients (N=47) received test message prompts for blood sugar readings 3x weekly for 3 months and appointment reminders 7, 3, and 1 day(s) prior to appointments. A software platform, the Patient Relationship Manager (PRM), displayed patient test message responses and identified out of bounds glycemic readings. A registered nurse dedicated 0.2 FTE to contacting patients with out of bounds readings and transferring patient readings to our medical record.

OBJECTIVES OF PROGRAM/INTERVENTION: To evaluate the feasibility of engaging diabetic patients in cell phone based text message interactions through blood sugar prompts and appointment reminders.
FINDINGS TO DATE: On average, patients responded to glycemic prompts 69% of the time, and 79% of the cohort responded to more than 50% of the glycemic prompts. The mean response time was 3 hours and 5 minutes. Providers report improved engagement of their patients with their diabetes, as well as quicker identification of hypoglycemic episodes. Analysis of patient and provider focus groups, patient responses to appointment reminders, and pre- and post-patient self-efficacy surveys will be completed by the end of March 2011.

KEY LESSONS LEARNED: Most patients engaged in text message based interactions. Variation was noted among mobile service providers in message delivery, time-out, and formatting. There was little cell phone service provider turn-over among patients. This pilot study helps inform an expanded text-message based intervention that will utilize PRM to support customized patient self-management and identify and reach out to patients overdue for medication fills.

UNDERSTANDING AND REDUCING 911 EMERGENCY CALLS AT OUTPATIENT INTERNAL MEDICINE CLINIC Jessica Jen-Yin Chen 1; Arlene Endozo 2; John Fontanesi 2; 1University of California at San Diego, Escondido, California; 2University of California at San Diego, La Jolla, California. (Tracking ID # 11260)

STATEMENT OF PROBLEM OR QUESTION: There are no data capturing 911 calls from a free standing academic outpatient Internal Medicine Clinic to understand the nature and extend of the problem.

DESCRIPTION OF PROGRAM/INTERVENTION: A separate written Patient 911 Emergency Calls Log was implemented and kept by clinic nurses outside the electronic health record (EHR). The log captures date, patient name, physician/nurse involved, reason for call, time call placed, time EMS arrived, time EMS left, event outcome. Cases were randomly assigned to physician reviewers to determine whether 911 calls are preventable. Additional analysis of all cases is performed to understand the nature of the call (patient demographic, visit types, reasons for 911 calls). The findings of the study result in recommendations in triage personnel education, and mandatory electronic health record 911 call documentation.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. To capture the volume and nature of the 911 calls
2. To improve quality of care by understand situations generating 911 calls
3. To prevent the need for 911 calls by deterring preventable causes

FINDINGS TO DATE: The thirty 911 calls were made in 19 months with an average of 1.6 calls per month. Patient demographic showed most calls involved 61–70 year old patients (33%), with female predominant (70%). The visit type included: scheduled routine visit 23%, scheduled acute visit 50%, walk-in visit 23%, and unclear visit 3%. Reasons for 911 calls can be divided into cardiac 33%, neurological 33%, pulmonary 20%, and miscellaneous 13%. Patients saw by primary care physician 60%, other providers 33%, unclear 7%. The physician reviewers were focus on preventable causes in triage system, not on scheduled visits. Preventable 911 calls: 2 cases of scheduled acute visit (7%); not-preventable: 13 cases (43%); unclear: 8 cases (27%); walk-in: 7 cases (23%). EHR documentation surrounding the calls: complete note 77%, brief note 13%, and no note 10%.

KEY LESSONS LEARNED: Most 911 calls from clinic may not be preventable. Improved triage personnel education may potentially reduce some 911 calls. 23% of 911 calls resulted from routine scheduled follow up visits. Of these, some may potentially be preventable. High risk patient tracking mechanism and education are needed. These patients should educate to call urgent appointments for acute urgent issues instead of waiting for distant pre-scheduled appointments. Inadequate electronic health record documentation prevents understanding the nature of some 911 calls. Basic electronic health record documentation surrounding all 911 calls should be required to improved communication. Further collection and analysis of data are needed to develop further understanding of the issue.

UNCOMPlicated hypertensiON: improving practiCE OUTcomes with the patient centered medical home model Abigail Deyo 1; Jennifer Mackinnon 1; Julie Mitchell 1; 1Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 11291)

STATEMENT OF PROBLEM OR QUESTION: Will the patient centered medical home model improve blood pressure control in patients with uncomplicated hypertension?

DESCRIPTION OF PROGRAM/INTERVENTION: Our intervention was targeted to improve hypertension control in uncomplicated hypertension as reported to The Wisconsin Collaborative for Healthcare Quality (WCHQ). Inclusion criteria were patients 18–85 years old with uncomplicated hypertension (excludes CHF, DM, and renal disease). Goal blood pressure was less than 140/90 based on JNC 7 guidelines. Patients were self-identified as having hypertension or high blood pressure. A survey identified barriers to hypertension control including diet, medication compliance, and previous patient education. After a discussion with the patient, providers then documented specific blood pressure goal, barriers in achieving goal, and the care plan and self-management goals. For critical blood pressures a nurse practitioner (NP) or provider saw the patient in urgent follow-up. In all cases, medical assistants, RNs, and NPs then coordinated targeted educational, referral, and social needs based on the survey and patient-provider discussions.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. Improve our practice’s percent of hypertensive patients with controlled blood pressure to 70% in 1 year using the patient centered medical home model
2. Increase patient participation in chronic disease self management
3. Fully utilize each member of the healthcare team

FINDINGS TO DATE: At an academic general internal medicine practice with 13 providers, we identified 1146 patient with a diagnosis of uncomplicated hypertension and a rate of control of 62.6%. The sample is 66% female and 44% male. Hypertension control was similar among female (62.1%) and male subjects (64.9%). This compares to a national average of 46.6% in 2009, although this data includes complicated HTN. The Wisconsin Collaborative for Healthcare Quality (WCHQ) has measured statewide control of uncomplicated hypertension for the last 5 years and noted a gradual trend to improving blood pressure control from 59.7% in 2005 to 73.2% in 2010.

KEY LESSONS LEARNED: Pre-intervention control of uncomplicated hypertension of 62% suggests need for improvement. Other practices in the state were able to improve their control rates with systematic interventions. Providers were presented with their individual patient data, which was motivational to develop a system improvement at the practice level. Our Joint Quality Office was tracking hypertension data as reported to WCHQ; however, the data was not available to providers to enable practice change. A challenge was learning to use our electronic health record (EHR) as a tool to both record and extract meaningful data and trigger appropriate interventions. We used a paper questionnaire and then added the data to the EHR to take advantage of our patient flow. We developed
a template for standardized documentation. Clinic staff needed to participate in the planning process, as our intervention required involvement at every level and strong leadership by both physicians and the clinic manager.

THE MEDICATION SELF-TITRATION EVALUATION PROGRAM (MED-STEP): A PATIENT-DIRECTED, IT-SUPPORTED HYPERTENSION TREATMENT PROGRAM Richard Grant 1; Hannah Pajolek 2; Alexandra Pelletier 3; Joseph Kvedar 3. 1Massachusetts General Hospital, Boston, Massachusetts; 2Massachusetts General Hospital, Boston, Massachusetts; 3Partners Center for Connected Health, Boston, Massachusetts. (Tracking ID # 11316)

STATEMENT OF PROBLEM OR QUESTION: Novel care strategies, such as safely empowering patients to titrate their own blood pressure medications, are needed to address the problem of uncontrolled hypertension.

DESCRIPTION OF PROGRAM/INTERVENTION: We developed a web-based application (Med-STEP) that allows patients with hypertension to titrate their own blood pressure medication regimens. The program was implemented in a single primary care practice staffed by 5 primary care physicians (PCPs). Each patient’s PCP specified a sequence of planned medication changes (“Treatment Pathways”) based on PCP-designated BP thresholds that was incorporated into the Med-STEP application. During the first week of each month for a 6-month period, patients used a home blood pressure monitoring device that automatically uploaded blood pressure readings to the Med-STEP website. Based on the PCP-defined algorithm, patients were advised to increase, decrease or remain at their current Treatment Pathway stage. If a medication change was advised, a prescription was sent to the pharmacy, the medical record was updated, and the research coordinator followed up with the patient.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. To develop a web-based tool that uses home blood pressure results to guide patients through a medication treatment pathway for blood pressure control. 2. To integrate this tool into the primary care setting. 3. To test the feasibility, efficacy, and impact of the medication self-titration program.

FINDINGS TO DATE: Between 2/2010-5/2010, we recruited patients with mild-to-moderate elevated blood pressure cared for by five PCPs within a single primary care practice. Of eligible patients contacted, 48% (20/42) consented to participate (mean age 51.1 years, 45% women). PCPs required 3.3 +/- 2.8 minutes to designate 6-step medication pathways for each patient. The 20 participants provided 100 patients/months of data. Patients successfully evaluated their pathways for 59 study months; resulting in five increased medication doses for 3 patients, two self-reports of non-adherence, and 52 readings that did not require medication changes. From baseline to study completion, patients had a significant decrease in blood pressure (2.3/5.7 mmHg; p = 0.01). The three subjects whose pathways were increased had an average decline of 11.4 /10.4 mm Hg. Most patients (86.7%) agreed that the system was useful to help them manage their hypertension.

KEY LESSONS LEARNED: A web-based model of blood pressure medication patient self-titration can be successfully implemented in a primary care practice setting. Expansion of the program will require attention to technical barriers (4 patients withdrew due to problems with the data upload), workflow issues (fixing medicines, ordering follow-up lab testing, and record updates were handled by study staff rather than practice staff), and the need for wider generalizability (study participants were self-selected and tended to have higher educational attainment and self-management motivation). This example of medication self-titration may be an important step towards a “medical home” model in which chronic disease management is less dependent on face-to-face clinic visits.

AUTOMATED BLOOD PRESSURE DEVICE IMPLEMENTATION IN AN ACADEMIC MEDICAL CENTER Uche Gordon Iheime 1; Stacey Jolly 1; Jennifer D Coleman 1; Laurie Zahar 1; Stephen P Hayden 1. Cleveland Clinic, Cleveland, Ohio. (Tracking ID # 11354)

STATEMENT OF PROBLEM OR QUESTION: Blood pressure (BP) measurement using an automated apparatus may be superior to manual methods but could impact workflow, causing difficulty in implementation.

DESCRIPTION OF PROGRAM/INTERVENTION: Setting: Over 6,000 patients with hypertension are being managed by 27 physicians in our main campus General Internal Medicine (GIM) clinic, a part of the Medicine Institute (MI) which has 47,000 such patients. The problem: ABP with the BpTru apparatus is being implemented in our MI clinic settings. The apparatus averages 5 BP measurements, over 5 minutes. This could impact workflow, causing difficulty in implementation.

Intervention: GIM leaders charged a team of Nurses, Medical Assistants, and Physicians with implementing ABP measurement in the 3 sections of GIM clinic. A pilot implementation program was carried out over 6 working days in one section. ABP reading was done for any patient with a BP more than 129 mm Hg systolic or 79 mm Hg diastolic.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. Develop a protocol to use automated BP measurement (ABP) in an outpatient clinic and measure adherence to it. 2. Evaluate the effect of the protocol on clinical work flow and acceptability. 3. Compare patients’ initial single and average ABP measured during the implementation.

FINDINGS TO DATE: • There have been no reports of undue delay in patient care. • Some patients reported the automated cuff was too tight. • Adherence: Of 74 consecutive patients, 46 needed ABP measurement, in whom adherence to protocol was 87%. In 11% it was omitted, and only ABP was done in 2%. • Initial and ABP difference: Among the 46 patients mean ABP systolic was 14 mm lower and ABP diastolic 6 mm lower than the initial BP.

KEY LESSONS LEARNED: 1. A front line team can rapidly develop and test a protocol for process change. 2. ABP measurement did not significantly impact workflow. 3. Patient and provider acceptability was high. 4. Manual BP measurement may be needed for some patients. 5. Ongoing training is needed.

A Statewide Initiative Using QI to Reduce Health Care Disparities Sunitha Mutha 1; Angela Marke 2; Patricia Heinrich 3. 1University of California, San Francisco, San Francisco, California; 2University of California, San Francisco, San Francisco, California; 3Heinrich LLC, Waltham, Massachusetts. (Tracking ID # 11398)

STATEMENT OF PROBLEM OR QUESTION: Health care disparities result in part from unequal care. Can QI tools help improve equality of care for vulnerable populations?
DESCRIPTION OF PROGRAM/INTERVENTION: We designed a process for catalyzing rapid cycle improvement to help community-based organizations:

1. use their own data to document and identify disparities for preventive care or chronic condition (e.g., colorectal screening, diabetes),
2. develop a detailed plan for measuring and tracking improvement, and
3. test strategies for tailoring care to determine if they result in improved care and reduce disparities for target populations.

OBJECTIVES OF PROGRAM/INTERVENTION: We established a competitive funding program for California organizations to undertake QI with the goal of improving equity in care. The program consists of:
1) an application specifying aims and goals for a 12-month QI effort
2) range of technical assistance to help organizations achieve their aims,
3) frequent monitoring of changes tested and analysis of their effect on intended measures, and
4) assessment of organizational support and influence on this QI effort.

FINDINGS TO DATE: We will present representative results from ongoing efforts to improve equity in care for diabetes care among Latins, hypertension control in African Americans, and colorectal screening for limited English proficient patients. The final results will include run charts of outcome measures and descriptions of the types of culturally and linguistically tailored changes that were tested. The findings will include results from efforts that have been unsuccessful in reducing disparities in care to highlight challenges and what we have learned about undertaking QI with the intent to improve equity in care.

KEY LESSONS LEARNED: QI efforts that focus on improving equity in care are distinct in several ways from general QI efforts as they require: 1) Specific types of demographic data to be able to stratify outcomes 2) a reference group to identify disparity in care 3) a clear definition of what counts as a disparity in outcomes 4) tailoring interventions to cultural and linguistic issues for target populations.

In addition, our statewide effort has given us insight into the state of understanding of health disparities among select health organizations, and the knowledge and skills organizations need access to in order to undertake this QI work.

“DOES THIS DOCTOR SPEAK MY LANGUAGE?” IMPROVING THE CATEGORIZATION OF PHYSICIAN NON-ENGLISH LANGUAGE SKILLS Lisa C. Diamond 1; Harold S. Luft 1; Sukyung Chung 1; Elizabeth A. Jacobs2; 1Palo Alto Medical Foundation Research Institute, Palo Alto, California; 2University of Wisconsin - Madison, Madison, Wisconsin. (Tracking ID # 11484)

STATEMENT OF PROBLEM OR QUESTION: Can we improve the categorization of physician non-English language skills in an ambulatory care practice serving a diverse patient population?

DESCRIPTION OF PROGRAM/INTERVENTION: In 2009, we received a grant to study physician non-English language proficiency. We sent a survey to physicians who use non-English language skills to communicate with patients, asking them to use an adapted version of the Interagency Language Roundtable (ILR) scale to categorize their language proficiency. The expectation was that eventual adoption of this validated scale (5 levels with descriptors) would provide more meaningful data to both patients and the health care organization.

Since 1997 PAMF has offered physician language proficiency information on its website to help patients select a language-concordant clinician. We compared the differences between the old, non-validated scale and the ILR scale. Primary data was collected from physician self-descriptions entered between 1997-April 2010 using the old scale and from April-November 2010 using the ILR scale. We worked with the Quality Improvement Steering Committee (QISC) at PAMF to obtain organizational support in this endeavor.

OBJECTIVES OF PROGRAM/INTERVENTION: To evaluate and improve upon the existing method of measuring physician non-English language proficiency at the Palo Alto Medical Foundation (PAMF).

FINDINGS TO DATE: Almost half of physicians reporting non-English language proficiency spoke Spanish. Other languages included: Chinese (Mandarin, Cantonese, and Taiwanese), South Asian (Hindi, Bengali, Gujarati, Marathi, Punjabi, Tamil, and Urdu), other Asian (Tagalog, Japanese, Korean, Vietnamese, Arabic, and Farsi), and non-Spanish European (Dutch, French, German, Greek, Italian, Portuguese, Russian, and Serbo-Croatian). Although most clinicians who rated themselves as “Fluent” on the old scale used similar designations on the ILR scale, there was substantial variation in the ways clinicians reclassified themselves among those who had listed the “Medical” category on the old scale. Physicians self-reporting Spanish as one of their non-English languages were particularly likely to lower their self-reported proficiency levels on the ILR scale. Physicians who reported speaking languages other than Spanish were more likely to rate themselves at the high end of both scales.

KEY LESSONS LEARNED: A more accurate way of measuring physician non-English language proficiency, such as the ILR scale, could reduce healthcare disparities for patients with limited English proficiency. In spite of being supported by existing research findings, implementing even small policy changes within an organization can be challenging. The presentation of local site-specific evidence of a problem can, however, make a compelling case even if the evidence would not meet research standards. Endorsement from organization leadership is essential and change takes time, dedication, and consensus-building.

IMPLEMENTATION OF A STANDARDIZED DISCHARGE SUMMARY FORM TO IMPROVE TRANSITIONS OF CARE Anastasios Kapetanos 1; Abby Spencer2. 1Palo Alto Medical Foundation Research Institute, Palo Alto, California; 2AGH, Pittsburgh, Pennsylvania. (Tracking ID # 11565)

STATEMENT OF PROBLEM OR QUESTION: The timeliness and content of transfer documents are highly variable; therefore we implemented a standardized discharge summary form that would be available immediately upon discharge.

DESCRIPTION OF PROGRAM/INTERVENTION: We have previously described a needs-assessment of our housestaff regarding the transition of care to extended-care facilities. Based on the results of that study, and the available literature on the key contents of a discharge summary, we designed and implemented a discharge form that would prompt for these elements. In September 2009, this form replaced the previous discharge paperwork in our hospital.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. To design a discharge form that will ensure the timely transmission of relevant information to receiving institutions and physicians.

2. To evaluate the accuracy and completeness of the discharge form.

FINDINGS TO DATE: Fifty-one percent of documents were completed by PGY1’s. Seventy-five percent of patients were discharged home and 25% to extended-care facilities. Only 31% had a contact number recorded. Pertinent results were completely documented 41% of the time, and specialist recommendations 48% of the time. Allergies were accurately documented in only 48% of forms. Four percent had no medication list, and 36% of medication lists were only partially complete.

KEY LESSONS LEARNED: In an attempt to improve transitions of care from our hospital to the receiving provider, we previously identified
content and timeliness of discharge summaries as key areas for improvement. Because hospital policy allows up to 30 days for electronic discharge summaries, we implemented the standardized discharge form to convey critical elements of the discharge sooner. We hypothesized that this form, which would prompt for the key elements of the hospitalization, would standardize and improve that process. Our data reveal that this form is often left incomplete. Reasons for this may include inadequate housestaff education, the time required to complete the summary, or the deference to electronic summaries. Further efforts are needed to educate housestaff on the importance of this form and how it should be completed.

WHO IS ENROLLED IN AN ACADEMIC HOME-BASED PRIMARY CARE PROGRAM? Laura Montague 1; Monica Ferguson 1; Barbara Boland 1; Susan Corson Day 2; Charmaine Wright1; 1University of Pennsylvania, Philadelphia, Pennsylvania; 2University of Pennsylvania, Media, Pennsylvania. (Tracking ID # 11580)

STATEMENT OF PROBLEM OR QUESTION: Home based primary care (HBPC) programs are small with limited availability, yet demand continues to increase as Americans age.

DESCRIPTION OF PROGRAM/INTERVENTION: In West Philadelphia, 53% of the population is over 75 years, with rising rates of complex medical illnesses. In order to improve the coordination of care of frail, chronically ill, homebound patients living in West Philadelphia, a local academic primary care practice recently developed an HBPC pilot program. Providers at this practice are currently referring patients from their panels to the HBPC program, co-managed by a nurse practitioner and MD. In this medical home transitions model, a nurse practitioner makes an initial home visit for medical evaluation or environmental assessment, and reviews the case with a collaborating physician within 24 hours. Cases are presented at a weekly team meeting. The MD follows up in 3–4 month intervals. Coordination of care between patient, family, home, hospital and office is provided by a nurse care manager. Thus far 19 of 30 patients have been enrolled for continuing HBPC.

OBJECTIVES OF PROGRAM/INTERVENTION: To enroll 30 patients in continuing HBPC, and to evaluate the characteristics, needs, and outcomes of the referred population to further inform HBPC program design, implementation, and evaluation.

FINDINGS TO DATE: Mean (SD) age was 82.1 (11.9) years with 78% female and 100% black. English was the primary language spoken in 94% of the households, and 65% of those referred lived alone. 78% were widows, with 6% currently married. Before they were enrolled in home care, mean (SD) number of prescribed medications was 12.3 (4.4) and 71% had home health assistance. In the 12 months prior to enrollment, 42% had at least 1 hospitalization; of those, 87.5% had more than 1. Mean hospital length of stay was 3.6 days. Reasons for hospitalization included admission both for acute complaints such as urinary tract infection, falls and small bowel obstruction, as well as management of chronic medical conditions, including exacerbation of congestive heart failure and COPD. There was no difference in mean age, education achieved, or total household number among those hospitalized compared to those not, but those hospitalized did have higher mean number of comorbidities (6.3 (0.76) versus 4.4 (0.5), p=0.03).

KEY LESSONS LEARNED: Those patients enrolled in the HBPC pilot program were elderly with large number of comorbidities, hospitalizations, and prescriptions. More data is needed to determine the characteristics, needs, and outcomes of the homebound population in order to plan appropriate services and policies in West Philadelphia.

IMPLEMENTATION OF A RESIDENT-RUN EXERCISE AND NUTRITION PROGRAM TO IMPROVE HEALTH BEHAVIORS OF HYPERTENSIVE PATIENTS: A FEASIBILITY STUDY Jennifer Neuman 1; Jennifer Rockfield 1; Andrew Demidowich 1; Daniel Zanchetti 1; Arzhang Fallahi 1; David C. Thomas1. 1Mount Sinai School of Medicine, New York, New York. (Tracking ID # 11596)

STATEMENT OF PROBLEM OR QUESTION: Nutrition and exercise counseling services are not readily available in Internal Medicine (IM) resident clinics but are an important component in the comprehensive care of patients with hypertension.

DESCRIPTION OF PROGRAM/INTERVENTION: Patients were recruited through the Internal Medicine Associates Clinic at Mount Sinai Hospital in New York City. Objective measurements including BMI, waist circumference, blood pressure, and resting heart rate were obtained upon enrollment and completion of the program. We conducted pre and post surveys regarding behavior and attitudes towards nutrition and exercise. Participants attended a nutrition and exercise program, composed of four weekly, hour-long sessions. Each session included a 30 minute lecture, a 20 minute group-exercise, and a 10 minute discussion on goals and barriers regarding nutrition and exercise. Patients were given pedometers and other incentives, such as subway fare, water bottles, and a collection of low-salt culturally appropriate recipes. Funding was provided through the Advancing Excellence in Clinical Medicine grant, through The Mount Sinai School of Medicine Department of Medicine. The program received IRB approval from the Mount Sinai School of Medicine.

OBJECTIVES OF PROGRAM/INTERVENTION: The goal of the program was to develop and implement a 4-week resident-led exercise and nutrition program for patients with hypertension. The primary objectives were to 1) increase physical activity among participants, 2) improve knowledge of nutrition, and 3) improve measures of chronic disease (weight, abdominal girth, BMI, blood pressure). We also aimed to extend the role of the IM resident into the community.

FINDINGS TO DATE: Of the 21 patients who signed consent, 8 patients participated in the program and 6 were present at 3 or more sessions. The majority of patients were female (7/8) with an average age of 63 years. The mean baseline BMI was 37, mean systolic blood pressure was 141 mm Hg, and mean resting heart rate was 70 beats per minute. Although our sample was not powered for statistical analysis, we noted several trends in our results. Physical activity increased with an average rise of 56%, or 45 points on the PASE score. We also found a relative increase in nutrition knowledge with an average rise of 13% or 4 points on a 30 point survey, and a relative decrease in perceived barriers to healthy diet and exercise with an average reduction of 8% or 2 points on a 50 point survey. We found that body weight decreased by an average of 1.9 lbs per patient and waist circumference decreased by an average of 0.5 cm per patient. We found no trends in blood pressure or heart rate.

KEY LESSONS LEARNED: Our pilot study supports the feasibility and possible benefit of an IM resident-run exercise and nutrition program for patients with hypertension. A healthy lifestyle approach taught by IM residents for treating hypertension may result in improved clinical parameters, increased exercise, and increased knowledge of a chronic disease. We aim to make our program a permanent fixture in The Mount Sinai Internal Medicine Residency.
HEALTH INFORMATION EXCHANGE 3.0: DESIGNING A WEB-BASED INFORMATION EXCHANGE PORTAL (IEP) TO CONNECT HEALTH & SOCIAL SERVICE GROUPS TO REDUCE AVOIDABLE HOSPITALIZATIONS AND HOSPITAL READMISSIONS. Qanh Kieu Nguyen 1; Connie Chan 2; Christopher Clark 2; Gregory Eastin 2; Brad Walsh 2; Sue Pickens 2; Heather Steiglitz 1; Anil Makam 1; Snehal I. Patel 3; Ruben Amarasingham 1. 1University of Texas Southwestern Medical Center; Parkland Health and Hospital System, Dallas, Texas; 2Parkland Health and Hospital System, Dallas, Texas; 3University of Texas Southwestern Medical Center, Dallas, Texas; 4Parkland Health and Hospital System; University of Texas Southwestern Medical Center, Dallas, Texas. (Tracking ID # 11827)

STATEMENT OF PROBLEM OR QUESTION: Current health information exchange (HIE) efforts may fail to address the unmet need for communication & coordination of care between health and social service providers.

DESCRIPTION OF PROGRAM/INTERVENTION: Aligning the efforts of health and social service organizations is a massive logistical feat rarely achieved for the individual patient in today’s clinical environment. We are designing a web-based IEP to enable real-time communication between PHHS and social service providers to facilitate care coordination across sectors and ultimately, to reduce readmissions and avoidable hospitalizations for patients with diabetes and heart failure. The IEP will facilitate exchange of critical health and case management information at the point of care, such as when a patient is discharged from the hospital or when a social worker first evaluates a client. The IEP will also lay the groundwork for an innovative system of care delivery by allowing health & social interventions to occur away from traditional care settings; creating a longitudinal perspective of care via referral tracking; and increasing access to a broad array of services to improve individual well-being and community health.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. Enable real-time communication at the point of care, between Parkland Health & Hospital System (PHHS), a major urban public safety net hospital, and social service organizations in Dallas County (e.g., Salvation Army, Catholic Charities of Dallas).
2. Reduce the 30-day preventable hospital readmission rate for patients with diabetes and heart failure.
3. Reduce the 1-year avoidable hospitalization rate for patients with diabetes and heart failure.

FINDINGS TO DATE: Heart failure and diabetes were identified by community leaders as conditions for which an IEP could be most helpful. PHHS data from 2008-09 showed related ICD-9 codes were associated with 45% of medical admissions and 20% of readmissions. Mental health, COPD, hypertension, asthma, immunizations and preventive care were also stated areas of priority.

Community profiling confirmed socioeconomic and health disparities for which an IEP could be directed. In 2008, 42% of Dallas County residents were below 200% of the federal poverty line (national average 30.9%); 47% lived in a geographic area of high need (per Thompson Reuter’s Community Need Index). Decreasing access to care was reflected by an increasing percentage of the uninsured over a 3 year period (29.1 → 33.2%), increasing numbers of adults with no personal physician over a 4 year period (69.3 → 73.6%) and avoidable hospitalizations for chronic disease (155/100,000 discharges related to diabetes; 255/100,000 for heart failure).

KEY LESSONS LEARNED: 1. There is a widely recognized and shared frustration among health care and social service leaders about the lack of coordinated care for shared patients across these sectors.
2. While the potential positive impact of HIE on quality and cost of patient care is almost universally acknowledged, current HIE efforts may inadequately address the need for communication and coordination of care between health and social service providers.
3. There are important legal, privacy and security obstacles to sharing health-related information between health and non-health organizations.
4. Our project is one of the first information exchange efforts to bridge the information gap between health providers and social service groups and may be replicable in other urban areas with large vulnerable patient populations.
5. Once implemented the IEP will be a valuable data gathering tool, tracking referral and utilization patterns to inform community resource allocation and program development.

DEVELOPING A PROGRAM TO REDUCE USE OF DIAGNOSTIC TESTING IN THE INPATIENT SETTING Marc Larochelle 1; Jeffrey Trost 1. 1Johns Hopkins Bayview Medical Center, Baltimore, Maryland. (Tracking ID # 11904)

STATEMENT OF PROBLEM OR QUESTION: Evidence suggests inpatient diagnostic testing is overused and a source of significant waste. Modifying physician ordering behavior has the potential to reduce costs and improve patient care.

DESCRIPTION OF PROGRAM/INTERVENTION: A multi-departmental, physician-led committee was organized with the aim to better understand and improve physician ordering behavior of diagnostic tests at our institution. Cardiac enzyme ordering was selected as an initial target. Based on a review of clinical evidence and guidelines, and discussions with cardiologists, criteria for appropriate ordering of cardiac enzymes for the diagnosis of acute myocardial infarction (AMI) were identified. A chart review of 35 patients admitted to an internal medicine floor on a single day in 2009 was used to contrast appropriate with actual utilization. The results were presented to internal medicine housestaff, medical students, and faculty. In addition to educational interventions, ongoing work is focused on modifying the computerized provider order entry system (CPOE) and developing a report card of ordering behavior at the institution, department, and individual levels to encourage appropriate utilization and assess progress.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. Develop a program at the Johns Hopkins Bayview Medical Center to establish a culture of responsibility and improve physician ordering of diagnostic tests, employing cardiac enzyme testing as our initial target.
2. Identify appropriate use of cardiac enzyme testing and contrast with actual use at our institution.
3. Develop interventions to align actual with appropriate ordering of cardiac enzymes and understand the potential cost savings of such an intervention.

FINDINGS TO DATE: For patients presenting with concern for AMI, appropriate utilization of cardiac enzymes was determined to include up to three measurements of cardiac troponin I spaced six to nine hours apart. Creatine kinase (CK) and MB fraction should not be included in initial testing, but may be appropriate in detecting reinfarction. Chart review of 35 patients admitted to the internal medicine service revealed a mean of 2.4 troponin I, 3.2 total CK, and 3.0 CK-MB tests ordered per patient. 80% of patients had at least one troponin I and 23% had 4 or more troponin I tests ordered. No patients were diagnosed with AMI. Extrapolating to 8,500 admissions annually, removing total CK and CK-
MB and limiting the number of troponin I tests to three for diagnosis of AMI would result in a reduction of 27,200 total CK, 25,500 CK-MB, and 5,950 troponin I tests. Based on administrative charge data this translates to $1.03 million saved annually.

**KEY LESSONS LEARNED:** We demonstrated significant overuse of cardiac enzyme testing at our institution and presented our findings at a housestaff conference. The 15 attendees were surveyed using an anonymous audience response system. All 15 attendees agreed that troponin I alone without total CK or CK-MB is optimal for diagnosing AMI. However, 47% and 50% of respondents felt that expectations of housestaff and attendings, respectively, would make reducing orders difficult. Prior research suggests that multimodal interventions, including further education, changes to CPOE, and report cards will enhance the likelihood of changing physician ordering behavior. Fostering an institutional culture that values and prioritizes stewardship of health care resources will be instrumental to producing meaningful and lasting change.

**CREATING A COMPOSITE MEASURE OF THE QUALITY OF CARE FOR PRIMARY CARE PROVIDERS**

**STATEMENT OF PROBLEM OR QUESTION:** Quality outcome measures have become an increasingly important method to evaluate care. How best to combine various outcomes to produce one overall composite measure of quality remains unclear.

**DESCRIPTION OF PROGRAM/INTERVENTION:** As part of a new institutional incentive program, providers are eligible to receive incentive salary payments based on the quality of their outpatient care. We created a composite measure in order to provide a metric for measuring overall quality. Using hierarchical logistic regression, each provider’s performance on 15 individual quality outcomes was determined after adjusting for patient age, race, gender, insurance type, number of visits in the 2-year period, count of comorbidities, household income, and educational attainment. Results for each individual measure were multiplied by a weighting factor and then summed to yield a final score which can range from −1 (significantly below the mean on all measures) to +1 (significantly above the mean on all measures). Weights were determined based on a survey of the perceived importance of each of the measures to overall quality of care, completed by providers at all sites.

**OBJECTIVES OF PROGRAM/INTERVENTION:** For the past 2 years, primary care providers (PCPs) at our institution have received biannual quality reports based on multiple individual measures, with each provider’s outcomes compared to a peer-group average for that measure. Overall quality rankings have been based on individual measures or on subjective evaluation of providers. Our primary objective was to create and evaluate a standardized composite quality measure.

**FINDINGS TO DATE:** Internal Medicine, Family Practice, and Medicine-Pediatrics faculty PCPs (n=79) with at least 100 patients seen 3 or more times for a routine office visit during the period were included in the analysis. Quality data come from 26,222 adult patients with 3 or more visits to one of 12 outpatient hospital-affiliated practices during 2009–10. Patients had a mean age of 54 years, 68% were female, and 43% white; 31% had Medicare, 21% Medicaid, and 20% were uninsured. The mean number of visits was 5.5, and patients had an average of 1.3 comorbidities. Composite scores ranged from −0.70 to +0.88, with scores in the top quintile ranging from −0.29 to −0.70. The composite demonstrates good face validity: PCPs in the top quintile were above the mean on an average of 5.2 individual outcomes and below the mean on 0.5; PCPs in the bottom quintile were above the mean on an average of 0.4 outcomes and below the mean on 4.9.

**KEY LESSONS LEARNED:** Using available EMR data, creation of a composite quality measure is a readily achievable task. Weighting the individual components of the composite using weights defined by the judgments of local providers improves “buy-in” and allows the method to be tailored to the prevailing standards at other institutions. The method demonstrates good face validity, but is complicated and may be difficult to explain fully to providers. Involving providers throughout the development and implementation of the composite measure has built a level of trust in the method which may lead to more rapid acceptability.

**CHALLENGES OF BUILDING A MEDICAL HOME FROM THE GROUND UP**

**STATEMENT OF PROBLEM OR QUESTION:** While the challenges of transforming existing practices into a PCMH are increasingly understood, there is no blueprint for creating a PCMH de novo. We have been creating a PCMH from the ground up.

**DESCRIPTION OF PROGRAM/INTERVENTION:** To initiate the design of the practice, 6 task forces were created: Staffing, Patient Flow, Resident Education, Neighborhood Engagement, Evaluation, and Information Technology. A leadership group consisting of the chairs of each task force and primary care leadership was also created. Each task force was charged with creating a mission statement, task list, and deliverables. The leadership group met regularly to review task force progress and to provide feedback and guidance.

**OBJECTIVES OF PROGRAM/INTERVENTION:**

1) To create a practice that would qualify at the highest level of PCMH accreditation at opening, that would embody a team-based model of patient-centered care, and that would demonstrate superior access, quality, value, and patient and staff experience.

2) To create an innovative curriculum for trainees on delivering care in a team-based setting.

3) To create a “learning laboratory” with evaluative research embedded in it’s very foundation, that could inform care redesign and practice.

**FINDINGS TO DATE:** The practice will open July 2011. However, there is much that can be learned from how the leadership group combined the recommendations of the task forces into an organizational structure, staffing plan, job descriptions and budget.

**KEY LESSONS LEARNED:**

1) The real advantage of creating a new practice is not the opportunity to define the practice’s processes but rather its culture. We intend to use hiring, orientation, training, practice structure, processes, metrics and incentives to create and sustain this culture.

2) Much more consensus exists on the processes needed in a PCMH than on which members of the team are responsible for which processes. Decisions on how the practice is staffed, and how the staff is organized into teams vs. shared support, drove many subsequent decisions.

3) The layout of the building and the available IT were not significantly modifiable and constrained many decisions. Minor modifications allowed us to support both patient-centeredness and team-based care.

4) Many specialists and non-physicians are excited to be included in the planning and staffing of a new PCMH, creating an opportunity to
craft innovative PCP-specialist partnerships to improve real-time consultation, access, and staff education.

MONTEFIORE TRANSITIONS CLINIC: REACHING THE RECENTLY INCARCERATED Ross MacDonald 1; Aaron Fox 2; Joshua Lackner 3; Lauren Shapiro 4; Joseph Deluca 1; Matt Anderson 1; 1Montefiore Medical Center, Bronx, New York; 2Montefiore Medical Center, Bronx, New York; 3Montefiore Medical Center, New York, New York; 4Montefiore Medical Center, White Plains, New York. (Tracking ID # 120999)

STATEMENT OF PROBLEM OR QUESTION: Former inmates are at high risk for morbidity and mortality following release from correctional facilities, in part due to gaps in care.

DESCRIPTION OF PROGRAM/INTERVENTION: In July, 2009, we established a TC for recently incarcerated adults through partnership with Bronx Parole Board and The Osborne Association, a local prisoner advocacy community based organization (CBO). To facilitate patient recruitment, a community health worker (CHW) was hired in early 2010, with funding from the CBO. The CHW gives health presentations to CBO clients encouraging health-seeking behaviors, and coordinates referrals to the TC, follow-up visits, and outreach to TC patients who have been lost to follow-up. The clinics held each Saturday at a Federally Qualified Health Center (FQHC) in the South Bronx. Attending physicians from the FQHC volunteer to provide care. Nursing and administrative staff are present for existing Saturday clinical sessions. All other FQHC services are available to TC patients. In addition to general primary medical care, the clinic provides HIV primary care and treatment of opioid dependence with buprenorphine.

OBJECTIVES OF PROGRAM/INTERVENTION: The Montefiore Transitions Clinic (TC) was established to provide access to primary care, mental health services and social services for recently incarcerated adults. Initially, referrals to TC were primarily from parole officers and the overall burden of chronic illness was low. In this abstract we report on the impact of a community health worker (CHW) on patient recruitment and disease severity.

FINDINGS TO DATE: With the assistance of a CHW, the TC has reached a population of former inmates with a higher burden of chronic illness. In comparison to the first 39 TC patients, the last 30 have higher rates of all chronic diseases examined, including higher rates of HIV infection (37% vs 2%, p < 0.01), chronic hepatitis C (43% vs 18%), diabetes (20% vs 5%), hypertension (30% vs 12%), psychosis (20% vs 7%), opioid dependence (43% vs 20%) and asthma (37% vs 20%). With the small sample size, only HIV reaches statistical significance, but the trend toward higher prevalence is consistent across a range of diseases. Time from correctional facility release to first visit did not differ between groups, though only 21 patients in the total sample had date of release documented. 11/21 (51%) were seen within 2 weeks of release and 16/21 (76%) within 1 month. More patients in the parole-referred cohort were uninsured at initial visit 24/39 (61%) vs 10/30 (33%).

KEY LESSONS LEARNED: The TC was founded to provide health care access to former inmates re-entering their communities from correctional facilities and to fill a perceived gap in care. Referrals from a CBO, coordinated by a community health worker, identified a population with a high prevalence of chronic diseases including HIV, hepatitis C, mental illness and opioid dependence. This demonstrates that non-medical personnel in the community can provide appropriate triage of former inmates, identifying those at highest risk. The CBO-referred group also had higher rates of insurance coverage, possibly because the CBO was successful in assisting former inmates with administrative tasks. Initial visits seemed to occur within a month of release generally, which was one goal of the clinic, though this needs to be better documented. A system of facilitated referrals, along with access to health centers where barriers to care are minimized, can help bridge gaps in care for the formerly incarcerated population.

WEB BASED TOOL TO IMPROVE THROMBOEMBOLISM PROPHYLAXIS RATES IN HOSPITALIZED PATIENTS. Bhaskar Arora 1; Bhaskar Arora2. 1Portland VAMC, Portland, Oregon; 2Portland VAMC, PORTLAND, Oregon. (Tracking ID # 12205)

STATEMENT OF PROBLEM OR QUESTION: Low rate of Ven thromboembolism (VTE) prophylaxis in hospitalized patients.

DESCRIPTION OF PROGRAM/INTERVENTION: Web based interface developed with the goal of reminding clinical providers to comply with the VTE risk assessment and prophylaxis for hospitalized patients admitted to medical ward of an acute care teaching hospital. Providers will log on to this web based interface and a list of patients with and without prophylaxis will be generated stratified by teams (general medicine), ward (floor) and names of the providers as well as using patient identification.

OBJECTIVES OF PROGRAM/INTERVENTION: Increase rate of Ven thromboembolism (VTE) prophylaxis in hospitalized patient.

Increase compliance with VTE risk assessment tool.

FINDINGS TO DATE: pre intervention prophylaxis rate for VTE prophylaxis was 70% based on chart review of a sample of about 50 patients on 2 occasions. Post intervention prophylaxis rate is yet to be established as the program hasn’t been implemented yet. Goal VTE prophylaxis with this intervention is expected to be 90%.

KEY LESSONS LEARNED: Technology plays a key role in the success of patient safety intervention. Reminder system helps improve compliance with VTE risk assessment and prophylaxis.

HOSPITALIST MANAGEMENT OF VASO-OCLUSION PAIN CRISSES Jonathan D Kirsch 1; Michael J Gilchrist 2; E. Allen Liles 2; Mukhtar Adem 2. 1University of North Carolina School of Medicine, Chapel Hill, North Carolina; 2UNC School of Medicine, Chapel Hill, North Carolina. (Tracking ID # 12219)

STATEMENT OF PROBLEM OR QUESTION: Vaso-occlusive pain crises (VOC) in patients with sickle cell disease are associated with considerable morbidity and mortality, prolonged hospital stays and significant resource utilization.

DESCRIPTION OF PROGRAM/INTERVENTION: This is a retrospective and prospective cohort study with four phases.

1. Patients with VOC are admitted to one team of hospitalist physicians.
2. Team agrees to protocol of care and preferential use of Patient Controlled Analgesia (PCA) to achieve pain control early.
3. Computerized Order Entry Set created with emphasis on PCA.
4. PCA settings used during hospitalization for each patient with VOC recorded upon discharge and utilized for future admissions.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. Standardize treatment by having all patients admitted to the hospital for VOC cared for by the same hospitalist service with consistent treatment protocols.
2. Reduce length of hospital stay (LOS) for patients with VOC by optimizing treatment protocols, learning the disease process and improving communication.
3. Reduce complications and resource utilization without compromising patient satisfaction or outcomes.
FINDINGS TO DATE: Average LOS has decreased from 5.4 days prior to intervention (January 2009 - June 2009) to 4.5 days after the intervention was adopted (January 2010 - June 2010).

KEY LESSONS LEARNED: Average LOS for patients admitted to the hospital with VOC has decreased after institution of a consistent and comprehensive pain management protocol led by hospitalists.

5-YEAR MEDICAID COST SAVINGS FROM MEDICAL DUPLEXES: THE ELDER PARTNERSHIP FOR ALL-INCLUSIVE CARE (EPAC)

Bruce Kinoshian 1, Jean Yudin 2, Ann Danish 3, Barbara Boland 3, Steve Touzeli 3, Mary Ann Forcic 2, Lesley Carson 2, Johanne Louis 2.

1University of Pennsylvania / Department of Veterans Affairs, Philadelphia, Pennsylvania; 2University of Pennsylvania, Philadelphia, Pennsylvania; 3Philadelphia Corporation for Aging, Philadelphia, Pennsylvania. (Tracking ID # 12245)

STATEMENT OF PROBLEM OR QUESTION: Does providing integrated complex medical care and social supports in a medical-duplex structure reduce Medicaid costs?

DESCRIPTION OF PROGRAM/INTERVENTION: We have operated an inter-agency, interdisciplinary team – a multi-family medical home – integrating the Philadelphia Corporation on Aging provided waiver services with a Independence-at-Home like housecall practice, recently expanded to the General Medicine practices. The housecall program is a collaborative practice of physicians, nurse practitioners and social workers at UPHS. Each team is paired with a care manager from PCA.

COORDINATION is through multi-modalities, although tethered by a monthly, face-to-face meeting to manage the plan of care. Each team is paired with a care manager from PCA.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. Create a high-functioning inter-organization, inter-disciplinary team to provide all-inclusive care to frail elders in the community.

2. Increase the share of community survival for frail elders.

3. Reduce long-term Medicaid costs to provide home and community based care to frail elders.

FINNINGS TO DATE: There were 4360 member-months of observation for the 92 EPAC cohort members; and 6910 member-months of observation for the 216 Waiver controls. Mean age was 82, 86% female, with 3.7 mean ADL impairments. EPAC participants had 256 months in long-term institutional care (5.7%), compared to 1726 months for waiver controls (24.9%). Mean survival was 47 months, with 44.3 months in the community for EPAC, and 31.9 months (24.2 in community) for waiver controls. Mean Medicaid costs were $1720 pmpm ($1448 HCBS/$271 NH) for Waiver.

Total 5-year Medicaid costs were $7.5 M for EPAC, and $9.8 M for equivalent member-months in Waiver, and $6.7 M for 92 equivalent Waiver consumers, with an incremental cost/QALY of $4,800, due to 15 month longer survival of EPAC members.

Mean HCC score was 3.55, projected expenditures of $15.3 million. Hospitalizations were 3.8/100 member months. The subsample’s Medicare costs were $6.2M, driven by a 76% reduction in nursing home months, compared to usual HCBS.

KEY LESSONS LEARNED: A multi-family Medical Home, by integrating medical care through a IAH-type housecall practice with HCBS provided by a AAA, can reduce Medicaid costs by 23%, driven by a 76% reduction in nursing home months, compared to usual HCBS.

Integrating care of complex multi-morbid frail elders in the community following medical home principles of patient centered, all-inclusive care can result in net savings to Medicare and Medicaid of $4.3 M for a matched cohort, despite a 47% increase in survival.

TITLE: IMPROVING INPATIENT PAIN: POSSIBLE BARRIERS AND SOLUTIONS. A QUALITY IMPROVEMENT INITIATIVE

Shashank Jain 1; Anthony Donato 2; Bikash Acharya 3; Paulina Mendoza Mancini 1; Gaurav Gulati 1; Bryan Romero 1; Jullian Diaz Fraga 1.

1The Reading Hospital and Medical Centre, Reading, Pennsylvania; 2The Reading Hospital and medical center, Birdsboro, Pennsylvania; 3The Reading Hospital, Reading, Pennsylvania.

STATEMENT OF PROBLEM OR QUESTION: Pain management is often inadequately managed in the inpatient setting, with prevalence of severe pain reported in 15-36%.

DESCRIPTION OF PROGRAM/INTERVENTION: Flow charting of nursing processes for pain assessment revealed significant limitations in nursingcomputer resources (multiple duplicate recording systems, no provisions forfomrtp and reminders). A focus group conducted identified a lack of nursingseducation on equianalgesic doses and medication side-effects, addiction andwithdrawal as well as a lack of nursing autonomy in treating pain.

Interventions to address these shortfalls four additive intervention cycles that included shorteducation sessions for nurses, revision of the nurse documentation system for pain evaluation, a nurse reminder system for reassessment, and implementations of a standard pain order set with pain-scale driven options for analgesia, and a nurse reminder system for pain reassessment.

OBJECTIVES OF PROGRAM/INTERVENTION: To improve inpatient pain-management, as measured by reassessment rates and patient satisfaction, by 20% on a singlemedical-surgical ward over a 6-month time period.

FINNINGS TO DATE: Nursing education efforts did not have statistically significant impact on post-test scores. Reassessment rates as evaluated by timeseries run charting did show significant improvement by the third cycle. Patient satisfaction scores regarding pain management had not improved by cycle three (before pain protocol instituted).

KEY LESSONS LEARNED: Initial focus groups helped us to realize that potential gaps in nursing knowledge andattitudes. However, quality improvement efforts that include educational interventions tend to have minimal effects on systems, as demonstrated in our study.

Bycharting the nursing workflow, we realized the need for a reminder system for the nurses to facilitate their process. Our data showed that such interventions improve reassessment rates and improve systemflow, as the literature suggests, however this did not translate to improved patient satisfaction. We believe that giving nurses autonomy in analgesic management may close this gap, and await implementation of our pain protocol. Delays in protocol implementation may be overcome by earlier involvement of IT resources and senior leadership.

USING THE HEALTHCARE FAILURE MODE AND EFFECT ANALYSIS (HFMEA) TO IMPROVE HANDOFF PROCESSES BETWEEN HEALTH CARE PROVIDERS

Aparna Sameer Kamath 1; Victoria M Steelman 2; Peter J Kaboli3.

1University of Iowa Hospitals and Clinics, VA Medical Center, Iowa City, Iowa; 2University of Iowa Hospitals and Clinics, VA Medical Center, Iowa City, Iowa; 3University of Iowa Hospitals and Clinics, VA Medical Center, Iowa City, Iowa. (Tracking ID # 12285)

STATEMENT OF PROBLEM OR QUESTION: Discontinuity in patient care due to multiple shift changes make handoff processes high-risk, high-volume, vulnerable to error and a crucial process for patient safety.

DESCRIPTION OF PROGRAM/INTERVENTION: The HFMEA was conducted based on guidelines provided by the Veterans Administration.
MINI-ROUNDS, AN INTERPROFESSIONAL PANACEA TO THE INEFFICIENCIES OF AN INTERNAL MEDICINE CLINICAL TEACHING UNIT. Cheryl Goldstein 1; Kim Ghuman 2; S. Ann Colbourne 1. 1University of Alberta, Edmonton, Alberta; 2Alberta Health Services, Edmonton, Alberta. (Tracking ID # 12390)

STATEMENT OF PROBLEM OR QUESTION: In developing an Integrated Plan of Care for patients admitted to our Internal Medicine teaching units, we found a lack of routine interprofessional communication leading to patient treatment delays.

DESCRIPTION OF PROGRAM/INTERVENTION: An interprofessional Change Team comprised of front-line staff on the General Internal Medicine Clinical Teaching Units at the University of Alberta Hospital, a tertiary care center, was created to streamline the care processes for admitted patients. Ad hoc and infrequent regular communication among physicians, nurses and allied health professionals was a barrier to delivering effective care on our wards. The current state consisted of once weekly interprofessional 30 minute rounds per ward (5 wards, 18-20 beds each) to discuss individual patient care needs and discharge planning. We developed daily rapid communication touch points, Mini-rounds, focused on the Integrated Plan of Care. To determine the duration, timing and necessary participants for the rounds we ran PDSA (Plan, Do, Study, Act) cycles and used these to hone the intervention. Feedback regarding staff satisfaction and usefulness of the intervention was provided by each participant and recorded.

OBJECTIVES OF PROGRAM/INTERVENTION: To facilitate patient throughput via brief daily rounds and enhance team communication among physicians, nurses and allied health professionals. Decrease time spent by care team members searching through charts, or paging a consultant to clarify a consult request/review findings. Improve patient and family satisfaction by providing more coordinated care.

FINDINGS TO DATE: Findings from the Mini-Rounds PDSA cycles: Key players required: Charge Nurse, Senior Medical Resident (or Attending Physician), Physical Therapist, Occupational Therapist, Social Worker, and the Care Coordinator. Optimal characteristics: brief and focused, one minute per patient, goal of 15-30 minutes, early in the morning prior to initiating the work day, and led by the Charge Nurse or Senior Resident. Care prioritization: Allied Health care workers consistently reported that the rounds enabled them to prioritize and organize their daily assessments. Empowerment: Charge Nurses felt more empowered to provide the patient and/or family members with up to date care plans, providing communication when physician team members were unavailable. Role Awareness: An educational opportunity to provide residents practical, hands-on instruction regarding scope of practice, allied health care professionals.

KEY LESSONS LEARNED: To care for our elderly patient population with multiple co-morbidities and societal needs, daily interprofessional care rounds provide an opportunity for a 360° assessment and review of the integrated plan of care. Initial PDSA cycles trialed at the bedside to involve patient/family members. Due to time constraints and scheduling logistics the rounds were moved to the nurses’ station with input on patient/family concerns provided by care team members. Ideally Mini-rounds will allow for a cohesive care plan that represents patient preferences and can be relayed back to the patient via multiple care team members rather than physicians alone. Current PDSA cycles will determine the most relevant issues to be covered during Mini-rounds to create a checklist or script to ensure efficiency and reproducibility.

Geographic contiguity of patients and the alignment of the allied health professionals with the physician team will optimize the functionality of Mini-rounds.

VALUE OF A HOSPITALIST INFORMATICIST FOR IMPLEMENTATION AND MAINTENANCE OF ELECTRONIC MEDICAL RECORD (EMR) SYSTEMS. Alpesh Amin 1; Amish Dangodara 2; Jim Murray 2; Ralph Cygan 2. 1University of California-Irvine, Orange, California; 2UCI, Orange, California. (Tracking ID # 12492)

STATEMENT OF PROBLEM OR QUESTION: Acceptance of in-patient EMR systems is poor without user input into design and function.

DESCRIPTION OF PROGRAM/INTERVENTION: The University of California, Irvine Hospitalist Program working with our CMIO, CIO, and the Hospitalist Program Executive Director created a 50% funded Hospitalist Informaticist (HI) position. We found a HI highly beneficial key components of EMR design such as admission, transfer, discharge, and handoff to outpatient setting. HI grasp the interface of what users of EMR systems need with many vital hospital functions because they serve as primary providers, consultants, and leaders or members of hospital committees. They interact frequently with multiple specialists, nurses, case managers, ancillary staff, pharmacy, and diagnostic areas,
making them well suited for both design of the EMR and for gathering user feedback to gauge potentially contradictory EMR enhancement requests that occur after implementation.

**OBJECTIVES OF PROGRAM/INTERVENTION:** 1. Clinicians with a narrow perspective who are only casually committed to informatics provide limited guidance to the builders of the EMR. 2. Poor design of an EMR from lack of sufficient user input may lead to unintended errors and be costly, as well as a waste of time-consuming resources. 3. A Hospitalist dedicated to informatics is ideally suited for successful EMR implementation and upkeep because of broad involvement with hospital-wide functions.

**FINDINGS TO DATE:** As a user, the HI knows the capabilities and limitations of the EMR system and can identify problems to craft workable solutions. They are able to broker the ordering clinician’s EMR needs with those of the demand departments to design electronic order components with sufficient logic and required fields to support workflows. HI have a realistic perception of user acceptance of key informatics decisions such as alert settings, security rights, logoff timeouts, synonyms, and data retrieval formatting to support user needs and reduce error. Functional testing of the EMR by a HI who knows various workflows can identify potential pitfalls and errors before they have the ability to impact patient care.

**KEY LESSONS LEARNED:** The HI broad perspective on hospital-wide function provides ideal credibility for translating the user’s needs and the technician’s ability to build an EMR to support those needs.

**PREPARING FOR A SHOCK: A PILOT SIMULATION INTERNSHIP FOR INCOMING RESIDENTS**

**DESCRIPTION:** The residents spent a full week in the simulation laboratory prior to their July 1 start date to allow them the opportunity to gain knowledge and skills prior to working with live patients. Attending physician faculty members served as teachers and observers. Clinical scenarios covered during the week included common medical emergencies such as chest pain, acute shortness of breath, hypotension, and acute mental status changes. Each type of emergency was presented several times to the residents, however, the underlying etiology varied. For example, three chest pain scenarios included acute myocardial infarction, pulmonary embolus or dissecting aortic aneurysm as the cause of the pain. Residents were also taught (and practiced) central line placement, lumbar puncture, thoracentesis, paracentesis, arterial line placement and intubation.

**NEEDS AND OBJECTIVES:** The beginning of residency training is a source of anxiety for most graduates of medical school. Many have not had adequate opportunities during medical school to perform important procedures they will be expected to carry out once they begin residency training. This pilot study sought to determine what effect providing incoming internal medicine residents a “simulation internship” using high fidelity mannequins to role play various clinical scenarios might have on their comfort level as well as knowledge level as they begin what often comes as a shock—the first weeks of internship.

**EVALUATION:** An anonymous questionnaire was given to each resident before and after the “simulation internship” to evaluate any perceived change in knowledge or comfort level. Questions included subjective judgment by the participants of their comfort level with evaluating patients with chest pain, hypotension, shortness of breath, mental status changes, and with writing orders in the medical record. A Likert scale of 1–5 where 1 is uncomfortable and 5 is very comfortable was used. In all categories there was demonstrated improvement in both perceived comfort level and knowledge. Similarly, noticeable improvement was observed in the quality of notes and orders written by the residents by the end of the experience.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** This pilot project demonstrated that by spending one week in the simulation lab, incoming residents can improve their comfort level in caring for common medical emergencies they will face as residents in the hospital. Since incoming residents had not had the opportunity to perform procedures during the two years prior to starting residency, the simulation internship also allowed them to learn or refresh the necessary skills to safely carry out these procedures. During the simulation internship, attending physicians were able to observe and encourage teamwork, communication skills, cultural awareness, ethics and professionalism among the interns. An unanticipated benefit was the wonderful sense of camaraderie and friendship that developed among the 12 interns. This pilot internship contributed to forming a better prepared, less anxious, more capable and more experienced group of entering interns to our internal medicine residency program.

**ONLINE RESOURCE URL (OPTIONAL):**

**MEDICAL SIMULATION FOR CLINICAL DECISION MAKING TRAINING FOR INTERNAL MEDICINE RESIDENTS**

**DESCRIPTION:** Ten common acute clinical scenarios frequently encountered on the wards such as hypertensive emergency and rapid atrial fibrillation were selected. Over the course of the year, interns have the opportunity to work through scenarios of increasing difficulty in small groups with the help of a facilitator. Each session is 60 minutes in duration and consists of two case scenarios. Each scenario begins with 10–15 minutes of mannequin-based patient management where learners manage the clinical scenario in groups of two or three, followed by a 15 minute debriefing session with a senior physician (resident and/or attending). Simulation faculty members serve as facilitators and observe and provide feedback to resident facilitators. Online surveys designed to assess interns’ satisfaction with the program are sent out monthly to interns who participated in the program.

**NEEDS AND OBJECTIVES:** Internal medicine interns today have limited opportunities to make patient care decisions independently in acute situations. However, such experiences are one of the foundations for learning in residency. Recently, mannequin-based simulation has gained widespread use in graduate medical education, typically in procedural and code training. While simulation focused on diagnosis and patient management has been attempted in the ICU, it has not been
DEVELOPING A COMMUNITY HEALTH ELECTIVE ROTATION FOR INTERNAL MEDICINE RESIDENTS Jillian Catalanotti 1; Zohray M Talib1; Jaideep S Talwalkar 1; Jason R Ouellette2. 1Yale University, New Haven, Connecticut; 2Saint Mary’s Hospital, Waterbury, Connecticut. (Tracking ID # 8334)

SETTING AND PARTICIPANTS: Residents in all three PGY levels participate in this elective. Lectures are given in our academic clinic building and clinical work is performed at nearby community clinics in the Washington, DC Metro Area.

DESCRIPTION: The lack of Primary Care physicians in underserved areas is a key barrier to access. Studies show that positive community-based experiences with underserved populations during training increase the likelihood of practicing in underserved areas. ACGME Internal Medicine Program Requirements do not mandate training in community settings. Accordingly, many physicians complete their Medicine training with no community-based outpatient experience. Providing clinical experiences in community-based settings during residency is an essential recruitment strategy for Primary Care. To this end, we designed a Community Health Elective for Internal Medicine Residents. For two weeks we hold daily lectures on the field of Community Health, demographics of our local population, and public health needs of particular underserved communities. Residents also work at one community-based health center for six clinical sessions. At the end of the rotation, residents give presentations on their clinical sites.

NEEDS AND OBJECTIVES: 1. Increase residents’ knowledge base and comfort with providing care in community settings; 2. Improve residents’ ability to discharge inpatients to community settings for follow-up care; 3. Expose residents to new career possibilities; and 4. Increase the likelihood that residents consider careers in Primary Care and underserved community settings.

EVALUATION: This course has been run three times over a 1.5 year period. Residents fill out baseline and post-course surveys and participate in a post-course focus group. Surveys include Likert-scale questions. Medians for baseline and post-course responses were compared using Wilcoxon sum-rank tests (n=14). Responses to “I feel competent discharging patients from the hospital with follow-up at community health sites” improved (p=0.005). Responses to “I am likely to practice Primary Care” and “I am likely to practice in an underserved setting” had no significant change, but the median baseline responses for both questions were “Agree.” The median responses to “This elective exposed me to new careers that I had not previously considered” and “Learning about Community Health has been an important part of my residency training” were both “Strongly agree.”

DISCUSSION/REFLECTION/LESSONS LEARNED: 1. While we expected residents in our primary care track to enjoy the elective, we were surprised that categorical residents, even those planning to specialize, responded very favorably. 2. Residents at all stages of training found this elective useful; PGY1s called it a good introduction to the city, while PGY3s said it informed career decisions. 3. Residents prefer small groups and discussion-based talks. 4. Because this is not a mandatory rotation selection bias may hinder our ability to show change in perceptions of Primary Care. 5. Setting up the elective requires faculty time to network, compose affiliation agreements and complete credentialing paperwork for residents. 6. In recruiting community preceptors, “No” may mean “Not right now.” Repeat contacts in subsequent semesters can be fruitful. 7. Many community-based physicians are excited to teach residents. Voluntary Clinical Faculty appointments and access to the University library are incentives for participation.

ONLINE RESOURCE URL (OPTIONAL): http://www.gwmed.com/joomla/index.php?option=com_content&view=article&id=96&Itemid=108

IMPROVING COMMUNICATION WITH POST-HOSPITAL DISCHARGE CARE PROVIDERS Jaideep S Talwalkar 1; Jason R Ouellette2. 1Yale University School of Medicine, New Haven, Connecticut; 2Saint Mary’s Hospital, Waterbury, Connecticut. (Tracking ID # 8572)

SETTING AND PARTICIPANTS: The study took place at a community hospital internal medicine residency program.

DESCRIPTION: A monthly one-hour workshop entitled Reviewing Effective and Accurate Documentation (READ) was launched in August 2007 to provide consistent and ongoing instruction on chart documentation in an internal medicine residency program at a community hospital. Guided by faculty moderators, residents critique two randomly selected peer chart notes per session. Discharge summaries are reviewed during three sessions each academic year and the importance of communication during care transitions is emphasized. There was no formal mechanism in place for teaching chart documentation skills prior to implementation of the workshop series.

NEEDS AND OBJECTIVES: Prior studies have shown low rates of discharge summary availability to post-hospital care providers. We hypothesized that implementation of an educational program on chart documentation skills would improve the frequency with which hospital discharge summaries were sent to the post-hospital care provider.

EVALUATION: Four blinded faculty members reviewed 63 randomly selected summaries from spring 2007, spring 2008, and spring 2009 for the presence of documentation of communication with the outpatient physician within the body of the summary. Summaries for patients who died in the hospital or were transferred to another inpatient facility were

ENABLING WEBSITES: 1. The George Washington University, Washington, District of Columbia. (Tracking ID # 8334)
excluded. Information regarding transmission of summaries to outpatient providers was verified through the medical records department. Communication of documentation with the outpatient physician occurred in the minority of summaries and did not change during the study period (p = 0.98). However, query of the medical records department revealed that the percentage of summaries actually “carbon copied” to the responsible outpatient physician increased from 47% (10/21) to 71% (15/21) to 86% (18/21) over the three years of the study (p = 0.03).

DISCUSSION/REFLECTION/LESSONS LEARNED: The frequency with which hospital discharge summaries were transmitted to post-hospital care providers increased following the implementation of a structured program to teach chart documentation skills to internal medicine residents. Ongoing emphasis on the importance of communication during care transitions may have accounted for improvements seen one and two years into the educational program.

ONLINE RESOURCE URL (OPTIONAL): http://www.stmh.org/read

AN EDUCATIONAL INTERVENTION TO INCREASE PREVENTIVE HEALTH SERVICES PROVIDED TO ADOLESCENTS AND YOUNG ADULTS BY INTERNAL MEDICINE PHYSICIANS Holly Catherine Gooding 1; Emily Blood 2; Niranj Sharma 3. 1Brigham and Women’s Hospital and Children’s Hospital Boston, Boston, Massachusetts; 2Children’s Hospital Boston, Boston, Massachusetts; 3Brigham and Women’s Hospital, Boston, Massachusetts. (Tracking ID # 8651)

SETTING AND PARTICIPANTS: This intervention was designed for IM residents training in an academic medical center and its associated outpatient community practices. Following a pilot session with a small group of PGY3 residents (n = 18), half of the PGY1 residents in the 2010–2011 class (n = 31) were randomly assigned to participate in the educational intervention during their introductory ambulatory medicine block rotation. The remainder of the PGY1 residents (n = 28) received no specific instruction in adolescent and young adult medicine and served as a comparison group. One half of the PGY2 residents will participate in the educational intervention in the coming months and will also be compared to their peers.

DESCRIPTION: The educational intervention is led by two faculty trained in both adolescent and internal medicine. Residents are first introduced to general topics in adolescent medicine and the role internists play in the primary and specialty care of adolescents and young adults. The residents are then divided into two smaller groups. Each group spends one hour reviewing screening recommendations from the USPSTF using an evidence-based medicine approach. Each group also spends one hour interviewing adolescents employed by the local children’s hospital as consultants for practitioners working with youth. The adolescents are trained in the portrayal of three standardized cases designed to highlight STIs, substance abuse, and depression. The adolescents are also trained to give feedback to the residents using the Structured Communication Adolescent Guide (SCAG), a commercially available tool with established validity and reliability.

NEEDS AND OBJECTIVES: The US Preventive Services Task Force recommends screening for sexually transmitted infections (STIs), alcohol misuse, and depression in adolescents and young adults. Despite these national guidelines, few adolescents and even fewer young adults receive routine preventive care in these areas. In addition, internal medicine (IM) physicians often report inadequate preparation to care for adolescent patients as they transition to young adulthood. Fostering interns’ understanding of preventive care guidelines and enhancing their communication skills regarding sensitive topics are essential for ensuring the health of adolescent and young adult patients. We aimed to create, deliver, and evaluate an educational intervention designed to increase internal medicine (IM) residents’ comfort with and confidence in their ability to care for adolescents and young adults, as well as the percentage of patients screened appropriately for Chlamydia, HIV, alcohol misuse, and depression.

EVALUATION: During the baseline pre-intervention period from July 2009 through June 2010, 117 IM residents saw 523 unique outpatients ages 16–26, representing 8.5% of all outpatients seen by the residents. Seventy percent of the patients had documented alcohol screening, 35% had documented depression screening, 21% had HIV testing, and 40% of females had Chlamydia testing. Eighteen PGY3 residents were surveyed to pilot the assessment instrument. More residents reported that they were somewhat or very comfortable taking a sexual history (78%) or a substance use history (67%) than a mental health history (28%) from adolescents and young adults. More residents reported that they were somewhat or very confident in their ability to identify and counsel adolescents and young adults with STIs (56%) than with substance abuse (6%) or depression (22%). The educational intervention for PGY1 and PGY2 residents is currently in progress.

DISCUSSION/REFLECTION/LESSONS LEARNED: Residents felt the opportunity to interact with adolescents from the community and to receive real-time feedback from them as well as their peers were the most valuable aspects of the workshop. Didactic portions of the intervention could be streamlined or presented in advance as self-study in the future. The practice of interviewing trained community members and receiving feedback in a small-group peer setting could be expanded to improve the care of other special populations in ambulatory medicine, such as patients requiring language interpreters or those with physical or cognitive disabilities. If successful in meeting the objective of improving preventive screening for adolescent and young adult patients, this educational intervention could be expanded to faculty practices or other internal medicine residency programs.

ONLINE RESOURCE URL (OPTIONAL):

TEAM AND PRACTICE-BASED, INTERPROFESSIONAL LEADERSHIP DEVELOPMENT Kathleen Ann McGrail 1; Nancy Cochran 2; Richard Frankel 3; Catherine Gracey 4. 1Rochester General Health System, Rochester, New York; 2Dartmouth School of Medicine, Hanover, New Hampshire; 3Indiana University/Purdue University School of Medicine, Indianapolis, Indiana; 4University of Rochester School of Medicine, Rochester, New York. (Tracking ID # 8726)

SETTING AND PARTICIPANTS: RGMG is the community-based outpatient arm of the Rochester General Health System, a teaching hospital system in upstate New York. Most of the RGMG practices are involved in primary care (IM, FM, pediatrics, oh-gyn) and include inner city safety net practices, as well as urban, suburban, and rural sites. Patients cared for range from well-insured to uninsured, and include refugees and migrant farm workers. Total encounters for all sites in 2009 were 529,820. The Team-based Quality Improvement Leadership Initiative (TBQI LI) is comprised of five 4-hour workshops presented over 6 months. Each group is composed of leadership triads from similar practices (20–23 participants in each cohort) who work together longitudinally. As much as possible, practices attend as intact leadership triads. Many participants have been working in their professions for 20 years or more.

DESCRIPTION: The program is experiential, highly interactive and emphasizes skill development as well as appreciation, and utilization, of diversity in teams. Sessions include short didactic presentations and skills practice in the following domains: 1) Team-building using relationship-centered techniques; 2) Interpersonal communication
skills including feedback, dealing with resistance, motivational interviewing, and conflict resolution; 3) Examination of assumptions, strengths and limitations of personality and leadership style, mindfulness and self-reflection; 4) Problem-solving using Appreciative Inquiry, rapid cycle quality improvement (PDCA), nominal process. An emergent planning process integrates core material and interactive exercises to meet participants’ needs. Didactic material is presented to the entire group while skills work is done in groups of 6-9. Sessions are lead by 3–4 facilitators experienced in teaching communication skills and personal awareness.

**NEEDS AND OBJECTIVES:** Paradoxically, at a time when most outpatient practices are still strongly hierarchical, high level teamwork has been identified as crucial to primary care practice transformation and the success of the patient-centered medical home. Professional development for current practitioners will be necessary to address this gap and make care truly patient-centered. Each outpatient practice of the Rochester General Medical Group (RGMG), is lead by a physician-nurse-practice manager triad. Data from leadership assessments and culture of safety surveys showed significant variation across the practices and a direct relationship between triad teamwork and staff and patient satisfaction leading senior leaders to endorse the creation of a program to improve teamwork. Its objectives were to: 1) develop leadership and communication skills within the triads; and 2) create a system-wide, inter-professional learning community.

**EVALUATION:** Each session is evaluated using a combination of qualitative and quantitative items. These include ratings of each of the sessions activities on a Likert scale and qualitative questions such as “Please describe a moment when you were the most/least involved” or “aha moments.” At the end of each session, participants are given the opportunity to reflect on how they were feeling before and after the session. Final evaluation of the program includes qualitative feedback, self-assessed impact of the program and outcomes of project groups.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Physicians were initially skeptical about the program but had 99% attendance at the sessions. Scores averaged 3.75/4, with a final session score of 3.89/4. Narrative feedback themes suggest the first program: was restorative, reducing professional isolation and burnout; gave a sense of common purpose, community and commitment within the triads and across RGMG; heightened personal awareness in areas that could positively affect their leadership effectiveness. Participants expressed the desire to continue to meet together as a learning community. Interpersonal communication skills were the earliest and easiest to adopt; next were group and team meeting facilitation techniques. Higher level skills such as the ability to give effective formative and summative feedback as well as managing conflict were the most difficult to master.

**ONLINE RESOURCE URL (OPTIONAL):**

**THE AMBULATORY INTENSIVE CARE UNIT: BRINGING AMBULATORY RESIDENCY TRAINING TO THE PATIENT CENTERED MEDICAL HOME.** Paul Chelminski 1; Sampson Andrew 2; Whitney Annie 2; Krista Fajman 3; Kim Young-Wright 3; 1The University of North Carolina Department of Medicine, Carrboro, North Carolina; 2UNC Department of Medicine, Chapel Hill, North Carolina; 3UNC Department of Medicine, Chapel Hill, North Carolina. (Tracking ID # 8743)

**SETTING AND PARTICIPANTS:** In 2004, we developed a two month continuity ambulatory elective (COE) to redress the imbalance between hospital and ambulatory training and to defragment ambulatory training. The UNC Internal Medicine Clinic clinic provides multimodal care; it features disease management programs in diabetes, anticoagulation and chronic pain, and team-based quality improvement initiatives. The resident and faculty practices are combined and share the same staff and resources. Prior to the COE, residents had been customers of, not participants in, the broader systems-based initiatives in the clinic. Their activities had been limited to continuity clinics and acute care. In the COE, residents are integrated into the disease management programs and execute a collaborative quality improvement project. In 2009–2010, we expanded this model to interns, creating the month-long Continuity Ambulatory Rotation (CAR).

**DESCRIPTION:** In 2009–10, twenty-four interns and six residents completed the CAR and COE rotations. A typical week for residents or interns on the COE and CAR rotation includes 2 or 3 continuity clinics (CC). They staff the acute, Same Cay Clinic (SDC) 2 or 3 times a week. They rotate through disease management programs in diabetes (DM), anticoagulation (Coag), and chronic pain (Pain). They work with an attending physician in her clinic in the preceptorship (Precept) capacity. They have protected time for conferences, Grand Rounds, and quality improvement projects (QI). This schedule is represented graphically below: MonTuesWedThursFriAmCC/Pain or (QI)DM or (QI)Conferences, QI ProjectPreceptNoon Ambulatory Conference Grand Rounds PmCoag-PreceptTravel ClinicCCSDC

**NEEDS AND OBJECTIVES:** Research shows that most medical visits occur in office settings and that 75% of health care resources are spent on chronic care. The preponderance of residency occurs, though, in tertiary care hospitals providing acute care. Cognizant of this imbalance, the residency review committee has mandated better ambulatory training. Continuity clinics—where residents forge longitudinal, healing relationships with patients—have been the centerpiece for this. Recently, mandated continuity clinics have increased from a minimum of 108 to 130 over 3 years of training. Historically, continuity clinic has been grafted awkwardly onto inpatient months, however. This fragments the ambulatory experience, and residents remain distracted by their hospital duties. In addition, continuity clinics have not been integrated into ambulatory systems of care that encompass the ACGME competencies of systems-based practice and practice-based learning.

**EVALUATION:** The COE and CAR electives have been highly rated by residents. We surveyed residents at the conclusion of the first year in which all interns had a dedicated clinic block. Nineteen of 30 (63%) responded. Forty-five percent rated the experience as excellent and 55% as good (No residents felt the rotation was either fair or poor.) All agreed that their understanding of ambulatory medicine was enhanced and felt that they acquired important skills in quality improvement. The survey also revealed that one of the most valued aspects was the preceptorship where residents participated in the management of an attending physician’s patients. In their comments, residents frequently cited their participation in a diverse set of clinical activities and having time to build relationships with different clinic staff (nurses, IT, administrators, care assistants, quality improvement staff) as particular strengths of the rotation.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** The ambulatory education of residents is a complex undertaking that requires the acquisition of diverse skills. The COE and CAR rotations provide uninterrupted ambulatory immersion, integrating multiple facets of ambulatory medicine in a patient-centered practice environment with a defined patient population and invested faculty who practice in the same clinic. It is an “ambulatory intensive care unit”—for patients and learners. Residents valued all aspects of the experience. We were surprised to find that the one-on-one preceptorship (where residents were paired with an experienced ambulatory clinician in her practice) has consistently been rated the most valuable aspect of the curriculum. This suggests that traditional role-modeling remains an essential ingredient in the apprenticeship model of physician training. It provides
the cement for cohesive professional growth in a complex and diverse practice environment.

**ONLINE RESOURCE URL (OPTIONAL):**

**EFFECTS OF A FIRM MODEL INNOVATION ON RESIDENT AND PATIENT SATISFACTION** Jessica Schmit 1; Margaret C Lo 2; Aida Vega 3.
1University of Florida College of Medicine Division of Internal Medicine, Gainesville, Florida; 2University of Florida College of Medicine, Division of Internal Medicine, Gainesville, Florida; 3Mount Sinai School of Medicine Department of Medicine, Division of Internal Medicine, New York City, New York. (Tracking ID # 9155)

**SETTING AND PARTICIPANTS:** Of the three IM residency continuity clinics at UF, the MP clinic faced the challenge of teaching the largest number of IM residents while caring for a sizable population of vulnerable, complicated, and indigent patients. Over 40% of patients are self-pay or Medicaid status, have greater than 10 active chronic issues, and are the disadvantaged i.e. African American, Hispanic, rural-based, or non-English speaking. 33 categorical medicine residents have their continuity clinics at MP and are precept from a total of 8 attendings. Residents would staff their continuity patients with any available preceptor attending that day. Oftentimes, patients may not be staffed by the same attending from their last clinic visit. The average faculty-to-resident ratio in the clinic was 1:4 which was not conducive to individualized teaching or mentoring. This unfavorable setting resulted in the lowest resident and patient satisfaction ratings year after year in their clinic experience at MP.

**DESCRIPTION:** In July 2007, 33 IM residents and 7 attendings at the MP clinic were randomly assigned to either the Orange Team or the Blue Team, each managing a certain patient panel. Residents and attendings in each team were expected to co-manage the patients in their team panel. Buy-in to the Firm Model was achieved via several earlier meetings with the clinic faculty and residents. Clinic team meetings were held monthly for one year afterwards. Team business cards were given to patients to identify the clinic physicians of their team. Using annual resident surveys routinely performed by the IM Residency program, pre-Firm questionnaire data from 2006–2007 were compared to post-Firm data from 2007–2009 to assess the residents’ perception on the level of continuity, clinic staff support, quality of faculty supervision, and degree of attending teaching/mentoring. For patient satisfaction and quality of care, the percentages of complaints, no-shows, ED visits, and admissions were evaluated.

**NEEDS AND OBJECTIVES:** The overwhelming shortage of general internists has made the improvement of ambulatory education a key initiative in medicine residency programs. Success of this initiative has been difficult due to competition from heavy ward duties, resident/faculty inertia, and limited outpatient support. These barriers result in negative resident ambulatory experience and translate into poor quality of patient care. Overcoming this atmosphere was the impetus for us at University of Florida (UF) to restructure our Internal Medicine (IM) Residency clinic at Medical Plaza (MP) into an innovative Firm Model. Success of the Firm Model in patient satisfaction and continuity has been well-cited in literature, but its impact on ambulatory teaching clinics remain under-reported. Our aim is to demonstrate that a Firm Model innovation in our large academic clinic would improve not only patient satisfaction and quality of care but also enhance resident learning and satisfaction of ambulatory education.

**EVALUATION:** Our Firm Model experienced an overall increase in residents’ satisfaction to their ambulatory education (3.9 in 2006 vs. 4.2 in 2009). Positive trends from 2006 to 2009 were seen in the level of continuity (4.1 vs. 4.3), quality of faculty supervision (4.5 vs. 4.7), and degree of teaching/mentoring (3.2 vs. 3.8). The ratings on clinic support staff remained unchanged. As a pilot program, statistical analysis could not be done due to lack of power from small survey sample size. A separate control clinic from the same time frame had lower resident ratings in the level of continuity and degree of attending teaching and no change in the quality of faculty supervision. Statistically significant improvements in patient satisfaction and quality of care were seen with lower patient complaints (1.4% in 2006 vs. 0.66% in 2009 p=0.0001) and no-show rates (25% vs. 20% p).

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Originally developed in 1970, the Firm Model remains an organizational innovation with academic and clinical advantages, including improved stakeholder satisfaction, faculty teaching/mentoring and quality of patient care. For optimal success, early buy-in from clinic staff is imperative. Any educational expectation from the Firm Model should also be made with patience as positive outcomes are modest and slow to develop. We further realize some unforeseen variables may adversely impact resident and patient satisfaction, such as new attendings or transient staff. It is thus essential to hold new faculty orientation and monthly team meetings indefatigably to promote teamwork among all stakeholders. Nonetheless, for any residency program struggling to balance the demands of high quality ambulatory teaching to those of efficient clinical care, the Firm Model is an achievable, exportable solution and can be sustained in any large teaching clinic with complex patient demographics.

**ONLINE RESOURCE URL (OPTIONAL):**

**GLYCEMIC CONTROL ROUNDS: IMPROVING INSULIN ORDERING PRACTICES ONE TEAM AT A TIME** Rachel E Thompson 1; Abdelhak Abdou 2; Louise Suhr 3; Dawn Corl 3; Brent Wisec 1;
1Department of General Internal Medicine, University of Washington, Seattle, Washington; 2Harborview Medical Center, Seattle, Washington; 3Department of Endocrinology, University of Washington, Seattle, Washington. (Tracking ID # 9327)

**SETTING AND PARTICIPANTS:** The on-call medical team at Harborview Medical Center was asked to participate in Glycemic Control Rounds each Wednesday during the academic year 2009–2010.

**DESCRIPTION:** For Glycemic Control Rounds (GCR) the on-call medical team joins our nurse practitioner, diabetes nurse educator and endocrinologist for 30 minutes of interactive education weekly. The session focuses on open questions, review of the team’s glycemic control data and directed advice. The team’s glycemic control data regarding insulin ordering was collected for dysglycemic patients for the 14 days leading up to GCR. The percent of dysglycemic patients who received correction only was calculated. All attendings and residents in the department of medicine, and all medical students who rotated on medicine services in the academic year 2009–2010 were asked to complete a web-based survey. The survey included knowledge based questions, comfort level questions and questions that related to perceived effects of attending GCR.

**NEEDS AND OBJECTIVES:** There is a need to improve insulin-ordering practices in the inpatient setting. At academic centers one challenge is the changing face of the frontline from month to month as residents and students rotate. One primary goal is to eliminate sliding scale insulin and move to a physiologic system of basal, prandial and correction dosing. Many programs have focused on developing top-down interventions. In our attempt to improve this ordering practice, we instituted a weekly educational session with medical teams, thus working from the ground up.

**ONLINE RESOURCE URL (OPTIONAL):**
EVALUATION: From July 2009 through June 2010 there were 251 attendees at GCR (5.3 ± 3.3 attendees per week). At the time of GCR, there were 529 patients on these services receiving insulin (11.3 ± 3.3 per week). 165 patients were discussed in detail with 79% of these regarding hyperglycemia and 21% hypoglycemia. 79 (31%) attendees responded to our survey. 88 non-attendants responded and serve as the control for our knowledge and comfort scores. We tested the impact of attendance on knowledge scores. When we included people’s level of training (student, resident attending) in the model, attendance was associated with a 1.11 point higher score on average (95% CI: 0.18-2.04, p=0.02). Residents perceived the sessions as the most useful, followed by medical students then attendings. Using the GCR data, comparing the first 6 months to the second, the percent of dysglycemic patients with insulin orders for correction alone fell from 22% to 14% (p=0.01).

DISCUSSION/REFLECTION/LESSONS LEARNED: Our GCR sessions are both novel and effective. The sessions were well attended and well received by residents, students and attendings. GCR has allowed us to reach many trainees in a concise fashion in addition to affect improved glycemic care to their patients. The cornerstones of these sessions are relevancy and small group discussion—we review real patients in real time with their current providers.

ONLINE RESOURCE URL (OPTIONAL):

FOUNDATIONS IN CLINICAL MEDICINE: A COURSE TO FACILITATE THE TRANSITION OF SECOND-YEAR STUDENTS TO THE THIRD YEAR
Susan B Glick 1; Michael O’Connor1. 1University of Chicago, Chicago, Illinois. (Tracking ID # 96230)

SETTING AND PARTICIPANTS: The course is an immersive 7-day classroom-based experience that foreshadows the busy days of the clinical clerkships. Class is held from 8 AM to 5 PM each day. Students receive a one-hour lunch break daily; there are no other scheduled breaks throughout the day.Optional office hours are held from 5–7 each evening. The course was piloted in June 2010 with 20 rising third-year students. MSTPs were required to take the course; it was optional for MD candidates. Students who had experienced academic difficulty in the preclinical years were encouraged to take the course. Of the students who elected to take the course, some did so to gain a competitive edge and others to improve their skill set. The course will be offered to up to 48 students in June 2011; it will again be required for all MD/PhD candidates and elective for MD candidates. In 2012, the course is expected to be required for all rising third-year students.

DESCRIPTION: The course includes 7 domains: 1. Hypothesis-Driven History and Physical Exam. Students are given a symptom and laboratory data to arrive at a differential diagnosis. 2. Data Interpretation: Students learn to integrate the history, examination, and laboratory data to arrive at a differential diagnosis. 4. Procedures: Students learn to perform common procedures as well as their indications and potential complications. 5. Presentations: Students prepare oral presentations from paper-based cases and present them to a faculty preceptor. 6. Large Group Sessions: Students receive didactic instruction in a large group setting on topics including lifelong learning and medical mistakes. 7. FICM Learning Laboratory: Because some students require additional practice and others desire it, course directors hold office hours each evening.

NEEDS AND OBJECTIVES: The need for a course to transition preclinical medical students to the clinical years was identified during the curriculum reform initiative at our institution. Planning for this course, named Foundations in Clinical Medicine (FICM) began shortly thereafter. To identify areas of need, we surveyed third year students as well as selected faculty and residents from the core clinical clerkships. We then attended national meetings and searched the literature to learn about new educational theories, programs and techniques that could be applied to the FICM course. Through these activities and others, we identified cognitive, communication and technical skills to be taught in the course as well as approaches to teach these skills to ensure students’ learning would be significant. The objective of this course is to facilitate second-year medical students’ transition to the third-year by maximizing their cognitive and emotional preparedness for the clinical disciplines.

EVALUATION: In 2010, we evaluated student performance with a pretest, mid-term exam and final exam. The mean score improved from the pre-test (52%; range 33-71%), to the mid-term (59%; 30-80%), to the final (82%; 62-94%). We also evaluated the course with anonymous written student feedback immediately following the course. Overall, the course was well received, as illustrated by the following comments. “You guys are AWESOME!!! Your vision of the course and execution was very polished and exceeded any reasonable expectation of a 1st time course.” “I just want to thank you both again for the opportunity to be a part of this amazing learning experience. It has assuaged the anxiety of starting 3rd year so much.” “I’m not exaggerating when I say this class was the most enjoyable I’ve had at Pritzker. I feel more aware of what’s expected of me as a 3rd year, and what I must do to surpass those expectations.”

DISCUSSION/REFLECTION/LESSONS LEARNED: Three months after the course, students’ feedback highlighted a transition in their thinking about which aspects of the course were most helpful. For example, “the ‘differential diagnosis’ sections (develop your differential for something vague like ‘chest pain’) were among my least favorite at the time (because they took so long), but they ended up being really helpful because they made me think critically about the ‘next steps’ in a patient workup - i.e. now that I have my differential, what labs/tests do I want, and how might the results of each of those reshape my dx? I think that’s a really important skill and it’s good to work on it early.” These comments reinforce the importance of developing a curriculum that balances students’ short-term needs (e.g., to assuage the anxiety associated with starting the clinical clerkships) with their long-term needs (e.g., to improve analytical and critical thinking skills to maximize cognitive preparedness to study the clinical disciplines).

ONLINE RESOURCE URL (OPTIONAL):

OBSERVING THE TEACHERS: A PILOT STUDY TO DETERMINE IF FACULTY DEVELOPMENT IS AN EFFECTIVE TOOL FOR PRECEPTORS TEACHING MEDICAL STUDENTS IN A PHYSICAL DIAGNOSIS COURSE.
Lisa Auerbach 1; Mimi McEvoy2. 1Albert Einstein College of Medicine, New York, New York ; 2Albert Einstein College of Medicine, Bronx, New York. (Tracking ID # 9754)

SETTING AND PARTICIPANTS: This study was conducting during a second year physical diagnosis course. The course is taught in groups of 8 same sex students and one preceptor. The groups meet weekly for 2.5 hours over 10 weeks. The sessions are peer practice.

DESCRIPTION: During peer practice sessions in a 2nd year physical exam course we observed a previously faculty member. We observed selected preceptors during 4 of 7 physical diagnosis sessions (vital signs, HEENT, abdomen and neurologic) via remote observation to determine if objective, strategies and format were being implemented as discussed in the 30 minute faculty meetings prior to each session. All preceptors were observed being observed. 12-item observation tool was crafted based on basic principles of group teaching and course format and objectives. General observations were also recorded.
NEEDS AND OBJECTIVES: To assess teaching skills of preceptors in a second-year physical diagnosis course for: 1. Conformity to cursojectives/strategies/format; 2. Demonstration of effective group teaching skills in a skills based course.

EVALUATION: All preceptors conformed to session objectives and teaching strategies, except in 2 cases where preceptors consistently lectured too long, minimizing hands-on practice. Other teaching approaches observed included demonstration, observation, hands-on corrections. All preceptors employed the PE skills practice checklists, but in different ways. Preceptors consistently gave feedback on techniques despite variability on the proportion of verbal explanation/demonstration. Length of sessions varied with some preceptors ending before 2½ hours; 2 preceptors who lectured for greater than 30 minutes ended later.

DISCUSSION/REFLECTION/LESAONS LEARNED: Video observation confirmed that our faculty do consistently meet course objectives. Faculty development may be related to achieving consistency of course objectives and strategies among preceptors despite a variety of approaches and styles. Opportunities for specific preceptor feedback abound with this observational method.

ONLINE RESOURCE URL (OPTIONAL):

A FACULTY DEVELOPMENT PROGRAM TO PREPARE INSTRUCTORS TO OBSERVE AND PROVIDE EFFECTIVE FEEDBACK ON CLINICAL SKILLS TO INTERNAL MEDICINE RESIDENTS Sheira Schlair 1; Larry Dyche 1; Felise Milan 1; Hillary Kunins 1; Julia Arnest 1; Eric Holmboe2.

1Montefiore Medical Center/Albert Einstein College of Medicine, Bronx, New York; 2ABIM, Phoenixville, Pennsylvania. (Tracking ID # 9766)

SETTING AND PARTICIPANTS: Ambulatory internal medicine teaching faculty at Montefiore Medical Center, Bronx, NY

DESCRIPTION: A revised mini-CEX instrument was developed with faculty feedback. Interactive 1 hour sessions were organized over an academic year. In the first session, participants used the instrument to evaluate a trainee’s clinical skills in a videotaped clinical encounter and gave real-time feedback to this trainee (now faculty). In a second session, facilitators enacted a scripted resident-patient encounter with deficient rapport-building. Faculty practiced feedback giving to this “pre-contemplative” resident using a “qualities of good feedback” pocket-card and the mini-CEX instrument. Themes in debriefing included understanding residents’ personal goals, emotional needs and time management. Subsequent quarterly sessions will employ group discussions of videotaped faculty feedback encounters to explore assessment accuracy. Program impact will be assessed by pre-post feedback quality and satisfaction, as measured by faculty and resident surveys and analyses of mini-CEX instrument data.

NEEDS AND OBJECTIVES: Feedback on directly observed clinical encounters is essential to health professional skill development, and the ACGME mandates direct observation in internal medicine residencies via the mini-CEX (“clinical evaluation exercise”). Current studies show deficits in the quantity and quality of feedback for medical trainees. Faculty training in direct observation and feedback skills has been shown to be more important than the assessment instrument used.

Faculty training in direct observation and feedback skills has been implemented a 1 year program to train internal medicine faculty to (1) Become familiar with the evidence-based communication and feedback literature (2) Learn to accurately assess resident interviewing skills and (3) Conduct behaviorally specific, learner-centered, emotionally sensitive feedback sessions based on direct observation.

EVALUATION: Post-session faculty surveys had a response rate of 100% for session 1 (n=24/24) and 75% for session 2(n=15/20). Preliminary analyses comparing overall mean faculty perception of their feedback skills before and after the first two faculty development sessions do not reach appreciable educational significance (mean=2.2 vs. 2.7,p=0.22, scale 0=not able to 4=extremely able to give high quality feedback). Faculty reported greatest improvement in the feedback skills including “addressing learner emotions” (mean=1.3 vs. 2.8,p=0.19) and “collaborative” feedback processing (mean=2.1 vs. 2.9, p=0.17). Data will be forthcoming from resident surveys and analyses of mini-CEX instrument data. Preliminary qualitative analysis of faculty program evaluation yielded curricular strengths: Interactive format, systematic approach to clinical observation and feedback giving, facilitator style (“openness to criticism and discussion”) and longitudinal nature of curriculum.

DISCUSSION/REFLECTION/LESAONS LEARNED: (1) Managing emotions of the “pre-contemplative” resident is challenging but faculty report growth after two program sessions. (2) Post-session faculty survey data revealed enthusiasm for skill development. (3) Multi-modal, interactive learning formats were well received. (4) Allocated time, faculty attitudes and faculty efficiency are critical factors to faculty satisfaction with this faculty development program and user satisfaction with mini-CEX programming overall. (5) Ongoing examination of resident perceptions of faculty feedback quality is paramount to determining program impact.

ONLINE RESOURCE URL (OPTIONAL):

ASSESSING THIRD-YEAR MEDICAL STUDENTS’ ABILITY TO RECOGNIZE AND ADDRESS A PATIENT’S SPIRITUAL DISTRESS DURING AN ACUTE MEDICAL CRISIS Sheira Schlair 1; Mimi McEvoy 2; Zsuzsanna Sidlo 2; William Burton 2; Felise Milan 1.

1Montefiore Medical Center/Albert Einstein College of Medicine, Bronx, New York; 2Albert Einstein College of Medicine, Bronx, New York. (Tracking ID # 9915)

SETTING AND PARTICIPANTS: 170 MS-3s at Albert Einstein College of Medicine, Bronx, NY

DESCRIPTION: In spring 2010, 170 MS-3s completed an 8-station videotaped CSA. One standardized patient (SP) was an elderly man with acute chest pain. He expressed fear of death, which he hoped to resolve by chaplain consultation. Students’ task was to assess and manage the SP's chest pain and distressed affect. There were a series of cues in the encounter that students were expected to acknowledge (e.g. prayer book and rosary beads were by the SP’s bedside and SP was wearing a religious medal around his neck; SP described fear about dying and admission to CCU). After the encounter, students answered fouropen-ended questions on their assessment and management in a post-encounter written exercise: (1) Recognition of the nature of this SP's distress; (2) Their response to the patient’s distress; (3) A reflective assessment of what they might have done; and (4) Perceived challenges of this CSA station. The SP evaluated the students’ communication skills.

NEEDS AND OBJECTIVES: The skills in recognizing and addressing patients’ spiritual needs are not well understood. To inform curricular development, we explored how third-year medical students (MS-3) recognize and address a standardized patient’s spiritual distress during an acute medical crisis and also examined the relationship between students’ reported response to spiritual distress and Clinical Skills Assessment (CSA) communication skills performance.

EVALUATION: Mixed methods analysis of the questionnaires was conducted by 3 coders using NVivo 8 for emergent themes. Analysis of
inter-rater reliabilities using SAS revealed kappa coefficients of > 0.6; codings with inter-rater reliability

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Most students reported offering a chaplain referral to a patient who exhibited signs of spiritual distress while few directly addressed spiritual beliefs. These findings raise questions regarding the role of medical students’ in spiritual assessment and their skills in this area. Further qualitative investigation of decision making prompting chaplain referral is warranted. In addition, further exploration is also warranted to clarify the relationship between medical students’ recognition and management of spiritual distress and communication skills.

**ONLINE RESOURCE URL (OPTIONAL):**

**INDIVIDUALIZED LEARNING PLANS FOR 4TH-YEAR PEDIATRIC AND INTERNAL MEDICINE SUB-INTERNs**

Elizabeth Sastre 1; Michelle Shepard 1; Amy Fleming 1; Vanderbilt University Medical Center, Nashville, Tennessee. (Tracking ID # 10006)

**SETTING AND PARTICIPANTS:** Twenty-three sub-interns in IM and 27 in pediatrics at a university-based medical center were invited to participate in the study and agreed. All students rotating on their sub-internship each month met together with a faculty preceptor to create an individual ILP and then met as a group on a weekly basis for the remainder of the one-month rotation.

**DESCRIPTION:** At the initial meeting, sub-interns completed an initial self-assessment of strengths and weaknesses modeled after ACGME core competencies, defined career goals, and set two initial learning objectives with corresponding plans to achieve them. During weekly group follow-up meetings, students documented self-reported progress, discussed successes and challenges, and revised goals or plans as necessary. Upon completion of the rotation, students completed a survey consisting of Likert-scale questions addressing satisfaction with various elements of the ILPs and ranking of their relative importance.

**NEEDS AND OBJECTIVES:** Individualized Learning Plans (ILPs) are an effective tool for promoting self-directed learning among residents. However, no literature details ILP use among medical students. We developed a study to (1) detail implementation of ILPs for fourth-year sub-interns in pediatrics and internal medicine (IM) at a single institution, (2) correlate students’ self-identified areas of weaknesses with types of learning objectives selected, and (3) evaluate satisfaction with handmade utility of elements of the ILP exercise.

**EVALUATION:** Students most often identified strengths in the areas of professionalism and communication and weaknesses in the areas of patient care and systems-based practice. 82% set at least one learning objective in an identified area of weakness. Students expressed high confidence in their abilities to create specific and achievable learning objectives (4.38+/−0.77) and to generate useful strategies to meet those objectives (4.28+/−0.60). They also agreed that discussions arising during group meetings were meaningful (4.37+/−0.81). The setting of learning objectives and weekly meetings were deemed themost important elements of the project, with definition of career goals least important.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Fourth-year sub-interns reported that ILPs helped them to accomplish more during their rotation, with the setting of learning objectives and strategies being the most useful element of the exercise. Future research will need to further define elements of successful ILPs and the optimal role for faculty mentorship.

**ONLINE RESOURCE URL (OPTIONAL):**

**IMPROVING UPWARD FEEDBACK IN MEDICAL EDUCATION**

Rachel Ann Bender Igacio 1; Kathleen M Finn 1, 2 Massachusetts General Hospital, Harvard Medical School, Cambridge, Massachusetts; 2 Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts. (Tracking ID # 10048)

**SETTING AND PARTICIPANTS:** An Internal Medicine residency program at a large university-affiliated hospital in Boston, Massachusetts. The program has approximately 150 medical residents across all years of training. All PGY-2, PGY-3 medicine residents as well as PGY-2, PGY-3, and PGY-4 Med/Peds residents were included in the survey group. The program currently requires on-line evaluations of attending physicians following inpatient rotations and recommends similar online peer evaluations of other residents.

**DESCRIPTION:** When given a list of 10 potential reasons for not completing evaluations and asked to check all applicable, residents selected the following: online evaluations are unlikely to induce change from the program (39%), feedback will not be incorporated by the attending (21%), and negative feedback hurts recipients’ feelings (55%). Residents expressed discomfort with giving negative evaluations due to power imbalance (53%) and fear of negative repercussions including receiving reciprocal negative feedback (37%). When asked to choose one or more of seven options for giving positive feedback to attendings, 82% of residents preferred speaking to the attending, to the program director (50%), or completing online evaluations (29%). For serious concerns, residents favored contacting either the program director (26%) or chief resident (45%), versus online (18%), however 34% would give no feedback in this scenario. 82% of residents favor positioning a neutral third party to hear concerns.

**NEEDS AND OBJECTIVES:** Resident online evaluations of teaching attending physicians at our institution are poorly utilized (13% completion rate), and rarely include actual constructive critiques aimed at improving an attending’s teaching skills or the quality of the teaching service. There is sparse medical education literature available on residents giving feedback to superiors. We conducted a survey of junior and senior residents with the following objectives: 1) to better assess why residents choose not to utilize the online evaluation system, 2) the circumstances that make them more or less likely to complete evaluations, and 3) their preferred methods of submitting feedback, if not via online evaluations. We plan to present the findings of the survey to the residency program director and key program administrators in order to enhance the current evaluation system and to improve both the percentage and utility of completed evaluations.

**EVALUATION:** We hope to incorporate our findings into an improved evaluation system. Based on the results, we have recently started one-on-one exit interviews of junior residents with the inpatient associate program director when they rotate off the teaching service. The goal is to obtain anonymous feedback on teaching faculty with the plan to share an aggregate of evaluations with them in a summary statement that removes the temporal connection and individual voice of the online evaluations. We plan to create follow-up surveys to assess attending and resident satisfaction with our new evaluation system as well as collecting data on utilization.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** While the ACGME mandates residents should be able to complete anonymous evaluations of attendings, this survey suggests on-line evaluations may be fulfilling a requirement but not providing any useful information. The business literature suggests giving upward feedback can be risky to one’s career and highly critical evaluations of superiors should be avoided. Our results indicate that residents are happy to share positive verbal feedback with an attending, but a safer system needs to be created to allow them to provide critical feedback of teaching attendings. Not only
are residents required to evaluate their attendings, but also positions on
the teaching service are highly coveted, and interaction with these select
clinicians shapes the future our next generation of physicians. It is our
obligation to provide our medical students and residents with the
highest quality clinicians and teachers available.

ONLINE RESOURCE URL (OPTIONAL): N/A

ACADEMIC YEAR END TRANSFER OF CARE - A PILOT SIGN-OUT PROGRAM IN AN AMBULATORY RESIDENCY CONTINUITY PRACTICE
Ann R Garment 1 ; Wei Wei Lee 2; Erica Phillips-Caesar 1; Christina Harris 1.
1New York Presbyterian Hospital - Weill Cornell Medical College, New York,
New York; 2University of Chicago, Chicago, Illinois. (Tracking ID # 100599)

SETTING AND PARTICIPANTS: The program was piloted in two
ambulatory care practices at an academic medical center in New York
City at the end of the 2009–2010 academic year. Outgoing residents
were eligible for participation if they had an established continuity panel
of patients that would be transferred to an incoming intern and if they
practiced at one of the two study continuity sites. They were excluded if
they were ending the academic year on an away rotation (e.g.
international elective) or vacation. All eligible residents were consented
to participation.32 resident-intern pairs participated in the study and
were randomized to the pilot transfer of care program (“TOC” group) or
the usual no-transfer of care (“NTOC” group).

DESCRIPTION: There were no statistically significant differences in
gender, patient panel size or educational track (i.e. categorical, research,
primary care) between groups. Two standardized hand-off forms were
developed by investigators based on literature review. The “Ten Tasks List”
(TTL) was a list of the ten most critical patient care tasks (e.g. medication
changes, pending laboratory tests) to be followed up by the intern within
the first three months of the year. These tasks were also referenced in
patients’ medical records. The “Sign-Out Document” (SOD) was a more
detailed form addressing the ongoing care of the full patient panel and
highlighting medically complex patients. TOC residents were asked to
create a TTL, a SOD and to verbally sign out both to their successive
interns. NTOC residents were asked to create just a TTL and return it to
the investigators only. In addition, residents and interns were surveyed about
their respective year-end transition experiences.

NEEDS AND OBJECTIVES: In an effort to prevent medical errors, the
Joint Commission on Accreditation of Healthcare Organizations rec-
mended that all healthcare groups implement a standardized approach
to communicating patient information during hand-off, or transfer of
care (TOC), between providers. Much of the research on TOC has been
conducted in the inpatient setting, but few if any studies have been in the
ambulatory care setting, particularly in residency continuity practices when new interns inherit the patient panels of graduating
residents at the end of the academic year. The objectives of this study were: 1) To develop a standardized TOC program among residents and
interns in an ambulatory care continuity practice, 2) To evaluate the
impact of this program on patient safety as documented by the completion of specific patient care tasks signed out by the residents to
the interns and 3) To evaluate resident perceptions of and feedback on
aspects of the program that could be improved.

EVALUATION: There was no difference in the mean number of tasks
completed by the two groups (TOC 4.08+/−1.75, NTOC 5.17+/−1.40, p
=.10). However, TOC interns were less likely to miss follow-up on tasks
compared with NTOC interns (17% vs 44%) when seeing continuity panel
patients (p=0.04; 95% CI 0.45–1.84). Over 90% of residents and interns agreed that sign-outs are important to patient safety. 70% of residents and
64% of interns agreed that a standardized ambulatory sign-out process
would be useful. Participants identified the following barriers to outpatient

TOC: 1) Lack of protected time to create the TTL and SOD, 2) Difficulty
succinctly summarizing issues for such large patient panels, and 3) Difficulty
coordinating schedules for verbal sign-out. Participants also
identified many advantages: 1) Relief of anxiety about complex patients, 2)
Identification of patient previously lost to follow-up, and 3) Exchange of
contact information for future resident-intern communication.

DISCUSSION/REFLECTION/LESSONS LEARNED: Our study demon-
strated that interns participating in a standardized ambulatory sign-out
program were less likely to miss following up on important clinical tasks
when seeing their patients. This suggests that relying solely on office
visit notes for the delineation of patient care is not adequate for
experienced providers. As one intern commented, “Many patients
have complex medical issues, it isn’t easy to learn about them in a few
minutes before you meet them for a 30 minute visit.” The program could
be improved by providing residents with protected time to review patient
panels, identify medically complex patients, create hand-off documents,
meet with interns for verbal sign-out and schedule appointments for
those complex patients to meet the new intern early on in the new year.
Our results have implications for the importance of standardizing the
ambulatory TOC process both for the safety of patients and the
satisfaction of medical trainees.

ONLINE RESOURCE URL (OPTIONAL):

SUPPLEMENTAL CURRICULUM IN LGBT HEALTHCARE AT NEW YORK UNIVERSITY SCHOOL OF MEDICINE
Benjamin Cox 1; Nicole Rosendale 2; Allison Avery 3; Richard Greene 4.
1New York University School of Medicine, Brooklyn, New York; 2New York University School of Medicine, New York, New York. (Tracking ID # 10211)

SETTING AND PARTICIPANTS: Medical students from all four classes
are invited via email to attend the supplementary dinner lectures at the
NYU Medical Center. These lectures are approximately 90 minutes long
and take place over the course of the academic year and are given by a
combination of medical students, faculty members, and specialists
invited from various community organizations. Students are encour-
aged to share questions and comments and have the opportunity to
submit questions anonymously if they choose. The lectures are
organized and hosted by the LGBT People in Medicine student group
at NYU with support from the Office of Diversity Affairs.

DESCRIPTION: In 2010, NYU School of Medicine created a certificate
program in LGBT Healthcare Training. All medical students are invited
to attend the supplementary lectures; to obtain the official certificate
students must attend all four lectures. They were developed using our
knowledge and skills objectives and are as follows: 1. ‘The Gay Lexicon’
presents and defines terminology used in the LGBT community and by
many LGBT patients. 2. ‘LGBT Health and Sociocultural Context’
examines the unique healthcare and mental health needs of LGBT
patients and puts them into a cultural and psychosocial context. This
lecture also gives recommendations of steps that everyone can take to
improve care for their LGBT patients. 3. ‘HIV in NYC’ discusses the
impact of HIV on the gay community, what is being done about it, and
examines the state of HIV in New York City. 4. ‘Transgender Health 101’
introduces specific transgender health issues and includes a discussion
on working with transgender patients.

NEEDS AND OBJECTIVES: When pre-clinical medical students at NYU
were surveyed about their knowledge, attitudes and confidence in caring
for Lesbian, Gay, Bisexual, and Transgender (LGBT) patients, the mean
score on the knowledge assessment was 59% and many students
expressed a lack of confidence in their ability to take a sexual history on
a LGBT patient or properly address their specific healthcare needs. The
results of this survey demonstrate that the standard curriculum—which
includes only one lecture on LGBT health - is not sufficient and that there is a clear need for educational intervention. A four-lecture supplemental curriculum was developed with objectives to improve knowledge of: LGBT-related terminology, medical conditions that more commonly affect LGBT persons, and the sociocultural context for specific LGBT healthcare needs. The curriculum also seeks to improve skills with taking an appropriate psychosocial history and screening and counseling LGBT patients on their unique health needs.

**EVALUATION:** Before the first lecture of the supplemental curriculum was given, a 39-question survey designed to assess knowledge, attitudes, and confidence in caring for LGBT patients was emailed to all first and second year medical students. After the first lecture in the series, the same survey will be sent out again to all first and second year medical students with additional questions about which supplemental and standard curriculum lecture(s) the student attended. This instrument will compare how students’ knowledge, skills, and attitudes changed having gone to the supplementary curriculum versus how these parameters changed having gone only to the lecture in the standard curriculum. These data will suggest whether this supplemental curriculum and certificate program can improve students’ confidence and competency in LGBT healthcare.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** In years past, the LGBT student group at the NYU School of Medicine hosted dinner lectures that were always high quality, but had very low participation. In an attempt to generate enthusiasm, leaders of the group designed this supplemental curriculum, presented it to school administrators, and proposed the creation of an official certificate program. The program was approved and introduced to all medical students explaining the benefits of completion (e.g., improving clinical skills, strengthening applications). At the first lecture, more than one hundred medical students came and participated! This innovation in medical education is still in progress, and its evaluation is not yet complete, however, we learned two important things about improving medical education in LGBT healthcare: creating a lecture series guided by a set of objectives is an important first step, and creating incentives such as a school-sponsored certificate had a dramatic impact on student participation.

**ONLINE RESOURCE URL (OPTIONAL):**

**ENHANCED FACULTY CONFLICT OF INTEREST DISCLOSURE TO PRE-CLINICAL MEDICAL STUDENTS AND ITS IMPACT ON ATTITUDES TOWARD INDUSTRY.** Azalea Kim; Lawrence Mummm; David Muller; Alex Federman; Deborah Korenstein. 1Mount Sinai School of Medicine, New York, New York. *(Tracking ID # 10212)*

**SETTING AND PARTICIPANTS:** Pre-clinical medical students at Mount Sinai School of Medicine and their lecturers in first and second year courses.

**DESCRIPTION:** In October 2010, a thirty-minute lecture introducing the issue of conflicts of interest in medicine was conducted for all first and second year students. Following these introductory lectures, all faculty and guest-speakers with exposure to pre-clinical students were asked to begin lecture sessions with a conflict of interest disclosure statement either via powerpoint slide or verbally. The statement includes whether he/she has any relevant conflicts of interest to disclose and if he/she will be discussing off-label or investigational uses of products during the learning session. In addition, lecturers were asked to submit this information, including the nature of relevant relationships with industry, to a web-based repository. This data is accessible to students anytime so that they may explore and better understand relationships that exist with industry.

**NEEDS AND OBJECTIVES:** The AAMC has recommended that medical schools educate students about interactions with the pharmaceutical industry and how those interactions can threaten professionalism. However, students continue to feel inadequately educated about industry interactions and a “hidden curriculum” continues to positively influence student attitudes toward industry. The Mount Sinai School of Medicine mandated disclosure of conflicts of interests by faculty lecturing to pre-clinical students beginning in October 2010. The objectives of the intervention are 1) To raise medical student awareness of the potential influence of interactions with industry and 2) To measure the impact of disclosure on student attitudes toward relationships with industry.

**EVALUATION:** Evaluation involves documentation of use of the reporting system and the impact of the project on student attitudes. We are tracking submitted disclosures and their content. We are also utilizing a survey to assess students’ attitudes toward industry using 14 items within 4 domains: appropriateness of industry gifts to physicians; appropriateness of industry-sponsored education; impact of industry relationships with academic faculty on quality; and the role of conflict of interest disclosures. Survey items were based on prior instruments and utilize a 4-point Likert scale. The survey was administered on a voluntary basis to pre-clinical students prior to the intervention and to beginning third year students, who did not experience the intervention and will serve as controls. The survey will be administered again at the end of the academic year to pre-clinical students, whose responses will be compared to both pre-intervention responses and to third year controls.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Data collection in this study is ongoing and will be complete at the end of the 2010–11 academic year. Early analyses suggest good faculty compliance with submitting disclosure data. We hypothesize that fostering student awareness of conflicts will make them more critical of industry interactions during the clinical years and will blunt the impact of the “hidden curriculum” which habituates them to relationships with industry and leads to increasingly positive attitudes over time. We plan to measure the impact of the new institutional policy through our survey tool, which is currently underway. In its pilot year, the main challenge is faculty acceptance of the new COI disclosure process, as well as tracking actual disclosure statements presented during lectures and developing a balanced curriculum to support student education on this issue.

**ONLINE RESOURCE URL (OPTIONAL):**

**TEACHING PRACTICE BASED LEARNING IMPROVEMENT (PBLI) THROUGH OBSERVATION, REFLECTION AND SMALL CYCLES OF CHANGE.** Mamta Singh; Sapanos Peter; Carter-O’Gorman Denise. 1Case Western Reserve University, Cleveland, Ohio; 2Western Reserve University School of Medicine, Cleveland, Ohio. *(Tracking ID # 10295)*

**SETTING AND PARTICIPANTS:** The medical school class is exposed to the different areas of the PBLI curriculum beginning in their first year. The topics range from health promotion, small group learning, and web modules to clinical observation. The class size ranges from 150 to 160 students.

**DESCRIPTION:** The CWRU medical school PBLI curriculum is a multi-faceted approach including:1) A Health promotion project through which students explore behavior change and its attendant barriers;2) Interactive online modules teaching improvement science methods 3) Observational patient-based experiences where students reflect on authentic clinical situations, 4) A Personal Learning Plan, which applies improvement methods to academic achievement. The CWRU medical school PBLI curriculum is a multi-faceted approach including:1) A Health promotion project through which students explore behavior change and its attendant barriers;2) Interactive online modules
teaching improvement science methods, 3) Observational patient-based experiences where students reflect on authentic clinical situations, and 4) A Personal Learning Plan, which applies improvement methods to academic achievement.

**NEEDS AND OBJECTIVES:** As one of the six ACGME competencies, PBLI is given equal footing with the traditional competencies of Medical Knowledge and Patient Care. However, it does not afford itself to traditional teaching and assessment methods. Given the reflective nature of this competency and its reliance on improvement science, The Case Western Reserve University medical school curriculum adopted a multifaceted curriculum that focuses on observation, reflection, and change cycles. The specific learning objective for this competency is that the student:

- Demonstrates and engages in skills and habits of self-reflection, self-assessment, and self-regulation to promote personal and professional growth.
- Critically appraises and assimilates scientific evidence.

**EVALUATION:** Student feedback has been largely positive with all four learning cycles and students have shown interest and understanding of improvement science as well as better reflection ability. To date student feedback regarding the online modules, which include principles of quality improvement, is available. 149 (90%) students thought the learning objectives were clear and 142 (91%) thought the learning objectives were met. When asked specifically whether they gained a good understanding of the key concepts, 71% students responded strongly agree or agree.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** PBLI does not lend itself to traditional teaching methods or assessment. Our integrated multi-method teaching using reflection, observation, and change cycles provides a foundation for teaching and assessing this competency. A traditional linear approach is not conducive to teaching PBLI. The reflection component linked with our competency-based curriculum has been successful in getting the key concepts of PBLI across. PBLI does not lend itself to traditional teaching methods or assessment. Our integrated multi-method teaching using reflection, observation, and change cycles provides a foundation for teaching and assessing this competency. A traditional linear approach is not conducive to teaching PBLI. The reflection component linked with our competency-based curriculum has been successful in getting the key concepts of PBLI across.

**ONLINE RESOURCE URL (OPTIONAL):**

**A COLLABORATION TO TRAIN GENERAL INTERNAL MEDICINE RESIDENTS IN CULTURALLY COMPETENT LEADERSHIP, ADVOCACY, AND COMMUNITY PARTNERSHIP SKILLS** Steve Roey 1; Sharad Jain 2; Craig Keenan 3; Kathleen Hicks 4; 1SCVMC, San Jose, California; 2University of California, San Francisco, San Francisco, California; 3University of California, Davis, Sacramento, California; 4Alameda County Medical Center, Oakland, California. (Tracking ID # 10423)

**SETTING AND PARTICIPANTS:** Residents from the UCSF Primary Care Medicine Program based at San Francisco General Hospital (6 residents/year), the Primary Care Medicine residency program at Alameda County Medical Center (6 residents/year), the Primary Care Program based at the University of California, Davis (6 residents/year), and the General Internal Medicine Program based at Santa Clara Valley Medical Center (10 residents enrolled in their novel Pathways Curriculum) participated in the new curriculum developed through this collaboration. These programs have similar training missions which include direct care for vulnerable populations and leadership to address health disparities. Given the close geographic proximity, program leadership sought collaboration to assess current practices, share successes and challenges at each institution, and work together to develop training models that can be implemented, evaluated, and ultimately disseminated to a broader audience of residency training programs.

**DESCRIPTION:** The collaboration focused on developing a comprehensive curriculum for medicine residents on topics in cultural competence, advocacy, leadership, and community partnerships. The process required the collaboration to (1) perform an assessment of current curricula being delivered at each residency programs and compare these curricula with the literature and national guidelines, (2) implement curricular design to facilitate delivery at programs with wide variations in schedules and logistics, and (3) document the impact of these curricular innovations on resident physicians. Support was provided by The California Endowment. The program directors participated in monthly conference calls and quarterly meetings to collaborate on project goals. Because of differences in the structure of each program, the curricular design process focused on the development of transferable modules that could be delivered at each program without relying on new resources or expert speakers.

**NEEDS AND OBJECTIVES:** With the explosion of chronic diseases, the widening health disparities, and the resultant morbidity and mortality from these conditions, it is imperative that we train the next generation of primary care physicians to have the knowledge, skills, and attitudes to address these medical problems and to design systems to consider the economic, political, and social factors which can exacerbate these problems. Physicians, especially those working in safety net systems, must be trained to address disparities through innovative programs that allow them to serve as “agents of change,” both locally and nationally, to improve outcomes for their patients. We describe a collaborative process among 4 internal medicine residency training programs that provide care to underserved populations and the development of a curriculum for residency programs specifically addressing topics on leadership, advocacy, community partnerships, and cultural competency.

**EVALUATION:** The impact of the curriculum on residents was assessed using pre- and post-curriculum survey; post-curriculum survey data collection will be completed this spring. Informal survey of program leadership involved in the design and implementation of the curriculum demonstrated great satisfaction with the process and ease of delivery with the curriculum. After a 1-year development phase, 4 different programs with a wide variety of schedule and logistical limitations were able to implement a robust curriculum that addressed economic, political, and social factors relevant to the future of primary care physicians. Each program was able to augment existing curricula and/or implement new curricula on cultural competence, advocacy, leadership, and community partnerships. Program leaders noted the beneficial effect that the collaborative process had not only on implementing new curricula and sharing resources and expertise, but also noted the beneficial effect on mentoring and faculty development.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Four internal medicine residency programs designed a comprehensive curriculum on leadership, advocacy, community partnerships, and cultural competency that is transferable between programs. All who participated in the design and implementation process acknowledged the benefit of collaboration. Comparing programs, discussing barriers to education, and partnering on solutions proved an invaluable technique in developing a curriculum that is both transferable and flexible to fit individual programs’ needs. Leveraging strengths and sharing resources among programs facilitated the process and provided smooth implementation. In addition to resident education, we believe that this process had significant beneficial impact on faculty development and program design. At a time when greater demands are being placed on educators, collaborating among program leaders that share a common mission serves as an excellent vehicle for enhancing the development of both residents and faculty.

**ONLINE RESOURCE URL (OPTIONAL):**
"I DON'T KNOW THEIR NAMES, I JUST TAKE WHAT THE DOCTOR GIVES ME": A MEDICATION RECONCILITATION OSCE STATION
Colleen Gillespie 1; Margaret Horlick 1; Colleen Gillespie 1; Barbara Porter 2; gaelle pierre 1; angela hang 1; 1New York University School of Medicine, New York, New York; 2New york university school of medicine, New York, New York. (Tracking ID # 10424)

SETTING AND PARTICIPANTS: Thirty five 2nd year internal medicine residents participated in a multi-station Objective Structured Clinical Examination (OSCE).

DESCRIPTION: We designed an OSCE case requiring medication reconciliation for a patient recently discharged from a hospital who presents to his PCP's office for medication refills. He has a bag of medications and is confused about which are new. Reconciliation skills included assessing patient knowledge of hospitalization and discharge and of their medications; assessing patient understanding of medications; and clarifying medications the patient should be taking. After each encounter, the SP and a faculty member evaluated the resident's communication (11 items), patient satisfaction (4 items), and patient activating (3 items) skills (Cronbach's alpha assessing internal consistency > .70 for all) as well as their medication reconciliation skills (4 specific items) using a behaviorally anchored checklist (three point scale of not done, partially done, and well done; scores operationalized as % of items well done).

NEEDS AND OBJECTIVES: In 2006, The Joint Commission listed medication reconciliation as one of its national patient safety goals. We were interested, therefore, in evaluating 2nd year internal medicine residents' knowledge of the steps involved in medication reconciliation, and their ability to communicate medication errors to a patient effectively.

EVALUATION: Our results showed that 92% of the residents fully assessed the patient's knowledge of medication names, 83% fully assessed his understanding of the medications, and 86% fully clarified the medications he should be taking, including updating and stopping prescriptions. However, only 51% assessed what the patient knew about both his hospitalization and discharge plan. Residents who received a "well done" rating for their performance in clarifying medications (30/35) had higher communication, patient satisfaction, and patient activating skills (4 items) the patient should be taking. After each encounter, the SP and a faculty member evaluated the resident's communication (11 items), patient satisfaction (4 items), and patient activating (3 items) skills (Cronbach's alpha assessing internal consistency > .70 for all)

The survey indicated that students perceived increased satisfaction and patient activating skills both in this case and for sequences of their decisions resulted in more effective in learning than instructional training. The use of web-based virtual patient simulation in student training. The use of web-based virtual patient simulation would allow students to learn and practice DKA management skills in a safe environment. The objectives of the project are: (1) implement a newly created web-based virtual patient simulation to teach the management of DKA; (2) test its effectiveness in teaching DKA-specific clinical decision making (3) assess students' perceptions of the effectiveness of the DKA VP compared to other instructional methods.

EVALUATION: Project evaluation includes (1) individual scores for pathways chosen (path score); (2) time to complete the case; (3) a pretest in a randomly selected subset of the participants and a post test for all participants that assesses DKA-specific decision making skills; (4) a survey assessing students' perceptions of learning experiences. To date, 35 students have completed the VP, post test and survey. The mean pretest score for a subset of students was 34%. The mean post test score for all students was 67%. The mean path score among students was 84 out of a possible score of 100 when all optimal pathways were chosen. The survey indicated that students perceived increased confidence in managing DKA and felt that the ability to see outcomes of their decisions resulted in more effective in learning than
with lecture or small group. Students felt that the program was of high educational value.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Using authoring software that facilitates the creation of multiple pathways through a simulated case, it is feasible to construct an interactive web-based virtual patient to teach clinical decision making in a simulated patient with DKA. The case-based single best answer multiple choice quiz was constructed to test clinical decision making and the pre- to post test score changes among students suggests a significant improvement in DKA-specific decision making skills. On the survey, none of the students indicated having managed a patient with DKA. The DKA VP simulation represents one way to help fill this educational gap. Using the methods demonstrated in this project, educators will be able to develop and study future VP’s that teach decision making in other complex medical illnesses.

**ONLINE RESOURCE URL (OPTIONAL):** http://vpsim.pitt.edu/vpSim/player/vpplayer.aspx?caseID=147005e8-e3d2-411d-813d-f52d266aaba

**SENIOR INTERNAL MEDICINE RESIDENTS AS TEACHERS OF MEDICAL-SURGICAL COMANAGEMENT CURRICULUM**

Eileen Henriksen 1; Atul Bhardwaj 1; Carolina Candotti 1; 1Penn State, Hershey Medical Center and College of Medicine, Hershey, Pennsylvania.

**SETTING AND PARTICIPANTS:** Setting: An academic tertiary care hospital Participants: The medicine-surgical consult/comanagement service. A senior medicine resident, medicine intern and anesthesia intern rotate on service for one month. The 3rd year student and medicine attending rotate on service every two weeks.

**DESCRIPTION:** At the start of the rotation, all students and residents took a 35 question clinical pretest. A curriculum was developed consisting of 16 powerpoint modules that begin with the pretest clinical case questions, followed by an evidence based review of the topic with references. Topics range from Pre-op cardiac evaluation and perioperative B-blockers to Diabetic management and osteoporosis. During the first 6 months, the modules were accessible to the attendings on the hospital computer drive. During the second 6 months, the senior residents also had access to these modules and were given the primary responsibility of teaching. At the completion of their rotation, all students and residents were given a 26 question post-test. Students, interns and residents were given a 10 question survey before and after the rotation. They were asked to rate their confidence level on medical-surgical disease management using a 10 point Likert scale.

**NEEDS AND OBJECTIVES:** 1. How best to educate students/residents in medical-surgical comanagement practice/2. To meet ACGME’s requirement of evaluating residents as teachers.3. To compare resident/student learning from attending led teaching versus senior resident led teaching.

**EVALUATION:** 39 students and residents participated over the course of a year. 18 during the attending led teaching, 21 during the resident led teaching. The average pretest scores were 57%. The post-test scores were 73% during both the attending led teaching and the resident led teaching. The confidence level in medical-surgical patient management rose 1.07 points in the attending led group and 1.46 points in the resident led group.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** The results of the pretest scores reveal the poor initial knowledge residents and students possess regarding medical-surgical comanagement practice. Surgical comanagement accounts for nearly 30% of hospitalists’ practice. Perioperative medical training remains underemphasized. Attendings had difficulty consistently finding time for organized teaching after rounds. The senior residents had a more constant presence on the team, embraced the opportunity to teach and found the modules quick, efficient and easy to teach. Resident led teaching was equivalent to attending led teaching when a structured curriculum was developed for teaching purposes. Housestaff’s confidence level rose a similar amount with attending vs resident teaching. The medical-surgical comanagement service offers a more limited curriculum than general internal medicine. It provides an opportunity for senior residents to take on the major teaching role using clinical scenarios and standard powerpoint teaching modules.

**ONLINE RESOURCE URL (OPTIONAL):**

**A NOVEL USE OF QUALITY IMPROVEMENT (QI) TECHNIQUE: AN APPLICATION TO AN EDUCATIONAL DILEMMA**

Mily Joy Kannarkat 1; Steven Kravet 1. 1Johns Hopkins University, Baltimore, Maryland.

**SETTING AND PARTICIPANTS:** The Division of Geriatrics at Johns Hopkins University School of Medicine utilized the 2009 annual Geriatrics Retreat as a forum to gather stakeholders and address specific curricular challenges.

**DESCRIPTION:** Though traditionally utilized to revamp processes that will directly improve patient care, the steps of quality improvement can be considered directly analogous to the approach that educators take to solving dilemmas in curriculum development and implementation. During the Geriatrics Retreat, a faculty member with QI expertise facilitated discussion using the QI techniques of flow mapping, hazard analysis, and cause and effect (fishbone) diagram. This discussion, shaped by QI techniques, resulted in the identification and prioritization of key failure points to implementing the curriculum. Proposed curricular solutions aimed at these key failure points led to ongoing developments in 1) creation of a standard approach for identification of patients; 2) increased staff participation; 3) revision and clarification of clerkship objectives.

**NEEDS AND OBJECTIVES:** 1) To teach stakeholders of a required chronic disease and disability clerkship how to use and apply QI more broadly and 2) To utilize QI processes as a formal tool in addressing barriers to implementation of this curriculum.

**EVALUATION:** “Informative,” “innovative,” and “productive” were common thematic descriptions of the Retreat irrespective of the background of the participants.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Although traditionally used to focus on the root cause of problems in broken systems, quality improvement lends itself to medical education. Using QI techniques, we were able to review available infrastructure, create a step-by-step process, identify and evaluate failure points, and eventually propose curricular solutions.

**ONLINE RESOURCE URL (OPTIONAL):**

**BARRIERS AND EDUCATIONAL SUCCESSES FROM A LEARNING COLLABORATIVE TO EDUCATE RURAL HEALTH CARE TEAMS AND RESIDENT LEARNERS ABOUT SHARED DECISION MAKING**

Kathleen Fairfield 1; Neil Korsen 2; Ruby Spicer 2; Lynn Doxey 3; Deborah Deatrick 1. 1Maine Medical Center, Portland, Maine; 2MaineHealth, Portland, Maine; 3Mainehealth, Portland, Maine.

**SETTING AND PARTICIPANTS:** We are using existing infrastructure of an integrated health system’s Learning Collaborative, training multidisciplinary primary care teams to bring SDM into practice. Four practices are participating in the first phase of implementation. Two
sites have residencies in internal or family medicine. Each team includes a physician leader, administrative leader, and support staff. We carried out 20 in-depth semi-structured interviews across 4 sites, with a range of 3–8 respondents per site. The respondents included 7 physicians, 1 NP, 1 RN, 3 Health Educators, and 8 administrative or support staff.

**DESCRIPTION:** Our Learning Collaborative model engages with multidisciplinary teams and trains them to include shared decision making routinely in processes of care. The training has included principles of SDM, identifying preference-sensitive conditions, use of decision aids in SDM, eliciting patient preferences and values, engaging health educators in SDM, and facilitating patient’s final decisions and self-management plans after viewing decision aids. Teams are encouraged to learn from each other and to share processes as they emerge.

**NEEDS AND OBJECTIVES:** Engaging primary care practices in the use of decision aids for shared decision making (SDM) is difficult, particularly if they are rurally located, have resident learners, and have not had prior experience in shared decision making. Learning Objective 1: To describe barriers to implementation of SDM using a Learning Collaborative model to engage health care teams in SDM using decision aids. Learning Objective 2: To report educational successes from multidisciplinary teams engaged in this Collaborative.

**EVALUATION:** The most frequently cited barriers to implementing the SDM program were time requirements and impact on clinical flow. Because patients are expected to complete surveys before and after viewing decision aids, some respondents cited the surveys, which are seen as lengthy, and noted that literacy barriers restrict participation. Some sites expressed concerns about level of patient health literacy, particularly for immigrants. Some sites reported tactical concerns related to the ability to employ the decision aids, such as the availability of equipment and space limitations. The sites reported many successes as well, including that patients enjoy increased access to health information. One site actively involved the health educator on the team and found that this increased referrals for decision aids. Many respondents reported that patients have a greater sense of awareness of their choices and engagement in their care and health decisions.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Implementing SDM in primary care is challenging, because of such barriers as time and space in busy practice. Academic practices may have additional difficulty, due to the varied schedules of providers and because resident practices are enriched with non-English speaking patients. SDM was perceived to add value because patients are more actively involved in decisions about medical care. Supporting practices to offer SDM training and tools may result in greater engagement of SDM by providers and patients. Engaging health educators in this process may ease some of the burden of implementing SDM and improve patient acceptance and understanding.

**ONLINE RESOURCE URL (OPTIONAL):**

**BEYOND RESIDENCY: A WEBSITE FOR THE ESSENTIALS OF CAREER PLANNING FOR RESIDENTS** Julie R. Rosenbaum 1, Rina L. Garcia 1; Donna M. Windish 1, Yale University School of Medicine, New Haven, Connecticut. (Tracking ID # 10734)

**SETTING AND PARTICIPANTS:** In 2003 faculty and chief residents in the Yale Primary Care Internal Medicine Residency noted that residents had questions each year regarding career planning. Interested trainees and faculty developed a list of informational needs, which became the content outline for BR. We aimed to create a resource that would be easily accessible and updated. We combined links from other online educational resources with insights from recent graduates who contributed their lessons learned. Over 4 years we developed content through an iterative process of presentations to residents and faculty. BR was initially launched in 2007 in the Department of Medicine and placed on the Yale Medical Library site. Initial users were Yale Primary Care, Traditional, and Medicine/Pediatric residents (N=164).

**DESCRIPTION:** The website consists of 5 sections 1) Resume or CV? 2) Getting a Job, 3) Obtaining a Fellowship. 4) The Road Not Taken, and 5) Networking. The sections include links to outside resources like the American College of Physicians site for career counseling, timeline for the application process, job alert signups, and sites for licensing and certification. BR includes suggestions for interviewing and CV writing, including a template residents can use to start their own CVs. Important considerations for job applications include financial, practice, and legal issues. The Fellowship section includes a timeline, links to the NMRP site, and suggestions for successful application process. The Road Not Taken includes discussion of lesser known fellowship and job opportunities.

**NEEDS AND OBJECTIVES:** Few residencies have courses to prepare residents for careers after residency. We developed Beyond Residency (BR) to provide a unified online resource to help trainees determine career choices after residency and how to successfully obtain them. The objectives of the website were to: 1) improve access to existing resources for obtaining a job or fellowship, 2) increase knowledge about the timeline and requirements for application, and 3) decrease stress and improve satisfaction with the application process.

**EVALUATION:** In 2009 we began a controlled trial to evaluate the impact of the site on resident stress with career planning and satisfaction with the process. We exposed 3 of 7 Yale Affiliated Hospital medicine residency programs to BR in addition to the main Yale residency. We developed an instrument to collect demographic data, what the resident applied for, what position was secured, and experience with the application process. The survey was sent electronically to recent graduates from Yale medicine residencies in June of 2009 and 2010, including sites that were and were not exposed to BR. Seventy-five residents (response rate=37%) completed the survey; only 15 reported use of BR. There were no differences in stress or satisfaction with the application process between residents who used BR compared to those who did not.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Although we did not find effects on stress or satisfaction from BR, problems accessing online tools may have played a major role as only a minority of residents reported using BR. Some reported issues finding the site and recalling the password. Difficulties contacting recent graduates for surveys were also noted. However, anecdotal evidence suggests that some residents found the centralization of career resources helpful. Further efforts at dissemination are underway.

**ONLINE RESOURCE URL (OPTIONAL):** http://www.beyondresidency.yale.edu

**DEVELOPMENT OF A CURRICULUM ON TEACHING PRACTICE-BASED LEARNING AND IMPROVEMENT: A “TRAIN THE TRAINER” APPROACH** Geoffrey Lamb 1, Jerome Van Ruiswyk 2, Barbara Connelly 3, Judith Rehm 4; Aun Mordal Boldt 5, Medical College of Wisconsin, Milwaukee, Wisconsin; 2Zablocki VA Medical Center, Milwaukee, Wisconsin; 3Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 10748)

**SETTING AND PARTICIPANTS:** The course is sponsored through the Office of Joint Clinical Quality and conducted at a large medical school encompassing 1450 faculty, 650 residents and 817 medical students. The campus includes an adult teaching hospital, a children’s hospital,
an inpatient mental health center and affiliated clinics. The course is offered to the clinical faculty at large on a once a year basis. The inaugural course was implemented in September, 2009. It was conducted as a half day session once a month for six months and incorporated an ongoing quality improvement project. Seven faculty completed the course including 3 pediatricians, 2 psychiatrists, a gynecologist and an internist. A second course began in September 2010 with 10 participants, including 2 pediatricians, a pediatric surgeon, a clinical psychologist and 6 internal medicine hospitalists.

DESCRIPTION: Six modules were developed incorporating on-line instruction, lectures, readings, analysis of critical incidents and opportunity to practice teaching with students. Content relevant to patient safety/QI included medical error, root cause analysis, disclosure, quality improvement skills and measurement. Content relevant to teaching skills focused on learning styles, development of teaching scripts, bedside teaching, small group teaching and lectures. Products created include on-line educational modules, powerpoint presentations to support lecture material, evaluation tools and an instructor’s guide. The design allows each topic to be taught independently or as a component of a six month course. Projects completed during the inaugural session focused on handoffs, tracking medication problems in outpatient clinics, consistent use of “time-outs” before C-sections, teaching self care to asthma patients, and monitoring of metabolic effects of psychiatric drugs.

NEEDS AND OBJECTIVES: Practice based learning and improvement (PBLI) is one of six core competencies mandated by the ACGME. Unfortunately, faculty educated in the traditional system are poorly prepared to train the residents in the relevant skills, including principles of patient safety and quality improvement. There is a need to train faculty, not only to develop their own skills, but to teach these skills in clinical settings. The purpose of this project was to develop and implement a curriculum to train faculty how to incorporate principles of patient safety and quality improvement into their bedside teaching.

Objectives:
Teach faculty the basic content to develop their own expertise in safety and quality improvement;
Develop small group and bedside teaching skills;
Practice teaching safety/quality principles in a mentored setting;
Assist in the development of relevant case scenarios to use in resident instruction;
Plan and implement a project.

EVALUATION: Evaluation incorporated pre and post tests on perceived skills, a multiple choice test of safety and quality improvement content knowledge and the QIKAT, a validated test of quality improvement process knowledge. Confidence in relevant skills were rated on a 5 point scale (1 = no clue; 5 = expert). Results are available from the first cohort of participants (n=7). QIKAT scores improved from a mean of 8.3 (range 1–14) to 9.4 (range 7–13), however this did not reach statistical significance. Similarly, results on a multiple choice test on safety and quality improvement knowledge improved from 73.4% to 83.9% but did not quite reach significance (p=0.09). However, participants’ confidence in their ability to initiate a quality improvement project (pre 2.3, post 4.3; p=0.006) and their ability to teach QI/safety issues at the bedside (pre 2.9, post 4.1; p=0.002) improved substantially.

DISCUSSION/REFLECTION/LESSONS LEARNED: We created a faculty development program using blended learning techniques to teach both content in patient safety/quality improvement and teaching skills so as to enhance the teaching of this content at the bedside and in small groups. Participants significantly improved their confidence in their ability in these skill areas, but further evaluation is needed assess whether faculty completers are using the skills in actual teaching situations. Improvement on the QIKAT and the multiple choice test on content did not achieve statistical significance but the ‘n’ was small. Feedback from learners emphasized the need to master content knowledge before addressing teaching skills and the current version of the course has been restructured accordingly. Products created in support of the curriculum are intended to allow the program to be administered at multiple sites by instructors trained in the curriculum.

ONLINE RESOURCE URL (OPTIONAL):

A WEB-BASED MODULE ON NEUROBIOLOGY TO ENGAGE STUDENTS IN SUBSTANCE ABUSE RESEARCH Andrea Truncali 1; Colleen Gillespie 1; Joshua Lee 1; Stephen Ross 2; David Kerr 4; Laura Huben 4; Frederick More 3; Madeline Naegle 4; Adina Kalet 5; Marc Gourevitch 1; 1NYU School of Medicine, New York, New York ; 2NYU School of Medicine, NY, New York ; 3NYU College of Dentistry, NY, New York ; 4NYU College of Nursing, NY, New York ; 5NYU School of Medicine, Brooklyn, New York. (Tracking ID # 10778)

SETTING AND PARTICIPANTS: All first-year medical students (n=172) were invited to complete the module as a supplement to their Neuroscience course addiction lecture. They received instructions for accessing the module by way of the Neuroscience course website.

DESCRIPTION: The multimedia module features a case study of a cocaine-dependent man whose addictive behaviors are described and linked with associated neurobiology, including reward, cue development and executive dysfunction. It uses interactive animation, user-controlled video segments, and immediate feedback facilitated by the learning platform. Successful research faculty colleagues further discuss how basic science has advanced the understanding and treatment of addiction. Immediate pre-post-testing on 4-point Likert scales evaluated interest in SA, interest in general- and SA-focused research and perceived knowledge. Post-testing evaluated attitudes and module appeal. A-month post survey was conducted by email to assess longer-term impact.

NEEDS AND OBJECTIVES: There is a need to build the ranks of substance abuse (SA) researchers across health professions. We developed a web-based module, the Neurobiology of SA, as part of a NIDA-funded initiative to increase interest in SA research among nursing, dental and medical students. We aimed to foster students’ understanding of addiction’s physiologic basis and motivate interest in SA-focused research.

EVALUATION: 83 of 172 (48%) students voluntarily completed the module (92 pretest, 44 posttest). Prior exposure to SA treatment or research was reported as absent (45%), personal (20%), educational (31%), and clinical (13%). SA interest increased (29% pre to 45% post somewhat or very interested, p=.005). There was no change in anticipated career research involvement, but interest in conducting SA research specifically increased from 45 to 52% (p=.09). After the module, students endorsed somewhat or full understanding of “how neurobiology research has shaped addiction treatment” (73%), “relationships between addiction and reward” (81%), and “pathways through which drug abuse affects decision making and inhibition” (90%). SA attitudes were generally ambivalent. At 4 months (n=44), students endorsed enhanced interest in SA treatment (77% some or a lot), SA research (70%) and change in attitudes (75%), as well as improved understanding of related course material (69%) and exam performance (84%).

DISCUSSION/REFLECTION/LESSONS LEARNED: A web module on the neurobiology of SA offered to preclinical medical students with a baseline lack of interest in SA was readily integrated into existing course material and led to enhanced interest in SA and possibly motivation to conduct related research. The module deepened understanding of
related course material. Attitudes toward SA treatment were generally ambivalent post-module but may represent an improvement from baseline. Future study will assess impact among dental and nursing students.

ONLINE RESOURCE URL (OPTIONAL): http://chip.med.nyu.edu/

USING STANDARDIZED PATIENTS TO EVALUATE RESIDENT SKILLS IN SCREENING AND BRIEF INTERVENTIONS FOR SUBSTANCE ABUSE IN THE PRIMARY CARE SETTING.

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SETTING AND PARTICIPANTS: This project took place at a large academic residency training program. Prior to SBIRT curriculum implementation, 15 primary care internal medicine residents (PGY2/PGY3) participated in the SP evaluation. The SP exam took place at a training facility designed for observation of learners during clinical skills exams. Actors were hired and trained in their specific roles as SPs.

DESCRIPTION: The standardized patient exam consisted of 3 twenty-minute outpatient encounters representing typical clinic visits. Specific cases were as follows:*35 year-old man with risky alcohol use and paroxysmal atrial fibrillation.*39 year-old woman with low back pain and opiate misuse.*63 year-old woman with depression and an alcohol use disorder. Cases evaluated the following substance use competencies:*Screening for substance use and taking a substance abuse history.*Accurate assessment of risky use and substance use disorders.*Brief interventions to address substance use.*Appropriate referral for substance use disorders.*Effective communication with patients regarding substance use.

NEEDS AND OBJECTIVES: It is widely recognized that screening and brief intervention for substance use disorders are lacking in primary care settings. Barriers include physician reluctance to address substance abuse, negative attitudes towards substance abusing patients, lack of confidence and inadequate skills. In order to address this deficiency, we are implementing a Screening, Brief Intervention and Referral to Treatment (SBIRT) curriculum for primary care internal medicine residents. To measure the impact of our curriculum, we propose using a standardized patient (SP) evaluation. The objective of this project is to determine baseline SBIRT skills for residents prior to implementation of the SBIRT curriculum from an SP evaluation.

EVALUATION: SPs evaluated residents using case-specific checklists that include history (HX), information sharing (IS), and patient-physician interaction (PPI) items. Residents received an average of 79 (sd=16) in history, 67 (sd=12) in information sharing and 69 (sd=6) in physician patient interaction. Residents completed a post-exercise survey indicating that they did feel it was a valuable experience (3.67/5). Residents attended a faculty-run debriefing session. Each resident SP encounter was videotaped and reviewed by residency faculty. Following the exercise, residents met individually with faculty to receive direct feedback on SBIRT skills.

DISCUSSION/REFLECTION/LESSONS LEARNED: Substance use disorders are ubiquitous in primary care settings and physicians receive inadequate training in managing these disorders. Internal medicine residents demonstrated a baseline performance on the SP evaluation that indicated room for improvement in SBIRT skills. Residents reported highest levels of confidence in screening patients for alcohol and drugs, but felt less confident making treatment plans for patients with substance use disorders. Resident evaluation scores also indicate a lack of skill in developing treatment plans for individuals with substance use disorders. Effective curricula should address SBIRT skills and confidence in managing substance use disorders, specifically focusing on the establishment of treatment plans. Our baseline data suggest that SP assessments can be used to assess SBIRT competencies in residents and may be useful in determining specific areas for individual resident improvement.

ONLINE RESOURCE URL (OPTIONAL): http://chip.med.nyu.edu/

INTERNAL MEDICINE MENTORSHIP EVALUATION (IMMENSE)

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SETTING AND PARTICIPANTS: This study was performed in the Internal Medicine Residency Program of the Mercy Hospital and Medical Center during 2009-2010. The participants were the incoming class, which consisted of sixteen interns, all graduates of foreign medical schools.

DESCRIPTION: We randomly divided our 16 incoming class trainees into two groups—the first group of 8 interns was assigned a mentor, and the second group of 8 interns had no mentor for the first 6 months. Their expectations of mentorship, in addition to their general background information, were evaluated via a questionnaire at the beginning of the year. After 6 months, the groups were switched so that the group previously receiving mentorship no longer had a mentor, and the group who were without a mentor in the first 6 months, were assigned to a mentor. The experience and value of mentorship were again evaluated via a standardized questionnaire for both groups. The mentors were given specific instruction on providing a mentor-mentee relationship, and were asked to evaluate their interns at the beginning and end of the mentoring period. The progress of the interns was followed using these records.

NEEDS AND OBJECTIVES: The role of mentorship is well recognized in the development process of an internal medicine trainee. Although an important part of training, mentorship programs are not uniformly mandated through all residency programs. In an effort to introduce a formal mentoring process in our program, we studied the specific relationship between mentors and mentees in a community program consisting mainly of international medical graduates (IMG). Our objectives were to evaluate the role of mentorship in: Resident development; IMG-specific issues; Resident comfort with post-graduate education; Resident decisions on post-residency education (fellowship) versus working in primary care or as a specialist. To the best of our knowledge, this is the first such study performed in a community program catering to IMGs.

EVALUATION: All 16 interns participated in and completed the study, 4 of whom were women and 12 men. Their ages ranged from 25 to 38. Although full analysis of the results is pending, review of the initial surveys reveal a unanimous interest in mentorship, with a particular interest in having a mentor that would impact professionally. In the first half of the study, all 8 participants provided positive feedbacks of their experiences. There was an improvement in communication skills, with a better understanding of healthcare policy and business. The drive for fellowship remained the same, with 7 out of 8 interns planning to pursue this. The expectations from mentors changed, from a career guide to a personal associate. The second group also showed an improved knowledge of healthcare policy and business after meeting with their mentors. The desire for fellowship decreased from 7 to 6 interns. The interest in a hospitalist career increased from 5 to 6 interns.
DISCUSSION/REFLECTION/LESSONS LEARNED: Mentoring is clearly an important component of resident education. Our evaluation of perceptions of mentorship by IMGs, and of their experience with it has provided interesting points for discussion. We find that mentorship is certainly an important social factor, which may benefit IMGs in terms of communication skills and cultural awareness. However, it would seem that these factors may be of benefit only in the very early stages of the intern year. Thereafter, career guidance seems to be more important. Providing an organized mentorship program for incoming interns would be a beneficial tool in the overall development of the resident.

ONLINE RESOURCE URL (OPTIONAL):

CONTRACT-BASED LEARNING AS AN APPROACH TO IMPLEMENTING COMPETENCY BASED TRAINING IN PRE-CLINICAL INTRODUCTION TO CLINICAL MEDICINE COURSES John F. Wilson 1; David Rudy 1. 1University of Kentucky College of Medicine, Lexington, Kentucky. (Tracking ID # 10902)

SETTING AND PARTICIPANTS: The setting is year one of medical school and participants are 115 first year medical students and 30 clinical and behavioral preceptors.

DESCRIPTION: ICM is an 11 credit, year long small group course for M1 students. ICM focuses on basic and applied interviewing, professionalism and medical ethics, applied topics such as grief, pain, and addiction; The course blends small group, on-line learning modules, independent study, and clinical placements. Assessment is through an extensive on-line portfolio. Students contract for a grade through a variety of contact options. The learning contracts are designed to focus on application and synthesis dimensions of Bloom's taxonomy. Each small group of eight students has a clinical and a behavioral preceptor. All course materials and assessment takes place through a single web portal. Each student has a personal WIKI page accessible to them and their preceptor, who provides blog style feedback, allowing for evaluation and dialogue.

NEEDS AND OBJECTIVES: Introduction to Clinical Medicine (ICM) courses often do not easily fit into the curricular structure of the basic science years in medical school. MCQ examinations, lecture based educational formats and the increasing pressures on clinician's teaching time are barriers to effective implementation of competency based learning in "doctoring" courses. Our objective was to use a contract based learning model to implement a competency based and portfolio assessed introduction to clinical medicine course for M1 students. Contract based approaches are noted for their emphasis on fluid rather than fixed curricula, challenge rather than threat motivation, active rather than passive learning, and a focus on questions rather than answers.

EVALUATION: The usefulness of contract-based teaching is illustrated through discussion of six course elements:
(1) Training in interviewing includes actor-patient simulations, learning labs with cycles of practice followed by coaching, formal self-assessments, and preceptor feedback.
(2) Required and elective "continuing medical education" credits model life-long learning.
(3) Diverse topics such as Medical humanities, Service Learning, and student-designed learning activities.
(4) Clinical placements introduce students to interprofessional education and team based clinical work.
(5) Small group seminars on grief, loss, pain, suffering, and addiction emphasize skill learning and formation of professional attitudes.
(6) A focus on written portfolio entries with blog-style preceptor feedback and formative or coaching based skill assessments move toward higher order Bloom objectives.

DISCUSSION/REFLECTION/LESSONS LEARNED: Advantages and practical problems about contract based learning are discussed and illustrated through use of student evaluations, quality assurance materials, student outcomes, and examples of portfolio entries. Issues related to faculty development of preceptors, creation and maintenance of clinical experience sites suitable for M1 students, and approaches to nurturing inter-professional involvement in the training program are discussed. The use of contract based learning to efficiently use clinician time, provide a flexible course infrastructure easily adapted to changing resources, and to promote higher order learning objectives is described.

ONLINE RESOURCE URL (OPTIONAL):

MASTERY LEARNING OF ORAL CASE PRESENTATIONS: E-LEARNING AND DELIBERATE PRACTICE Heather Heiman 1; Toshiko Uchida 1; John Butter 1; Craig Adams 1; Gary Martin 1. 1Northwestern University Feinberg School of Medicine, Chicago, Illinois. (Tracking ID # 10918)

SETTING AND PARTICIPANTS: We designed a waitlist-control study in which second-year students in the class of 2013 are randomized to receive instruction in oral presentations in the fall or in the spring. When not learning oral presentations, they receive a written presentations curriculum. The university's IRB judged this project to be exempt. Classes are divided into 4 colleges, which are cluster-randomized such that two colleges constitute the intervention group and two the control. All students are required to take both curricula, but they may elect not to contribute data to the study. Of 168 students, 161 consented. Data is being collected at baseline, after the intervention group receives the curriculum, and after both groups have received the curriculum. The class of 2012 (n=165) took the assessment to function as a historical control. M4 students on a teaching selective assist with oral presentations practice, and a separate group of M4 students function as raters.

DESCRIPTION: The curriculum consists of an on-line module followed by deliberate practice. We created a 2-hour interactive module using e-learning software (Articulate). In the module, students watch a faculty member interview and examine a patient with vertigo. In segments, they watch her demonstrate a poor presentation, answer questions about her deficits, and then watch a gold standard oral presentation. They repeat this process for a full oral presentation of a second case. For deliberate practice, we developed two cases with video interviews and written physical examinations. Students deliver a presentation of Case A to an M4 student who gives detailed feedback according to a specific checklist. Students then watch the video of their Case A oral presentation, edit their Case B oral presentation and then present Case B to the same M4 student, again receiving detailed feedback.

NEEDS AND OBJECTIVES: The oral case presentation is a critical clinical skill. It is a chief means of interprofessional communication and a primary tool for evaluating students' clinical reasoning. Nationally, students express confusion about expectations for presentations, and there are few published curricula. We aimed to develop an intensive 2nd-year student curriculum for mastery learning of oral case presentations. In mastery learning, students practice a task until they demonstrate or exceed a fixed standard of competence. All learners achieve competence, but the practice time needed varies. Our specific objectives were to 1) create an intensive curriculum with deliberate practice of oral case presentations 2) develop standardized cases for assessment 3) set mastery learning standards for each case using an expert panel 4) demonstrate that the curriculum improves performance 5) determine if students who fail can achieve competence via additional practice.

EVALUATION: We developed six assessment cases consisting of video interviews and written physical exams about a broad range of chief
concerns. We used rigorous methods to develop a generic checklist and a specific checklist for each case including content and style criteria. Trained M4 student raters evaluate presentations on video. For the historical controls, mean checklist scores for the six cases ranged from 62-71%. A panel of 10 experts met to determine mastery standards for each case. Assessments for the class of 2013 are being rated. Students in the intervention used a Likert scale to rate the educational quality of the curriculum (1=poor, 2=fair, 3=good, 4=very good, 5=excellent). The overall curriculum was rated 4.0 (90% response rate). Using a 5-point scale with 1=strongly disagree and 5=strongly agree, students reported feeling more prepared to do a presentation after the curriculum (4.3).

**DISCUSSION/REFLECTION/LESSONS LEARNED:** We addressed a curricular need by creating a 4-hour mastery learning curriculum with e-learning and deliberate practice. We developed rigorous checklists and set standards for competency. Because it is on-line and integrates with a fully-developed M4 student teaching selective, the curriculum will be sustainable. We are finalizing minimum passing scores for each case; students not meeting the standard will engage in more practice and reassessment until they demonstrate mastery. Students rated the curriculum favorably. Critiques included the length of the on-line module and some difficulties navigating between slides. We are now assessing inter-rater reliability of the checklists. Initially, while most items showed good agreement between raters, items judging speech/style did not. We eliminated two of these items and improved rater training on the others. Rating of baseline and post-curriculum data is ongoing.

**ONLINE RESOURCE URL (OPTIONAL):** [http://simulation.northwestern.edu/elm/oralcase/player.html](http://simulation.northwestern.edu/elm/oralcase/player.html)

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**IMPROVING MEDICAL STUDENT PHYSICAL DIAGNOSIS SKILLS AT BROWN MEDICAL SCHOOL**

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**SETTING AND PARTICIPANTS:** 30 third year medical students at four hospitals affiliated with the Alpert Medical School of Brown University were sent a four item email survey.

**DESCRIPTION:** The survey asked about 18 physical findings including goiter, aortic stenosis murmur, mitral regurgitation murmur, cardiac rub, jugular venous distension, S3 heart sound, clubbing, shifting dullness, hepatomegaly, asterixis, jaundice, palmar erythema, stiff neck, chest wall dullness to percussion, asymmetric deep tendon reflexes, clonus and ulcerated skin lesions. They were asked about their experience with each finding, their confidence with each finding and their understanding of the disease association with each finding. The survey was repeated six weeks later with the hope that the initial survey would serve to trigger their interest and encourage their learning. We also asked if students learned on their own or were taught by others. Student knowledge improved by 7% from survey 1 to 2 and they were able to see 9% more findings by the second survey.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Based on this small sample pilot, we are expanding the survey to four medical schools to see if our discovery that most third year medical students on their internal medicine clerkship will learn on their own and are encouraged by peer-driven email to acquire physical diagnosis skills. We will survey a control group of students to see if our encouragement is a valid intervention.

**ONLINE RESOURCE URL (OPTIONAL):**

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**A COURSE ON COMICS AND MEDICINE FOR 4TH YEAR MEDICAL STUDENTS**

Michael Jay Green 1; Michael Jay Green 1. Penn State College of Medicine, Hershey, Pennsylvania. (Tracking ID # 11002)

**SETTING AND PARTICIPANTS:** At Penn State College of Medicine in Hershey, PA, all medical students are required to register for a Humanities elective during their 4th year of study. This course was offered as 1 of 16 such electives. Over a two-year period, 16 students enrolled in the 4-week course. Students had no clinical or other academic responsibilities during this month.

**DESCRIPTION:** The course was taught seminar style, and met twice per week for 3 hours per session. Using various graphic stories as examples, students learned how images and text are used synergistically to communicate complex narratives. Topics included: overview of comics and medicine; elements of storytelling; how pictures work; point of view; drafting a script; dialogue and transitions; social context of medicine; and final presentations. During the course, students not only learned about how comics are relevant to the practice of medicine, but they also created their own graphic stories that illustrated memorable encounters with patients or other aspects of their professional development.

**NEEDS AND OBJECTIVES:** While “comics” increasingly address serious medical themes – from life with a chronically ill sibling (“Epileptic” by David B) to the experience of cancer (“CancerVixen” by Marisa Acocella Marchetto) – this medium has not been used for teaching medical students to better appreciate patients’ experience of illness. The goals of this course were to use sequential graphic stories (or “comics”) to enhance students’ observational and communication skills, to promote empathy for others’ narratives, and to provide a creative outlet to express their personal growth and professional development.

**EVALUATION:** Pre- and post-course attitudes and skills were compared using a 5-point Likert-style scale (1 = strongly disagree, 5 = strongly agree). Outcomes of interest included whether students’ felt the course was relevant to their medical education, whether creating a graphic story could make them a better doctor, and whether doing so improved various skills (e.g., writing, drawing, communication, diagnosis, clinical reasoning, observation, empathy, awareness of physician bias, and interpretation of information). Qualitative comments about the strengths and limitations of the course were also elicited from students.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Medical students who enrolled in this course on comics and medicine reported a significant improvement (p<0.05) over baseline in their writing skills, verbal communication skills, nonverbal communication skills, communication with patients, communication with colleagues, observational skills, awareness of physician bias, and ability to interpret information. They also reported that creating a graphic story helped them become better doctors. Reviews of the course were overwhelmingly positive, and students particularly appreciated the opportunity to reflect on their experiences as developing professionals through creative self-expression. Too often, medical school pedagogy presumes students are “empty
HEALTH IMPACTS OF WAR: AN EDUCATIONAL CAMPAIGN FOR VA PROVIDERS

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**SETTING AND PARTICIPANTS:** The conflicts in Iraq and Afghanistan have exposed combat Veterans to risks such as physical injury (including traumatic brain injury from blast wave exposure), psychological trauma, environmental agent exposure and numerous psychosocial stressors potentially impacting financial, social and family life. A broad spectrum of mental health conditions and psychosocial difficulties are common among these Veterans: clinical presentations involve complex combinations of physical and mental health symptoms and conditions and a variety of psychosocial concerns that vary widely from Veteran to Veteran. A VA-wide education and training campaign collaboratively created and implemented by all of the programs and disciplines involved in post-combat care (primary care, mental health, social work, rehabilitation services, addictions services and pain management) was created and implemented to educate and train on topics of post-combat care the 300,000 VA employees, working in the 152 hospitals and 784 clinics nationwide.

**DESCRIPTION:** The post-combat care education and training campaign addressed these topics: military culture and the challenges of deployment, health risks in the combat environment, health concerns of returning combat Veterans, models for providing integrated post-combat care and VA services and benefits available to returning combat Veterans and their family members.

The educational strategy included: creation of a multidisciplinary leaderships group; establishing best practices; conducting national, regional and local trainings; educating leadership at all levels; designating clinical champions; promoting best practices through directives/trainings/funding incentives, developing trainings and materials through VA education services and centers of excellence; conducting community of practice conference calls.

Given that half of these Veterans are either seen outside of the VA or are receiving no health care at all, outreach and interagency collaboration was an integral aspect of the educational campaign.

**NEEDS AND OBJECTIVES:** The one million Veterans who have separated from the military after serving in Iraq and Afghanistan have unique health care needs that must be effectively addressed to insure successful readjustment and reintegration following the war. Creating and implementing models of care, putting appropriate resources in place and educating VA providers in “post-combat care” is a central component of the VA mission.

Resources and services in VA prior to the 2003 outbreak of these conflicts were not entirely aligned with the needs of these Veterans. VA undertook a nation-wide program to educate providers (multi-disciplinary teams of primary care, mental health and social work providers) in how to provide effective primary care based “post-combat care”. Topics included military culture, deployment, health risks of combat (physical, mental health and psychosocial), health care needs of returning combat Veterans and models of care for meeting the needs of returning combat Veterans and their families that are consistent with the new VA medical home model of care delivery: Patient Aligned Care Teams or PACT.

**EVALUATION:** The effectiveness of the VA post-combat care education and training campaign has been measured in a number of ways. Data extracted from surveys conducted by VA Primary Care Services in 2009, the VA Mental Health Primary Care Integration Program in 2010 and a QuERI (Quality Enhancement Research Initiative) implementation study completed in 2010 has been used to monitor the implementation of integrated post-combat care programs in VA medical centers around the country. Clinical monitors and national data bases such as VSSC (VHA Support Service Center for clinical data) have been used to measure and assess in an ongoing manner critical screening and surveillance measures related to post-combat care. Regularly scheduled focus groups and surveys have provided ongoing information on Veterans' satisfaction with services and care they are receiving.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Training VA staff to provide optimal care for returning combat Veterans required a rapid and ongoing dissemination of unique and continuously evolving content- and process-specific information related to the health concerns of returning combat Veterans as well as to strategies for creating and sustaining integrated service delivery platforms for this population. An integrated agency-wide approach was essential. The presentation will describe the scope of the health care needs of this population, the education/training programs implemented to insure that these needs were effectively addressed both within the VA system and in the community at large, and ongoing education efforts necessary to mitigate downstream health impairments and optimize the long-term function and well being of these Veterans and their families.

Key elements, critical challenges, obstacles encountered and lessons learned will be summarized. This educational campaign and the strategies utilized have potential relevance for other patient cohorts and health care settings.

**ONLINE RESOURCE URL (OPTIONAL):** http://pennstatehershey.org/web/humanities/home/resources/comicbook
identified. A second anonymous survey was sent to the same 19 residents assessing the value of monthly SBP meetings.

NEEDS AND OBJECTIVES: Although the Accreditation Council for Graduate Medical Education (ACGME) requires physicians-in-training to achieve proficiency in Systems-based Practice (SBP), one of six domains of physician competency, few effective training methods have been described. The ACGME defines SBP as the ability to identify, evaluate and utilize health care system resources to provide optimal care. SBP is especially important in internal medicine residency programs, where residents have fragmented schedules and competing commitments. The emergence of the Patient Centered Medical Home (PCMH) model, with its emphasis on optimizing resources and team-based care, presents an opportunity to engage residents in SBP while fulfilling ACGME educational objectives and improving patient care. To this end, we designed and implemented a resident-driven educational program to improve resident competency in SBP, and provide an ongoing forum for discussion, education and innovation in our ambulatory teaching clinic.

EVALUATION: Seventy-four percent (14/19) of residents responded to the initial survey, with up to 5 solutions given for each scenario. Responses varied by the skill level of the clinic staff member asked to assist with the task, the number of phone calls, emails, and hand-offs required, and the time needed for task completion. Given the heterogeneity of responses a set of best practices, emphasizing non-physician resources, was created and disseminated. Our second survey used a 5-point Likert scale (5=Quite Valuable, 1=No Value) to quantify the value of monthly SBP discussions. One hundred percent (14/14) of respondents reported that sessions would be “valuable” or “quite valuable.” We then initiated monthly discussions (60–75 minutes) during ambulatory blocks (4–8 residents/month). To date we have held two sessions. Prior to each session we solicit SBP topics and distribute a resident-derived agenda. Afterwards, we email key takeaway points and post updates on our program searchable website.

DISCUSSION/REFLECTION/LESSONS LEARNED: The development of a resident-driven process to address SBP is feasible, meets ACGME requirements, and provides an opportunity to optimize care at a primary care teaching clinic. Through our program, residents learn about the elements of SBP, collectively evaluate clinic processes, assume a stakeholder role in the functioning of their clinic, and facilitate the improvement of patient care. Our iterative process allows us to craft agendas for monthly SBP meetings based on real-time issues as defined by residents. These have included the making and tracking of timely referrals, incorporating non-MD providers into the management of chronic diseases, planning for the electronic medical record, and effectively managing and communicating with patients between visits. We have found that our residents are invested in SBP and are eager to engage in discussions to evaluate systems and implement change. The process will become increasingly beneficial as our clinic evolves into a certified PCMH.

ONLINE RESOURCE URL (OPTIONAL):

**EFFECT OF A PAIN MANAGEMENT CURRICULUM ON RESIDENTS’ CONFIDENCE AND ATTITUDES**

Aaron Fox 1; Hillary V Kunins 2; Joanna L Starrels 1

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**SETTING AND PARTICIPANTS:** Our intervention targeted 29 internal medicine residents in all 3 years of the Primary Care and Social Medicine (PCSM) residency program at Montefiore Medical Center in the Bronx, NY (intervention group). The PCSM program trains 10 residents per year and focuses on ambulatory medicine in indigent urban settings. Prior to the intervention, PCSM residents received three lectures in physical exam and diagnosis of musculoskeletal disorders (knee, shoulder, and ankle) and one session on management of chronic pain. In Montefiore’s categorical internal medicine residency program (comparison group) residents received a similar curriculum and did not take part in the educational intervention.

**DESCRIPTION:** The curriculum commenced in October 2009 and was led by faculty in general internal medicine and geriatrics. It included 14 didactic and skills practice sessions distributed throughout the three years of training: 1. Introduction to Chronic Pain: Guidelines and Psychosocial Context (one session); 2. Common Pain Syndromes (back/neck, knee, shoulder, hip, wrist/elbow, and ankle/foot) (six sessions); 3. Therapeutic Joint Injection (one session); 4. Non-pharmacologic Treatments for Pain (one session); 5. Opioid Pharmacology (one session); 6. Opioid Risk Management: Opioid Treatment Agreements and Interpretation of Urine Drug Testing (two sessions); and 7. Racial Disparities in Pain (one session). Residents also took part in group skill practice sessions with a standardized patient, focused on negotiating an opioid treatment agreement and responding to aberrant drug related behaviors.

**NEEDS AND OBJECTIVES:** To one-third of primary care patients suffer from chronic non-cancer pain (CNCP), accounting for approximately 10% of ambulatory visits. However, internal medicine residents report a lack of training and confidence in treating CNCP, and find it less rewarding than treating other chronic conditions. We developed an innovative pain management curriculum with the objectives of improving whether residents felt confident and prepared to diagnose and treat CNCP. In addition to evaluating confidence and preparation, we hypothesized that participation in the curriculum would be associated with change in residents’ attitudes toward pain management, specifically that managing CNCP would become less of a burden on time, less difficult and more rewarding.

**EVALUATION:** First and second year residents were surveyed via email one month before curriculum inception and 12 months later. Using a 5-point Likert Scale, the survey assessed confidence, preparation, and attitudes with regard to treatment of CNCP. Of 19 PCSM residents, 14 (74%) completed both surveys. Of 76 categorical residents, 18 (24%) completed both surveys and comprise the comparison group. For each group, we analyzed pre- to post-intervention changes using paired T-tests. Among PCSM residents, confidence in and preparation for managing CNCP increased significantly. Prior to the intervention, only 2/14 residents agreed that they were prepared to manage CNCP; this increased to 9/14 after the intervention. There were no significant changes in perception of difficulty, reward, or time required to manage CNCP. Before and after the intervention, residents reported that managing CNCP was difficult, unrewarding, and time-consuming. There were no significant changes in the comparison group.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Confidence in and preparation for managing chronic non-cancer pain improved one year into our innovative pain management curriculum, but residents continued to find management of CNCP difficult, time-consuming, and unrewarding and on average still lacked confidence. Informal resident feedback has suggested reasons for our limited impact in these domains. Residents report busy clinic sessions and varying approaches to CNCP among precepting faculty, but our intervention did not address these systems-level barriers. We have since expanded faculty development in management of CNCP, created a primary care based pain management clinic in which residents will have additional time with their pain patients, and are developing a clinic-wide policy on opioid prescription. Future evaluations will help to identify successful
components of our curriculum that might be replicated in other institutions.

ONLINE RESOURCE URL (OPTIONAL):

AN INTERPROFESSIONAL STANDARDIZED PATIENT EXERCISE IMPROVES ATTITUDES TOWARDS TEAM CARE Jennifer Staves 1; Mehran Hossaini 2; Lisa Kroon 3; Caroline Lindsay 3; Barbara Newlin 4; Bridget O'Brien 1; Kimberly Topp 1; Maura Wamsley 1. 1University of California, San Francisco School of Medicine, San Francisco, California; 2University of California, San Francisco School of Dentistry, San Francisco, California; 3University of California, San Francisco School of Pharmacy, San Francisco, California; 4University of California, San Francisco School of Nursing, San Francisco, California. (Tracking ID # 11244)

SETTING AND PARTICIPANTS: In 2009-2010, 101 second- and third-year students (23 dental, 26 medical, 21 nursing, 24 pharmacy, and 7 physical therapy) participated in the ISPE that was held 6 times at the Clinical Skills Center at our University. Participants were assigned to interprofessional teams of 4-5 students. One faculty member from each professional school was present at the ISPE, observing teams and leading a debriefing session.

DESCRIPTION: We created the case of “Paul Harris,” a standardized patient (SP) with complex chronic medical conditions. During the 4-hour exercise, students were divided into interprofessional teams. Each student individually interviewed the SP while team members observed remotely. The team then gathered to develop a joint care plan. The exercise concluded with a faculty-led debriefing session in which students reflected on the interprofessional experience.

NEEDS AND OBJECTIVES: Interprofessional education (IPE) is recognized as a valuable means of enhancing communication and collaboration between healthcare professionals. To maximize the benefits of IPE, interventions should emphasize active collaboration between students, reflect authentic clinical settings and roles of participants, and be rigorously evaluated using validated outcome measures. With these needs in mind, we developed and implemented an Interprofessional Standardized Patient Exercise (ISPE) for students from the Schools of Dentistry, Medicine, Nursing, Pharmacy, and Physical Therapy. The goals of the ISPE are to:

1. Enhance knowledge of other healthcare professionals' roles
2. Foster collaboration in patient management
3. Improve communication skills with other healthcare professionals

EVALUATION: We evaluated students' attitudes toward interprofessional team-based care by administering the Attitudes Toward Health Care Teams validated survey to students pre- and post-ISPE. Students' attitudes improved on 2 of the 3 subscales of the survey (which uses a 6-point Likert Scale); Team Value (pre-mean=4.87, SD=.50, post-mean=5.13, SD=.53, p<.001) and Team Efficiency (pre-mean=4.41, SD=.64, post-mean=4.72, SD=.64, p<.001). Attitudes toward Physicians' Shared Role in interprofessional teams did not change significantly (p=.29). We also surveyed students and faculty about their satisfaction with the ISPE, which was high; faculty would recommend the exercise for students in their profession (mean=5.67 on a 6-point scale, SD=1.05) and students would recommend the ISPE to a fellow student (mean=5.34, SD=.89). Perceived achievement of the goals of the ISPE was evaluated through focus groups, in which students across all schools reported appreciation for learning about other professions.

DISCUSSION/REFLECTION/LESSONS LEARNED: We successfully developed and implemented an ISPE for students from 5 health professions. The ISPE was well received by student and faculty participants. Attitudes towards interprofessional teams improved in some, but not all areas after the ISPE. The findings from this ISPE contribute to the growing body of literature on efforts to generate positive attitudes toward interprofessional collaboration early in training, which may influence students' ability and willingness to be active and effective members of healthcare teams in their future careers.

ONLINE RESOURCE URL (OPTIONAL):

DEVELOPING A BOTANICAL MEDICINE CURRICULUM FOR MEDICINE RESIDENTS: A NEEDS ASSESSMENT OF KNOWLEDGE, CONFIDENCE, AND COMMUNICATION Miriam Rahav 2; Miriam Rahav 2; Sharon Leung 3; Darlene LeFrancois 1; Montefiore Medical Center, New York, New York; 2Montefiore Medical Center, Bronx, New York; 3Montefiore Medical Center and Albert Einstein College of Medicine, Bronx, New York. (Tracking ID # 11252)

SETTING AND PARTICIPANTS: Our very large training program (including 114 categorical HS) is located in one of the five poorest Congressional Districts in the U.S., but its wide variety of neighborhoods also includes affluent areas. Residents therefore care for people of all races, with an extensive variety of conditions, psychosocial backgrounds, and resources. Our patients also represent a diverse spectrum of beliefs on health and healthcare. The Botanical Medicine (BM) curriculum will be initiated with all PGY2 categorical residents rotating on their ambulatory month (ACR). This month traditionally incorporates the essential biomedical, behavioral, and epidemiologic elements of a sound ambulatory practice, supporting residents' role as primary care providers to our diverse population. The BM curriculum will be divided into a traditional lecture format as well as 5 short modules to be completed online during ACR. The online modules will have links to resources for further self-study.

DESCRIPTION: All categorical interns (n=38) and residents (n=76) were invited to participate in an online adaptation of a previously validated survey by K. Kemper at Wake Forest University. The survey evaluated participant demographics and exposure to BM in addition to the 3 domains of knowledge, confidence and communication practice. Knowledge score (0-100%) was generated as percent of the knowledge questions answered correctly. Confidence score (range 14-70) was derived from responses to 14 Likert scale questions with “1” indicating “strongly disagree” to “5,” “strongly agree.” Communication practice score (range 0–10) derived from nine items scored as a proportion corresponding to the percentage chosen (0.0 to 1.0); and two yes-no items that were scored as 0.5 for yes and 0 for no. Values were expressed as medians and interquartile range (IQR). Univariate and multivariate linear regression (MLR) was performed, a two-sided P <.05 was considered statistically significant.

NEEDS AND OBJECTIVES: Complementary and alternative medicine (CAM) comprises a diverse set of healing modalities. CAM has grown in the last decade with 2007 estimates placing CAM use prevalence at 38% of U.S. adults; tallying $34 billion in national expenditures. As use of CAM grows so does the need for healthcare providers to provide informed counsel on safe and relevant use. CAM therapies botanicals are the most commonly used, but currently there is no formal curriculum in this area for our categorical housestaff (HS). To target learning needs, we conducted a needs assessment survey focusing on knowledge, confidence, and communication practices, domains considered necessary to achieve the overall goals of practicing and teaching about botanicals at the point of care. Curriculum objectives hope to improve HS competency in these three domains as pertains to the clinical applications and side effects of the 10 most commonly used botanicals in the U.S.

EVALUATION: Of the 114 HS, 86 (75.4%) responded and 76% were female. Personal use of BM was reported by 25% and 14.7% had
to: 1) Integrate interns and PISCES students into resident continuity
interns, and medical students is desirable. Program objectives were
increasing opportunities for teaching interactions among residents,
teaching by an expert because of greater cognitive congruence. Thus,
that, for some content, near peer tea c h i n gm a yb em o r ee f f e c t i v et h a n
at UCSF have had separate continuity clinic days. There is evidence
and residents. Moreover, internal medicine (IM) residents and interns
participated in focus groups. 36 out of 70 residents completed the
2010 regarding their satisfaction with the team model. PISCES students
were reorganized to create a team-based model of care. Teams included
approximately 4 PGY2/PGY3 residents, an LVN, an administrative
structure. More work must be done to better integrate students into
the existing team structure. Although PISCES students reported positive learning experiences in the IM clinic
and appreciated resident interactions when they occurred, they did not
strongly identify as members of their clinic team.

DISCUSSION/REFLECTION/LESSONS LEARNED: Despite the high
prevalence of BM usage by patients, categorical HS had knowledge
deficiencies relevant to the use of 10 common botanicals, greater in
those reporting no history of personal BM use. In the communication
domain, a great majority of HS had not communicated with patients
about the use of botanicals in the last 30 days, nor did they feel
confident in doing so. While history of personal use of BM and prior
formal education in BM predicted confidence, overall scores remained
quite low. Our BM curriculum has the potential to not only impact
knowledge, but enhance confidence by identification of resources for
reference and further study and create a communication practice where
the spectrum of patient health practices is more fully reflected in HS-
patient encounters. Acknowledgement, counseling and documentation of
patients’ botanical use has the potential to impact the accuracy of our
medical record, the safety of our practice and cultural sensitivity of our
providers.

ONLINE RESOURCE URL (OPTIONAL):

INTEGRATING MULTIPLE LEVELS OF LEARNERS INTO AN
INTERDISCIPLINARY TEAM-BASED MODEL OF AMBULATORY
CARE Katherine Julian 1; Bridget O’Brien 1; Maria Wamsley1. 1UCSF,
San Francisco, California. (Tracking ID # 11255)

SETTING AND PARTICIPANTS: In 2008, IM resident continuity clinics
were reorganized to create a team-based model of care. Teams included
approximately 4 PGY2/PGY3 residents, an LVN, an administrative
assistant (AA), and an attending.

DESCRIPTION: In April 2009, we integrated 14 PISCES students into
resident continuity teams at 2 clinical sites and in June 2009, we
integrated 26 interns into the teams. Each team consisted of one
attending, 2-6 PGY2/3 residents, 2-3 interns, one LVN and one AA.
Nine of our ten teams included PISCES students.

NEEDS AND OBJECTIVES: At UCSF, the Parnassus Integrated
Student Clinical Experiences (PISCES), a year-long integrated
clerkship, was developed to enhance continuity experiences for
third-year students. While the PISCES program was well-received,
one limitation was the relative lack of interaction between students
and residents. Moreover, internal medicine (IM) residents and interns
at UCSF have had separate continuity clinic days. There is evidence
that, for some content, near peer teaching may be more effective than
teaching by an expert because of greater cognitive congruence. Thus,
increasing opportunities for teaching interactions among students,
interns, and medical students is desirable. Program objectives were
to: 1) Integrate interns and PISCES students into resident continuity
clinic teams; 2) Promote near-peer teaching among multi-level
learners.

EVALUATION: We surveyed interns, PGY2 and PGY3 residents in spring
2010 regarding their satisfaction with the team model. PISCES students
participated in focus groups. 36 out of 70 residents completed the
survey. 70% were satisfied with the clinic integration and 51% reported
the integration improved informal peer mentoring between intern/residents. 70% reported seeking advice from resident peers in clinic
and 59% reported receiving quality teaching from resident peers in clinic.
78% responded that integrating resident/intern clinic improved colle-
giality. 87% of resident respondents supported the presence of students
on the teams but only 29% of respondents felt that students were
effectively integrated into the existing team structure. Although PISCES
students reported positive learning experiences in the IM clinic
and appreciated resident interactions when they occurred, they did not
strongly identify as members of their clinic team.

DISCUSSION/REFLECTION/LESSONS LEARNED: Integrating intern
and residents together in continuity clinic improved informal peer
mentoring, near-peer teaching, collegiality and the clinic educational
environment. Residents overwhelmingly supported the presence
of students on their clinic teams. However, most residents and students
did not feel that students were effectively integrated into the team
structure. More work must be done to better integrate students into
clinic teams and increase the interaction with interns and residents.

ONLINE RESOURCE URL (OPTIONAL):

GERIWARD: AN INTERPROFESSIONAL TEAM-BASED CURRICULUM
ON CARE OF THE HOSPITALIZED OLDER ADULT
Stephanie Renneke 1; Lynda Mackin 2; Adam Moylan 3; Bree Johnston 2; Meg Wallhagen 3; Vicki Jue 6; Eunice Tam 6; Cindy J. Lai1. 1University of California, San Francisco, San Francisco, California; 2University of California, San Francisco Department of Physiological Nursing, San Francisco, California; 3University of California, San Francisco, Division of Geriatrics, San Francisco, California; 4University of California, San Francisco, Division of Geriatrics and Veterans Administration Medical Center, San Francisco, San Francisco, California; 5University of California, San Francisco, Department of Physiological Nursing, San Francisco, California; 6University of California, San Francisco, Department of Pharmacy, San Francisco, California. (Tracking ID # 11266)

SETTING AND PARTICIPANTS: Third year medical students, 4th year
pharmacy students and graduate nursing students rotating in clinical
participated. Students assembled into interprofessional teams on the
hospital medicine unit for a 2-hour workshop. GeriWard, offered four
times, included 26 medical students, 12 pharmacy students and 13
nursing students during the first six months of a 12-month pilot.

DESCRIPTION: GeriWard consisted of two parts: (1) a two-hour bedside
clinical workshop during which teams interviewed and examined an
older patient from the inpatient service and reviewed one of three
clinically relevant geriatric AAMC competencies: bladder catheter use,
restraints and skin assessment/pressure ulcer staging; and (2) medical
students presented their findings to their inpatient teams. Students
completed pre- and post-workshop surveys on attitudes towards
interprofessional education and self-efficacy around the geriatric
competencies. Within two weeks of the workshop students gave a
presentation to the inpatient team. Hospital-based faculty rated the
presentations on content, knowledge and application to systems-based
practice.

NEEDS AND OBJECTIVES: Health professions students in all dis-
ciplines will care for hospitalized older adults during their training and
in their future careers. These students must be proficient in geriatrics,
including team-based experiences that mirror interdisciplinary care
models. We developed an inpatient geriatrics curriculum “GeriWard” for
students during their clinical rotations. Student objectives were to 1)
identify key geriatric competencies pertaining to the hospital setting; 2)
engage in team-based learning to complete a patient-focused bedside
exercise and 3) present a patient case emphasizing the importance of systems-based practice.

**EVALUATION:** A total of 51 students completed surveys (94% response rate). All students showed improvement in attitudes toward interprofessional education pre and post-curriculum (p=0.001). Students rated their knowledge and self-efficacy on the geriatric competencies higher after participating in the curriculum; for example, after the program 88% of participants were confident in identifying indications for bladder catheters and risk factors for pressure ulcers, compared to only 60% before the curriculum. Using a 5-point Likert scale, over 90% of students agreed or strongly agreed that they learned skills applicable to future practice. Hospitalist faculty rated the student presentations highly, citing the students’ ability to identify geriatric problems, as well as identifying opportunities for quality improvement interventions.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** GeriWard is a novel interprofessional curriculum that combines team-based learning and bedside care of the hospitalized older adult. Students actively engage in the learning process by presenting the patient case back to the inpatient teams. Those experiences can increase students’ self-assessed ability to care for hospitalized older adults within an interprofessional team dynamic and provides a unique opportunity to address how systems issues can directly affect patient care.

**ONLINE RESOURCE URL (OPTIONAL):** https://moodle.ucsf.edu/course/view.php?id=823

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**STAGED IMPLEMENTATION OF A PROGRAM TO IMPROVE RESIDENT PERFORMANCE ON STANDARDIZED EXAMINATIONS**

Kurt Pfeifer 1; Michael O. Frank 1; Susan Davies 1; Heather Toth 1; Monica Ziebert 1; Joanna Rea 1; Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 11267)

**SETTING AND PARTICIPANTS:** The Internal Medicine (IM) Residency Program at our institution is comprised of 99 residents rotating between 3 hospitals and engaging in a variety of inpatient and ambulatory electives and mandatory rotations. Residents’ medical knowledge is assessed yearly using the American College of Physicians (ACP) In-Training Examination® (ITE). This examination focuses on educational objectives expected of a proficient second-year IM resident and is given annually to over 20,000 IM residents. Results are reported by content area and by percentile for an individual resident’s training level. As one means of assessing its educational effectiveness, the Residency Program compares resident ITE scores with their previous scores, national averages and performance on the American Board of Internal Medicine (ABIM) Certification Exam (CE). ITE performance in specific subspecialties is used to assess the effectiveness of related resident rotations.

**DESCRIPTION:** The Residency reviewed resident ITE and CE data and approved implementation of a high-yield board review course conducted near the end of each resident’s final training year. The course was run by faculty with board review experience. Following its launch, improvement was seen in many content areas but not among lower performers. Discussion of these results led to the start of a weekly board review series to teach test-taking skills and curricular material with a CE focus. Initial results suggested further improvement in some content areas but not among the lowest performers. To improve the performance of below average test-takers, a medical knowledge competency policy was instituted to outline interventions for each resident based on their ITE performance. These included use of a learning style survey and counseling on specific study plans based upon the results; advising on test-taking strategies; and limitation of special electives and moonlighting.

**NEEDS AND OBJECTIVES:** 1. Improve resident performance on the American College of Physicians In-Training Examination® and the American Board of Internal Medicine Certification Examination.
2. Provide residents with structured, performance-driven guidance on daily study habits and board preparation.
3. Utilize standardized examinations in curricular development and enhancement.

**EVALUATION:** Since introduction of the yearly board review course, data has shown improvement in residents’ performance deciles from the final-year ITE to the CE in cardiology, endocrinology, gastroenterology, hematologist-oncology and pulmonology (p<0.05 by paired T-testing) for residents whose final-year ITE score was in the 30-49th percentile. However, no significant difference was seen in other content areas or among residents with a final-year ITE score outside this range. Since institution of weekly board review, increases in resident percentile ranks have been seen in general internal medicine, hematologist-oncology, pulmonology and rheumatology (p<0.05) among residents with a second-year ITE score in the 30-49th percentile but only in general IM and hematologist-oncology among residents with a second-year ITE rank in the 12-29th percentile. Resident feedback suggests they strongly value both interventions and considered them major contributors to their CE success.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** As described, the program has continuously evolved over time as the standardized exam challenges of our residents and the limitations of our interventions have become better understood. The program has had a significant impact, but lack of improvement in some content areas has led to further exploration of how board review of these is conducted. A clear target for further intervention is also the group of residents with ITE scores below the 12th percentile. The medical knowledge competency policy focuses a great deal of attention on these individuals, but the impact of these interventions has yet to be determined. Overall, the program has been successful in making some early gains in resident standardized examination performance and in focusing the Residency Program’s resources on this important facet of resident competency.

**ONLINE RESOURCE URL (OPTIONAL):**

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**A CURRICULUM TO TEACH RESIDENTS TEAM-BASED CARE AND POPULATION MANAGEMENT**

Nivedita Ghosh 1; Charles Morris 1; Rebecca Cunningham 2; Lori Tishler 3; Asaf Bitton 3; Brigham and Women’s Hospital, Boston, Massachusetts; Division of General Medicine, Brigham and Women’s Hospital, Boston, Massachusetts; Division of General Medicine, Brigham and Women’s Hospital, Brookline, Massachusetts. (Tracking ID # 11309)

**SETTING AND PARTICIPANTS:** All residents in a Brigham and Women’s Hospital-affiliated continuity clinic will spend a two-week block of ambulatory time at Brigham and Women’s Advanced Primary Care Associates, an innovative internal medicine practice grounded in the patient-centered medical home concept. The practice will be comprised of four physician-led care teams and other shared health professionals, such as a clinical pharmacist, a certified diabetes educator (CDE), and clinical social workers.

**DESCRIPTION:** Through workshops and direct patient care, key non-physician health professionals will educate residents about their scope of practice, their role in the care team, and their unique skills. Residents will develop a toolkit of skills learned from these team members that they can then utilize in their own patient care encounters. To better understand the interactions among team members and patients residents will attend team meetings, shadow patients through a series of appointments, and participate in shared medical appointments.
Finally, residents will learn how to conceptualize patient care beyond individual patients and begin to think about health on a population level. They will be provided diabetic and hypertension quality metrics from their own patient panels and will be expected to devise a plan to systematically assist patients not meeting treatment goals. Importantly, development of this plan will help residents learn how to better utilize resources within their own clinics.

**NEEDS AND OBJECTIVES:** As health care becomes more collaborative, it is problematic that many resident clinics function in more traditional models of primary care without any meaningful integration of non-physician health professionals. Residents are often unaware of alternative practices, know little of the scope of practice of other health professionals, and are unfamiliar with panel management concepts. Given this training, we expect many graduating residents will be ill-prepared to participate effectively in evolving care models. Below are the results of a 9-month process to identify key learning deficits in the traditional resident clinic and a curriculum proposal to help residents work more effectively in an accountable care environment.

All trainees will:
1. Be exposed to new care delivery models
2. Better understand the skills and scope of practice of non-physician health professionals
3. Better understand population management and be provided with personal panel data to encourage population-level thinking

**EVALUATION:** By tracking referrals, we will study if this program encourages residents to augment patient-care through the support of non-physician health professionals. Referrals made to such resources may constitute a proxy for more collaborative and comprehensive care efforts. Tracking the number of referrals to a specific patient-care resource, e.g., a clinical pharmacist, made by residents who were exposed to the program versus an unexposed group may reveal if resident physicians’ behavior has actually changed as a result of the intervention. Asking residents to rate their experience and understanding of team-based care through quantitative and qualitative measures will also be a priority.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** We found that primary care faculty agreed the following professionals had valuable and teachable skills for residents: 1) Clinical social worker- focuses on motivational interviewing, engaging the patient, and risk assessment and counseling; 2) Clinical pharmacist- focuses on optimizing individual regimens for safety, cost, patient acceptability, and best practices; 3) CDE- focuses on glucometer use, insulin use, and diabetic lifestyle education; and 4) Nutritionist-focuses on culturally sensitive diet counseling. Faculty also agree residents must understand the roles of ambulatory Advance Practice Clinicians and Care Coordinators.

**LESSONS**
1) Curriculum development was enhanced by multistakeholder input including the various health care professionals who are best poised to identify their unique skills.
2) Curriculum development has preceded hiring of practice staff allowing educational expectations to be built into job descriptions.
3) Use of personal panel data increases relevance.

**ONLINE RESOURCE URL (OPTIONAL):**

**INTERDISCIPLINARY PALLIATIVE CARE EDUCATION MODULE**
Matthew Ellman 1; Leslie Blatt 2; Susan Asher 2; Diane Viveiros 2; Dena Schulman-Green 1; Margaret Bia 1; Yale School of Medicine, New Haven, Connecticut; 2Yale New Haven Hospital, New Haven, Connecticut; 3Yale School of Nursing, New Haven, Connecticut. (Tracking ID # 11428)

**SETTING AND PARTICIPANTS:** The program was built and instituted collaboratively at the Yale Schools of Medicine and Nursing and Yale-New Haven Hospital (YNHH) Depts. of Religious Ministries and Palliative Care. The web-based component is easily accessed with student ID log-on. The complementary live workshops take place 6 times per academic year. Participants include 3rd year medical students (on the last day of the 2nd month Medicine Clerkship), advanced nurse practitioner students, and masters-level divinity students who are enrolled in or have completed a clinical pastoral inpatient rotation. Both components of the program are required of all 3rd year medical students at our institution, and during the program’s 2nd year, became a requirement for advanced nursing students in the adult and geriatric track. The program is optional for divinity students, but most students enrolled in the YNHH clinical pastoral rotation have participated.

**DESCRIPTION:** This innovative “blended” curriculum has 2 components: 1) an online, interactive clinical case module; 2) a live workshop with multi-disciplinary faculty. Students independently work through the online case, which explores the clinical course of a patient with end-stage breast cancer. The module contains a variety of didactic features and challenges students with issues in spirituality, family dynamics, and goals of care. Students free text their responses to 4 reflections focusing on spiritual and cultural aspects of the case and the interdisciplinary team. In the live workshop, students work collaboratively in small groups discussing palliative care issues that cross-professional lines (e.g., balancing hope / truth telling; patient requests for prayer; cultural biases). Finally, to experience first hand the contributions of diverse professionals, each small group collaborates to develop a plan of care for a newly presented clinical case.

**NEEDS AND OBJECTIVES:** Graduating medical and other health professional students often do not feel adequately prepared to care for patients towards the end of life, especially with regards to the spiritual and cultural aspects of palliative care. In addition, few opportunities exist for students to learn how to work effectively on an interdisciplinary team providing care near the end of life. We created, implemented, and evaluated an educational module for medical students and other health professional students within the following 5 learning objects: 1) To understand the basic precepts and goals of palliative care; 2) To recognize and address common misconceptions about opioids; 3) To identify spiritual and cultural needs of patients and understand how to meet these needs; 4) To understand the clinical features of imminent death and how to help the patient/family at that time; 5) To recognize the contributions of all health care professionals and understand the importance of the interdisciplinary team.

**EVALUATION:** We evaluated 10 cycles of the program (2009–10), in which a 148 medical, 46 nursing, and 25 chaplain students participated. Qualitative analysis of student online reflections showed nurses to be the most holistic in their clinical assessments, with physicians focusing on care planning, and chaplains most adept at considering nuances of spiritual issues; however, participants recognized issues beyond their own discipline. Results from a questionnaire for 214 students (Likert scale anchors: 5=Strongly Agree; 1=Strongly Disagree) are shown here (Mean (St. Dev.)): 1) I have greater understanding of the importance of addressing spiritual needs of patients with terminal illness - 4.4 (0.89); 2) I have a greater understanding of contributions of other health care professionals & the importance of the interdisciplinary team in caring for dying patients - 4.4 (0.91); 3) The combination of the online interactive case & interdisciplinary discussion groups facilitated learning - 4.3 (0.91).

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Two features distinguish this program: (1) its interdisciplinary emphasis both in content and in learning format. Our qualitative analysis shows that students become aware of the roles that other professionals play on the interdisciplinary team and that they recognize the importance; (2) its
“blended” curriculum (online module and live workshop) with special focus on spiritual/cultural aspects of palliative care. Student self-reports on the value of the learning experience suggest that the program imparts important palliative care content. The interdisciplin ary workshop can be challenging to schedule without a working relationship with faculty in other disciplines who have access nursing, divinity and social work students. However, we believe that this palliative care learning module is a flexible tool to facilitate interdisciplin ary learning and is likely adaptable for use in other educational settings.

ONLINE RESOURCE URL (OPTIONAL): http://learn.yale.edu/im/palliative2/

TEACHING ACGME CORE COMPETENCIES VIA AN AMBULATORY MEDICINE CURRICULUM: A RETROSPECTIVE REVIEW OF THE AMBULATORY CURRICULUM FOR THE UHCMC/CLEVELAND VAMC INTERNAL MEDICINE RESIDENCY PROGRAM Ronda Mourad 1; Karen Horowitz 2; Simran Singh 1; Keith Armitage 2; David Aron 1; Sarah Augustine 1; Susan Kirsh 1; Megan McNamara 1; Eleni Pelcancos1; Louis Stokes Cleveland VAMC, Cleveland, Ohio; University Hospitals Case Medical Center/Louis Stokes Cleveland VAMC, Cleveland, Ohio. (Tracking ID # 11450)

SETTING AND PARTICIPANTS: The University Hospitals Case Medical Center/Cleveland Veteran Affairs Medical Center (UHCMC/VAMC) IM Residency is an ACGME accredited program designed to train residents to become well rounded general internists or subspecialists. There are 123 residents, with 27 categorical IM interns and 4 medicine-pediatrics interns. General Medicine faculty supervise resident continuity clinics at UH and VAMC. Residents also receive ambulatory training during urgent care, geriatric, and elective rotations where they may choose amongst 30 subspecialty clinics. The Ambulatory Block provides a setting to transmit medical knowledge as well as model core values specific to Ambulatory Medicine. UHCMC/ VAMC categorical interns (31 in total) are divided into three groups. Each group experiences this block in a 1-month rotation which includes 28 clinical sessions (continuity and subspecialty clinics) and 12 didactic workshops.

DESCRIPTION: Content delivered in each workshop was reviewed to specifically assess the extent to which the competencies are represented. Each workshop leader was asked to reflect on his or her work and describe how each session incorporated the ACGME competencies. A table was constructed to summarize the workshop educators’ self-assessment results. Additional opportunities to strengthen the presentation of core competencies in this curriculum were identified by this peer review.

NEEDS AND OBJECTIVES: Ambulatory medical education represents only 30% of the educational exposure time in the typical Internal Medicine (IM) Residency yet ambulatory practice is the primary activity for the average practicing internist. A strong ambulatory curriculum is vitally important to the training of IM residents. The intent is to create physicians who are mindful of the core values of patient care as outlined in the six ACGME competencies (patient care, medical knowledge, practice based learning and improvement, communication, professionalism, systems-based practice) as they move forward in their residency. The ambulatory program offers educators the opportunity to overtly model the core competencies. By self-reflection throughout residency, residents are expected to apply these values in patient interaction and clinical decision-making across all venues.

EVALUATION: Review of the ambulatory curriculum led to the conclusion that the ACGME competencies are pertinent to each didactic workshop. Opportunities exist to model and teach all six competencies in each workshop. Interestingly, some educators were unable to identify and report how the competencies were pertinent to their own workshops.

DISCUSSION/REFLECTION/LESSONS LEARNED: Translating ACGME competencies overtly to residents is desirable. With educators focusing on the ACGME competencies as threads in their didactic workshops, residents can be expected to incorporate these competencies into their care of patients. Future directions include: 1) feedback to educators on additional opportunities to incorporate teaching points related to each of the six competencies; 2) development of an orientation session focusing the learner on the competencies as a framework for future learning; 3) development of a tool to assess residents’ ability to identify these lessons after each workshop; 4) development of standardized clinical scenarios as an assessment tool to gauge residents’ abilities to apply the competencies.

ONLINE RESOURCE URL (OPTIONAL):
into medical residency education. Hence, we developed POCHS, our Systems- Based Practice curriculum.

Our objectives are 1) To describe the implementation and evaluation of POCHS 2) To evaluate its impacts on residents’ knowledge as measured by our knowledge assessment tool 3) To evaluate its impact on resident’s awareness and attitudes towards the changing healthcare system as assessed through open ended interviews and 4) To obtain residents’ perceptions and feedback on aspects of the course that could be taught differently.

**EVALUATION:** Both quantitative and qualitative measures are used. The quantitative assessment includes a 50-item, pre- and post-course survey that assesses knowledge of key topic areas. The residents’ perceptions of the course are measured with a summative evaluation. This evaluates each instructor, the venues for teaching and the course content.

The qualitative evaluations are comprised of comments that are recorded on their summative evaluation forms and assess whether their awareness of the healthcare system has increased and whether their attitudes towards systems-based practices have changed.

From 2008-2010, 135 residents completed the course. All had a mean increase of 18 points in knowledge scores. The course averages 4.5 on a scale of 1-5, 5=one of the best residency rotations. The qualitative comments theme around increased awareness because they were never taught this material, feeling more comfortable with entering practice and the necessity of this course.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** POCHS provides a framework for how to teach residents about emerging changes in health care. It is obvious that this course is needed and valued. With changes in healthcare, it is crucial that all residencies afford their trainees a similar curriculum. Based on our literature review a similar curriculum is not offered in most residencies. Our curriculum can serve as a template to other residencies. This material is important because it assists in producing more versatile physicians- which is exactly what the new face of generalism, the 21st century physician will be. Further it complies with the ACGME’s core competency of systems-based practice.

Although a success POCHS demonstrated that many next steps need to be taken. The course provides knowledge and raises awareness of core issues yet the next step is to expand its objectives to include translating that knowledge beyond awareness and into skills that are then applied to clinical practice.

**ONLINE RESOURCE URL (OPTIONAL):**

**QUALITY IMPROVEMENT EDUCATION THROUGH A RESIDENT-DRIVEN PROGRAM** Jennifer Carnahan 1; Elizabeth Ellen Lawler 1; Zouyan Lu 1; Christopher Mueller 1; Pinky Patel 1; Geoffrey Lamb 1; Jaishree Hariharan 1; Theodore MacKinney 1; 1Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 11500)

**SETTING AND PARTICIPANTS:** The Internal Medicine Residency Program at the Medical College of Wisconsin (MCW) is comprised of 99 residents rotating between three hospitals. Residents have continuity clinic one half-day per week in one of six clinical sites. The QI educational program is implemented yearly and involves participation from all residents. Unique to this educational program is that the medical residents themselves are the architects of the quality improvement initiatives. A core group of resident leaders meets monthly to plan and direct the program. Members of the faculty with QI experience serve as mentors to this group.

MCW participates in the Wisconsin Collaborative for Healthcare Quality (WCHQ), a nationally recognized collaborative of health care systems throughout the state that coordinates public reporting of health care quality measures in our state. Reporting measures and other data from WCHQ serve as guides for the development and measurement of the residents’ QI interventions.

**DESCRIPTION:** The QI program was introduced early in the 2009/10 academic year and focused on quality measures from the WCHQ. It was rolled out in a series of stages, beginning with faculty providing basic education on QI and the target quality measures. The core group of QI residents leaders was then formed and responsibility for the project was transitioned to them.

All residents performed patient panel chart reviews. Then, the QI resident leaders led a series of educational sessions with the residents to develop quality improvement initiatives at each clinic site. In these sessions, they performed root-cause analysis and process mapping to determine potential quality detractors and then selected one for the QI intervention at each site. Later sessions focused on the multidisciplinary implementation of these interventions. Throughout the process, faculty mentors provided guidance to the residents and resident QI leaders on the QI process as well as how to bring about change through leadership.

**NEEDS AND OBJECTIVES:** 1) Provide for medical residents a foundation of education in quality improvement (QI) that will be applicable for the duration of their careers.

2) Develop a residency-wide program to contribute to meeting the Accreditation Council for Graduate Medical Education requirements for practice-based learning.

**EVALUATION:** Initial data from the 2009/10 academic year QI project shows that prior to the educational intervention only 52% of residents were comfortable using measurement to improve their clinical skills.

After the intervention 85% reported feeling comfortable. Other areas of great improvement in QI education include use of the Plan-Do-Study-Act (PDSA) model and identifying how data is linked to specific processes. The comfort level increased from 16% to 59% in the first area and increased from 37% to 78% in the second. Furthermore, 78% of residents rated the QI educational program as good or very good.

The institution as a whole also showed improvement on WCHQ rankings. Initially the rate of compliance with colorectal cancer screening was only 58.5% however, after this initiative the rate of compliance increased to 64.8%.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Overall, residents have responded positively and have been enthusiastic to implement the interventions. They have demonstrated an increased awareness of quality measures and an improved understanding of how to implement systems change in a multidisciplinary care system. Although coordination of a project with many residents of varying knowledge and skills was challenging, it was beneficial to have residents lead the planning and execution of this QI project, which allowed more participation and investment into its outcomes. Other intended outcomes of this QI project are to improve patient care and share lessons learned with others and early data suggests that gains have already been made.

Some clinics have demonstrated an improvement in documentation of QI measures and outcomes. Residents have already disseminated their work to practitioners outside of our network. Ultimately, current residents will pass their newly acquired QI knowledge on to future residents in the program.

**ONLINE RESOURCE URL (OPTIONAL):**

**IMPROVING ORAL CASE PRESENTATIONS USING A CURRICULUM BASED ON CLINICAL REASONING SKILLS** Dalal Alromaihi 1; Eduardo Castillo 2; Kimberly Baker-Genau 3; Eric Secher 4; 1Henry Ford Health System, Dearborn Hts, Michigan ; 2Henry Ford Health System, Detroit, Michigan ; 3Henry Ford Health System, Northville, Michigan ; 4Henry Ford Health System, Troy, Michigan. (Tracking ID # 11501)
SETTING AND PARTICIPANTS: This was an interventional study. An Oral Presentation Curriculum and an evaluation tool were developed by two Chief Medical Residents under the supervision of the Internal Medicine Program Director and the Designated Institutional Official. The study took place at Henry Ford Hospital, Detroit, MI between January and May of 2009. The facility used was the Simulation Center at the Henry Ford Hospital and included a conference room and examination rooms where encounters were videotaped. The study included a convenience sample of Internal Medicine residents who were on an elective rotation during the timeframe of the study. A signed consent was obtained from all the participating residents and the study was approved by the Institutional Review Board at Henry Ford Hospital.

DESCRIPTION: The study participants underwent 4 sessions. During the first session, residents observed a videotaped patient-physician encounter and then reviewed a printed summary of the physical examination and diagnostic study results for the simulated patient. The data contained both relevant and non-relevant information. The residents then formulated oral case presentations that were videotaped. In the second session, a curriculum was presented by two course instructors and consisted of a PowerPoint presentation and two videos of different case presentations, which were reviewed by the group. In the third session, the residents’ presentation skills were re-evaluated by completing a second case presentation simulation exercise that described a different encounter. The first 3 sessions took place within 10 days. A month after the intervention, the residents completed the third videotaped case presentation simulation exercise to evaluate the sustainability of the effectiveness of the curriculum.

NEEDS AND OBJECTIVES: The oral case presentation is a fundamental tool for successful communication. Deficiencies in presentation skills may result from unrefined clinical reasoning skills or deficits in training. Faculty may expect a certain skill level of the presenter, which requires an understanding of the clinically relevant elements. Trainees learn how to organize their presentations based on feedback during clinical rotations. However, during the first year of training there is an opportunity to assist learners in development of concise oral presentation that is based on clinical reasoning rather than reporting unprocessed data. The objective of our intervention was to design a curriculum to teach the first year residents how to use clinical reasoning skills to differentiate relevant from non-relevant information to improve their presentation quality and length. We also developed an evaluation tool, The Henry Ford Assessment, to objectively assess the quality of the oral case presentations.

EVALUATION: 13 out of the 37 Internal Medicine residents were selected for the study and underwent all four sessions. An evaluation tool, The Henry Ford Assessment, was developed to assess the quality of the case presentations, which consisted of 15 items, each one with a 7-level Likert scale. The tool was developed based on items considered to be important during case presentations by the authors and several published papers on the subject. The presentations were also timed. The scores of the three exercises were compared. There was a significant difference between the scores of the first and second exercise (74.2±9 vs. 89.1±5.5) (p<0.001) as well as between the first and the third exercise (74.2±9 vs. 85.6+6) (p=0.001). The total time of the presentations decreased significantly between the first and second exercise (7.6+2.1 min vs. 5.9±1.9 min) (p<0.001) and between the first and third exercise and (7.6±2.1 min vs. 6.1±2 min) (p=0.006).

DISCUSSION/REFLECTION/LESSONS LEARNED: Case presentations are fundamental to successful communication of clinical data in patient care and resident education. Unfortunately there is no standard curriculum or evaluation tool for case presentations. We created a curriculum that improved the residents’ case presentations and an assessment tool to evaluate these presentations. We found that our curriculum significantly improved the quality and decreased the time of the presentations. This effect was sustained one month after the curriculum. The evaluation tool is being re-evaluated based on findings. A revised tool will be pursued. Mastering the important skill of concise, accurate and relevant case presentations early in the training would improve the communication of patient information and the efficiency of time utilization during teaching rounds. This curriculum can potentially be adapted to improve oral presentations for residents and medical students across different programs.

ONLINE RESOURCE URL (OPTIONAL):
**DISCUSSION/REFLECTION/LESSONS LEARNED:** Thus far, our outcomes include clinical measures such as a decrease in hospital utilization and improvement in A1C levels, though future directions include assessing resident knowledge and attitudes regarding PCMH principles and using surveys looking at interdisciplinary work amongst clinic personnel. We have had support from the Department of Internal Medicine for help in funding various aspects, including hiring a full time nurse coordinator and having pharmacy support. We have shown that developing a PCMH within a resident continuity clinic is feasible. Instituting a PCMH in a resident continuity clinic meets multiple educational goals including interdisciplinary teamwork, systems based practice and practice based learning. By establishing a PCMH in a resident continuity clinic, residents are learning the principles of the PCMH by performing them, incorporating them into regular practice, thereby better preparing them for a future in primary care.

**ONLINE RESOURCE URL (OPTIONAL):**

**USING MULTI-MEDIA TO TEACH MEDICAL STUDENTS DIABETES MANAGEMENT AND ENHANCE CLINICAL SKILLS** Jaishree Hariharan 1; Judi Rehn 1; Jessica Kahle 1; Dawn Bragg. 1 Medical College of Wisconsin, Milwaukee, Wisconsin; 2 Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 11561)

**SETTING AND PARTICIPANTS:** The M4 class consists of 200 students who participate in an ambulatory medicine clerkship at our institution. Twenty students rotate monthly and an emphasis on use of guidelines for evaluation and management of common medical conditions was introduced in 2009. They are provided with an iPod touch to augment learning and access web-based curricular materials. As part of a learning resources grant to integrate chronic disease management into student education using technology, podcasts of lectures and instructional videos were created using technology experts and housed on our web platform. A pocket reference card for stepwise medication management in diabetes previously developed by a team of health professionals in our institution was available for decision support.

**DESCRIPTION:** The blended learning curriculum to teach evidence-based diabetes care is part web-based, self-study and part face-to-face. At the beginning of the month, the students are provided with access to lecture podcasts, video clips, reading materials which included evidence based guidelines, pocket cards and six cases. Video podcasts included patient evaluation, comprehensive diabetes management including medications, demonstration of diabetes supplies and self management support. Podcasts could be viewed through iTunes from the web-portal or downloaded onto their iPod. Students were given 2 weeks to review the podcasts and guidelines and prepare for case discussion in class. Class time was used to review guidelines and apply the knowledge learned to the clinical cases in an open interactive format with faculty. At the end of the course, students completed an anonymous questionnaire focused on the quality, knowledge and confidence gained from the course.

**NEEDS AND OBJECTIVES:** The high prevalence of chronic illness in the US, particularly diabetes calls for training that is designed and organized to provide high quality care. Medical students’ competency to understand chronic disease management is essential to become good clinicians. Evolving web-based technology is having an impact on efficient delivery of medical education and patient care. Our objectives were to develop a web-based multi-media integrated educational experience into medical student curriculum aimed at improving medical student knowledge and confidence in diabetes evaluation and medication management.

**EVALUATION:** Fifty-five students participated between March and November 2010. Cronbach’s alpha of the Likert-scaled questions showed high reliability at 0.86. 84% rated the quality of the webcasts as good. 95% agreed that the videos provided practice-based learning and knowledge. 100% reported that the course met stated objectives and 89% would recommend it to a fellow student. Self-reported knowledge and confidence before and after the course was ascertained using a 5-point scale (1=very high). Preliminary analysis using Wilcoxon signed rank test showed significant improvement in knowledge of principles of diabetes management (N=20) from mean of 2.95 to 2.35 after (p=0.001). Confidence to titrate medication improved from mean of 3.45 to 2.7 (p=0.001).

**DISCUSSION/REFLECTION/LESSONS LEARNED:** This program was the first at our institution to attempt a technology-based blended learning method, and it has helped us deliver content and enhance learning in a format that addresses multiple learning styles. It allows flexibility with scheduling and pace of learning and provides a balance of traditional instructor led training, asynchronous online study, and structured point of care training with clinical cases. Our results show that students’ knowledge of diabetes and confidence in management improved with this approach.

**ONLINE RESOURCE URL (OPTIONAL):**

**DIABETES RX: AN INNOVATIVE MOBILE DIABETES MANAGEMENT APPLICATION ON THE IPOD TOUCH** Jaishree Hariharan 1; Kimberly Brennan 1; Michael Phillips 1; Jan Nelson 1; Deborah Gillard 2; Irene O’shaughnessy 1. 1 Medical College of Wisconsin, Milwaukee, Wisconsin; 2 Froedtert Hospital, Milwaukee, Wisconsin. (Tracking ID # 11562)

**SETTING AND PARTICIPANTS:** The M4 class consists of 200 students at our institution who are provided with an iPod touch to augment learning and access web-based curricular materials. Twenty students participate monthly in the ambulatory medicine clerkship and as part of a required competency in the use of guidelines in clinical practice receive instructional materials, laminated pocket cards and diabetes cases for homework. Feedback on the content of the pocket cards was very positive, however continued use is unclear. Diabetes Rx is a mobile management tool being developed to replace the existing pocket cards as part of a learning resources grant to integrate chronic disease management education into student curriculum utilizing advances in technology. It will be piloted during their ambulatory clerkship.

**DESCRIPTION:** This custom application essentially converts a paper pocket reference chart into a digital format with a striking overall look and feel to the popular drug database tool, Epocrates. Choosing from Insulin or Oral agents, the user is guided through menus based on glycohemoglobin and creatinine branching through dosing and titration options to achieve the optimal therapy for the patient. Phase 1 involves building the application using Apple’s SDK and Objective C software for deployment on an iPod Touch, iPhone, or iPod device. Phase 2 involves testing the application for both content and functionality with a small group of users and modified after feedback. Users can install it by importing the app into iTunes and syncing their device. Phase 3 will include dissemination using the enterprise distribution method, made available to all students and accessed via a password protected website or file sharing system.

**NEEDS AND OBJECTIVES:** Medical decision-making in diabetes management is complex. The critical piece is using an evidence-based approach to medication management. Guidelines provide the framework, but the devil is in the details. Pocket reference cards for stepwise medication management of diabetes were developed at our institution using current guidelines for teaching medical students and residents and updated yearly. Although the cards are useful, regular updating is time consuming and expensive. Evolving web-based technology is
Health Disparities: Awareness to Action

Cristina M Gonzalez
Albert Einstein College of Medicine- Montefiore Medical Center, Bronx, New York.

Setting and Participants: The elective, “Health Disparities: From Awareness to Action,” was offered on a voluntary basis to first-year medical students at the Albert Einstein College of Medicine (AECOM). AECOM is located in the Bronx, NY, and its affiliated hospitals serve a predominantly ethnic and racial minority population. Prior to this elective, there was one session on HD in the third year of undergraduate education. In 2009, a pilot elective on HD was approved by the Dean of Education. The following year, course evaluations were presented to the Dean of Education and an education executive committee and the elective was expanded to include sessions on advocacy skills. In 2010, a total of eleven students participated in the course. The thirteen 1.5-hour sessions occurred over a three-month period during the lunch breaks between mandatory courses with lunch provided. Attendance was voluntary, but typically sessions included six to ten students.

Description: The curriculum was divided into three areas with the final session for evaluation:

1. Background (four sessions): Sessions included computer-based modules summarizing the HD literature, videos introducing the social determinants of health, and small group discussion with community health advocates.
2. Provider Contributions (three sessions): Skill building sessions prepared learners to recognize implicit biases and minimize the influence of bias on patient care. Learners completed the Implicit Association Test (IAT), participated in case-based discussion groups, and practiced culturally sensitive interviewing techniques.
3. Advocacy Skills (five sessions): Skill building sessions prepared learners to address the social determinants of health through advocacy and social change. Sessions included strategy for advocacy campaigns, community outreach, physicians’ professional organizations, media communications, and legislative advocacy.

Needs and Objectives: Health and health care disparities (HD) are well documented. The importance of health disparities education (HDE) in the undergraduate medical curriculum is recognized by the major accrediting bodies, and guidelines for HDE were recently published, yet many medical schools still lack formal curricula on HD. After an initial pilot elective based on SGIM recommendations for HDE, our own focus group interviews with the intended learners, we developed an innovative curriculum emphasizing both the epidemiology of HD and skills necessary to address HD. Course objectives were as follows: (1) Learners will define HD and list examples of diseases where disparities are evident; (2) Learners will demonstrate confidence in utilizing clinical skills targeting provider contributions to HD; (3) Learners will demonstrate confidence in developing advocacy skills targeting social contributions to HD.

Evaluation: Learners completed questionnaires at course inception and completion. Items assessing confidence in knowledge and skills relating to HD were rated on a four-point Likert scale. Seven students completed both questionnaires. Changes in confidence were examined using paired T-tests. Learners demonstrated increased comfort in defining HD, social determinants of health, and implicit bias, and increased awareness of mistrust, communication, and physician contribution to HD. Learners also increased confidence in their advocacy skills. Perception of personal subconscious bias did not change.

Qualitative responses identified several positive aspects of the course that facilitated learning: the small group environment, enthusiasm of faculty, and focus on development of practical skills. Suggestions for improvement included: additional experiential learning and longitudinal integration into the four-year curriculum.

Online Resource URL (Optional): http://www.mcw.edu/general/Linksofinterest/DiabetesRx.htm

Teaching Without Lectures in the First Year: The MUSC Integrated Curriculum Synthesis Module

Jeffrey G. Wong
Debra J. Hazen-Martin; Donna H. Kern; Matthew D. McEvoy
Medical University of South Carolina, Charleston, South Carolina.

Setting and Participants: In 2009, MUSC adopted a systems-based pre-clinical curriculum. The goal for curriculum reformulation was to explicitly demonstrate relevance to the students between the basic science material being presented and their development as a patient-centered student physician. Four-year-long themes [Structure-Function, Molecules-Energetics, Homeostasis-Regulation, and Fundamentals of Patient Care] were organized vertically into educational systems Blocks [Musc-skeletal, CV/Resp, Renal/GI, GU/Reprod, and Cognition]. Each Block began with a video-taped patient whose underlying conditions became the clinical framework from which the Blocks’ overall learning goals/objectives were derived. The video for this final Block was of a patient-actor whose broad-ranging underlying...
conditions (physical, mental, cultural, socioeconomic), encompassed the breadth of material from the entire year. Six broad review topics (based on the Blocks and the Fundamentals theme) were derived from the video.

DESCRIPTION: Organizationally, all 165 first year students learn throughout the year in small groups (COM TEAMs) comprised of 8-9 students and 1–2 teachers. Following the Synthesis Block video presentation, all students were assigned to one of the 6 broad topic groups - every COM TEAM had at least one student in each of the 6 groups. Broad topics were further subdivided into 3 major subtopics creating 18 in total, each with a list of review questions pertinent for mastery of the large topic. For each subtopic, 9–10 students worked collectively researching the answers and creating an academic poster displaying the content material for their subtopic. Faculty experts within each content block served as resources but did no active “teaching”. Students had no other academic commitments during this week. All 18 posters were displayed during the Synthesis Block Poster day when the students reconvened in their original COM TEAM groups and presented her/his poster to her/his other COM TEAM members.

NEEDS AND OBJECTIVES: The Medical University of South Carolina (MUSC) is two years into its curricular reformulation of its pre-clinical course work. We wished to design and implement an educational review module for our students that would: (1) promote self-directed learning; 2) allow independent group-work with formal peer teaching and assessment; 3) provide all students the experience of creating an academic poster; and 4) provide all students the opportunity for a formal academic presentation.

EVALUATION: The students, on a tightly scheduled agenda, rotated through the 6 presentation rooms where, at any one time, 6 simultaneous talks were made. Each student evaluated their COM TEAM peers’ using a 5-point Likert-type scale that assessed the quality of the speaker’s 20 minute oral poster presentation. Students also collectively assessed one another’s effort during the research and poster preparation phase. Faculty teachers used the same evaluation tool to assess the student’s performance. Working collaboratively, the students were forced out of the passive learning seen in most large group lectures and were compelled to take an active role in researching answers to questions and applying content material to a “real” patient case. Each of our 165 students had the opportunity to participate in the creation of a poster and each student individually made an academic presentation to her/his peers and faculty members. The student evaluations from the exercise were extremely positive.

DISCUSSION/REFLECTION/LESSONS LEARNED: Our Synthesis review module was totally devoid of lecture, comprised of direct, hands-on collaborative team learning, required students to be self-directed in their education, and provided each one the opportunity to create an academic poster and make an academic presentation in front of one’s peers. Through this innovative educational activity, we were able to better approximate the higher rungs on Harden’s Integration Ladder (R Harden, Medical Education 2000, 34:551–557) and work toward achieving our institutional goals of true curricular integration.

ONLINE RESOURCE URL (OPTIONAL): A REQUIRED, SHORT PALLIATIVE CARE ROTATION FOR FIRST-YEAR INTERNAL MEDICINE RESIDENTS - Brook A. Calton 1; Adam Moylan 2; Eric Widera3. 1UC San Francisco, San Francisco, California; 2UC San Francisco & The Veterans Affairs Hospital, San Francisco, California. [Tracking ID # 11696]

SETTING AND PARTICIPANTS: The palliative care rotation takes place at the Veteran Affairs (VA) Medical Center in San Francisco, CA. The medical center inpatient facilities consist of a 120 bed hospital and a neighboring 108 bed Community Living Center (CLC). The Hospice and Palliative Care Service is consulted on approximately 1–2 new patients per day at both of the inpatient facilities. An attending, palliative medicine fellow, social worker, chaplain, and psychologist staff the consult service. The service also provides primary care for a 10-bed inpatient hospice unit housed within the CLC that admits approximately 100 new patients per year. All 44 categorical, PGY-1 internal medicine residents at UC San Francisco (UCSF) complete the palliative care rotation during an ambulatory block month in the 2010–11 academic year.

DESCRIPTION: Residents spend 4–4.5 days on the rotation. They primarily work with the Palliative Care Consult Service, but occasionally also admit patients to the inpatient hospice unit and follow them for the duration of their rotation. Residents evaluate and provide recommendations for VA patients on end-of-life issues including symptom management and goals of care. They also attend an interdisciplinary palliative care team meeting and receive instruction from attendings and fellows on 3 predefined topics: palliative care theory and end-of-life care models, pain management, and facilitating family meetings.

Residents evaluate the rotation via a questionnaire emailed to them on their final day on the service. The questionnaire gathers data on the types of experiences residents have while on the rotation, measures residents’ perceived comfort and knowledge of specific palliative care topics before vs. after the rotation, and queries residents’ impressions on the rotation’s strengths and weaknesses.

NEEDS AND OBJECTIVES: Graduating fourth-year medical students and first-year Internal Medicine residents report a lack of comfort and skill in providing end-of-life care. A recent study suggests the only predictor of resident’s perceived competence in providing end-of-life care is clinical experience in the area. Recently, licensing bodies, including the ACGME and ABIM, have addressed this educational gap by requiring curricula and mandating resident competencies in palliative care. Despite this, there are only three required palliative care rotations for internal medicine residency programs described in the literature. All of these rotations were at least one week long and none targeted first year residents. In 2009, UCSF developed a required, short (4–4.5 day) palliative care rotation for all PGY-1, categorical, Internal Medicine residents to increase their knowledge and comfort in providing end-of-life care. This project was supported in part by a Donald W. Reynolds Foundation Grant at UCSF.

EVALUATION: Evaluation is ongoing. All 20 residents who completed the rotation also filled out the questionnaire. Regarding residents’ clinical activities on the rotation: 100% discussed goals of care with a patient/family, 95% adjusted pain medications, and 85% sat in on, but only 20% led, a family meeting. 50, 60, and 35%, respectively, received lectures on palliative care theory and end-of-life care models, pain management, and family meetings.

All residents felt the rotation increased their comfort in discussing goals of care (50% strongly agreed, 50% somewhat agreed) and their ability to treat symptoms at the end-of-life (45% strongly agreed, 55% somewhat agreed). 95% of residents strongly agreed the rotation increased their belief that palliative care is valuable to patients and families.

Reported strengths of the rotation included dedicated time to learn pain management and how to facilitate family meetings. Residents felt the rotation could be improved through more formalized didactics.

DISCUSSION/REFLECTION/LESSONS LEARNED: Our preliminary data suggests our required palliative care rotation improves first-year residents’ perceived comfort with, and self-perceived knowledge of, key palliative care issues. A novel aspect of this intervention is the short duration of the rotation, at only 4–4.5 days, making it more realistic to implement at other institutions than longer rotations. The short
duration and the focus on experiential learning led to variability in the extent to which residents received lectures on the three predefined core topics. Many residents suggested more formal didactics would strengthen the rotation. In the future, we should consider building in more structured case-based learning. To further evaluate the impact of this rotation, we should consider a more rigorous research design that includes the use of a control group and either pre/post intervention self-efficacy questionnaires or other validated palliative care knowledge assessment tools.

**ONLINE RESOURCE URL (OPTIONAL):**

**PROCEDURE CLINIC DOUBLES MEDICAL RESIDENTS’ EXPERIENCE IN DOING KNEE AND SHOULDER INJECTIONS.** Ruth Preisner 1; Leonard Jenkins 2; Ajay Khurana 2. 1VA Pittsburgh Healthcare System, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania; 2Veterans Administration Pittsburgh Healthcare System, Pittsburgh, Pennsylvania. (Tracking ID # 11700)

**SETTING AND PARTICIPANTS:** University of Pittsburgh post-graduate year (PGY)-3 internal medicine residents in the General Medicine Track are required to rotate through the Veterans Administration Pittsburgh Healthcare System’s (VAPHS) PCPC. Other PGY-3 residents may elect to do so.

**DESCRIPTION:** PCPC occurs the same afternoon each week. Three faculty members rotate staffing. A PCPC consult, a computer order entry, is available to all primary care providers in the VAPHS. The most common referrals include knee and shoulder injections and cryotherapy of skin tags and warts. Other consults have included trochanteric bursa, lateral epicondyle, and other bursae injections.

**NEEDS AND OBJECTIVES:** Musculoskeletal problems comprise approximately 25% of primary care visits. Knee injections are among the most frequent procedures performed by internists. Our medical residents report too few opportunities (2-3 knees and 0-1 shoulders per trainee).

Establishing a primary care procedure clinic (PCPC) will increase the number of procedures performed by residents.

**EVALUATION:** Since June 2009, 5 PGY-3 residents have rotated through the PCPC. Together they have performed 39 (average 7.8, lowest 4 per resident) knees and 16 (average 3.2, lowest 2 per resident) shoulder injections. All residents were evaluated by faculty in their e-portfolios as “being able to independently perform knee and shoulder procedures”.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** On average, residents who rotated through the PCPC more than doubled their procedure numbers. All were judged to be able to perform knee and shoulder procedures independently. The VAPHS PCPC is a procedure rich environment allowing residents to increase their experience in performing knee and shoulder injections. Residency programs should consider establishing similar procedure clinics.

**ONLINE RESOURCE URL (OPTIONAL):**

**QUALITY AND SAFETY TRACK: A PILOT PROGRAM TO DEVELOP STUDENT LEADERS IN QUALITY IMPROVEMENT AND SAFETY JST.** Julie Oyler 1; Lisa Vinesis 1; Vinny Arora 2. 1University of Chicago Medical Center, Chicago, Illinois; 2University of Chicago Medical Center, Chicago, Illinois. (Tracking ID # 11710)

**SETTING AND PARTICIPANTS:** All first year medical students (MS1s) receive four introductory lectures on quality and safety. We then developed a 10 week elective for students interested in participating in QST. The once weekly, two- hour elective, combined lectures on QI principles with hands-on exercises using real hospital quality data. Students evaluated Center for Medicare Services (CMS) quality data on the www.hospitalcompare.org website and developed a group project.

**DESCRIPTION:** Faculty used materials previously used in a QI curriculum for medicine residents and faculty to teach principles of writing aim statements, developing process maps, interviewing stakeholders, evaluating measurements tools, developing Plan-Do-Study-Act (PDSA) cycles, creating a fish bone diagram, and developing a theoretical intervention. Students presented their theoretical QI project as the final assignment. The five students in the QST elective worked on a group QI project targeting the CMS measurement of “timely antibiotic administration in pneumonia patients.” The students recommended that current emergency room protocols be updated with diagnostic criteria for pneumonia and that additional training on pneumonia protocols be added to both nurse and doctor continuing education schedules.

**NEEDS AND OBJECTIVES:** Medical students are often not introduced to quality improvement (QI) and safety concepts and rarely get hands on training in QI methodology. Recently, leaders in the American Academy of Medical Colleges encouraged medical schools to enhance QI education. Our goal is to develop and train student physician leaders in QI and safety. Recent curricular changes require University of Chicago medical students to declare a scholarly concentration. The Quality and Safety Track (QST) is one of five areas that students can participate and coursework includes involvement in the Institute for Healthcare Improvement (IHI) open school and a mentored QI project.

**EVALUATION:** In September 2009, 88 MS1s were surveyed about their comfort with QI methodology using the Quality Improvement Knowledge Assessment Tool (QIKAT). Of the 78 (87%) responders, there was a low level of comfort with basic QI methodology. The same survey was administered to five MS1s before and after their participation the QST elective. Comfort with “making changes in a system” was low at the beginning of medical school and after the elective (38% and 20%) but improved significantly to 100% after the elective. Similarly, comfort with “using small cycles of change” and “implementing a PDSA cycle” were low at the beginning of medical school and after the elective (38% and 20%) but improved to 100% of the student being moderately or extremely confident in these areas of QI methodology after the elective.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** A hands on elective in which real time data engages MS1s in quality improvement efforts can significantly improve the confidence in basic QI methodology. The students are already been selected for a special leadership opportunity by IHI and 4 of the 5 have received funding to work on Quality/Safety projects. Students presented this project as well as mentored projects at the national IHI conference and 4 other conferences and have won regional and national awards.

**ONLINE RESOURCE URL (OPTIONAL):**

**THE IMPACT OF FACULTY CHARACTERISTICS ON INTERNAL MEDICINE RESIDENCY CANDIDATES INTERVIEW SCORES: EFFECT OF FACULTY RANK.** Julie Oyler 1; Vinny Arora 1; Jeffery Chadbeneau 1; James Woodruff 1. 1University of Chicago Medical Center, Chicago, Illinois. (Tracking ID # 11720)

**SETTING AND PARTICIPANTS:** A one time retrospective evaluation of previously existing interview data from applicants interviewed at the University of Chicago Internal Medicine Program from September 2004 to March 2009 was performed.

**DESCRIPTION:** Faculty interviewers were assigned randomly according to their availability. Each interviewer received an electronic copy of the
SKILLS-BASED OBESITY CURRICULUM

Shwetha Iyer 1; Hillary V Kunins 1; Angela Jeffers 1; Melanie Jay 2; Sheira Schlair 3. 1Montefiore/Albert Einstein College of Medicine, Bronx, New York; 2Division of General Internal Medicine/New York University School of Medicine, NY, New York; 3Montefiore/Albert Einstein College of Medicine, New York, New York. (Tracking ID # 11749)

IMPROVING RESIDENT COUNSELING COMPETENCE: A 5A’S SKILLS-BASED OBESITY CURRICULUM Shwetha Iyer 1; Hillary V Kunins 1; Angela Jeffers 1; Melanie Jay 2; Sheira Schlair 3. 1Montefiore/Albert Einstein College of Medicine, Bronx, New York; 2Division of General Internal Medicine/New York University School of Medicine, NY, New York; 3Montefiore/Albert Einstein College of Medicine, New York, New York. (Tracking ID # 11749)

DISCUSSION/REFLECTION/LESSONS LEARNED: In our preliminary analysis of this large recruitment database, faculty of lower academic rank give residency candidates lower ratings than faculty of higher rank. The effect of rank is statistically significant and consistent across the order of academic rank. Knowledge of this relationship is useful for optimal design of a residency program’s interview strategy, and the interpretation of faculty interviewer ratings of residency candidates.

ONLINE RESOURCE URL (OPTIONAL):

INTEGRATIVE MEDICINE IN RESIDENCY (IMR): AN INNOVATIVE SPECIAL INTEREST TRACK AT THE UNIVERSITY OF NEW MEXICO Robert Richard Leverence 1; Arti Prasad 1. 1University of New Mexico, Albuquerque, New Mexico. (Tracking ID # 11823)

SETTING AND PARTICIPANTS: The track is available to all Internal Medicine Residents at the University of New Mexico as of July 2010. Prerequisites are enthusiasm about new learning opportunities, commitment towards health and wellbeing, and the ability to maintain a minimum of 30th percentile score in In-Training-Exam. A three year on line curriculum offers evidence-based modules in Prevention, Wellness, Botanical Medicine, Integrative Oncology, Women’s Health, Acute and Chronic care, Mental health issues, and CAM Safety & Efficacy. UNM has enhanced this curriculum through onsite mentoring with four IMR faculty, field trips, quarterly talks by guest speakers, and an annual integrative medicine clinic rotation at the UNM Center for Life, a research/scholarly project in an integrative medicine topic, and an end of the year retreat. There are currently six residents (four PGY3, one PGY4 and one PGY5), eight attending faculty, and eight affiliated faculty with expertise in integrative medicine.
PGY2, and one PGY 1) who have enrolled into this track. They are paired with mentors who also supervise their Continuity Clinics.

DESCRIPTION: Integrative Medicine in Residency (IMR) is a 200-hour online competency-based curriculum developed by The Arizona Center for Integrative Medicine, U of A. This curriculum is being piloted among eight Family Medicine residency programs nationwide. There are currently five additional residency sites serving as early adopters of the IMR for which UNM is the only Internal Medicine Residency program. IMR structure was initially derived through formal needs assessment by the U of A. Competencies are aligned with the ACGME Outcome Project; content was developed by leading IM educators; online instruction blends didactic information with interactive, case-based learning and streaming video; a modular format is flexible for resident schedules; online portfolios hold competency evaluation data, and additional teaching is done through experiential on-site methods. Emphasis is placed on teaching self-care and resident wellbeing.

NEEDS AND OBJECTIVES: Many Americans use complementary and alternative medicine (CAM) in pursuit of health and well-being. CAM is a group of diverse medical and health care systems, practices, and products that are not presently considered part of conventional healthcare. Integrative Medicine (IM) refers to a practice that combines both conventional and CAM treatments for which there is evidence of safety and effectiveness. The 2007 National Health Interview Survey showed that approximately 38 percent of adults use CAM. The American Medical Association advocates awareness among medical students and physicians of the benefits, risks, and evidence of efficacy for CAM.

The Integrative Medicine Track in Residency at UNM Internal Medicine Program was developed to achieve the following goals:

- Provide residents with a broader clinical skill set
- Improve patient care
- Improve resident wellbeing
- Enhance residency recruitment at UNM
- Better marketability of graduates

EVALUATION: 1) Evaluation of the Online Curriculum is multi-dimensional. Curriculum evaluation by residents occurs after course completion. ACGME Competency evaluation is conducted through online questionnaires and faculty ratings (medical knowledge tests, self-assessments, reflection questions, direct observation checklists). Residents’ wellness and well-being are assessed with online standardized instruments on lifestyle behaviors, stress, burnout, depression, and positive personal characteristics. Resident learning in the IMR is assessed through pre-/post tests using multiple choice questions. 2) Evaluation of the IMR Track includes incoming resident survey to assess IM interest and residency program attraction; resident rating and match success; midyear evaluation of residents in standardized scales of depression, burnout, stress, satisfaction with life, faculty mentor job satisfaction; ITE scores; IM projects and presentations; and ABIM scores.

DISCUSSION/REFLECTION/LESSONS LEARNED: As American healthcare shifts from a predominantly disease-management orientation to one that values health maintenance and promotion, we believe Integrative Medicine will play a key role. Likewise, we feel training our residents in Integrative Medicine will not only better prepare them to meet the challenges of clinical care, but itself foster a shift in healthcare to the promotion of wellbeing. Upon introduction of the IMR track at UNM in July 2010, it was met with much enthusiasm not only by internal medicine residents but also by institutional leadership including the Dean, Department of Medicine Chairman, General Medicine Chief, and the Residency Program Director, the last two of whom enrolled as IMR faculty mentors. Enthusiasm remains high however the primary challenge has been integrating the IMR curriculum into the residency curriculum in a manner that allows adequate time for participation. UNM is looking at creative ways to sustain this important specialty track.

ONLINE RESOURCE URL (OPTIONAL): https://integrativemedicine.arizona.edu/main/login.html

INCARCERATION MEDICINE AND RE-ENTRY: A CURRICULUM FOR URBAN HEALTH LEARNERS Jennifer E. Bracey 1; Karran A Phillips 2; Rosalyn Stewart 3. 1Johns Hopkins University School of Medicine, Baltimore, Maryland; 2National Institutes of Health, National Institute of Drug Abuse & Johns Hopkins University School of Medicine, Beltsville, Maryland; 3Johns Hopkins University School of Medicine, Baltimore, Maryland. (Tracking ID # 11832)

SETTING AND PARTICIPANTS: The IMRC will train PGY2 residents in the Johns Hopkins University Urban Health Residency Program, a combined Internal Medicine-Pediatrics program (MP), and PGY2 residents in the Internal Medicine (IM) Urban Health Primary Care Track.

We are working with Correctional Medical Services (CMS), which currently holds the contract to provide healthcare services to Maryland correctional facilities, to plan resident experiences in the jails or prisons. A Patient-Centered Medical Home model will be the centerpiece of each resident’s outpatient experience and will take place in the East Baltimore Medical Center (EBMC), located in one of the most under-served communities in Baltimore. Residents will also work in Maryland’s largest federally qualified healthcare center, Baltimore Medical Systems (BMS). EBMC and BMS patient populations include a large number of formerly incarcerated/newly re-entered individuals.

DESCRIPTION: The objectives of the IMRC are that residents will: 1) Be able to describe the prevalence of incarceration in the United States, including the demographics of the incarcerated. 2) Be able to define commonly used terms in the judicial system as these terms are used in many relevant readings in prison health. 3) Recognize the limitations of healthcare delivery in institutionalized settings, including the challenges in complying with evidence based medicine and CDC guidelines. 4) Explain the following non-health related barriers to transitioning back to the community and how these affect access to health care: job procurement, stable housing, transportation, child care, etc. 5) Rate as important both geriatric care and palliative care in prisons and be able to describe programs such as medical parole, compassionate release, hospice units and nursing homes within prison systems. 6) Rate as “strongly agree” that they can take care of these patients effectively.

NEEDS AND OBJECTIVES: In 2009, 2.3 million Americans were in prison or jail and an additional 5 million were on probation or parole. Thus, 1 in 31 adults are under some form of correctional control, a rate that jumps to 1 in 11 among African American men and is higher in many urban neighborhoods. Compared with the general population, incarcerated persons have higher rates of hypertension, asthma, cervical cancer, hepatitis, TB, and HIV.

Although the literature documents the extensive health challenges faced by this sizable population, few formal curricula exist to provide medical trainees with the knowledge and skills needed to care for this vulnerable population and to understand the systems and policies that affect them. The goal of this Incarceration Medicine and Re-entry Curriculum (IMRC) is for learners to develop the knowledge, skills, and attitudes necessary to care for patients who are currently or formerly incarcerated, understanding the unique health challenges faced by these individuals.

EVALUATION: At the end of the curriculum, each resident will analyze a common term or measure in the judicial system and describe programs such as medical parole, compassionate release, hospice units and nursing homes within prison systems. The identified “problem” may be a problem found in various settings...
including jail intake, prison sick visits, transition back to the community, etc. Program leadership will identify the "experts." Examples of these "experts" include a federal judge, methadone clinic director, healthcare for the homeless medical officer, representative from the mayor’s office or the City Health Department, or the director of the state’s correctional medical services (these are some of the individuals contacted for our needs assessment).

DISCUSSION/REFLECTION/LESSONS LEARNED: A thorough Needs Assessment has been conducted using multiple modalities including a focus group with learners and both informal and structured interviews with key community players and providers. The objectives will be met through formal didactics, rotations in correctional settings, focus groups with formerly incarcerated individuals, and outpatient experiences.

This curriculum will be implemented with Urban Health residents and Internal Medicine Urban Health Primary Care Track residents beginning in late 2011, early 2012. This curriculum is being planned through the Johns Hopkins Faculty Development Program in Curriculum Development, a longitudinal program spanning nine months, which uses the six step approach used by Kern, et al.

ONLINE RESOURCE URL (OPTIONAL):

A CURRICULUM USING POETRY AND FICTION FOR INTERNAL MEDICINE RESIDENTS Calvin Chou1; Ronald Strauss2. 1University of California, San Francisco, San Francisco, California; 2University of California, San Francisco, Larkspur, California. (Tracking ID # 11846)

SETTING AND PARTICIPANTS: 48 second-year internal medicine residents in a VA-based residency track (VA PRIME) that focuses on epidemiology and outcomes research in academic years 2009–10 and 2010–11.

DESCRIPTION: Over five weeks, residents read and reflected upon poetry and prose while on an outpatient block. After an introduction to how to approach a poem, residents read and discussed medically-oriented poems by diverse writers (Alice Walker, Reynolds Price, Paul Muldoon), poems by doctors (Peter Pereira, Rafael Campo, William Carlos Williams), poems written by patients or patients’ family members (Donald Justice, Jane Kenyon, C.K. Williams, Avi Kovner), and prose written by physicians (Samuel Shem, Perri Klass). For the final seminar, residents brought in a piece of their own writing (poem, short story, or journal entry) on anything having to do with the experience of being a doctor, a patient, or a patient’s family member, and they shared their work with each other. We distributed an anonymous survey at the end of the seminar series and asked participants to rate their impressions, either on a four-point (1 = strongly disagree, 4 = strongly agree) Likert scale or a similar five-point scale.

NEEDS AND OBJECTIVES: Many U.S. medical schools offer medical humanities electives, including literature and medicine courses. Various benefits and objectives of such courses have been described: a means of strengthening humanistic competencies such as empathy, an approach to understanding the doctor-patient relationship, and a venue for self-reflection. However, most medical literature on this subject focuses on voluntary offerings in undergraduate medical education. Our goal was to start a required literature and medicine course for medical residents to increase their own understanding of the patient-physician relationship.

EVALUATION: Response rate was 71%. Medical residents (n=34) agreed that this seminar gave them new insights into being a doctor (3.3±0.6, on 4-point scale), new insights into being a patient (3.4±0.7, on 4-point scale), and new insights into the process of medical training (3.2±0.7, on 4-point scale). Residents felt that the curriculum caused them to reflect on their own personal values (3.2±0.7, on 4-point scale) and gave them increased empathy for patients (3.3±0.7, on 4-point scale). There was consensus that the overall course was “helpful to me as a doctor” (4.4±0.7, on 5-point scale). In addition, residents liked poetry significantly more after taking the course (3.1 pre vs. 3.9 post-course, on 5-point scale; p<.01) and preferred to spend this instructional time more on a medical humanities topic than a medical science topic (3.5 pre- vs. 4.2 post, on 5-point scale; p<.01).

DISCUSSION/REFLECTION/LESSONS LEARNED: Our literature and medicine course succeeded in enhancing medical residents’ understanding of their and their patients’ experiences of medicine as well as appreciation of the value of medical humanities coursework. As we did not select residents based on interest in medical humanities prior to this course, we suggest that other programs can successfully institute similar curricula as a general part of medical resident education.

ONLINE RESOURCE URL (OPTIONAL):

THE CRIMSON CARE COLLABORATIVE: A MODEL FOR PRIMARY CARE MEDICAL EDUCATION Michelle Fox1; Jessica L. O’Brien2; Emily M. Hinchliff3; Rebecca Berman4; 1Harvard Medical School, Massachusetts General Hospital, Boston, Massachusetts; 2Harvard Medical School, Boston, Massachusetts; 3Harvard Medical School, Massachusetts General Hospital, John D. Stoeckle Center, Boston, Massachusetts. (Tracking ID # 11853)

SETTING AND PARTICIPANTS: The Crimson Care Collaborative (CCC) is a Harvard Medical School (HMS) and Massachusetts General Hospital (MGH) student-faculty medical practice that provides high quality, affordable, health care to people in Greater Boston who do not have access to a primary care physician. First through fourth year medical students volunteer in all aspects of clinic operation. We had 92 student volunteers this past fall. The practice operates according to a bridge-to-care model: patients are seen on an ongoing basis as needed and simultaneously work with the integrated social services team to find an appropriate long-term care provider.

DESCRIPTION: The CCC is an interactive learning environment that heightens student appreciation for the complexity of primary care. Two students, precepted by a primary care attending physician, see each patient; more senior medical students take on the role of medical educator for their more junior counterpart. This tiered mentorship instills the practice of compassionate care through modeling and internalizing the behaviors of more senior practitioners. In addition, students have the opportunity to assist patients with social service needs, provide personalized health education, and learn alongside a patient how to navigate the medical system. CCC incorporates education through several other modalities including resident teaching conferences and a 6-week course designed for students to delve deeper into scholarly work related to the clinic.

NEEDS AND OBJECTIVES: In the environment of a severe shortage of primary care providers, medical schools need to demonstrate commitment to primary care as a career option, and encourage students to become empathic innovators and to develop a skill set to understand and improve an increasingly complex medical system.

Objective of Program:
1. Increase exposure to primary care for medical students.
2. Appreciate barriers to care, disparities in outcomes, and quality improvement opportunities within a clinic setting
3. Promote compassionate patient care as a tenet of medical education

EVALUATION: Through surveys and qualitative analyses, we found that students involved in CCC felt they were motivated by a desire to help
patients and to work with the underserved. The majority of students voiced an interest in primary care, and qualitative data suggested that working in CCC confirmed and enhanced student-interest in pursuing a career in primary care. Students report having a more enriched experience in the clinic with both structured and unstructured teaching during clinic. The pilot of the course indicates that students develop thoughtful innovations for the clinic when given a structured environment and faculty support. Through designing and running the CCC, students reported feeling tremendous ownership pride in the CCC, and gained a better understanding of the complexity of running a primary care practice.

**DISCUSSION/REFLECTION/LESSONS LEARNED:**

**KEY LESSONS LEARNED**

Student-faculty collaborative clinics increase medical student exposure to primary care and can enhance and confirm interest in this field. Student-faculty collaborative clinics can be used as an educational tool to teach students about primary care, community medicine, and the challenges of providing health care to the underserved. Further work is focused on assessing if and how volunteer work in the clinic changes student attitudes toward the underserved and primary care.

**ONLINE RESOURCE URL (OPTIONAL):**

**DEVELOPMENT OF AN INNOVATIVE WORKSHOP TO TEACH COMMUNICATION SKILLS IN GOALS-OF-CARE DISCUSSIONS IN THE ICU**

Jacqueline Yuen 1; M. Carrington Reid1. 1New York Presbyterian Hospital, Weill Cornell Medical College, New York, New York. (Tracking ID # 11854)

**SETTING AND PARTICIPANTS:** The 3-hour workshop will be piloted at the resident retreat on April 5, 2011. Participants will include approximately 35 first-year residents at the Cornell Internal Medicine Residency Program.

**DESCRIPTION:** First, we conducted a needs assessment survey and found that our residents felt inadequately prepared for goals-of-care discussions they have encountered and ranked the discussions in the ICU to be the most challenging. Next, we identified existing courses on goals-of-care discussions in the literature. We then convened an interdisciplinary team of educators from critical care, palliative care and general internal medicine to develop our course content. The course will include these components: 1) A palliative care specialist and an intensivist will role model their approaches to goals-of-care discussions in the ICU setting and use trigger videotapes and cases to prompt a group discussion. 2) Participants will engage in small group role-play exercises with a standardized patient (SP) or family member (SF). After each enactment, a facilitator will direct the participants to self-reflect on their performance, as well as solicit feedback from other group participants and the SP or SF.

**NEEDS AND OBJECTIVES:** Few residency training programs provide formal training in communication skills in end-of-life discussions. Residents encounter many instances where the need to clarify goals of care arises, but many lack comfort and adequate skills to lead these discussions. Critically-ill patients are particularly challenging because end-of-life decisions often need to be made quickly and by surrogate decision-makers. Our goal is to provide first-year residents with a safe and effective means of learning to conduct goals-of-care discussions in the ICU setting.

Objectives:

1. To provide role-modeling of effective approaches to goals-of-care discussions.
2. To observe residents conduct goals-of-care discussions in a simulated setting and provide feedback.

3. To improve residents’ confidence in conducting goals-of-care discussions in the ICU setting.
4. To teach communication skills that will be applied by residents in future discussions.

**EVALUATION:** At the conclusion of the workshop, the participants will be asked to complete an evaluation form to rate the effectiveness of the course on improving their confidence in conducting goals-of-care discussions as well as elicit suggestions for improving the course. After their first ICU rotation (and after completing the course), participants will be surveyed online to assess whether or not the skills learned from the course have impacted the way in which they led goals-of-care discussions during their ICU rotation.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** To our knowledge, this is the first reported educational intervention designed to teach residents to conduct goals-of-care discussions in the ICU setting. Experiential learning has been demonstrated to be most effective in teaching these advanced communication skills. Through role-modeling effective approaches and providing observation and feedback in small group role-plays exercises in our innovative course, we believe our workshop will provide a valuable educational experience for our participants. After piloting the course, we will refine the intervention (using pilot data), as well as expand it to target the educational needs of residents at different levels of training and across different specialties. In the near future, we hope to evaluate the impact of the course on residents’ communication skills via direct observation of actual discussions in real clinical settings or through videotaped standardized-patient exercises.

**ONLINE RESOURCE URL (OPTIONAL):**

**AN INNOVATIVE MEDICAL SPANISH CURRICULUM FOR RESIDENTS**

Avik Chatterjee 1; Jaideep Talwalkar2. 1Yale Internal Medicine and Pediatrics Residency Program, New Haven, Connecticut; 2Yale Internal Medicine and Pediatrics Residency Program, Hamden, Connecticut. (Tracking ID # 11855)

**SETTING AND PARTICIPANTS:** Yale-New Haven Hospital (YNHH) is a 980-bed tertiary care center in New Haven, CT, a city with a population of about 125,000. About 21% of the population self-identifies as Hispanic. The medical Spanish curriculum was offered to all 77 second-, third- and fourth-year residents in the internal medicine, pediatrics, and combined internal medicine/pediatrics residency programs, though only those who self-identified as intermediate or advanced Spanish-speakers were invited to participate. Interns were excluded because it was felt that their schedules would be too busy to allow for meaningful participation. Ultimately, twenty resident learners began participating in the curriculum in July 2010. 85% at the intermediate level and 15% at the advanced level. None are native-Spanish speakers, though all have had some formal Spanish language training.

**DESCRIPTION:** The curriculum, designed in conjunction with the YNHH Interpreter Services Department, is composed of nine month-long, body-system-based modules. Each module is designed to take 4 weeks to complete. Scheduling is flexible; learners choose how to fit the program into their individual schedules. Each module has grammar and vocabulary objectives, includes a variety of learning activities emphasizing practical applications, and is composed of four parts. Part one is an online grammar and vocabulary lesson; part two is a chapter from a commercially available medical Spanish DVD program; part three is a simulated patient encounter that the learner and the assigned tutor (a hospital interpreter or a native Spanish-speaking resident or fellow) schedule on their own; and part four is a community-based...
activity, where the learner delivers counseling (such as smoking cessation) to a native-Spanish speaking volunteer from a local non-profit organization.

**NEEDS AND OBJECTIVES:** Monolingual Spanish-speakers comprise a large part of the American patient population, and surveys reveal that physicians-in-training with low Spanish-proficiency avoid seeing Spanish-speaking patients. A needs assessment survey revealed that 91% of residents at our institution noted seeing monolingual Spanish-speaking patients a few times a week or daily, and that residents were eager to become more proficient in medical Spanish. We developed a rigorous medical Spanish curriculum for intermediates to advanced speakers with the goals of improving residents' vocabulary, fluency, and confidence in communicating in Spanish, using a flexible structure that would fit into residents' schedules.

**EVALUATION:** A multi-phase program evaluation is ongoing. A formal language test was developed including a written and oral portion to evaluate learner progress at the middle and end of the curriculum. The written test was piloted on a group of medical residents/fellows of varying Spanish abilities (ranging from beginner to native speakers), with a resultant gradient in scores. The midyear evaluation, composed of the written test and a survey to evaluate the acceptance and attitudes of the residents to the intervention, is due to be returned at the end of January 2011; of the respondents to date, 100% have completed at least 4 modules and 67% are satisfied with the program. Respondents have reported increased confidence in communicating in Spanish, and anecdotal feedback from simulated patients also indicates that participants have increased fluency. The final test and survey will take place in June 2011.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Our novel medical Spanish curriculum for residents has been well-received by participants and preliminary data indicate that completion of the program components is feasible within a resident’s schedule. While learners have been able to participate in most activities, scheduling the community-based practice sessions has been a challenge, likely because the activity requires travel to the nonprofit’s office. We plan on providing additional scheduling assistance and incorporating incentives (e.g., meals) to enhance participation in these sessions. Similarly, due to competing demands, we have met with challenges scheduling oral evaluations of learners. We plan to focus on written evaluations which are more flexible since they do not require simultaneous participation of curricular faculty, mentors, and learners. Despite these challenges, residents appreciate the flexibility of the curriculum and may have improved vocabulary, fluency, and confidence in communicating in Spanish.

**ONLINE RESOURCE URL (OPTIONAL):** www.ysli.zymichost.com

**THE HEALTH LITERACY CEX** Elizabeth Leilani Lee 1; Lawrence Ward2.

1Temple University Hospital, Philadelphia, Pennsylvania; 2Temple University Hospital, Bala Cynwyd, Pennsylvania. (Tracking ID # 11865)

**SETTING AND PARTICIPANTS:** The clinical evaluations took place at an outpatient internal medicine residency clinic in Philadelphia, PA. The patients of this practice are predominately African American and established to have low health literacy. In a survey of practice patients using the rapid estimate of adult literacy in medicine (REALM) questionnaire 80% of patients met the criteria of low health literacy. A total of 21 residents (6 PGY-1, 8 PGY-2, and 7 PGY-3) participated in the CEX during their weekly continuity practice session. The examinees were blind to the focus of the CEX and had a total of two CEXs completed by two different examiners for the study. The examiners consisted of 5 residents (3 PGY-1 and 2 PGY-3) who observed an entire patient encounter to complete each CEX. The patients used in the CEX were regular scheduled patients with a chronic medical problem and were allowed to decline participation without interruption to their appointment.

**DESCRIPTION:** The health literacy CEX consisted of the following 10 interviewing and counseling skills: 1) Greeted the patient with a kind, welcoming attitude 2) maintained appropriate eye contact while speaking with the patient 3) Encouraged the patient to voice their concerns throughout the visit 4) Spoke clearly and at a moderate pace 5) Explained things using non-medical language 6) Limited the discussion to less than 5 major points or topics 7) Gave specific concrete explanations and directions 8) Used visual aid such as a picture, diagram, or model to help explain something to the patient 9) Asked the patient if they had any questions 10) Verified that the patient understood the directions that they gave (i.e.) asked the patient to give back and corrected their misconceptions. Each skill was rated on a 2 point scale (0 = not proficient, 1 = approaching proficiency, 2 = proficient) for a maximum score of 20 points.

**NEEDS AND OBJECTIVES:** Health literacy is defined as a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment. Low health literacy can result in difficulty accessing health care, poor health outcomes, and rising health care costs. Approximately 90 million adult Americans have fair to poor literacy placing them at risk. Health care providers are known to overestimate literacy abilities of their patients and further contribute to the health literacy problem. Medical education has recognized health literacy as an important issue, however few education tools exist to teach the clinical skills and interventions that improve health outcomes for poor literacy patients. The objective of the health literacy clinical evaluation exercise (CEX) was to develop a tool that could evaluate the use of health literacy skills in a clinical setting as well as, provide a format that encourages further education on this topic.

**EVALUATION:** The average total score for the health literacy CEX was 12.9. The percentage of residents scoring proficient for the 10 tasks were: 1) Greeted the patient with a kind, welcoming attitude (95.1%) 2) maintained appropriate eye contact while speaking with the patient (82.9%) 3) Encouraged the patient to voice their concerns throughout the visit (51.2%) 4) Spoke clearly and at a moderate pace (68.3%) 5) Explained things using non-medical language (60.9%) 6) Limited the discussion to less than 5 major points or topics (58.5%) 7) Gave specific concrete explanations and directions (53.6%) 8) Used visual aid such as a picture, diagram, or model to help explain something to the patient (9.7%) 9) Asked the patient if they had any questions (48.7%) 10) Verified that the patient understood the directions that they gave (i.e.) asked the patient to give back and corrected their misconceptions (2.4%).

**DISCUSSION/REFLECTION/LESSONS LEARNED:** The health literacy CEX is an easy tool to implement and can be used to assess learners of all levels of medical education, and can be adapted to a variety of clinical settings including inpatient encounters. The examination format allows for direct bedside health literacy teaching and encourages feedback to improve the resident's skills. The greatest benefit we found using the CEX was in identifying residency wide deficiencies. This was dramatically illustrated by the example that only 2.4% of residents correctly used the teach back method. This was an unexpected finding given that residents had been educated multiple times on this method. Overall, the health literacy CEX was developed to assess residents in the clinical skills that have been shown to reduce poor health outcomes in low literacy patients. Further examination of the CEX is necessary to determine its effectiveness in health literacy education.

**ONLINE RESOURCE URL (OPTIONAL):**
A 28-HOUR RETREAT FOR INTERNAL MEDICINE INTERNS
Barry Fields 1; Douglas Olson 1; Chryssanthi Kournioti 1; Stephen Huot 2; 1Yale Primary Care Residency Program, Hamden, Connecticut; 2Yale Primary Care Residency Program, New Haven, Connecticut. (Tracking ID # 118868)

SETTING AND PARTICIPANTS: We planned at an autumn Intern Retreat, held in Connecticut’s pastoral Litchfield Hills, which spanned 28 hours between Saturday morning and midday Sunday. All categorical and preliminary interns in the Yale Primary Care Residency Program were invited. The Chief Residents established a period - 9 pm Friday through 5 pm Sunday - during which time residents covered their intern colleagues' hospital responsibilities.

DESCRIPTION: Our Retreat was built on our primary goals:
1. Enhance teambuilding while allowing expression of internship-related stress. Interns lined up in response to queries such as most introverted to most extraverted, and revealed answers to questions such as, “What adjectives might a person use to describe you when they are angry at you?” Later, a faculty member facilitated a discussion regarding stressors.
2. Provide a forum for information about various programmatic initiatives. Interns participated in research “speed dating” in which pairs had limited time with one faculty member to learn about ongoing projects before moving on to another faculty member.
3. Facilitate interns’ learning from shared experiences to create a context from which they could approach the next phase of their year. The Program Director and Chief Residents held a session discussing high and low points of the year, allowing common experiences and themes to be shared.

NEEDS AND OBJECTIVES: With ACGME-mandated scheduling changes compounding expected stresses of internship, we sought to provide reassurance, camaraderie, and personal and professional growth to interns completing the first few months of their year. Our specific objectives included:
1. Enhance teambuilding while allowing expression of internship-related stress.
2. Provide a forum for information about various programmatic initiatives.
3. Facilitate interns’ learning from shared experiences to create a context from which they could approach the next phase of their year.

EVALUATION: Intern Attendance: 80% of class
Post-Retreat Questionnaire Results: 100% of attendees “Agree” or “Strongly Agree” with the statements on a Likert Scale: “[This] was an appropriate location in which to have this Retreat” and “Overall, this Retreat was a valuable part of my internship.”

Representative Quotations from the Post-Retreat Questionnaire:
“I valued the bonding at the campfire, and our team building activity because it made me appreciate my colleagues even more than before.”
“I feel like our class is closer together and will work better together...The Intern Retreat should happen every year.”
“The Retreat created a stronger sense of community...I feel more invested in our group success and the program’s success.”

DISCUSSION/REFLECTION/LESSONS LEARNED: Participant feedback suggests the overarching goals of the experience were achieved, a key measure of its potential sustainability. We specifically gleaned the following incites from planning, implementing, and reviewing this year’s Retreat:
1. Establish approximately as much free time as structured activities in the Retreat’s itinerary.
2. Allow at least 4 months before the Retreat to find and reserve an appropriate location; many Retreat Centers are booked months in advance.
3. Do not make plans in a vacuum; elicit suggestions from all housestaff and faculty members in conceptualizing a Retreat that fits a Program’s needs.
4. Choose the Retreat date when intern schedules are created. Therefore, intern vacation time can be avoided.
5. Incorporate Intern Retreat coverage into upper-level residents’ schedules from their time of creation, thus eliminating the chance of prior engagements.

ONLINE RESOURCE URL (OPTIONAL):

AN ASSESSMENT OF THE STANFORD STUDENT EXPERIENCE OF A NEW LEARNING COMMUNITY
Preetika Basaviah 1; Kambria Hooper 2; Lars Osterberg 1; Jennifer Hayes 3; Jennifer Delta 4; 1Stanford, Menlo Park, California; 2Stanford, Palo Alto, California; 3Stanford, Stanford California. (Tracking ID # 11876)

SETTING AND PARTICIPANTS: The setting is the pre-clerkship years (1st and 2nd) at Stanford Medical School. Participants included 124 students in the first two years of medical school, and 15 faculty E4C members.

DESCRIPTION: Beginning in 2008, incoming students were matched with an E4C faculty, who serves as a teacher and mentor. Each E4C guides 5-6 students per class year in the following ways: providing periodic feedback; assisting in professional development to ensure students graduate with mastery of core clinical skills; reference letters and participate in milestone events; precepting students in pre-clerkship, cultivating students’ acquisition and refinement of communication skills, physical examination skills, clinical reasoning, and professionalism; and guidance for reflection and professionalism during clerkship.

NEEDS AND OBJECTIVES: Mentoring is perceived as an important part of academic medicine, but more research on how to design effective mentoring programs is needed. The Educators-4-CARE (E4C) Program, consisting of 15 faculty mentors from multiple disciplines, enhances the development of students as skilled and compassionate physicians by providing a curriculum designed to promote compassion, advocacy, responsibility, and empathy in students. The program focuses on developing students’ professionalism, clinical skills, and interpersonal communication skills. We developed a survey to assess student perceptions of effectiveness in: program structure: accessibility, quantity and quality of mentorship; and how well E4C prepared students for training. The goal was to identify strengths and opportunities for improvement in developing students’ professionalism, and clinical and interpersonal communication skills in the pre-clerkship years.

EVALUATION: Students (n=124, response rate=75%) positively rated the quality of E4C. More than 80% rated E4C as “very good” or “excellent” for rolemodeling, instruction of clinical skills, and professionalism/ interpersonal communication skills development. At least 75% of students gave high ratings to professionalism skills development, which included: setting goals; identifying strengths; identifying and remediating weaknesses; and feedback, and the overall rating of the program on professionalism/ interpersonal communication. Students overwhelmingly felt their mentor was approachable, accessible, and responsive (91%). Students gave positive ratings for faculty being a helpful resource for academic, clinical, and/or professional development issues(82%), and helping them develop a learning plan (69%).

DISCUSSION/REFLECTION/LESSONS LEARNED: Student comments provided feedback for program improvement in the following theme areas: program structure, faculty mentoring, faculty teaching, faculty role modeling, social events, and the role of student feedback. Program ratings from second year students were slightly lower than first
year students in identifying strengths in clinical skills as well as receiving feedback on clinical skills (83% and 69% for Years 1 and 2, respectively, for both areas). This finding may be attributed to less direct teaching time with E4C mentors in second year. Mentors are now rotating into more parts of the 2nd-year curriculum. We hope to see E4C impact the following:

- Student performance on clinical performance examinations and National Board Examination scores
- Students consistently providing both empathy and relationship-centered clinical care
- Student wellness
- Successful faculty re-appointments and promotions among participating E4C faculty

ONLINE RESOURCE URL (OPTIONAL):

CLINICAL STUDENTS' EXPLORATION OF CRITICAL INCIDENTS USING FACULTY GUIDED REFLECTION Preetha Basaviah 1; Lars Osterberg 1; Erika Schullinger 2; Kambria Hooper 2; Stanford, Menlo Park, California; Stanford, Palo Alto, California. (Tracking ID # 11885)

SETTING AND PARTICIPANTS: Faculty (longitudinal clinical skills mentors and career advisors) facilitated small group discussions with four goals: (1) develop skills of self-reflection; (2) identify coping strategies from peers such as self care, team problems, and burnout; (3) provide a positive influence on professional growth; and (4) promote and maintain humanism and professionalism. Doctoring with CARE (Compassion, Advocacy, Responsibility, Empathy) sessions occurred every other month in 2009–10, and were required for core clerkship students. Faculty facilitate 90 minute, small group discussions.

DESCRIPTION: Themes include abuses of power, role on the team, preparing for clerkships, death and dying. Students are encouraged to discuss experiences that challenge them professionally. Groups provide a safe place where students freely discuss professional experiences. Continuity of groups was preserved for most sessions, except when students stepped out of clinical rotations. Students rated experiences through survey after each session.

NEEDS AND OBJECTIVES: Reflective practice is an essential competency for students and an important skill for professional development. When faced with critical incidents during rotations, students often struggle to cope effectively. Some incidents involve ethical dilemmas, abuses of power, patient disrespect, and positive and negative role-modeling. Some experiences can undermine students’ professional development, leading students to learn from the “hidden curriculum” rather than constructive role-modeling. Students often lack support to effectively learn from incidents; reflecting on significant clinical experiences has been shown to be an effective way for students to grow professionally. Critical reflection promotes deeper learning, giving meaning to significant clinical experiences.

EVALUATION: Students felt comfortable sharing intense, challenging situations and ethically ambiguous experiences encountered during clinical training. Students learned and/or shared coping strategies by engaging in candid discussions of their clinical experiences. Students learned and/or used skills of reflective practice. With respect to group structure, students appreciated having both specific discussion themes as well as open discussion.

DISCUSSION/REFLECTION/LESSONS LEARNED: Our findings raise questions relevant to reflective practices sessions. What is the right balance of selected themes versus open discussion? What is the appropriate balance of faculty input regarding critical incidents students face? Are small group, faculty guided student reflection sessions the most effective approach for promoting student reflection? Comparing student experiences with different methods of promoting self-reflection may help determine the optimal forum for promoting and educating students in reflective practice.

ONLINE RESOURCE URL (OPTIONAL):

IMPACT OF A QUALITY IMPROVEMENT CURRICULUM FOR PRE-CLERKSHIP STUDENTS Preetha Basaviah 1; Kambria Hooper 2; Julia Pederson 2; Stephanie Smith 2; Felipe De Jesus Perez 2; Shubha Bhat 2; Natalia Leva 2; Paul Helgerson 2; Troy Leo 2; Clarence H. Braddock 2. Stanford, Menlo Park, California; Stanford, Palo Alto, California. (Tracking ID # 11886)

SETTING AND PARTICIPANTS: Stanford’s Practice of Medicine Course developed a QI/PS curriculum for 2nd-year students transitioning to clerkships. The goal was to emphasize patient safety principles and systems-based quality improvement, as well as define the role of medical students in a hospital team with regards to practicing methods in patient safety, which could include: observing and reporting errors, dealing with mistakes they make, and actively advocating for QI.

DESCRIPTION: Stanford’s curriculum consisted of two, 60-minute modules presented in seminar format, focusing on key areas of process and quality improvement, and patient safety. By the end of the two sessions, students should:

1) Understand the importance and relevance of QI/PS in practice
2) Briefly describe the local and national QI/PS context
3) Articulate the role of the clerkship student in QI/PS
4) Feel more prepared to look at clinical practice through a QI/PS lens
5) Be familiar with some local Stanford initiatives and tools
6) Be familiar with the role of the medical professional in QI/PS

NEEDS AND OBJECTIVES: Despite increasing recognition of the importance of quality improvement (QI) and patient safety (PS), the physician role in QI is often not defined or role modeled to physicians in training. In response, a handful of medical schools have begun to incorporate PS training in the curriculum. Long-term data are not available, but results from pilot studies suggest that material is well received. The Telluride Interdisciplinary Roundtable suggested that patient safety curricula re-frame health care as part of a larger system rather than individual practice, begin during the first year and continue throughout training, and foster an environment conducive to communicating and reporting errors.

EVALUATION: The pre/post evaluation showed a significant increase (p < 0.001) in trainees’ attitudes related to the importance of Quality Improvement and Patient Safety topics, including confidence in: defining quality improvement, ability to identify flawed patient care processes, ability to improve flawed patient care processes, and approaching a care provider about a process-improvement idea. The first session, covering Process Improvement and Quality, received a rating of 3.44 (scale 1–5, poor to excellent) from 63 students. One student commented that the session took a topic “that can be quite dry and gave an excellent talk on the subject matter.” The second session, covering Patient Safety concepts, received a rating of 3.58 from 59 students. One student commented, “The session made a lot of great points and was very rational. I felt empowered towards the end of the talk to make a difference by noticing to detail/small things.”

DISCUSSION/REFLECTION/LESSONS LEARNED: Results indicate that the curriculum had a positive impact on the knowledge, skills, and attitudes related to quality improvement and patient safety of the students who attended. We have yet to see if clerkship students will participate in QI/PS efforts during clinical training.

ONLINE RESOURCE URL (OPTIONAL):
YOU BE THE EMBOLUS: A STUDY OF INTERACTIVE DESIGN FEATURES FOR LEARNING THE PATHOPHYSIOLOGY OF THROMBOEMBOLIC STROKE

Adina Kalet 1; Hyuk-Soon Song 2; Martin Pusic 2; Michael Nick 2; Alvin H. Martin Pusic 2; Michael Nick 2; Jan Plass 3. 1NYU School of Medicine, Brooklyn, New York; 2NYU School of Medicine, New York, New York; 3NYU Steinhardt School of Education, New York, New York. (Tracking ID # 118999)

SETTING AND PARTICIPANTS: The intervention was carried out at a large private medical school in the northeastern United States. The participants were second year medical students who had completed their preclinical Neurosciences block and were about to start their clinical placements. In a 90-minute computer lab session, the students received an introductory neuroanatomy lecture and completed a multiple-choice prior knowledge test. They were then randomized to complete one of four versions of the CAI module (described below) followed by a 20-item post-test where they considered stroke cases similar to those in the module and identified the likely anatomic correlates. Finally, as a transfer test, participants were asked to identify abnormalities on 20 MRIs with clinical descriptions of actual cases. All measures were scored by an individual unaware of study assignment.

DESCRIPTION: We designed an online module that embedded the Stroke Locator activity in 4 clinical cases. Students considered the text of the case and then moved an animated embolus on the 3D model from the carotid to the putative cerebral vessel. After submitting their answer, the students saw an explanation specific to the case. Time was not limited. For the study maneuver, we modified the Stroke Locator module by varying the cognitive as well as the kinesthetic interactivity, creating 4 module versions: movie (low, low), slider (low, high), click (high, low), and drag (high, high). Users in the movie condition observed an animation of the embolus migration. Those in the slider condition had to drag a linear slider placed below the graphic to move the embolus along the correct path. In the click condition, students moved the embolus to any location by clicking on vascular structures. Those in the drag condition had to click and drag the embolus to emulate its movement in the vasculature.

NEEDS AND OBJECTIVES: An important learning objective for medical students is to understand the pathophysiology of embolic strokes in order to be able to recognize clinical stroke syndromes and to be able to precisely link clinical presentations to anatomic locations in the cerebral vasculature. Medical students can learn the pathophysiology of embolic stroke from a number of learning resources; however, for this particularly visual topic, computer-aided instruction (CAI) can enable novel instructional strategies including 3D visual representations and kinesthetic interactivity during learning. We developed the “Stroke Locator” (SL), a 3D representation of the cerebral vasculature where the student can use the computer mouse to drag an onscreen embolus into any part of the vascular tree and see what stroke syndrome is produced. In a randomized, factorial study design, we used this tool to investigate the effects of kinesthetic and cognitive design elements on the consequent learning.

EVALUATION: 53 students completed the protocol: movie (15), slider (11), click (12), or drag (15). To examine the effects of the level of cognitive and kinesthetic interactivity on clinical knowledge acquisition and reasoning, two-way ANOVAs were conducted. For clinical knowledge acquisition, measured by a multiple-choice test, students who did a module with high cognitive interactivity performed better than those doing one with low cognitive interactivity, regardless of the level of kinesthetic interactivity (Cohen’s d=0.52; 95% CI: 0.0, 1.0). However, for clinical reasoning, measured by MRI reading, students in the click group performed better than those who received the drag treatment (Cohen’s d=0.7; 95% CI: -0.1, +1.5). An observed interaction effect for cognitive and kinesthetic interactivity (F (1, 48)=3.91, MSE=84.38, p=.05) suggests that the increased behavioral complexity of the drag action may have elevated demand for cognitive resources beyond that of the click treatment.

DISCUSSION/REFLECTION/LESSONS LEARNED: This study has important theoretical and practical implications. The use of interactive features in a multimedia learning environment must be carefully considered. While potentially beneficial, interactivity that is inappropriately applied may hamper rather than facilitate meaningful learning. We found that the increased kinesthetic complexity of dragging a representation of an embolus up the cerebral vasculature reduced participants’ ability to transfer their new knowledge to MRI reading tasks, compared with simply clicking on the expected point of thrombotic vessel occlusion. If multimedia applications are to promote deep engagement and construction of elaborated mental models in complex content areas, the type of interactivity employed must accommodate the cognitive resource limitations of target learners. A better understanding of this relationship will aid in the selection of appropriate interactive design features in medical multimedia learning environments.

ONLINE RESOURCE URL (OPTIONAL): http://wmdapps.s3.amazonaws.com/SLDrag/index.html

HEALTH DISPARITIES: A METHOD TO TEACH ABOUT VALUES AND ASSUMPTIONS

Deborah Swiderski 1; Cristina M Gonzalez 2; Alvin H. Strenick 2. 1Albert Einstein College of Medicine Montefiore Medical Center, Bronx, New York; 2Albert Einstein College of Medicine-Montefiore Medical Center, Bronx, New York. (Tracking ID # 11990)

SETTING AND PARTICIPANTS: This curriculum is one module in “Patients, Doctors, and Communities” (PDC), a required course for third year students at the Albert Einstein College of Medicine. Einstein is located in the Bronx, New York, one of the poorest and most diverse urban communities in the United States. Groups of 8–10 students meet monthly throughout the third year in a 2 hour seminar with dedicated faculty facilitators for a curriculum in advanced communication skills, bioethics, professionalism, health systems, and public health. The only other formal curriculum in HD is an elective for first year students, which attracts about 10 students each year. The curriculum described here is required for the entire class of 180 students.

DESCRIPTION: A module on HD has been part of the PDC curriculum since its first year, but the content and structure changed each year because it proved difficult to “put a face to” the statistics surrounding this problem, and to engage students on a personal level with the problem of implicit bias. Two new instructional methods were piloted in 2010 toward this end. A written assignment asked students to describe an “Aha! Moment” when they realized they had made an assumption about a patient or team member that they discovered to be incorrect. The second was an opportunity to talk with a patient volunteer from a minority group who would discuss the impact of their minority status on the health care they had received. Students were also given core narratives, and 45 patient volunteers, Doctors, and Communities” (PDC), a required course for third year students at the Albert Einstein College of Medicine. Einstein is located in the Bronx, New York, one of the poorest and most diverse urban communities in the United States. Groups of 8–10 students meet monthly throughout the third year in a 2 hour seminar with dedicated faculty facilitators for a curriculum in advanced communication skills, bioethics, professionalism, health systems, and public health. The only other formal curriculum in HD is an elective for first year students, which attracts about 10 students each year. The curriculum described here is required for the entire class of 180 students.

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NEEDS AND OBJECTIVES: The seemingly intractable problem of Health Disparities (HD) casts a long shadow over the many achievements of modern medicine, making its inclusion in medical education imperative, a need acknowledged by many accrediting bodies. While it is important to teach students the dimensions of this problem and its external causes, it is also important, but difficult, to teach them about
the problem of implicit bias, which has been shown to perpetuate unequal care. A novel curriculum developed for third year medical students aims to build student knowledge about the problem of HD in the US and awareness of its multidimensional causes, including unintentional bias from health providers.

**EVALUATION:** Feedback about these methods was enthusiastic and positive. Faculty reported that student narratives formed the foundation for an open and honest discussion of the general problem of bias in everyday life and in the practice of medicine. Students and faculty commented on the power of having direct dialogue with a patient about their experience of bias within the medical system. Formal evaluation methods will be employed when the module is offered this year using mixed methods strategies: a student survey to collect self-report data about the impact of the module on beliefs and attitudes about HD and implicit bias; an instrument to allow facilitators to evaluate group discussion and participation; and narrative analysis of the written assignment done in preparation for the session and another assigned several months later at the end of the course, using thematic analysis to evaluate changes in student attitudes.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** The problem of HD is complex and a variety of methods are required to teach it effectively. Engaging an entire class in examining their values and assumptions is a difficult but important aspect of this effort. A number of strategies have been attempted in PDC to meet this goal in prior years, including administration of the Implicit Associations Test (IAT), core readings, and asking students to interview patients on their inpatient teams. The new methods employed in our pilot were far more successful in engaging students and faculty. We hope that formal evaluation will document that it helped them to appreciate the experience of bias from a patient perspective and to become more aware of their own potential for implicit bias, both important goals of the curriculum. Although we did not encounter problems in our pilot, we will enhance preparation for both patient volunteers and faculty facilitators to ensure that both groups feel adequately supported in their roles.

**ONLINE RESOURCE URL (OPTIONAL):**

**INTRODUCTION TO CLINICAL PRACTICE GUIDELINES VIA CASE BASED LEARNING: THE SUMMA HEALTH SYSTEM INTERNAL MEDICINE RESIDENCY EXPERIENCE** Rex Wilford 1; Ronald Jones 1; David Sweet 2. 1Summa Health System, Akron, Ohio; 2Summa Health System, Wadsworth, Ohio. (Tracking ID # 120862)

**SETTING AND PARTICIPANTS:** Clinical practice guidelines have been developed from reviews of available evidence-based data with adherence being associated with improved patient outcomes. Pay-for-performance programs and public reporting have encouraged adherence. Poor resident knowledge of key clinical practice guidelines has been documented, while implementation of an interactive curriculum has been associated with improvement. We developed an internet accessible case-based ambulatory learning curriculum with direct links to established clinical practice guidelines for our internal medicine residents completing their ambulatory care rotation.

**DESCRIPTION:** Eleven didactic cases involving common ambulatory care medical issues were developed and posted on the residency program’s website with electronic links to clinical practice guidelines beginning in December 2008. A post-test to be answered utilizing the guidelines was included with each case. Twice weekly resident led small group educational sessions (30 minutes each) were implemented during the annual one month ambulatory block rotation to facilitate review of the guidelines. Attendance and participation was required for all residents completing their ambulatory care rotation, assuring exposure of all residents to these guidelines at least annually. Cases were presented by a resident followed by a question and answer session in which residents and faculty participated. Feedback to the presenting resident was provided via the ACGME Learning Portfolio. An anonymous, voluntary electronic survey was posted for two weeks in May 2010 to obtain feedback on the curricular changes.

**NEEDS AND OBJECTIVES:**
1) Develop an internet accessible case-based ambulatory learning curriculum for Internal Medicine residents with direct links to established clinical practice guidelines
2) Integrate this curriculum into the already established didactic program that is part of each resident’s ambulatory care month

**EVALUATION:** A total of 41 of 60 possible residents responded to the survey. 98% of respondents felt the didactic sessions where helpful in preparing them for independent practice (35% extremely helpful; 40% very helpful; 23% helpful), 98% of respondents felt the information they had learned during didactic sessions had changed the way they managed their clinical and/or hospital patients. 34% of respondents felt they were not likely or only somewhat likely to have reviewed the clinical practice guidelines prior to graduation without these didactic sessions (5% extremely likely; 20% very likely; 41% likely; 27% somewhat likely; and 7% not likely).

**DISCUSSION/REFLECTION/LESSONS LEARNED:** Case based learning can be an effective method to introduce internal medicine residents to clinical practice guidelines. Success of such didactic sessions rests on ease of access to the cases and clinical practice guidelines via availability on the internet with direct links, as well as organization and feedback. The vast majority of residents feel participation in such sessions is valuable and contributes to changes in the way they manage their patients. Future studies should focus on the impact of participation in these sessions on subsequent indicators of resident clinical performance. The curriculum could be implemented by other programs.

**ONLINE RESOURCE URL (OPTIONAL):** http://web.me.com/ronjones1/Site_7/Welcome.html

**MID-DISCIPLE AND MID-ROTATION ASSESSMENT AND COURSE CORRECTION** Mark Mayer 1; David Gugliotti 2; Matthew Kroh 2; Adele Sweet 2; Matthew Kroh 2; Tracy Hull 2; Xiaon Jin 2; Robyn Stewart 2. 1Cleveland Clinic Lerner College of Medicine of CWRU SOM, University Heights, Ohio; 2Cleveland Clinic Lerner College of Medicine of CWRU SOM, Cleveland, Ohio. (Tracking ID # 120994)

**SETTING AND PARTICIPANTS:** In 2006, Basic Core rotations for third year medical students were designed for Cleveland Clinic Lerner College of Medicine and CWRU School of Medicine, integrating “core clerkships.” Goals were to integrate clinical rotations, didactics, and assessments across 2 or 3 disciplines in each “Basic Core” rotation. For this to work best for assessments, sharing of assessments between faculty of different disciplines at periodic intervals should occur within a multi-disciplinary rotation.

**DESCRIPTION:** At the Cleveland Clinic, the Basic Core 1 rotation includes Internal Medicine and Surgery. Students are required to fill out logs for patient encounters, and submit these to faculty online, requesting assessment. They are also assessed on involvement in interdisciplinary didactics. A core faculty assessment team (3–4 members each in IM and Surgery) meets together every fourth week, tracking clinical progress, personal learning plans, diagnoses and conditions covered by students. This team discusses interventions to address learning needs, and alters upcoming rotations on the same or the sister discipline as needed. These core faculty members meet with students every 4 weeks during a 16-week Basic Core rotation. Mid-reviews and end-of-discipline reviews are entered online by Faculty
IMPLEMENTING BIOPSYCHOSOCIAL LEARNING IN A LONGITUDINAL AMBULATORY CLERKSHIP: PROGRESS AND CHALLENGES

Rosalyn Stewart 1; Gail Geller 2; Patricia Thomas 3; Maura Joyce McGuire 4. 1Johns Hopkins University School of Medicine, Department of Medicine, Baltimore, Maryland ; 2Johns Hopkins School of Public Health, Baltimore, Maryland ; 3Johns Hopkins University School of Medicine, Glen Arm, Maryland ; 4Johns Hopkins Community Physicians, Baltimore, Maryland. (Tracking ID # 121119)

SETTING AND PARTICIPANTS: LC begins in the 4th month of medical school, runs for two semesters and enrolls 120 medical students who work 1:1 with an LC preceptor in a practice located within 25 miles of the main campus. Prior to beginning the LC, students complete an intense clinical skills course (CS) and an orientation to HS. Faculty participants included LC preceptors, CS faculty and HS faculty; leaders of all three faculty groups attend integration meetings. The majority of LC preceptors are part-time faculty (85%). All LC preceptors receive a small stipend for teaching, complete orientation and participate in ongoing faculty development (FD) via bi-monthly online meetings. CF and HS faculty do not receive additional support for work in LC and did not consistently participate in FD. Students and faculty have access to online course materials, and receive weekly emails with readings and learning objectives.

DESCRIPTION: In addition to completing 24 patient care sessions, students learn HS by reading, reflecting, and participating in 5 small group sessions. Students track clinical and HS learning events (HSLE) for two patients per clinic session, and submit 7 written reflections per semester to an online learning portfolio. CS faculty, who also function as individual student advisors, receive an email link when students submit a reflection, and are encouraged to review it.

NEEDS AND OBJECTIVES: Medical education reform calls for formation of professionals who improve medical practice, enhance quality and safety, and care for patients as individuals. To address these needs, the Johns Hopkins University School of Medicine (SOM) launched a new four year curriculum which combines biopsychosocial and clinical training in a first year ambulatory clerkship (LC). The biopsychosocial curriculum is framed around eleven horizontal strands (HS): clinical reasoning, cultural competence, communications, ethics/professionalism, epidemiology, life-cycle (pediatrics and aging), nutrition, health policy, pain and patient safety. Unique objectives of our LC were to implement a curriculum for biopsychosocial learning in everyday practice, develop qualified faculty and employ appropriate instructional and evaluation methods.

EVALUATION: Curriculum evaluation methods included quantitation of HSLE and a knowledge assessment. Students and faculty complete a clerkship evaluation. FD attendance is tracked.

DISCUSSION/REFLECTION/LESSONS LEARNED: One class has completed the LC with the HS curriculum. HSLE demonstrate exposure to all eleven biopsychosocial strands, and 80.4% of students agreed that biopsychosocial learning objectives were met. Learning methods present challenges; in designing the LC curriculum we felt that reflection and facilitated discussion would promote HS learning, but few students agreed that reflections (19.6%) or small groups (15.7%) were useful. Students strongly endorsed a need for feedback on reflections; while faculty indicated goals and how to provide feedback were unclear. We believe that reflection and discussion are valuable and have potential for consolidating areas of learning that would otherwise be missed. We are working on faculty development, rubrics for providing feedback and evaluating quality of reflective learning, and incorporating team and concept-mapping methods into our small group work.

ONLINE RESOURCE URL (OPTIONAL): https://casemed.case.edu/cas/
Our objectives were to: (1) create a M&M conference that is sustainable in diverse ambulatory clinic settings, (2) foster a supportive, collaborative environment through a prospective, morning-report style case presentation, and (3) execute action plans to improve patient care.

**EVALUATION:** To date, of the cases discussed, 56% involved harm to patients and 44% were considered near-misses. Common themes were inconsistent clinic protocols, unrecognized medication interactions, medication prescribing errors, and delayed diagnoses of important medical conditions. Examples of quality improvement activities produced from this conference include redesigned clinic protocols for vaccine documentation and acute coronary syndrome, and education on appropriate evaluation of dyspnea and documentation of preventive health screening. Feedback sessions found that participants valued the conference’s mission and format.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** The application of a morning report format to M&M promotes frank and open discussion, in contrast with other types of M&M in which participants passively consider a fully presented case in retrospect. Furthermore, the morning report format is readily exportable: most internists are familiar with its rubric, and such a conference may be performed in small group clinic settings.

Reflecting on our experience with this innovative model of M&M in the primary care setting, we find the following critical features: (1) a morning-report style presentation, (2) a small, multidisciplinary group, and (3) creation of an action-oriented task group. This model is not housestaff-dependent and may be readily adopted in any primary care clinic.

**ONLINE RESOURCE URL (OPTIONAL):**

**IMPLEMENTING PATIENT AND FAMILY CENTERED CARE IN THE CURRICULUM OF AN INTERNAL MEDICINE RESIDENCY PROGRAM**

Maral Kojaian 1; Parul Sud2. 1McLaren Regional Medical Center, Flint, Michigan; 2Mclaren Regional Medical Center, Flint, Michigan. (Tracking ID # 12138)

**SETTING AND PARTICIPANTS:** The setting is a community based internal medicine program. Attendants included 36 internal medicine residents (PGY 1, 2, 3), faculty members, and a subspecialist. One of the regularly scheduled educational noon conferences was converted into a monthly Ambulatory PFCC conference.

**DESCRIPTION:** A resident’s continuity clinic patient with family members is invited to the PFCC conference. An informed consent is obtained. The patient presents his/her story and an interactive discussion ensues among faculty, residents, patient, and family. Primary diagnosis, differential diagnoses, and management plans are discussed. The patient and family are encouraged to ask questions and express their beliefs, feelings and frustrations. Specific emphasis is placed on seeking the patient’s and family member’s understanding and perspectives about the illness and its effects on their lives.

**NEEDS AND OBJECTIVES:** Patient- and family-centered care (PFCC) is an approach to health care that is grounded in partnerships among patients, families, and health care providers. The four principles of PFCC are: Dignity and Respect, Information sharing, Participation and Collaboration. Integrating the core concepts of PFCC in residency training programs is seen essential in meeting the six ACGME competencies. There are many barriers to implementing change from the current profession-centric to patient-centered practice. To our knowledge most residency programs have not implemented curricula to teach PFCC to residents. Our primary objective was to implement a model of PFCC in our curriculum. A secondary objective was to seek residents’ feedback of this process as well as exploring barriers to the practice of PFCC.

**EVALUATION:** Four months after implementing the PFCC noon conference, a two part-survey consisting of 20 questions was administered anonymously amongst the faculty and residents, to evaluate their knowledge and attitudes about PFCC, and their satisfaction with this model. Twenty three people responded. Over 75% reported that PFCC conference helped improve performance in all ACGME core competencies. Eighty percent and 70% agreed that they would like to implement PFCC in their outpatient clinic and inpatient wards respectively. Ninety percent felt that PFCC noon conferences might be burdensome to patients or that patients might be offended by revealing sensitive personal history. 100% agreed that the organization provided opportunities to learn directly from patients and their families. Time constraint was perceived as the main barrier to implementing PFCC.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** In the era of healthcare reform, patients remain at the core of human medicine, especially in the context of primary care providers and Patient Centered Medical Home. We took the initiative in our Internal Medicine residency program to teach the concepts of patient-and family centered care via a PFCC conference. This model improved residents’ perception of performance in ACGME core competencies particularly Interpersonal and Communication skills, Professionalism, and System-Based practice. We did not measure patient/family satisfaction, nevertheless, studies have shown that when health care providers, patients and families work in partnership, the quality and safety of health care rises, costs decrease, and provider and patient satisfaction increases.

**ONLINE RESOURCE URL (OPTIONAL):**

**A NOVEL CURRICULUM IN CLINICAL REASONING**

Joseph Rencic 1; Robert Trowbridge2. 1Tufts University School of Medicine, Tufts Medical Center, Cambridge, Massachusetts; 2Maine Medical Center, Portland, Maine. (Tracking ID # 12169)

**SETTING AND PARTICIPANTS:** 200 second-year medical students are divided into fifteen small groups. Groups meet for nine case-based sessions of two hours each. These are spread over 6 months. This course replaced the previous problem-based learning curriculum in the second year.

**DESCRIPTION:** To develop clinical reasoning skills, students learn how to apply pattern recognition to cases based on clinical findings and epidemiology, and how to apply Bayesian reasoning for more difficult cases. Each week focuses on a common medical symptom. Web-based, interactive pre-class cases introduce clinical material and teach problem solving and decision making via “clinical reasoning tips”. Students use these cases to develop illness scripts for specific symptoms. The in-class cases, taught by master clinicians, focus on the same symptom as the pre-class case, but have different final diagnoses. Illness scripts and clinical reasoning concepts from the pre-class case are used to compare and contrast the two cases. Students list the clinical findings, and then rate the likelihood of each finding for each disease in the differential in a tabular format. This allows development of pattern recognition and discussion of Bayesian reasoning.

**NEEDS AND OBJECTIVES:** Clinical reasoning is a fundamental skill of the physician. Although most medical schools have case-based learning courses, few explicitly teach clinical reasoning. We developed a case-based learning model focused on clinical reasoning that integrates principles of modern learning theory into master clinician-facilitated case-based learning. Our objectives are 1) to introduce students to key definitions and concepts of clinical reasoning, and 2) to teach students to apply these techniques to reduce cognitive diagnostic error.
EVALUATION: Evaluation of the students will be based on a final exam consisting of key features and script concordance testing items, as well as short answer to assess students reasoning processes. In addition, we will use a one station OSCE focused on applying clinical reasoning to an ambiguous case to gain a qualitative understanding of the student’s reasoning process. The course will be evaluated via a survey instrument and focus groups with the students and faculty.

DISCUSSION/REFLECTION/LESSONS LEARNED: This course is innovative in teaching clinical reasoning by strengthening both pattern recognition and analytic skill, as well as methods for reducing diagnostic error. Existing PBL courses at other schools could be easily modified to resemble this one. Seven sessions to date are completed. Preliminary feedback has been extremely positive. Students enjoy linking their pathophysiologic knowledge to clinical cases, and facilitators have all agreed to teach the course again next year. We plan to collect formal feedback from both students and faculty at the conclusion of the course regarding course content and structure and perceived relevance. The major limitation of the course is the assessment of students. Given the significant costs of a multi-station OSCE focused on clinical reasoning (perhaps the gold standard), our approach seems reasonable. However, we continue to work on better methods of assessment to evaluate the effectiveness of the course in achieving its objectives.

ONLINE RESOURCE URL (OPTIONAL):

DEVELOPING A RESIDENT DRIVEN PEER EVALUATION SYSTEM: OUR PROCESS AND CHALLENGES Aubrey Jolly Graham 1; Saumil Chudgar 2; Erin Hommel 2; Diana McNeill 2. 1Duke University Medical Center, Durham, North Carolina ; 2Duke University Hospital, Durham, North Carolina. (Tracking ID # 12186)

SETTING AND PARTICIPANTS: This evaluation system was implemented in a single, large Internal Medicine residency program of approximately 140 categorical residents and 26 residents from combined residency programs.

DESCRIPTION: A peer evaluation development and implementation committee was assimilated, led by residents and included representatives from all levels of training, with additional support from program administrators and directors. A succinct, practical evaluation tool that would be universal to a variety of inpatient rotations and evaluator-subject relationships was developed. A pre-implementation survey was administered to determine resident attitudes toward peer evaluation. The peer evaluation process was implemented residency-wide after a pilot phase to assess the tool’s ease of use and methods of dissemination. A post-implementation survey was administered both to residents and faculty advisors to assess acceptability and impact of the system.

NEEDS AND OBJECTIVES: Assessing resident performance the six ACGME core competencies is a critical part of resident education. Residency programs are challenged with demonstrating this assessment using valid and reliable tools. Peer evaluations are one such tool thought to be well suited to provide feedback in competencies that may be more difficult to assess via traditional evaluation methods: Professionalism, Patient Care, and Interpersonal and Communication skills. Unfortunately, limited data exists on the applicability and acceptability of peer evaluation among resident physicians. Acknowledging that residents are uniquely positioned to provide insightful review of each other’s performance, we sought to develop a valid peer evaluation tool, implement a resident-driven peer evaluation system, and simultaneously assess resident acceptance and perceived utility of peer evaluation. As a means of stimulating acceptance, peer evaluation development and implementation was entirely resident-driven.

EVALUATION: Feedback on the peer evaluation system was assessed periodically through resident-led committee meetings and focus groups, permitting interim adaptation of the feedback tool and dissemination process. Completion rates were tracked real-time. Pre- and post-implementation survey data was compared. Additional survey data concerning residents’ comfort with the peer evaluation system (including level of evaluator anonymity) was studied. Post-implementation surveys of faculty advisors were also analyzed. The quality of the resident peer-to-peer feedback was considered through analysis of average evaluation ratings per evaluation statement per level of training. Additional data was gathered through review of free text comments regarding specificity and usefulness of the evaluation feedback.

DISCUSSION/REFLECTION/LESSONS LEARNED: Securing resident input in the development and implementation of the peer evaluation system was integral to the creation of a useful, applicable, and well-accepted system. The survey tool has since been easily adapted to a multi-evaluator 360 degree system. A completion rate of 87% was achieved. Many residents had positive comments about the utility of the system. Faculty advisors overwhelmingly reported the peer evaluations as useful. The greatest challenge has been maintaining resident confidence in anonymity, limiting more honest and robust feedback. Ratings for certain evaluation statements suggest a trend of improvement between classes as residents advance. Additional challenges include adapting to changes in rotation structure and residency management software, anticipating the cost and resources associated with maintaining the system, and ensuring timely distribution of evaluations.

ONLINE RESOURCE URL (OPTIONAL):

DISCHARGE SUMMARY QUALITY IMPROVEMENT PROJECT Tehila Zuckerman 1; Dahlia Rizk 1; Maria Kassab 1; Anna Kochn 1; Rebecca Calabrese 1. 1Beth Israel Medical Center, New York, New York. (Tracking ID # 12192)

SETTING AND PARTICIPANTS: The study took place in a large urban academic medical center over a one month period. Discharge summaries of 29 house officers were evaluated when they were assigned to a medical ward during this time. Survey participants included all current internal medicine house officers, the primary care teaching practice, as well as hospitalist physicians. The educational intervention took place in the format of a noon conference for the house staff.

DESCRIPTION: An anonymous pre-intervention on-line survey was sent to 121 internal medicine house officers and 39 faculty physicians, asking recipients to rate current discharge summary quality and their interest in a formal educational session on this topic. Thereafter, 30 randomly selected, de-identified discharge summaries were scored using an 18 item discharge summary quality scoring tool created by study investigators. Subsequently, approximately 60-70 internal medicine house officers attended an educational lecture highlighting those items in need of improvement identified by the scoring tool. The session was followed by an anonymous post-intervention on-line survey of house officers, soliciting feedback about the lecture. Lastly, thirty randomly selected, de-identified discharge summaries written by the same group, after the intervention, were scored to evaluate impact. A quality score of 80% or greater was considered adequate quality.

NEEDS AND OBJECTIVES: Hospital discharge summaries are an important tool used by clinicians for communication with colleagues and patients. Studies have demonstrated discharge summary quality impacts patient morbidity and mortality. Studies have further shown discharge summary quality often does not meet the standards set by medical societies and physician consensus. This study aimed to determine the quality of discharge summaries written by house staff
at a large urban academic medical center. It further sought to evaluate whether an educational intervention would be effective to improve quality. The perception of the intervention was also assessed.

**EVALUATION:** The pre-intervention survey yielded responses from 50 of 121 house officers and 24 of 39 faculty physicians queried. On average for both faculty and house staff, it was perceived that 60% of summaries were of high quality as it pertains to completeness and legibility. 86% of house officers and 87.5% of faculty agreed a formal educational intervention would be of benefit. The post-intervention survey of 121 house officers yielded 42 responses. The discharge summary scoring tool found the average overall pre-intervention quality score to be 87%, but identified 9 of 18 individual items scored as having an average quality below 80%. The overall post-intervention quality score of the discharge summaries improved to 93.9%, with only 1 of 18 individual items scored having an average quality score below 80%. The post-intervention survey revealed 96% of the house staff attending the session recommended formally incorporating the educational intervention into the academic curriculum.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** House officers and faculty were in agreement regarding the need for discharge summary quality improvement and an educational intervention to help achieve this goal. The educational intervention given for this purpose was universally perceived as valuable by the house officers who attended. Nearly all summary items in need of improvement achieved a quality score of greater than 80% after the educational intervention. Our study demonstrates the value of implementing a formalized discharge summary educational session into the official academic curriculum.

**ONLINE RESOURCE URL (OPTIONAL):**

**TEACHING MOTIVATIONAL INTERVIEWING IN AN AMBULATORY MEDICINE CLERKSHIP WITH SUPPORT FROM AN ONLINE WEB BASED ACADEMIC SITE** Teresa Cheng 1; Julie M Crosson 2; Warren Hershman 3; Suzanne Sarfaty 4; Thomas Barber 4. 1Boston University School of Medicine, Brookline, Massachusetts; 2Boston University School of Medicine, Dorchester, Massachusetts; 3Boston University School of Medicine, Sharon, Massachusetts; 4Boston University School of Medicine, Boston, Massachusetts. (Tracking ID # 12226)

**SETTING AND PARTICIPANTS:** The MI workshop was one in a monthly series of workshops developed in academic year 2010 on advanced physician-patient communication as part of Boston University’s Ambulatory Medicine Clerkship. Our goals in designing the curriculum included maximizing direct teaching time and effective use of senior physicians with advanced communication skills. Scarce instructional time would be reserved mainly for skills demonstration, practice and constructive feedback. Hence, we used an online web based academic site called Blackboard to post assigned readings and demonstration videos on MI technique prior to the workshop session in order to take full advantage of the classroom time to focus on clarification of concepts, discuss contrasting view points and allow extended time for role playing.

**DESCRIPTION:** A major difficulty with teaching MI is the tendency of health care professionals to under appreciate the challenges of adopting behavioral changes in the context of a patient’s life. Toward this end, during the role plays incorporated into our workshop medical students are asked to work on a meaningful personal health behavior change. During the week, they are asked to post their reflections on Blackboard’s Discussion Board, an online forum for non simultaneous communication. Postings are grouped into threads that contain a main heading and all related replies. Fellow students are pre-assigned in class to respond to their small group members. Our innovations for the workshop include the employment of the previously underutilized resource of Blackboard in clinical medicine rotations, use of experiential learning as a way of enhancing reflection on the challenges of behavior change, and the use of Discussion Board as a vehicle for sharing of reflections.

**NEEDS AND OBJECTIVES:** Much of health care today focuses on helping patients manage conditions whose outcomes can be greatly improved by behavior change. These conditions range from tobacco and alcohol cessation to control of chronic diseases such as diabetes and hypertension. Motivational Interviewing (MI) has been shown to be more effective than traditional advice giving in the treatment of a broad range of medical conditions. Previous efforts to incorporate MI into the curriculum of medical schools have focused mostly on knowledge and skill development. To promote a shift in attitudes and encourage understanding of the collaborative spirit of MI, we designed an experiential educational intervention to help medical students understand and articulate the challenges of behavior change. We believe this may facilitate empathy and increase understanding of the importance of the patient’s perspective in health behavior counseling.

**EVALUATION:** The MI curriculum has been in place since June 2010 and overall response has been positive. Acceptance and participation in this assignment was high. As groups of students interact during the course of the week and comment on each others posts, it is clear that Discussion Board is instrumental in achieving our learning objectives of understanding and articulating the challenges of adopting behavior changes. Students have frequently commented that the challenges of behavior change were greater than they had originally thought. Postings by students reflect on how this helped them realize the difficulties their patients face when taking on health behavior change. In addition, students have been innovative with their use of Discussion Board, attaching pictures of themselves using a variety of exercise equipment as they work to get back in shape or posting additional information they have found while doing research on a behavior change.

**DISCUSSION/REFLECTION/LESSONS LEARNED:** To our knowledge, online academic websites have not previously been used as a method of encouraging self reflection for behavior change. The most frequent changes adopted by the medical students include healthier eating, exercise, taking vitamins, getting more sleep, and also less common ones such as reduction in online surfing time, more leisure reading, and getting organized.

It is unclear if the increased insight into the challenges of behavioral changes will translate into long term improvements in health care communication overall and in particular for MI. Whereas role plays have been used in other MI curriculum, this is the first time that we have used a student driven scenario. In contrast to what is often seen in other role play sessions, the students remained highly engaged during the sessions. In addition, by the end of the academic year we will have a rich repository of health behavior change reflections which we hope to analyze for content and themes.

**ONLINE RESOURCE URL (OPTIONAL):**

**IMPROVING COMMUNICATION SKILLS AND TRANSITIONS OF CARE: DEVELOPMENT OF A DISCHARGE SUMMARY CURRICULUM FOR INTERNAL MEDICINE INTERNS** Briar Leigh Duffy 1; Jed Gonzalo 2; James Bost 3; Melissa McNeil 1. 1University of Pittsburgh/VA Pittsburgh, Pittsburgh, Pennsylvania; 2Beth-Israel-Deaconess Medical Center, Boston, Massachusetts; 3University of Pittsburgh, Pittsburgh, Pennsylvania. (Tracking ID # 12248)

**SETTING AND PARTICIPANTS:** This study was conducted in the University of Pittsburgh Internal Medicine residency program from August-November 2010. All first-year residents rotating on the general internal medicine inpatient services were included. Sixty-five interns participated.
DESCRIPTION: Faculty and residents were surveyed to assess their views about characteristics of the ideal DS. We then used these results to develop the curriculum and to adapt a previously published DS grading tool. The curriculum consisted of a 1-hour workshop during the first week of a 4 week general medicine inpatient rotation followed by weekly 10-minute peer review sessions on colleagues’ deidentified DSs. The workshop included a didactic presentation of DS requirements and faculty preferences, an exercise on converting hospitalization details to a DS, and an introduction to the DS grading tool. During the peer review grading sessions, each intern received 1) formative feedback via a copy of a DS that he or she had written that had been graded by both another intern and the faculty member and 2) DS that he or she had previously graded with a copy of the faculty grade for comparison. Then, each intern graded a new DS written by a peer. Interns completed pre- and post- curriculum questionnaires.

NEEDS AND OBJECTIVES: High quality discharge summaries are critical to ensuring effective transitions of care for hospitalized patients after discharge. Despite their importance, little attention is given to teaching residents how to write discharge summaries (DSs) and this lack of emphasis is apparent. Retrospective analyses of DSs shows they are missing information about pending tests 75-87% of the time and about the follow-up provider 33% of the time. The primary goal of this educational innovation was to develop an interactive discharge summary curriculum for internal medicine interns. The key element of the curriculum was the use of peer feedback as a way to reinforce key concepts, achieve resident buy-in, and use faculty time efficiently. The goal of the curriculum was improved discharge summary quality.

EVALUATION: The mean score of the discharge summary improved (p=0.02). They reported that they had a higher level of knowledge about the required (p=0.001) and preferred components (p < 0.001) of a DS compared to before the curriculum. As a result of this curriculum, participating interns stated they would write higher quality DSs (3.83/5) and would be better able to offer constructive feedback to peers (3.73/5). They felt it should be offered to next year’s interns (4.1/5). They commented that the feedback, specific critiques, and anonymous peer grading were helpful.

DISCUSSION/REFLECTION/LESSONS LEARNED: Participating interns improved the quality of their DSs in several categories, felt the curriculum was valuable, and asked that it be offered to future interns. Peer feedback can enhance learning for interns and distribute the teaching workload from faculty.

ONLINE RESOURCE URL (OPTIONAL):

AN EDUCATIONAL INNOVATION - INTRODUCTION OF WEB-BASED PERIOPERATIVE TEACHING MODULES FOR SENIOR RESIDENTS ROTATING THROUGH THE GENERAL INTERNAL MEDICINE CONSULT SERVICE Fraulein Morales 1; Vijay Daniels 1; Cheryl Goldstein 1; Narmin Kassam1. 1University of Alberta, Edmonton, Alberta. (Tracking ID # 12282)

SETTING AND PARTICIPANTS: In our institution, third year Internal Medicine residents complete a 4-week rotation on the GIM Consult Service. The objectives of this rotation are for learners to: gain an understanding of the consultation process, triage admissions from the Emergency Department and transfers from the Intensive Care Unit, and learn the principles of perioperative management by completing consultations from surgical services, under the guidance of a staff internist. Perioperative consultations provide the bulk of consultations on the service.

DESCRIPTION: The authors identified the most common issues encountered in perioperative medical consultations and modules were created to address these. Each module had a primary author and a reviewer. The author completed a literature search and wrote a summary document. The modules consisted of this summary document and the referenced articles. Twelve modules were written and uploaded to our online e-learning community allowing users access from anywhere at any time.

NEEDS AND OBJECTIVES: Prior to this Perioperative Module, there were no formal references or resource materials regarding perioperative medical management available to learners at our institution. Learning was highly preceptor and case-dependent.

To identify medical issues most commonly encountered in the General Internal Medicine (GIM) Consult Service in a tertiary care, teaching hospital. To design and create an evidence-based curriculum on perioperative medical management that will be resource material for learners rotating in the GIM Consult Service. To design and create evidence-based curriculum on perioperative medical management that will serve as a teaching guide for preceptors on the GIM Consult Service. To disseminate the use of the curriculum through the University of Alberta Department of Medicine’s web-based teaching and learning tool. To evaluate learner usage of the curriculum by gathering usage data from our e-learning community.

EVALUATION: We introduced the perioperative modules during the Internal Medicine residents’ Academic Half-day to increase comfort with the online e-learning resource and to encourage use of the modules. After a two-hour seminar, the residents completed a survey which demonstrated that 92% planned on using the modules as their primary resource for perioperative medicine. After the seminar, mean comfort level with the online e-learning resource increased from neutral to between somewhat comfortable and very comfortable. We will be presenting the usage data from the months of July to January, which will include how often learners use the modules, which modules are used most and least often, and whether there is a relationship to usage and timing of the rotation’s final examination on perioperative medicine.

DISCUSSION/REFLECTION/LESSONS LEARNED: The authors initially intended to write a perioperative curriculum as a result of the absence of an evidence-based resource for learners and teachers. The idea to publish the modules on our online learning community came from the desire to disseminate the modules to a wider audience. We accomplished this by:

Making the modules accessible from anywhere at any time (point of need). Collaborating with our e-learning community experts to have access to convenient links to relevant resources. Encouraging the use of discussion boards for learners with questions/clarification. Clearly identifying module facilitators along with their contact information. Challenges remain, including (1) regular review of literature to update the modules (2) promote the continued use of the modules and discussion boards by both learners and preceptors and (3) encourage the readers to delve deep into the evidence and literature behind the summary documents and not focus on the latter.

ONLINE RESOURCE URL (OPTIONAL):

SAFE TRANSITIONS FOR EVERY PATIENT (STEP): IT’S PRIMARY Geoffrey C Lamb 1; David Klehm 1; Heather Toth 1; Michael Weisgerber1. 1Medical College of Wisconsin, Milwaukee, Wisconsin. (Tracking ID # 12284)

SETTING AND PARTICIPANTS: The STEP Collaborative is a group of Medical College of Wisconsin faculty in internal medicine, pediatric,
and family medicine participating in a three-year faculty development program designed to train faculty in curriculum development. The strategy is to develop methods to effectively teach learners to conduct safer and more effective care transitions. We have developed a workshop for training residents to effectively perform care handoffs using a standardized communication tool (the PRIMARY mnemonic). The targeted learners are residents in primary care specialties although the program would be suitable for senior medical students and specialties in which handoffs are commonplace.

DESCRIPTION: Content was developed using a systematic process including 1) a review of the care transition literature, 2) a needs assessment using surveys and structured interviews, 3) synthesis of the results of #1 and #2 to develop a standardized tool for care transitions (the PRIMARY mnemonic: Person, Reason, Input, Medical course, Assessment, Responsibilities, and Your turn) and 4) workshop creation and piloting during monthly facul development sessions. This one hour workshop consists of an introductory presentation, an interactive discussion of critical incidents involving care transitions, and a spirited Jeopardy-like game to reinforce key elements of the process. The workshop packet contains the PRIMARY care transition mnemonic, a critical incident worksheet, a quiz for assessing learner knowledge, a workshop evaluation form, and a detailed instructors' guide.

NEEDS AND OBJECTIVES: Lack of quality communication at the time of transition of patient care from one health care provider to another can lead to medical errors, patient dissatisfaction, and inefficiencies. The Joint Commission has identified that 70% of errors leading to significant patient harm arise from poor communication, often at the time of a hand off. Despite this, there is little formal education on the best methods of communicating necessary information at the time of a care transition. The few existing curricula have focused largely on handoffs within the hospital setting. Transitions to and from the primary care medical home have not been addressed. There is a need for curricula that emphasize transitioning patients from the perspective of the primary care setting. The purpose of this workshop is to introduce residents to a systematic approach to providing safe transitions for patients to and from the primary care setting.

EVALUATION: As a pilot, the workshop was initially presented to 37 family practice residents of all levels of training. Based on feedback from this session, the introductory lecture and the Jeopardy game were restructured to make them clearer and more focused and to include more case examples. Nineteen first year internal medicine and eight pediatric residents completed the revised workshop. Evaluations were performed using the session evaluation form. Participants found the workshop to be relevant (6.0; 1 = poor, 7 = excellent) and believed that it would improve their handoff skills (3.1; 1 = strong disagree, 4 = strongly agree).

DISCUSSION/REFLECTION/LESSONS LEARNED: We designed an interactive workshop to train residents to perform consistent handoffs to and from the primary care setting. The materials developed are easily shared and adaptable to other audiences. Residents appreciate the varying formats within the workshop although transitions from one activity to another need to be smooth, without delays. The Jeopardy game can get competitive. Rules and judges decisions need to be clear and consistent. Overall, the workshop has been well received and has been characterized as both valuable and fun.

ONLINE RESOURCE URL (OPTIONAL):

FACULTY DEVELOPMENT FOR CONTRIBUTED SERVICES FACULTY THROUGH PRESENTATION AT A CME CONFERENCE Toshiko Uchida 1; David Baker 1. 1Northwestern University Feinberg School of Medicine, Chicago, Illinois. (Tracking ID # 12332)

SETTING AND PARTICIPANTS: At Northwestern University’s Feinberg School of Medicine (NUFSM), our affiliated private practice and FQHC faculty are designated as “Contributed Services” (CS) faculty with “Clinical” professor titles. Starting in 2010, we recruited 4 CS faculty to analyze and present original research articles from the previous year at an annual CME conference. The CME conference is called the “Year in Internal Medicine” (YIM) and has been hosted by our Department of Medicine for the last 47 years. YIM draws approximately 200 internists each year, and consists of both didactic presentations and small group workshops lead largely by NUFSM specialists. Our session was a new addition to YIM entitled the “Update in General Internal Medicine.” This project was developed through our CTSA-sponsored practice based research network known as REACH.

DESCRIPTION: For each of the last 2 years, 4 CS faculty (3 private practice and 1 FQHC) per year have been recruited to present 2 articles each. Presenting faculty have ranged from 1–14 years post-residency, with most having very limited experience with professional presentations, and none in a setting like YIM. Articles are drawn from our monthly Division of General Internal Medicine Journal Club from the previous year. All Division and CS faculty are invited to vote for the articles which they feel have had the greatest impact on clinical practice, and presenters choose from this rank-ordered list. Faculty receive detailed one-on-one guidance and mentorship from an experienced REACH faculty member and presenters receive feedback from the audience was that the presenters were not experts in the topics covered and could not answer questions that were beyond the scope of the chosen articles.

DISCUSSION/REFLECTION/LESSONS LEARNED: Having CS faculty present at this well-established CME conference has been an excellent way to engage them in the academic life of the institution. Developing the presentations is a significant amount of work for these CS faculty, most of whom have full-time clinical responsibilities; however, all have agreed that it was worth the time invested. Since most presenters came to this project with limited experience, significant time and effort in one-on-one input was required from the REACH faculty member as well. Based on the audience’s concern that the presenters were not experts, for YIM 2011 the description of “Journal Club” has been added to the title of the session to clarify the nature of the presentation, and presenters have prepared more thoroughly for anticipated questions. We
ENHANCING MEDICINE SUBINTERNSHIP THROUGH NARRATIVE MEDICINE

SUSAN CLARK BALL
1. Weill Cornell Medical College, New York, New York. (Tracking ID # 12407)

SETTING AND PARTICIPANTS: The facilitator met once a week for an hour with students during their medicine sub internship. Sessions consisted of 2-6 students.

DESCRIPTION: Students were invited to reflect on their sub internship experience, to discuss difficult or rewarding situations and to comment on their “ownership” of their role as physician. Students read a brief text (poem, essay, story) chosen by the facilitator, then discussed the writing, offering perspective on both the content and the style. Students were then asked to write to a given prompt, usually a prompt influenced by the reading, such as, “describe a time when you had a front row seat,” or “write about a safe place.” Students and facilitator read their writing to the group and reflected on the content and narrative style.

NEEDS AND OBJECTIVES: Fourth year students on the Medicine Subinternship lack a forum in which they can reflectively assess their work and their future as clinicians. Our curriculum innovation sought to support the Medicine Subinterns by offering an added perspective through narrative competence and reflective writing.

EVALUATION: This is the firstyear that this project has started. Students’ responses have been positive but more rigorous evaluation has not been done. Assessment tools and ideas for further course enhancement are under discussion.

DISCUSSION/REFLECTION/LESSONS LEARNED: The techniques of Narrative Medicine used in our curriculum innovation seek to enhance the students’ capacity for narrative competence and reflective writing. The Medicine Subinternship is a pinnacle experience for most students as they find themselves at the end of one career (student) and the beginning of another (physician). The Subinternship involves a surfeit of responsibility and a limited amount of authority. Students spend inordinate amounts of time learning the “rules and tools” to get their work done, but little if any unstructured time is spent reflecting on their role as doctor, on their communication with their patients, or on their experience as a person. The Narrative Medicine curriculum innovation looks to broaden students’ perspective on the sub-I experience and improve their understanding and insight into their role as physician.

ONLINE RESOURCE URL (OPTIONAL):

“I HAVE A WEALTH OF RESOURCES IN MY COMMUNITY” : A MULTI-METHOD APPROACH FOR CROSS CULTURAL TRAINING FOR INTERNAL MEDICINE RESIDENTS

Lisa Staton 1; Mukta Panda 1; Carlos Estrada 2; Donna Roddy 3; David Ortiz 1; University of Tennessee College of Medicine, Chattanooga, Tennessee; Birmingham VAMC, The University of Alabama at Birmingham, Birmingham, Alabama; Blue Cross BlueShield Tennessee, Chattanooga, Tennessee. (Tracking ID # 12422)

SETTING AND PARTICIPANTS: The Internal Medicine Residency Program at the University of Tennessee College of Medicine, Chattanooga partnered with BlueCross BlueShield of Tennessee to obtain license to use an innovative web based curriculum, Quality Interactions®: trainees were required to complete 16 online sessions. The interactive case-based program uses real patients through case-based scenarios to...
demonstrate how cross-cultural challenges can be addressed in the clinical setting. We evaluated the course using domains referenced similar to the General Cross-cultural Preparedness survey to assess the participant's perceived preparedness for dealing with a variety of cultural encounters after the course (28 items; 5-point Likert scale).

DESCRIPTION: The multi-method approach included: a) a week long mid day conference series (panel discussion, introduction to online resources), b) a noon conference webinar with a national expert, c) small group sessions, d) a multi-cultural social gathering with local diversity leaders in the university, hospital, and private health care community and e) a Grand Round presentation on cross cultural training (introducing an NHLBI-funded online curriculum, Cultural Competencies Online for Medical Practice, http://www.c-comp.org).

NEEDS AND OBJECTIVES: National organizations recommend that health care professionals remain sensitive to cultural diversity among patients and recognize that preconceived perceptions may contribute to disparities in health care. Furthermore, accrediting organizations support inclusion of cultural competence training for student, physicians and all health care providers. We developed a multi-method approach for cross-cultural training of internal medicine residents using community resources.

EVALUATION: Of the 35 participants, 28 responded (80%); 62% were white, 19% African American, 15% Asian and 4% Chinese. Residents comprised 71% of respondents, faculty 7%, medical students 3%, others 19%. Seventy one percent of respondents perceived that the training would help them better care for patients from cultures different from their own and 63% thought participation should help care for patients whose beliefs are at odds with western beliefs. Most participants (63%) felt that the activity would help them feel more comfortable negotiating a treatment plan. Prior to the training, participants felt comfortable obtaining a social history (64%), but felt less comfortable caring for patients who distrust the U.S. system (27%), identifying religious belief that impact care (35%), and identifying customs that might affect care prior to the course.

DISCUSSION/REFLECTION/LESSONS LEARNED: A multi-method approach for cross-cultural training may help improve learner's confidence in their preparedness in cultural encounters. The training can set the stage for ongoing online learning and improve residents comfort with cross cultural encounters and improve knowledge, identification and collaboration with community partners. Follow up is needed to assess whether residents perceived comfort will translate into improved quality of care.

ONLINE RESOURCE URL (OPTIONAL): Cultural Competence Online for Medical Practice (C-COMP): A Clinician’s Guide to Reduce Cardiovascular Disparities (http://www.c-comp.org) and Quality Interactions®: A Patient-Based Approach to Cross-Cultural Care http://www.bcbs.com/providers/x

THE ART MUSEUM AS A SETTING FOR MULTIDISCIPLINARY TEAMBUILDING Mary E. Thornlike 1; Ray Williams 2; Joel T. Katz 3.
1Brigham and Women’s Hospital/Harvard Medical School, Jamaica Plain, Massachusetts; 2Harvard Art Museum, Cambridge, Massachusetts; 3Brigham and Women’s Hospital/Harvard Medical School, Boston, Massachusetts. (Tracking ID # 12425)

SETTING AND PARTICIPANTS: The Integrated Teaching Unit (ITU) at Brigham and Women’s Hospital is a regionalized general medicine care unit with a focus on bedside teaching, increased educational time, and multidisciplinary teamwork. Two teams of attendings, residents, and medical students rotate on the unit for one-month periods. Pharmacy students rotate for 3-month periods. Nurses, two social workers, two physical therapists, and two nurse-case managers work on the unit as permanent staff, and join with each rotating team to make two integrated multidisciplinary teams. The unit uses a variety of techniques to foster multidisciplinary teamwork including orientations for new team members, daily structured multidisciplinary rounds, a discharge planning checklist, ongoing quality improvement projects, and modeling of teaching and leadership by non-physician professionals.

DESCRIPTION: We designed a teambuilding intervention that takes place twice a month at the Harvard Art Museum. Each team rotating on the ITU has an evening session at the museum attended by all members of the medical team, a selection of nurses from the unit, and the team’s assigned social worker, physical therapist, nurse care coordinator, and pharmacy students. Teams take part in a series of structured discussions about works of art, led by a museum educator and a physician. Each work is chosen to prompt discussion and reflection about the nature of teamwork, the communication and interaction style of that specific team, and professional issues raised in the course of caring for patients. Program participants also complete several brief writing exercises over the course of the evening, inviting them to reflect on team dynamics, their own contributions to their team, and parallels or differences between the team’s experience in the museum and in the hospital.

NEEDS AND OBJECTIVES: Multidisciplinary teams are common in medical settings, and failures in teamwork and team communication have been shown to contribute to medical errors. As health care organizations work toward new goals of increased efficiency, safety and quality, multidisciplinary teamwork will be required in every setting. However, physicians are trained in a system that tends to emphasize individual responsibility and decision-making rather than teamwork, and which privileges the physician point of view. Other medical professionals are also trained in “siloed” settings with little opportunity for interprofessional education.

EVALUATION: Program participants complete a written evaluation at the end of the evening in addition to the reflective writing exercises. Feedback from both medical teams and other disciplines has been 100% positive. Common themes that emerge in the writing exercises and evaluations include respect, listening, hierarchy, the traditional segregation of disciplines, and the value of incorporating a wide range of perspectives. Participants frequently comment on the power of working together in a setting where traditional hierarchies and roles are absent. Nurses, social workers, care coordinators, pharmacy students and physical therapists who attend the sessions report that the teambuilding sessions have improved communication and collaboration with the medical teams rotating on the unit.

DISCUSSION/REFLECTION/LESSONS LEARNED: An art museum-based experience that engages both emotional and cognitive themes, allows transcendence of traditional roles and hierarchies, enacts team dynamics and encourages reflection on all these themes, has potential to improve communication and teamwork in a multidisciplinary medical team setting. When a group struggles together to build a theory about the meaning of a work of art, a student nurse and a senior physician-scientist can both contribute insights of substantial depth and meaning. The museum experience also serves as a chance for each group to learn something about themselves as a team-patterns of communication, humor, areas of tension, ability to tolerate disagreement and to build on each others’ ideas. When the teams return to the hospital, there is a new sense of connection, of knowing each other in a way that transcends the superficial. People who would have passed each other without notice now stop and talk about their shared patients.

ONLINE RESOURCE URL (OPTIONAL):
RESIDENTS-AS-LEADERS: A PROGRAM OF LEADERSHIP DEVELOPMENT THROUGH ASSESSMENT, OBSERVATION, FEEDBACK AND COACHING

Mary E. Thornelkde 1; Gregg Strack 2; Joel T. Katz 3; Brigham and Women’s Hospital/Harvard Medical School, Jamaica Plain, Massachusetts; OPUS Leadership Group, Boston, Massachusetts; Brigham and Women’s Hospital and Harvard Medical School, Boston, Massachusetts. [Tracking ID # 12454]

SETTING AND PARTICIPANTS: The Integrated Teaching Unit (ITU) at Brigham and Women’s Hospital, a regionalized general medicine care unit with a focus on bedside teaching, increased educational time, multidisciplinary teamwork and leadership development. PGY-2 and PGY-3 residents spend a month rotating as team leaders on the unit.

DESCRIPTION: Each month, the four resident team leaders take part in a structured program of leadership development, co-led by a physician and a management psychologist/leadership consultant. Each resident first completes an online self-assessment of their leadership style including strengths and areas for development, using a commercially available, nationally-normed instrument. Each resident is then individually observed leading team rounds by the leadership consultant, followed by a feedback session incorporating both the results of the self-assessment and the direct observation. During this session residents set individual goals for leadership development for the remainder of the month. Residents are then observed a second time by the ITU medical director, who again provides feedback targeted to each resident’s individual goals. Finally, feedback on residents’ performance is obtained from interns and nurses on each resident’s team.

NEEDS AND OBJECTIVES: Effective leadership by physicians is crucial in the current healthcare environment, with increasing emphasis on multidisciplinary teams, collaboration, performance and innovative practice structure. However, little or no consensus exists regarding optimal methods for defining and developing effective leadership during residency. This lack of consensus is reflected in the ACGME competencies, where leadership themes appear in multiple locations without a clear focus.

EVALUATION: Our goal is to use information gathered from the resident self-assessments, observations and the 360-degree feedback to create and validate a tool specific to resident leadership skills that can be used both as an assessment and a guide to individual resident development.

DISCUSSION/REFLECTION/LESSONS LEARNED: The first twenty residents to experience the program have given positive feedback about the perceived value of the intervention. Analysis of residents’ leadership behaviors as reported in the self-assessment and through direct observation show that the most commonly observed behaviors include interpersonal skills such as approachability and caring in relation to team members, as well as being organized and methodical in their work. Behaviors least frequently manifested include communicating clear expectations and giving feedback to team members.

ONLINE RESOURCE URL (OPTIONAL):

READMISSION MORNING REPORT: A NOVEL WAY TO INCORPORATE SYSTEM BASED PRACTICE, HOSPITAL PRIORITIES, AND RESIDENT EDUCATION

Mario Njem 1; Maguy Chiha 1; Pamela Cooper 1; Kelly Caverzagie 1; Kimberly T; Wadih Baker-GenawChacra 2; Brigham and Women’s Hospital, a regionalized general medicine care unit with a focus on bedside teaching, increased educational time, multidisciplinary teamwork and leadership development. PGY-2 and PGY-3 residents spend a month rotating as team leaders on the unit.

DESCRIPTION: Each month, the four resident team leaders take part in a structured program of leadership development, co-led by a physician and a management psychologist/leadership consultant. Each resident first completes an online self-assessment of their leadership style including strengths and areas for development, using a commercially available, nationally-normed instrument. Each resident is then individually observed leading team rounds by the leadership consultant, followed by a feedback session incorporating both the results of the self-assessment and the direct observation. During this session residents set individual goals for leadership development for the remainder of the month. Residents are then observed a second time by the ITU medical director, who again provides feedback targeted to each resident’s individual goals. Finally, feedback on residents’ performance is obtained from interns and nurses on each resident’s team.

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ONLINE RESOURCE URL (OPTIONAL):

AN INNOVATIVE APPROACH TO ESTABLISHING COMMUNICATIONS EXPECTATIONS AND STANDARDS IN CONSULTANCY

Cheryl Goldstein 1; Jennifer Ringrose 1; S. Ann Colbourne 1; University of Alberta, Edmonton, Alberta. [Tracking ID # 12507]
SETTING AND PARTICIPANTS: The University of Alberta Hospital General Internal Medicine Urgent Access Clinic (UAC) was developed in October 2009 to fill a gap in ambulatory care opportunities for senior internal medicine residents and to fill a need for urgent emergency room and community referrals. This hospital is a tertiary care center and a major referral center for Northern Alberta. The senior residents complete a 2-week ambulatory block rotation with UAC scheduled three days per week. Afternoon clinic responsibilities are in the Preoperative Assessment Clinic. Attending staff is assigned to the UAC on a weekly basis. The senior residents usually see 2 new patients per day and are allotted 1 hr 45 minutes to allow for a complete History and Physical exam, presentation and review with staff, and dictation of the consultation letter. During the second week, if necessary, patients may be booked to the same resident for a follow up appointment and follow up documentation as required.

DESCRIPTION: The residents are expected to dictate and review their consultation letters prior to distribution. The Attending physician will review and may choose to further revise the resident’s dictated letter prior to distribution. The residents are aware of their responsibilities and are given feedback during the rotation. The format of this feedback has been variable. To ensure feedback is provided we have scheduled feedback/teaching session on Thursdays to address resident performance, ambulatory topics and review consultation letters. This feedback will be passed along to the Attending staff covering the second week. At the end of the 2-week rotation, review of the resident’s consultation letters will assess for improvement in documentation skills. This competency, hitherto, has not been well captured in our curriculum. For the purposes of this study, the residents will be unaware that the consultation letters are part of a more formal research study.

NEEDS AND OBJECTIVES: Canadian and American post-graduate medical education governing bodies list communication as one of the mastery level core competencies for trainees in residency training programs. There has been minimal research to date with respect to written consultation letters in residency training programs (1,2). Residents require formal instruction on the key elements of a consultation letter. Our objectives are:

To schedule and ensure concurrent feedback on the completed consultation letters to make sure that the valuable skills of case synthesis and communication are honed and improved.
To meet a curriculum requirement in our training program.
To determine if we are meeting the needs of our referring physician base with our consultation letters.

EVALUATION: We plan to measure the effectiveness of the verbal feedback and the written communication of our residents. Two independent staff physicians will complete the Montreal Consultation Letter Rating Scale (MCLRS) based on the revised initial and final consultation letters completed by the dictating resident, prior to any revision by the Attending physician. The MCLRS was developed at the University of Montreal in 2003 and used by internists providing consultation letters to family physicians(3). In addition to the verbal feedback, the staff physician attending the UAC clinic will complete an evaluation form. The evaluation will be based on surveys sent to our referring physician population regarding the essential features of a consultation letter within Northern Alberta. The two Montreal Consultation Letter Rating Scales, and the two evaluation forms will be compared for each resident. The intra-reader reliability will also be calculated between staff members evaluating each resident.

DISCUSSION/REFLECTION/LESSONS LEARNED: Communication is a key skill required for most aspects of care provided by general internists, yet a difficult skill to measure. In reviewing residents written consultation letters, we gain insight into their abilities to synthesize the patient’s story and care requirements, in addition to their ability to communicate a clearly outlined management plan to partnering providers.

ONLINE RESOURCE URL (OPTIONAL):