PCNA 20th Annual Symposium
Poster Abstracts

**Category: Data-Based Research**

**First Place Winner: Randomized Controlled Pilot Study Testing Use of Smartphone Technology for Obesity Treatment**

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**Background:** More than one-third of adults in the United States are obese, putting them at increased risk for serious health complications. Even modest weight loss, 5–10% of initial body weight, can reduce the risk of these negative health consequences. The established interventions for weight loss are resource intensive, which can create barriers for full participation. Research suggests that mobile phones are a useful tool for intervention; however, there is a need for rigorous clinical trials testing the isolated effect of technology.

**Objectives:** The major goal of the pilot study was to evaluate the feasibility, acceptability, and preliminary efficacy of theoretically based behavioral interventions delivered by smartphone technology.

**Methods:** 68 adults were randomized to one of four groups for six months: (1) intensive counseling, (2) intensive counseling plus smartphone, (3) less intensive counseling plus smartphone, (4) smartphone only. The outcome measures of weight, body mass index, waist circumference, and self-reported dietary intake and physical activity habits were assessed at baseline and six months.

**Results:** The sample was 78% female, 49% African American, average age of 45 years, and average body mass index of 34.3 kg/m². Intervention usage was highest in the counseling plus smartphone groups. There were trends for differences in weight loss among the four intervention groups. Participants in the intensive counseling plus smartphone group and less intensive counseling plus smartphone group tended to lose more weight than the other groups (5.4 kg and 3.3 kg, respectively).

**Conclusions:** The results of this trial provide support for the use of smartphone technology for self-monitoring as an adjunct to behavioral counseling.

**Second Place Winner: American Indian Women’s Risk Perceptions and Health Beliefs Regarding Cardiometabolic Disease Following Gestational Diabetes**

Emily J. Jones, PhD, RNC-OB; Hannah Fraley, MSN, RN, IBCLC; College of Nursing and Health Sciences, University of Massachusetts Boston, Boston, MA.

**Background:** The incidence of cardiovascular disease (CVD) in American Indians is two times higher than the rate of the general U.S. population. Although American Indian women (AIW) with previous gestational diabetes mellitus (pGDM) are at high risk for developing type 2 diabetes (T2D) and CVD, little is known about their risk perception and health beliefs surrounding prevention.

**Objectives:** To describe childbearing AIW’s risk perceptions and health beliefs related to delay and prevention of T2D and CVD following pregnancy complicated by GDM.

**Methods:** A descriptive mixed methods study was conducted with 28 self-identified AIW (32.07 ± 4.9 years; documented pGDM) who obtained care in a tribal health system in a Southwestern state. Risk perception was measured using a modified version of the Risk Perception Survey-Developing Diabetes (adapted from Diabetes Prevention Program). Descriptive statistics were used to analyze survey data. Informant interviews and focus groups allowed participants to more fully describe risk perception and health beliefs. Inductive content analysis was used to explore the qualitative transcripts.

**Results:** Mixed methods data indicated moderate to high risk perception for T2D and CVD, with a positive relationship between risk perception scores (r = .887, p = .11), despite the fact that most women expressed knowing less about CVD. Many women perceived higher risk for T2D than CVD related to family history. Some variation existed related to women’s confidence to delay versus prevent T2D and CVD. However, the majority expressed delay was more probable, while prevention was possible for their children with earlier adoption of healthy lifestyle behaviors.
Conclusions: To reflect AIW’s moderate to high risk perception and their health beliefs related to T2D and CVD, culturally relevant health promotion interventions should emphasize the value of delaying cardiovascular disease with lifestyle behavioral change in the years following GDM rather than focus solely on prevention.

Third Place Winner (Tie): Provider Management of Cardiovascular Disease Risk in HIV Infected Patients: Room for Improvement

Yvonne Commodore-Mensah, BSN, RN; Jason Edward Farley, PhD, MPH, CRNP; Chakra Budhathoki, PhD, MS; Hayley Mark, PhD, MPH, RN; Cheryl R. Dennison Himmelfarb, PhD, ANP, RN; School of Nursing, Johns Hopkins University, Baltimore, MD.

Background: Antiretroviral therapy (ART), chronologic and physiologic aging, and comorbidity can substantially increase cardiovascular disease (CVD) risk in persons living with HIV (PLWH). Limited research has examined provider CVD prevention practices in PLWH.

Objective: We examined evidence-based CVD prevention practices and compared practices among patients with controlled and uncontrolled HIV in a retrospective cohort of PLWH.

Methods: Twenty of 37 providers within the Johns Hopkins AIDS Service agreed to participate and 10 records were randomly selected per provider. Medical records (n = 200) between January 1 to December 31, 2010, were reviewed to determine provider adherence to CVD prevention guidelines.

Results: Sample characteristics were as follows: male (58.5%), mean age (47.61 ± 8.93 years), African-American (78%), and unemployed (67%). The majority were treatment-experienced (93% had prior/current ART) and had controlled HIV (viral load ≤ 50 copies/ml) (76%). Among the 84 current smokers; 64% were advised to quit/cut back; 49%, offered assistance to quit; and 23%, prescribed smoking cessation medications. Among overweight/obese patients, those with controlled HIV were more likely to receive dietary counseling than those with uncontrolled HIV (58% vs. 25%; p < .002). Patients with controlled HIV compared to those with uncontrolled HIV were more likely to have fasting blood glucose measured (8% vs. 0%; p < .007), dyslipidemia (28% vs. 11%; p = .02) and have lipid-lowering medications prescribed (26% vs. 9%; p < .012). Among patients with hypertension, there were no differences by HIV control status and hypertension was uncontrolled (≥ 2 values of 140/90) for 58%, and 51% had antihypertensive medications prescribed. Compared to physicians, nurse practitioners and physician assistants were more likely to recommend dietary modification [OR: 2.5, 95% CI (1.4, 4.6), p = .002].

Conclusions/Implication for Practice: Our findings demonstrate that provider CVD risk management in PLWH is suboptimal. Strategies to promote lifestyle counseling and CVD risk management into the care of PLWH is needed to prevent CVD clinical sequelae.

Self-reported Barriers to Referral for Elevated Blood Pressure in the Emergency Department and Differences Between Provider-Type

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Background: Undiagnosed or under-treated hypertension (HTN) is prevalent in the emergency department (ED). The American College of Emergency Physicians (ACEP) recommends all adult patients who have a BP ≥ 140/90 mm Hg be referred for further evaluation. However, referral rates remain low and there are limited data to understand why.

Objective: The conceptual framework by Cabana and colleagues (1998) guided this study to examine barriers (knowledge, attitudes, external factors) to referral for elevated BP in the ED. This was a secondary analysis to determine differences between provider-type and self-reported barriers.

Methods: A random multidisciplinary sample of ED providers from three professional organizations in the United States (n = 450) were surveyed. Appropriate descriptive and bivariate analyses were conducted.

Results: RNs reported less knowledge of Stage I HTN (p = .043) and Pre-HTN (p < .01); were less aware of the ACEP guidelines (p < .001) and definitions for HTN (p < .001); reported more difficulty caring for patients who are asymptomatic (p = .007); required financial compensation to refer (p = .048); and perceived BP referrals are influenced by the opinion of the medical director (p < .001). MDs reported more skills to refer (p = .008); time as a barrier (p = .038); the ACEP Policy has not been formalized (p = .004); and wanted to know more about the policy before applying it (p < .01). PAs were more likely to report patients are not aware of health benefits (p = .035) and doubted their concern for their BP (p = .023); and felt emotionally or physically uncomfortable when referring (p = .025). Despite these differences, there was no significant difference between provider-type and referral.

Conclusion/Implications: Recommendations are multifaceted and any intervention to improve referral rates should address issues that may be disciplinary specific. All ED healthcare providers have potential to reduce the adverse outcomes due to elevated BP.
**Oral Abstract Winner**

The Afro-Cardiac Study: Examining the Cardiovascular Disease Risk Profile of West African Immigrants Residing in the United States

Yvonne Commodore-Mensah, BSN, RN; Cheryl R. Dennison Himmelfarb, PhD, ANP, RN; School of Nursing, Johns Hopkins University, Baltimore, MD.

**Background:** Little is known about cardiovascular disease (CVD) risk among West African immigrants (WAI) in the United States (US). WAIs may be at high CVD risk prior to migration, which may worsen with increased years of US residence.

**Objective:** We examined global CVD risk using the lipid-based 10-year Framingham CVD score (FRS10), CVD risk factors (hypertension, diabetes, smoking and overweight/obesity) and independent predictors of increased CVD risk.

**Methods:** The “AFRO-Cardiac” study is a community-based cross-sectional study among WAI adults born in Ghana/Nigeria and residing in the Washington, DC metropolitan. Descriptive statistics and sex comparisons were performed on FRS10 and CVD risk factors. FRS10 was categorized as low risk (<10%), intermediate (10–20%) or high risk (>20%). A multivariate logistic regression model identified predictors of high CVD risk.

**Results:** Participants (n = 145) were aged 50 ± 8.5 years and 61% female. Majority (72%) have resided in the US >10 years. Hypertension prevalence was 53% with no sex differences (males, 46%; females, 57%) [p = 0.201]. Overweight/obesity prevalence was 94% in females, 82% in males (p < 0.0001). One participant smoked and 15% were diabetic, with no sex differences (males, 20%; females, 12%). FRS10 was higher among males (11.10 ± 8.85) than females (6.66 ± 6.48) [p = 0.0016]. Also, global CVD risk was classified as high, intermediate and low, respectively, for 13%, 23%, 64% of males compared to 3%, 20%, and 77% of females [p = 0.082]. Predictors of high CVD risk using dichotomized FRS10 categories (<10% vs. ≥10%) included longer US residence [OR: 1.12, 95% CI: 1.04–1.20, p = 0.001], unemployment [OR: 7.0, 95% CI: 1.69–29.79, p = 0.008] and household income <$25,000 [OR: 4.17, 95% CI: 1.33–13.08, p = 0.014].

**Conclusions/Implication for Practice:** CVD risk factors were highly prevalent in relatively young WAIs. While employment was protective, lower income and longer US residence were associated with high CVD risk. Prevention strategies for CVD in WAI must be tailored to socioeconomic factors and sex.

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Promoting Health Literacy Among African Americans With High Blood Pressure

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**Background:** African Americans (AAs) have the world’s highest prevalence of high blood pressure (HBP), a major risk factor for cardiovascular disease. Because HBP is a chronic health problem, its control is dependent on individuals’ self-care skills, and a critical component of such self-care skills is health literacy. Low health literacy has been identified as a major barrier to successful management of chronic disease in the general population.

**Objective:** To test a culturally sensitive intervention focused on health literacy that is designed to reduce HBP in a AA population.

**Methods:** 100 participants were recruited from senior centers (3) or older adult/disabled housing (5) and randomized by site to intervention (n = 41) or wait-list control (n = 59). The intervention included 3 1-hour in-person education sessions followed by 3 biweekly telephone or in-person counseling sessions with BP monitoring. Data collection occurred at baseline, 3 and 10 weeks. Literacy was measured with the Rapid Estimate of Adult Literacy in Medicine (REALM). Other measures included the Hill-Bone Adherence Scale, HBP Self-efficacy scale, Center for Epidemiologic Studies Depression Scale (CES-D) and HBP Knowledge test.

**Results:** Mean age was 66 years and 26% were male. Significant between group differences were limited to age (intervention: 70.6 years; control: 63.5 years). There were no significant differences on systolic (SBP) or diastolic (DBP) blood pressure, literacy, knowledge, adherence, self-efficacy or depression. At baseline, literacy scores were not significantly correlated with mean SBP (r = -0.08, p = .46) or mean DBP (r = -0.09, p = .39), self-efficacy, adherence or depression. Depression was significantly related to adherence (r = -0.21, p = .04) and knowledge (r = -0.20, p = .04). Adherence was significantly related to SBP (r = -0.22, p = .03) and DBP (r = -0.23, p = .02).

**Conclusions:** In this older adult AA sample, literacy was not significantly related to BP or self-care skills.

Quantifying Diastolic Dysfunction as an Early Marker of Diastolic Heart Failure: Retrospective Analysis Using Echocardiography

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**The Problem**

In the United States, heart failure costs $34.4 billion annually and is associated with a mortality rate of 20% annually.
within 5 years of diagnosis. Diastolic heart failure (DHF) accounts for 50% of all hospital admissions for heart failure. Although echocardiographic (echo) evidence of diastolic dysfunction (DD) precedes most cases of DHF, tracking and quantifying the significance of early echocardiographic (echo) markers of DD remains undefined. The primary aim of this study is to track the date of DD diagnosis relative to date of DHF admission.

**Methodology**
A retrospective analysis with 349 patients with a primary discharge diagnosis of DHF was identified in 2011–2012; 281 patients or 80 percent were excluded from the total sample due to a history of congenital heart disease, ejection fraction ≤45% or cardiac arrhythmias. Through 2-D Doppler echo DD markers were identified. Using simple linear regression and logistic regression, the time between DD diagnosis and first admission for DHF was analyzed.

**Results**
Of the subjects (66% female, 34% male) included in the study sample (n = 68), 98% had evidence of DD on echo prior to DHF admission. In 30% of the cases, DD was detected 4 years prior for DHF admission. In 21% of the cases, DD was detected 5 years prior to DHF admission, and in 5% of cases, DD was detected 7 years prior to DHF admission. In addition, statistically significant trends were detected in ages of DHF admission when comparing race, black (49%) age 67, white (51%) age 81, p < 0.001.

**Conclusions**
Given that moderate and severe grade DD are independent predictors of mortality and mild, moderate or severe DD are predictors of all-cause mortality, evidence of DD prior to DHF admission suggests important clinical ramifications. Evidence-based studies are needed that guide clinical evaluation and standards of care.

**Risk Perception in Cardiovascular Disease**
Michelle Block, PhD, RN; Meg Gulanick, PhD, RN; Sue Penckofer, PhD, RN; Holli DeVon, PhD, RN; Loyola University Chicago; University of Illinois Chicago.

**Background:** Cardiovascular disease (CVD) remains the leading cause of death in the United States, despite widespread knowledge of risk factors and prevention strategies. Risk perception is a complex phenomenon that contributes to how a person views disease and makes health choices.

**Purpose:** To examine the accuracy of perceived personal risk for CVD and factors contributing to risk perception.

**Methods:** A cross-sectional descriptive correlational design was used. A convenience sample (N = 113; age = 58 ± 9.8 years) was recruited from hospital-based health screenings. Participants completed the Coronary Risk Individual Perception Scale, Revised Life Orientation Test, Life Engagement Test, and Patient Health Questionnaire. Projected cardiovascular risk was calculated using the Heart Health Score and the Framingham Risk Score. Interval and ordinal level data were analyzed with Pearson’s and Spearman’s rho correlations, respectively. Multiple regression evaluated predictors of perceived risk.

**Results:** The sample was predominantly female (60%), Caucasian (70%), and well-educated (70% > high school diploma). Increased risk perception was positively correlated with the number of self-reported risk factors (r = .44, p < .01) and negatively correlated with Heart Health Scores (r = -.40, p < .01). Knowing a friend with CVD (r = .194, p < .05), life satisfaction (r = -.201, p < .05), and depressive symptoms (r = .334, p < .01) significantly correlated with risk perception. However, depressive symptoms was the only significant predictor of risk perception, explaining 12% of the variance in scores (β = .278, p = .003). This finding is consistent with prior evidence that strongly supports a role for depression in CVD risk.

**Conclusions:** Individuals accurately perceived their risk for CVD. Furthermore, perceived risk correlated with the number of self-reported risk factors. Depressive symptoms emerged as the sole significant predictor of CVD risk, lending support to include assessment of depressive symptoms as part of CVD risk stratification.

**American Indian Women’s Risk Perceptions and Health Beliefs Regarding Cardiometabolic Disease Following Gestational Diabetes**
Emily J. Jones, PhD, RNC-OB; Hannah Fraley, MSN, RN, IBCLC; College of Nursing and Health Sciences, University of Massachusetts Boston, Boston, MA.

**Background:** The incidence of cardiovascular disease (CVD) in American Indians is two times higher than the rate of the general U.S. population. Although American Indian women (AIW) with previous gestational diabetes mellitus (pGDM) are at high risk for developing type 2 diabetes (T2D) and CVD, little is known about their risk perception and health beliefs surrounding prevention.

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**Methods:** A descriptive mixed methods study was conducted with 28 self-identified AIW (32.07 ± 4.9 years; documented pGDM) who obtained care in a tribal health system in a Southwestern state. Risk perception was measured using a modified version of the Risk Perception Survey-Developing Diabetes (adapted from Diabetes Prevention Program). Descriptive statistics were used to analyze survey data. Informant interviews and focus groups allowed participants to more fully describe risk
perception and health beliefs. Inductive content analysis was used to explore the qualitative transcripts.

Results: Mixed methods data indicated moderate to high risk perception for T2D and CVD with a positive relationship between risk perception scores ($r = .887$, $p = .11$), despite the fact that most women expressed knowing less about CVD. Many women perceived higher risk for T2D than CVD related to family history. Some variation existed related to women’s confidence to delay versus prevent T2D and CVD. However, the majority expressed delay was more probable, while prevention was possible for their children with earlier adoption of healthy lifestyle behaviors.

Conclusions: To reflect AIW’s moderate to high risk perception and their health beliefs related to T2D and CVD, culturally relevant health promotion interventions should emphasize the value of delaying cardiometabolic disease with lifestyle behavioral change in the years following GDM rather than focus solely on prevention.

Cardiometabolic Syndrome Among Adolescents in Nairobi County Secondary Schools in Kenya
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Background: Cardio metabolic syndrome (CMS), characterized by primary hypertension, central obesity, dyslipidemia and hyperglycemia, increases the risk of developing cardiovascular diseases and diabetes. It is a major cause of morbidity and mortality across age groups and populations globally because of westernization and nutrition/activity transition. We sought to determine the risks associated with cardio metabolic syndrome among secondary school adolescents in Nairobi Kenya.

Methods: A cross sectional study involving a random sample of 384 adolescents was conducted and screening for CMS risk factors in 3 schools using objective protocols. CMS risk factors, namely, age, gender, alcohol, physical activity, diet and medical history, were obtained. Blood pressure, weight and height helped establish physical status of participants. Ethical approval was obtained from the KNH/UoN ethics committee.

Results: 384 adolescents aged 12 to 21 (mode 14 and 16) years were screened. Majority were urban dwellers, consumed alcohol 56.2%, and did not exercise 69%. High BMI was associated with negative body image perception (19%, 56% and 26% for normal, overweight and obese participants, respectively, $p < 0.001$), depression ($p < 0.05$) and tendency to overeat when sad or angry ($p < 0.08$).

Conclusion: Findings showed gender, urban-rural setting differences and high clustering of risk factors for CMS that appears different than adult and western model, calling for age- and region-specific policies/interventions. Clearly there is need for early interventions targeting the adolescents to prevent high rate of CMS and its sequel on adulthood. School and community health-focused strategies on adolescents need to be initiated and scaled up to facilitate early detection, treatment and prevention of CMS.

Caregiver Stress and Cardiovascular Disease Risk Among Female Family Caregivers of Persons With Heart Failure
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Background: Stress is a risk factor for coronary heart disease and can lead to mental-stress–induced myocardial ischemia (MSIMI). MSIMI is associated with an increased risk of death and fatal and nonfatal cardiac events, independent of standard cardiac risk factors. MSIMI occurs more often in women, and younger women have the highest risk. Family caregiving for those with chronic conditions can be a highly stressful situation. Women comprise the majority of the family caregiver (FCG) population, making this population particularly at risk for MSIMI.

Purpose: To evaluate baseline cardiovascular disease (CVD) risks of female FCGs of persons with heart failure (HF) currently enrolled in an ongoing trial, and to examine risk factors by age.

Methods: Female FCGs ($n = 97$), mean age of $56.15 \pm 11.5$, were dichotomized by age <50 and age ≥50. Baseline data included Perceived Stress Scale (PSS), Patient Health Questionnaire (PHQ-9), lipid panel and C-reactive protein (CRP). Descriptive, correlational and non-parametric statistics were used in the analysis.

Results: Overall, female FCGs had high perceived stress (PSS score range 21–38; mean = 29.5 ± 3.6), and 59.4% had mild depressive symptoms (PHQ9 mean = 6.1 ± 4.2); no significant differences between younger (n = 22) and older FCG (n = 75) were found. CRP (range 0.15–23.9, mean = 3.8 ± 4.1) was elevated in both age groups. Younger FCGs were more likely to care for additional people ($p = 0.003$), have a higher BMI ($p = 0.006$), and higher hip ($p = 0.05$) and waist.
Depressive Symptomatology, Measured by Center for Epidemiologic Studies Depression Scale (CES-D) Is Increased in Filipino-American Women (FAW) With Metabolic Syndrome (MetS)

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Background and Objective: Filipino-Americans, the second largest Asian-American group, have higher rates of MetS, a cluster of factors that increase the risk for cardiovascular disease, than other Asian Americans. Since depression is associated with MetS and cardiovascular disease in other populations, the prevalence of depression and its association with MetS in FAW was determined.

Methods: FAW (n = 376, 53.48 ± 7.07 years) participated in health and psychosocial screenings in four metropolitan areas. MetS was defined as 3 out of 5 of the following factors: central obesity, reduced high-density lipoprotein cholesterol, elevated triglycerides, hypertension, and elevated fasting blood glucose (NCEP ATP III, 2001). Depression was determined using the CES-D, with scores of 15–21 indicating minor to moderate depression and scores >21 indicating major depression.

Results: The percent of FAW with MetS was 47.60% (n = 179). FAW with MetS were older (55.67 ± 6.81 vs. 51.57 ± 6.75, t = -5.87, p < .001) and had resided in the USA for more years (26 ± 13.45 vs. 22.04 ± 13.11 yrs., t = -2.78, p < .01). The prevalence of minor to moderate depressive symptomatology was 18% and major depressive symptomatology was 8%. Controlling for these two confounders, FAW with MetS had a higher CES-D score than those without MetS (11.49 ± 7.13 vs. 9.97 ± 6.82, p = 0.04). The prevalence of mild to moderate depression did not differ between those with and without MetS (16% vs. 20%, Fisher’s Exact p = 0.22) but the prevalence of major depressive symptomatology was increased in those with MetS (11% vs. 0.05%, Fisher’s Exact p = 0.02; odds ratio = 2.52 95% CI = 1.14–5.55).

Conclusion: Since FAW with MetS report more depressive symptomatology compared to those without MetS, clinicians need to be cognizant of depression as a co-morbidity with MetS when treating this population.

Experiences of Living With Heart Failure: An Exploratory Study

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Background: Heart Failure is the leading cause of hospitalization among older people. It is one of the most debilitating chronic illnesses that severely affect patients’ quality of life (QOL). International literature reveals that the challenge of living with heart failure may be influenced by several individual and contextual factors. However, this topic remains unexplored in Pakistan.

Objective: This study was undertaken to understand the experiences of heart failure patients in an urban context in Pakistan.

Methods: A qualitative exploratory study design was used in this study. A purposive sample of twelve patients with variation in their level of self-care, age, gender, income, educational status participated in this study. Data were collected via in-depth interviews that were transcribed verbatim and content analyzed for pattern of themes.

Results: The analysis of patients’ narratives revealed four themes and sub-themes. The major themes were: Imprisoned by the illness, Fear of uncertainty, Adapting to health deviated needs, and Health care system constraints.

Conclusion: Several personal- and system-related factors seem to impose challenges to the quality of life of HF patients. Therefore, understanding of their issues is imperative to take appropriate measures that improve their QOL.

Key words: Heart failure and Quality of life.

Gender Differences in Blood Glucose and Stress Levels in Cardiac Patients Receiving a Relaxation Response Intervention in the Acute Care Setting

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Background: Evidence exists that point to gender-related disparities in outcomes among cardiac patients. These disparities may be due in part to gender differences in risk factors. Stress-induced hyperglycemia is a known risk factor contributing to an increase in morbidity and mortality among patients hospitalized with cardiovascular disease. Recent evidence suggests that women are more sensitive to low levels of stress hormones.
and less able to adapt to higher levels than men but little is known about the gender-related effectiveness of interventions designed to reduce stress.

**Objective:** The purpose of this study was to examine gender differences in capillary blood glucose (CBG) and self-reported stress levels (SRSL) in cardiac patients receiving a brief relaxation response intervention (RRI).

**Methods:** Post-hoc analysis of data obtained from a previously conducted randomized study which examined the effects of a brief RRI on CBG and SRSL in patients hospitalized with coronary artery disease was performed. Multivariate analysis of variance was utilized to determine gender differences in outcome variables among those subjects receiving a brief RRI (n = 22; 72% male; age 65 ± 11.2 years).

**Results:** Pre-RRI, SRSL (p = .007) and CBG (p = .02) were higher in females compared to males. Following the intervention, females demonstrated a greater decrease from baseline CBG (p = .017) and SRSL (p = .048). Post-RRI, there was no gender difference in SRSL; however, CBG levels remained higher in females (p = .03).

**Conclusions:** Significant gender differences in CBG and SRSL were observed among patients receiving a brief RRI. Female patients reported higher stress levels pre-intervention with corresponding higher levels of CBG when compared to males. While female patients demonstrated a greater decrease in CBG and SRSL following the intervention, post-RRI CBG levels remained significantly higher in females. Further studies are needed to determine the clinical relevance of these findings in relation to gender-related outcomes in cardiac patients.

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**Glycemic Control and Cardiovascular Fitness**

Elizabeth Wilson Moxley, PhD, RN, Department of Nursing Sciences, University of Illinois at Chicago, Illinois; Lauretta T. Quinn, PhD, RN, FAAN, CDE, Department of Nursing Sciences, University of Illinois at Chicago, Illinois.

**Background:** Diabetes is a serious health problem affecting approximately 25.8 million individuals in the United States and approximately 79 million individuals have prediabetes. The development and implementation of lifestyle modifications such as physical activity are among the most effective methods for prevention and treatment of diabetes.

**Objectives:** The aim of this study was to examine the relationship between glycemic control (HbA1C) and cardiovascular fitness (VO2peak and VT) in overweight and obese diabetic and nondiabetic subjects. In addition, the influence of selected characteristics (body composition [BMI]) and insulin sensitivity (HOMA %S) on the relationship between glycemic control and cardiovascular fitness was also explored.

**Methods:** The study was a secondary data analysis of the study “Diabetes, Exercise and Postprandial Oxidative Stress” (National Institutes of Health/National Institute of Nursing Research grant R01NR007760-03). The study included 51 overweight/obese subjects with type 2 diabetes (n = 18) and nondiabetic controls (n = 33). The relationships between glycemic control and cardiovascular fitness (HbA1C, VO2peak, and VT) were conducted using linear regression analyses. The explained variability for the linear model between HbA1C and VO2peak was 19%, (p < .05) and the explained variability for the linear model between HbA1C and VT was 13% (p < .05). The influence of BMI and HOMA %S on the relationship between glycemic control and cardiovascular fitness was analyzed using multivariate analysis of variance and covariance (MANOVA and MANCOVA).

**Results:** No significant effects from the covariates on the interaction between HbA1C and cardiovascular fitness were observed. However, when all of the variables included in the study were included in a MANOVA model (HbA1C, BMI, HOMA %S, age, gender, duration of diabetes, and ethnicity), significance was demonstrated for the variables gender, ethnicity, age, and BMI on the combined dependent variables VO2peak and VT.

**Conclusions:** Based on these outcomes, it is possible that that even mildly elevated HbA1c levels may contribute to decreased cardiovascular fitness. Future research is necessary, however, to more thoroughly examine VO2peak and VT in subjects with wider ranges of HbA1C in order to provide insight into the magnitude of the relationship between glucose control and cardiovascular fitness.

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**Hostility Does Not Predict Recurrent Acute Coronary Syndromes or Mortality in Patients With Coronary Heart Disease**

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**Objective:** Anger and hostility are negative emotions associated with greater risk for development of cardiac disease and cardiac dysrhythmias. However, prior studies are equivocal about the association of negative emotions with cardiac event recurrence and mortality in patients after acute coronary syndrome (ACS).

**Methods:** We performed a secondary analysis of data collected during the Promotion trial to determine whether hostility was a predictor of ACS recurrence and mortality. Demographic and clinical data were collected at baseline; hostility was measured with the Multiple Adjective Affect Checklist (MAACL), and patients were followed for 24 months for evaluation of recurrent cardiac events or all-cause mortality. Cox proportional hazards regression was used to determine whether hostility scores predicted recurrence of ACS events or all-cause mortality.
Results: Patients (n = 2321) were married (73%), Caucasian (97%) men (68%), 67 ± 11 years of age. The mean hostility score (7.6 ± 3.8) indicated a majority of patients were hostile; 57% male and 56% females reported high hostility. Hostility was not a predictor of recurrence of cardiac event (p = 0.394) or all-cause mortality (p = 0.245). Pre-existing hypertension, prior percutaneous transluminal coronary angiography (PTCA), and prior acute myocardial infarction (AMI) were independent predictors of recurrence, with 1.4 (p = 0.01), 1.5 (p = 0.003) and 1.5 (p = 0.003) times greater risk of recurrence, respectively.

Conclusion: Hostility was common in this group of patients after ACS but did not predict ACS recurrence or all-cause mortality. Further research is needed to investigate mediating or moderating effects of hostility on the association between variables like depression or anxiety, and ACS recurrence or all-cause mortality.

Illness Perceptions, Coping Behaviors, and Appraisal of South Asians Immigrants with Coronary Artery Disease: A Mixed Methods study

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Background: Mortality rates for coronary artery disease (CAD) have declined in the United States (US). The rates of decline, however, are slower for ethnic minorities including South Asians (SAs). Increased premature incidence and mortality related to CAD are well documented in SAs. There is an aggressive need for primary and secondary health promotion and disease prevention programs targeted at this ethnic minority to reduce and control CAD morbidity and mortality.

Objectives: To examine illness perceptions, coping behaviors, and appraisal of SAs with CAD, using Leventhal’s Model.

Methods: Using a mixed methods study, 102 (70.8% response rate) SAs with CAD completed survey questionnaires including Demographics, Health History, Illness Perception Questionnaire Revised (IPQ-R), and the Modified Coping Behavior. Twenty (20) (19.6%) participants were interviewed after completing the survey questionnaires. Participants were recruited using convenience and snowball sampling. Data were collected during face-to-face encounters or by telephone. Quantitative data informed the first two stages of the model and qualitative data informed all three stages of the model. Survey questionnaires were analyzed using descriptive and inferential statistics. Qualitative data were analyzed using content analysis.

Results: Participants were from India (52.9%), Pakistan (42.2%), and from Bangladesh (4.9%). Mean age was 62 (SD = 11.2 years), age at CAD 53.1 (SD = 9.9.8), 77.5% were male, 74.5% had less than a high school education, and 60.8% communicated in native languages (Hindi/Urdu). Participants scored higher on components of the negative illness perception (M = 65.0, SD = 8.1) vs. positive illness perception (M = 57.6, SD = 5.9). A majority of participants perceived diet, heredity, and stress as the most important causes of their CAD. Qualitative findings were congruent with survey results. Participants reported and appraised adopting healthy behaviors (eating healthy diet, exercising, and using stress reducing techniques) after their CAD.

Conclusions: Overall, Leventhal’s model provided explanatory support to understand SAs participants’ illness perceptions, coping behaviors, and appraisal.

Medication Adherence Factors in Black Women With Hypertension

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Background: Black women have the highest prevalence of hypertension (HTN) in the world at 47% and these alarming rates are increasing. Although antihypertensive medications have proven efficacy in blood pressure (BP) control and medication adherence is critical to deter organ damage, an estimated 50–70% fail to take prescribed medications. The reason for medication nonadherence in Black women with HTN is poorly understood.

Objective: To examine the relationship between medication adherence and selected demographics, knowledge, self-care, trust, coping, racism, depression, and reactance in Black women with HTN.

Methods: Data were collected from 80 Black women taking prescribed antihypertensive medications using the following instruments: High BP Prevention IQ, Self-Care of HTN Index, Trust in Physician Scale, John Henryism Active Coping Scale, Index of Race-Related Stress-Brief Version, Patient Health Questionnaire-9, the following instruments: High BP Prevention IQ, Self-Care of HTN Index, Trust in Physician Scale, John Henryism Active Coping Scale, Index of Race-Related Stress-Brief Version, Patient Health Questionnaire-9, Therapeutic Reactance Scale, and Hill-Bone Compliance to High BP Therapy Scale. Statistical analysis included Spearman rank-order correlation, Fisher’s exact test, and exact discrete-event (proportion odds model).

Results: Participants had a mean age of 47.8 ± 9.2; 67% were actively employed; and 30% had incomes at or below federal poverty. Univariable predictors of medication adherence were self-care and trust. In the final model, all age groups were less likely to be adherent to their antihypertensive medications (P for trend = 0.0036), whereas those who took 5 to 7 medications were 3.6 fold more likely to be adherent (p = 0.0048). Trust in the health care provider was associated with medication adherence (P for trend = 0.015).

Conclusions: Poor adherence to antihypertensive medications among Black women of all ages is daunting.
Self-care regimens and trusting collaborative patient/provider relationships are important. Research to explore culturally relevant interventions that promote medication adherence in Black women with HTN is needed.

**Implications for Practice:** Nurses should evaluate the effect that antihypertensive medications have on the patient’s daily life to determine risk for medication nonadherence.

**Nursing Interventions to Improve Pneumococcal Vaccination**

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**Background Summary:** Little research exists that describes the current practices of cardiovascular nurses in the area of pneumococcal immunizations. Pneumonia contributes to acute worsening of preexisting cardiac conditions and can trigger new cardiac events.

**Objectives:** Despite the recommendations of the Centers for Disease Control (CDC) that adults age 65 and older be vaccinated against pneumonia, the vaccination rate remains low. The investigators questioned if a nurse-driven pneumococcal vaccine intervention program would 1) increase nurses’ knowledge and 2) improve the pneumococcal vaccination rates in cardiology clinics.

**Methods:** During a 12-week period, cardiology clinics were provided with these pneumococcal vaccination interventions: mandatory staff education inservice, vaccine administration protocol orders, clinic call center on-hold telephone message about vaccination importance, clinic based patient education materials, vaccine facts scripting and a pocket guide for staff, and weekly emailed educational tips. A convenience sample of eighteen cardiovascular nurses completed a survey regarding adherence to guidelines and importance of interventions. Results were compiled using summary statistics.

**Results:** As a result of our intervention, the majority of nursing staff are familiar with the CDC Guidelines (32% to 65%). Nurses doubled the percent of time they always discuss the possible consequences of pneumonia if not vaccinated (18% to 45%). An average of Pneumovax (32% to 65%). Nurses doubled the percent of time they

**Conclusions:** The results from this study suggest that the use of a nurse led multifaceted intervention program in the cardiology clinic setting increased nurses knowledge about pneumonia vaccination. Nurses should incorporate assessing, advising and administering the vaccine into daily practice. Further studies with a larger sample size should be explored, including other patient populations and/or regions known to have low vaccination compliance rates. A broader application of these interventions may address this important public health initiative.

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**Electronic Medical Record in Private Practice: A Method of Collecting and Reporting Outcomes Data**

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**Objective:** To define the method of use and benefits of an Electronic Medical Record (EMR) to collect, measure and report real time outcomes in weight loss, blood sugar, serum lipid reductions, medication reduction and diagnosis resolution.

**Methods:** The clinical outcomes of nutrition counseling by dietitians in private practice in more than 20 states were collected and analyzed for weight loss, blood sugar, serum lipid, and change in activity levels. A Cloud-based EMR was used in private practices from March 1, 2012 to March 1, 2013. The RD entered information into the database at each patient visit that included but was not limited to weight, labs, medications and diagnosis. The data were collected anonymously, exported and analyzed by diagnosis and duration for total weight change and weight change per week, changes in laboratory values and activity levels.

**Results:** There was a statistically significant decrease in weight in male diabetics, significant weight gain in anorexia nervosa, significant increase in activity duration and frequency and a significant decrease in A1C, BS, Cholesterol, LDL and TG levels after MNT. Proposal for the PCNA Annual 2014 Meeting will be utilizing data downloaded and analyzed prior to March 1, 2014, which will include entries beginning March 1, 2012.

**Conclusion:** Reimbursement is vital to the long-term professional success. In order to be reimbursed, we need to use a database in our practices in order to collect, report and publish outcomes data to strengthen the foundation of clinical evidence used by CMS and other insurers in making coverage decisions.

**Sleep Quality and Metabolic Syndrome Risk in Women With Previous Gestational Diabetes**

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**Introduction:** Women with previous gestational diabetes (pGDM) have elevated risk for immediate and future cardiometabolic diseases. Poor sleep quality has been associated with metabolic syndrome (MetS) and depressive symptoms in women but has not been assessed in women with pGDM.

**Objectives:** This study examined self-reported sleep quality in relation to MetS and depressive symptoms in women within five years of a pregnancy affected by gestational diabetes (GDM).

**Methods:** Sleep quality was assessed with the Pittsburgh Sleep Quality Index (PSQI). Depressive symptoms were
measured with the PHQ-9. BMI was calculated from measured height and weight. MetS was determined by the presence of ≥3 risk factors (waist circumference, blood pressure, lipids, fasting glucose). Data analysis included descriptive, bivariate statistics, and multiple logistic regression (MLR).

**Results:** Participants (n = 75, 55% non-white) had a mean age of 35.6 (SD = 5.3) years and were 2.6 (SD = 1.6) years since a GDM delivery. Mean PHQ-9 scores were 4.1 (SD = 4.0) with 32% classified with mild-moderate depressive symptoms. Global PSQI scores were 6.4 (SD = 3.4), with half (49.3%) reporting poor sleep quality. Fifteen (20%) participants had MetS, although many had a risk factor; 60% had an elevated waist circumference and 48% had elevated blood pressure. There were no differences in global PSQI scores in those with MetS compared to those without. An association was found between depressive symptoms and global PSQI scores (r = .44, p < .0001). In MLR analysis, only a higher BMI was predictive of MetS. Neither global sleep quality nor depressive symptoms remained significant predictors, when controlling for age, race/ethnicity, education, and BMI.

**Conclusions:** This study demonstrates that women with pGDM have cardiometabolic risk factors and many report poor sleep quality. Although sleep quality was not associated with MetS risk in this sample, the association between higher depressive symptoms and poorer sleep quality in this at-risk group of women warrants further study.

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**Using Interactive Technology to Improve Health: Is Weight Loss Just a Mouse-Click Away?**

Sarah K. Grall, PhD, Research Director, Community Health Innovation, PeaceHealth Laboratories, Vancouver, WA; Rebecca Donatelle, PhD, Professor Emeritus, College of Health and Human Sciences, Oregon State University; Adam Branscum, PhD, Associate Professor, College of Health and Human Sciences, Oregon State University.

**Background:** Overweight and obesity are public health burdens despite decades of behavioral treatment efforts. Web-based approaches combining interactive technology and online social networking (OSN) are increasingly being used and may provide the basis for improvements in short and long-term weight loss.

**Purpose:** To assess short and longer term factors associated with weight and risk markers changes in overweight adult healthcare workers who used interactive technology.

**Design:** Retrospective analyses of participants completing a 6-month intervention. Weight and risk markers were assessed at 6 months and in a subsample of participants 1-yr post-intervention to determine the predictive strength of demographic and behavioral variables on short and longer term weight loss.

**Subjects:** 168 overweight healthcare workers (131 females, 37 males)

**Measures:** Weight and biomarker data were collected at baseline and 6 months, and in a subsample (n = 48) 1-yr post-intervention. Physical activity and OSN were tracked through a website. Perceptions of health status, current activity and weighing habits, and perceptions of study benefit data were obtained via self-report at 1-yr post-intervention.

**Analyses:** Single and multiple variable linear regression analyses and paired t-tests

**Results:** At 6 months, weight loss was greater in participants who used technology features (physical activity tracking and weight tracking) more than those with lower utilization patterns (p < 0.001 and p < 0.0001). Greater utilization of the OSN was associated with greater weight loss in males (p < 0.0001). 1-yr post-intervention, weight loss was maintained, with a BMI decrease of 4.7% (p < 0.001) in the subsample. Diabetes risk was reduced with a mean HbA1c change of −.10 (p < 0.05) and a proportional change (−10%) in FBG in the subsample (p < 0.05).

**Conclusion:** This preliminary examination of a technology-enabled weight loss approach is suggestive of modest but favorable short and longer term health improvement outcomes in overweight participants who used selected features as part of an interactive technology weight loss intervention.

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**Lipid-Lowering Supplement Trials in Pediatric Patients: A Systematic Literature Review**

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**Background:** Recent universal cholesterol screening guidelines for 9–11 year-olds may result in increased cholesterol management among pediatric providers. Families may express interest in over-the-counter supplementation (nutraceuticals) as treatment.

**Objective:** This systematic literature review aims to identify the pediatric nutraceutical literature, and evaluate potential effectiveness and safety.

**Methods:** Two searches of 22 potential nutraceuticals were undertaken in the CINAHL, PubMed, and OVID databases using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method in April and November 2013. English-language intervention trials in human subjects 2–18 years old were included. Studies of parenteral nutrition (PN), combination-agents, simultaneous pharmacotherapy, dietary intake frequencies, dietary substitutions, lacking lipid profile outcomes, and supplementation as treatment for disorders other than common primary lipid abnormalities or diet-induced metabolic derangements in otherwise well children were excluded.

**Results:** Initial searches retrieved 1402 articles, locating seven agents trialed in children: phytosterols/phytostanols (N = 14), fish oil (N = 5), psyllium fiber (N = 5), soy and isoflavones (N = 5), garlic (N = 1), policosanol (N = 1), and flaxseed (N = 1). Twenty-one (65.6%) were randomized, placebo-controlled trials. Median exposure length was
8 weeks (range 3–41.6); median participant number was 25 (range 7–132). Twenty-one studies described participants as having a familial hypercholesterolemia. Twenty-two (68.75%) controlled for overall diet prior to or during nutraceutical exposure. Approximately 36.5% of research lacked side effect considerations. All (5/5) fish oil studies reported some degree of triglyceride lowering; 83.3% also suggested an increase in LDL. Thirteen of fourteen phytosterol/phytostanol studies (92.9%) reported decreased LDL. Psyllium and soy research suggests a lowering effect across all lipid parameters.

Conclusions: The evidence does not support nor reject the use of nutraceuticals for cholesterol management in children. Heterogeneity among participant populations, product dosages, and statistical comparisons make assessment of clinical effectiveness difficult. Effect trends suggest how nutraceutical classes may potentially benefit some children. Possible side effects cannot be discounted.

**Dyspnea Scores Using Borg and Visual Analogue Scales in African American Patients With Heart Failure**

Karen M. Vuckovic, PhD, RN, ACNS-BC; Holli DeVon, PhD, RN, FAHA, FAAN; Catherine Ryan, PhD, RN, FAHA; Mariann Piano, PhD, RN, FAAN; University of Illinois, Villa Park, IL.

Background: Little is known about activity-provoked dyspnea in African American (AA) patients with stable heart failure (HF), a vulnerable group who develop HF at a younger age and have higher mortality rates compared to Caucasians. To complicate matters, there is no universally accepted tool for evaluation of dyspnea in HF.

Purpose: To compare dyspnea scores in patients with preserved versus reduced ejection fraction HF (HFpEF vs. HFrEF) before and after the 6-minute walk test (6MWT) using 2 dyspnea scales.

Methods: A convenience sample (HFrEF = 26; HFpEF = 19) of AAs (>50 years) was recruited from a HF clinic. Dyspnea was measured using the Borg and VAS tools at: a) baseline; b) during the 6MWT (Borg only); and c) 3 minutes after completion of the 6MWT. Group comparisons at baseline and 3 minutes were analyzed using repeated-measures ANOVA and χ² tests. Agreement between scales was determined by correlation and Bland-Altman plots.

Results: Baseline characteristics were similar between groups. The majority of HFpEF subjects reported dyspnea at baseline (Borg 63%; VAS 73%) and 3 minutes after the 6MWT (Borg 78%; VAS 79%). In the HFrEF group, 80% reported dyspnea at baseline using the VAS tool but only 34% reported dyspnea with the Borg tool. During the 6MWT, both groups reported a similar increase in Borg scores (F₁, 43 = 40.8; p < .001). Most subjects remained dyspneic at 3 minutes using the Borg scale and VAS. Correlations between the Borg scale and VAS were moderate at each time point, and as dyspnea increased, agreement between dyspneic scores decreased.

Conclusions: The Borg and VAS tools showed moderate agreement, indicating that dyspnea may go undetected if a single measure is used. We advocate the use of multiple scales to measure dyspnea at rest and following activity to strengthen the validity of self-reported dyspnea in HF.

**Category: Innovation in Patient Care**

**First Place Winner: Reducing Bed Rest Following Manual Removal of Femoral Artery Sheath After Diagnostic Angiogram**

Laura Mack, BSN, RN-BC, FHN, Memorial Hospital, Freeport, Illinois; Jessica Schneiderman, MSN, APN, ACNS-BC, CCRN, FHN Memorial Hospital, Freeport, Illinois.

Background: Bed rest time after manual removal of femoral artery sheath at FHN Memorial Hospital has traditionally been 6.5 hours, often requiring outpatients who have their sheath removed manually to be transferred to the inpatient unit to fulfill required bed rest time. This puts a stress on the availability of beds for acute care and/or requires the cardiac catheterization lab to be open past usual hours.

Purpose: To reduce bed rest and improve patient comfort following manual removal of a femoral artery sheath after diagnostic angiogram.

Description: Based on a comprehensive review of related literature, our team developed a reduced bed rest protocol for patients meeting inclusion criteria and undergoing angiogram for diagnostic purposes. The protocol consists of 3 hours of bed rest upon achievement of hemostasis while allowing the head of bed to be elevated to 45 degrees. The patient is discharged one hour after the protocol is completed if no complications are present.

Evaluation and Outcomes: Data were compared pre- and post-implementation of the reduced bed rest protocol. Bed rest time was reduced to an average of 3 hours with only one report of pain in the protocol group as compared to a baseline average of 6.5 hours of bed rest and 50% of patients reporting pain. There were no groin site complications in patients undergoing the protocol. All outpatients were discharged home from the cardiac catheterization lab.

Implications for Practice: Bed rest time can be reduced safely, which improves patient comfort as well as nursing resource allocation.

**Second Place Winner: Care Transition Coordinators Reduce Heart Failure Readmissions Without Impacting Length of Stay**

Kim Newlin, RN, CNS, ANP-C; Kristen Wolber, RCP, MPH; Frances Patmon, MSN, RN; Stephen Peters, MD, FACC; Dianne Miller, MPH, COO; Sutter Roseville Medical Center, Roseville, California.

Background: Heart failure (HF) is the most common diagnosis associated with 30-day readmission in the Medicare population. It is considered an indicator of
hospital quality and thought that 90% of these readmissions are potentially avoidable. In 2009, Sutter hospitals averaged an 18% readmission rate, prompting the development of a system wide initiative. At Sutter Roseville Medical Center (SRMC), an outpatient, hospital-based HF clinic was opened; education was provided to inpatient, home health and skilled nursing staff; relationships with multiple disciplines were developed; protocols were created with local skilled nursing facilities; and hospital physicians were provided information on documentation for accurate coding and creating safe transition plans.

**Purpose:** Despite these multiple interventions, HF readmission rate was not at the goal of 13.2%. A Care Transition Coordinator (CTC) pilot program was approved to help accurately identify appropriate patients and provide intensive transition planning and support.

**Design/Implementation:** Understanding that the transition begins the minute the patient enters the emergency room, two CTCs were hired (each .5 FTE) to provide 7 day a week coverage. Patients were identified through multiple modalities, allowing for timely interactions, risk stratification, and transition planning. Daily communication occurred with email, rounding and meetings with Case Managers, physicians, bedside nurses, home health, ER staff, and the palliative care team. CTCs carried a Blackberry to provide access to the hospital staff and HF patients and family. Timely documentation occurred in a program that was available system-wide to key transition partners.

Evaluation and Outcomes: Upon implementation of the CTC program (*), there was a reduction in both HF readmissions and length of stay.

| Measure                  | 12/2011–5/2012 | 6/2012–11/2012 | 12/2012–5/2013* | Change |
|--------------------------|----------------|----------------|-----------------|--------|
| HF Readmission Rate      | 22.7%          | 17.5%          | 12.9%           | −9.8%  |
| Length of Stay (days)    | 4.13           | 3.72           | 3.28            | −0.85  |

**Implications for Practice:** Employing CTCs as key transition team members can be instrumental in reducing readmissions.

**Third Place Winner: Partnering With Public Health for Hypertension Control**

Margaret O. Casey, RN, MPH, National Association of Chronic Disease Directors, Atlanta, GA.

**Background:** Million Hearts® is a national initiative to prevent 1 million heart attacks and strokes in the U.S. by 2017, aligning efforts to improve health across communities.

The National Association of Chronic Disease Directors (NACDD) is a public health organization serving state health department (SHD) chronic disease programs in all states. NACDD works with SHDs to support prevention strategies, providing training, developing partnerships with health care providers, and promoting effective approaches in chronic disease prevention.

**Purpose:** NACDD promotes partnerships between public health and health care to develop more effective cardiovascular disease prevention strategies.

**Design/Implementation:** NACDD provides Million Hearts® Workshops for SHDs and health care partners to further cardiovascular improvement goals, particularly hypertension control. This includes identifying key partners, high impact initiatives and performers within the state and convening partners for meaningful planning and action. NACDD convenes stakeholders to identify a shared agenda, promoting effective strategies and shared work on key strategies. Evidence-based strategies considered for the workshops: determining hypertension control metrics, feedback mechanisms for control rates, engaging patients in their own care, and providing support for clinical teams through community health workers and pharmacists and connections to community resources for lifestyle change.

**Outcomes:** Evaluations of Million Hearts® Stakeholders Workshop show most participants agree the information and resources received, and networking opportunities, are useful in their work. Long-term outcomes are expected to include: SHDs and health care partners have concrete action steps identified; organizations partnering with states will take definitive actions to improve hypertension control in their patient populations, and improved blood pressure control through improved collaboration.

**Implications:** Members of the Preventive Cardiovascular Nurses Association have been at the forefront of cardiac disease prevention through patient care, counseling and education. Partnering with public health will provide multiple opportunities and resources to expand those efforts, through population health strategies.

**Oral Abstract Winner: A Nurse-Led Intervention to Improve Evidence-Based Vascular Care in Primary Clinics**

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**Background:** Many patients treated by three primary clinics and who have coronary heart disease (CHD) were failing to meet all four evidence-based optimal cardiac care (OCC) targets (LDL <100 mg/dl, BP <140/90, no tobacco use, taking aspirin unless contraindicated). Because nurse-led patient care systems have been demonstrated to improve the individual components of OCC, we implemented a nurse-led primary care team system to improve our performance.
Purpose: to increase the proportion of CHD patients who are at goal for all 4 components of OCC and compare this to the proportion of diabetes mellitus (DM) patients without CHD who are at goal for optimal diabetic care (the 4 components of OCC plus HgA1c < 8%).

Design: Key components of the system were a registered nurse (RN) assigned to work with providers, information technology (IT) staff and clinic assistant care coordinators in each clinic to a) verify accuracy of the data, b) formulate quarterly OVC status reports for each provider, c) develop treatment protocols, d) review reports and develop care plans with patient care teams, and e) designate responsibility for plan implementation and patient follow-up.

Evaluation: All patients with CHD and DM without CHD were identified. Independent pre and post-intervention samples were randomly selected from each group. Chart audit determined status on each OCC and DM target in a 1 year period before organizing the patient management system and one year after the system was implemented.

Conclusions: A nurse-led system to improve evidence-based cardiac care in primary care clinics can result in significant improvement in measures of performance. Diabetic care in the comparison group also improved significantly, resulting in no significant difference between the 2 groups.

Implications for Practice: Primary care efforts to improve patient outcomes in chronic disease should consider an approach that is systematized, team-based and nurse-led.

Screening for Peripheral Artery Disease in Individuals With Coronary Artery Disease
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Background: Peripheral artery disease (PAD) affects an estimated 8 million Americans. However, the actual prevalence may be higher because PAD is frequently undiagnosed, particularly in those adults with coronary artery disease (CAD). Although PAD and CAD have a similar vascular pathology, early detection and treatment of PAD are difficult because claudication symptoms usually only occur in the advanced stages of the disease.

Purpose: To improve the PAD screening process of adult CAD patients in an outpatient cardiology clinic via the combined use of a newly developed patient-completed questionnaire (Peripheral Artery Disease Risk Questionnaire [PADRQ]) and Ankle Brachial Index (ABI) tests.

Design/Implementation: Twenty-one CAD patients were evaluated by a nurse practitioner during their scheduled cardiology appointment over a four week period. After an informed consent was obtained, the participants completed the PADRQ and underwent ABI testing. The presence of PAD was determined via correlating the ABI scores with the PADRQ responses.

Evaluation/Outcomes: The majority of the participants were male (52%) and Caucasian (57%) with a mean age of 63 ± 13 years. Nine participants had ABI scores ≤0.9 or ≥1.4, which indicated the presence of PAD. Claudication symptoms were reported in 86% of participants after walking ≥2 blocks and 71% when walking up one flight of steps. Right and left leg ABI scores were found to be inversely correlated to claudication symptoms experienced after walking 5 blocks (r = −0.6 and −0.5, respectively, p = 0.008 and 0.019).

Implications for Practice: The PADRQ was a useful tool for identifying those CAD patients who had a high risk for PAD and benefited from diagnostic ABI testing. Routine screening is necessary to identify asymptomatic and symptomatic CAD patients at risk for PAD.

Your Hearts Connection
Mary Collier, MSN, RN, RT(R), CCRN- CSC; Stephanie Dunlap, DO; Justin Foreman, BSN, RN; Lindsey Neese, MSN, RN, ACNS-BC; Monica Worrell, BSN, RN; UC Health, Amelia, OH.

Introduction: The “Your Hearts Connection Team” of healthcare providers implemented a disease management program to provide a comprehensive education and resource liaison to support and empower heart failure (HF) patients. The primary focus of the program supported patient empowerment through providing resources and education to amplify the treatment and management of HF while optimizing positive patient outcomes.

Evidence-Based Program Guidance: The team implemented focus areas of the Robert Woods Johnson (RWJ) Foundation for guidance in the design and implementation of interventions to meet our goals. Three areas of focus included quality, public health, and
vulnerable populations (RWJ, 2011). Quality of care emphasis initiative within the institution is current with the Get With the Guidelines®-Heart Failure (GWTG-HF) supported by the American Heart Association’s collaborative quality improvement program.

**Interventions:** A focused team of healthcare providers set forth interventions that enabled the team to apply optimal contributions to transform the organizations standards of care to CHF patients. Our institution’s positive results enabled our team to further develop innovative interventions to continue optimal patient centered care.

Structured interventions in Phase One include a “Your Hearts Connection Referral,” which incorporates:

- Dietary consult
- Social work consult
- Financial Consult
- HF Education teaching utilizing a teach back method of understanding
- Dedicated portable phone line with messaging system
- Information/resource packet for patients
- Scale
- Medication organizer
- Fluid Measuring Cup
- Nurse-driven follow-up phone calls
- Two-week supply of discharge medications (Free of charge)

Additional growth and development in Phase Two of the “Your Hearts Connection” Program included:

- Utilization of the patients’ MAR as a teaching resource with each medication administration
- Two full-time HF coordinators
- 60 minutes of HF patient teaching
- Structured in-patient and out-patient HF classes
- Scheduled follow-up appointment within 7 days of discharge
- Dedicated phone line for patients to call with questions
- Home care RNs were educated to identify worsening HF symptoms and communicate findings to the provider during the patients’ transition of care to home.

**Barriers:**

**Phase One:** The socioeconomic status of the population served influenced patients ability to adhere to medication regimens, follow-up appointments, and fluid & dietary restrictions.

**Phase Two:** Patient participation, motivation, health literacy, and literacy placed a key part in barriers to be overcome. Barriers to nursing staff included time constraints and communication with the provider regarding plan of care.

**Results:**

**References:**

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**Benefits and Barriers to Cardiac Rehabilitation**

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**Background Summary:** Cardiac rehabilitation (CR) has been found to reduce mortality, improve cardiac risk factors, reduce recurrence of cardiac events, and improve quality of life (1, 2). Prior research has found that most barriers are due to low perceived need, logistical factors, work/time conflicts, and medical comorbidities (3). Reasons for discontinuing have included physical problems, the belief that one can do it on their own, and cost (4).

**Purpose/Problem Being Addressed:** The purpose of this study was to identify perceived benefits and barriers to participation in a community based CR.

**Design:** Surveys were mailed to all patients referred to the program between 2010 and 2012 (n = 449). The 15-question survey included open-ended and closed-ended (yes/no) questions about perceived benefits and barriers. The final sample (n = 128, 41% female) was composed of active participants (70%), non-starters (14%), and some who had quit the program (16%).
Evaluation/Outcomes: Most endorsed barriers were no insurance coverage of the program, the belief that they could do it on their own, followed by other medical problems, scheduling conflicts and lack of time. Of the individuals who discontinued the program, the most prevalent reason endorsed was cost/lack of insurance, the feeling that they could do it on their own, driving distance, and other medical problems. The benefits described by participants included having a scheduled/structured time for exercise, development of discipline, and the sense of safety provided by medical supervision.

Statement of the Conclusions: This study was consistent with the literature for barriers to starting cardiac rehabilitation and for discontinuing the program.

Implications for Practice: This study provides more evidence for the importance of appealing to Medicare to revise insurance requirements for community-based programs. Results about cost barriers suggest that community scholarship programs should be continued, fundraising efforts increased, and education about scholarships expanded. It is also necessary to improve education to community members and medical personnel about the specialized and comprehensive nature of cardiac rehabilitation.

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**Cardiovascular Disease Prevention in a Gynecology Practice**

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**Background:** Cardiovascular disease (CVD) is the number one cause of death among women in the US, claiming nearly 420,000 lives per year. Gynecologic providers, specifically advanced practice nurses, often serve as primary care providers and are uniquely positioned to identify and implement strategies to reduce risk of CVD. Despite strong evidence about CVD risk among middle aged women, most are not aware of the importance of discussing risk factors with their gynecologic provider nor do perceive themselves at risk. There is a need for interventions aimed at increasing knowledge and perception with hopes they will engage in health promotion and preventive measures.

**Purpose:** This purpose of this quality improvement project was to evaluate if a nurse practitioner led CVD program for women ages 40–64 initiated in a gynecology practice would increase knowledge and enhance risk perception of CVD.

**Design/Implementation:** Participants (n = 20) were recruited by convenience sampling from a gynecology private practice. This program consisted of individualized assessment focused on modifiable risk factors, education, and a lifestyle action plan aimed at decreasing CVD risks. Outcome measures included the Coronary Heart Disease Knowledge Test for Women and the Perception of Risk of Heart Disease Scale, given pre/post intervention.

**Evaluation/Outcomes:** Statistical analysis of pre/post scores demonstrated significant improvement: mean pre-knowledge score 77 and mean post-knowledge score 87 (p < 0.01), mean pre-perception score 0.75 and mean post-perception score 7.45 (p < 0.01). Program evaluations received positive participant feedback with recommendations for further community outreach.

**Implications:** The findings from this project have clinical and research implications. It is crucial that women’s health providers assess and educate their patients about the risks of CVD. This would be a great opportunity for DNP and PhD prepared to nurses to collaborate on a study exploring the impact of gynecologic provider in prevention of female heart disease.

**Communicating Risk With Relatives of Familial Hypercholesterolemia Patients, a Summary of the Evidence**

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**Background Summary:** Familial hypercholesterolemia (FH) is the most common inherited, potentially deadly disease affecting an estimated 600,000 people in the United States. It is estimated that 90% of those affected are unaware that they have the disease. When FH is undiagnosed and untreated, it is linked with early coronary heart disease in more than 50% of men by age 50 and 30% of women by age 60. Cascade screening is the most cost effective method available to identify family members with this disease; however, current guidelines do not specify the most effective communication strategy to implement when contacting relatives for cascade screening. Therefore, an exhaustive search of the literature was conducted to determine the most successful
communication methods used in contact tracing and cascade screening.

**Purpose:** The purpose of this summary of the evidence is to identify the communication method with greatest impact in having at-risk populations present to a provider for disease screening. These findings will inform clinicians of the most successful methods to implement when cascade screening relatives of known familial hypercholesterolemia patients.

**Design:** A rigorous literature search was conducted concerning contact tracing and cascade screening methods. Multiple databases were examined, including PubMed, CINAHL, Ovid, Google Scholar, Cochrane Library, and research lists from relevant articles. A quality rating was assigned to each piece of evidence using the Johns Hopkins Evidence-Based Practice and the Strengthening the Report of Observational Studies in Epidemiology (STROBE) Tools.

**Evaluation of Outcomes:** The majority of studies support direct contact of relatives via letter, mailed from the provider. Provider-initiated communication more often resulted in at-risk persons being evaluated by a healthcare professional when compared to other methods of communication.

**Implications for Practice:** Based on the literature, relatives of current FH patients would be more likely to present to a clinic for cascade screening if they were directly contacted via letter from a healthcare provider.

**Heart Healthy Living: A Community-Based, Tailored Intervention to Improve the Cardiovascular Knowledge in African American Women**

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**Background:** Low health literacy is an extensive source of economic insufficiency in the United States healthcare system. Health literacy is lowest among the more vulnerable members of our communities such as the elderly, racial/ethnic minorities, low education level, uninsured and publicly insured.

**Problem:** Cardiovascular (CV) disease remains the leading cause of death for women, and African American (AA) women suffer from a disproportionate burden of CV risk factors (RF) and low health literacy. We developed a community-based, tailored health education, nutrition, and physical activity program, Heart Healthy Living (HHL) to address the unique challenges AA women face.

**Description:** HHL consisted of a 6-week program to improve the CV health literacy of AA women aged 18 years or older with at least one CV RF and the ability to exercise at moderate intensity. The weekly program had 3 key components; didactic lecture, group interactive learning, and physical activity. Participants completed a pre- and post-test of the validated Heart Disease Knowledge Questionnaire (HDKQ).

**Evaluation of Outcomes:** Participants included 32 AA women with a mean (SD) age of 48 years (11.1). Knowledge of heart disease risk and symptom awareness were low at entry; on average, participants scored 53% on the HDKQ; however, after completion of the program, this average improved to 73%.

**Conclusion:** We found that a tailored health education and physical activity program resulted in improved cardiovascular health knowledge in AA women. Larger and longer studies of HHL are ongoing to determine whether these results are replicable and sustainable.

**Implications for Practice:** Our pilot suggests that a community-based, tailored education program has the potential to improve knowledge gaps in CV disease and potentially improve clinical outcomes.
Implementation and evaluation of a “small-test-of-change” of the project and disseminating results through professional presentations.

Evaluation/Outcomes: Three cohorts of student groups have completed the EBP series with positive results. More detailed information of specific PCNP student projects will be shared to demonstrate both the process and outcomes related to preventive cardiology.

Implications for Practice: Preparing PCNP students for the current and future healthcare environment requires merging academic and experiential experiences that are feasible and sustainable in “real-world” practice.

An Overview of Nurse-Led Initiatives to Reduce Central Line Infections
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Background: On a heart failure and cardiac transplant unit, there was an overall improvement in central line–associated infection rate: in 2008, there were 2928 line days and 4 infections, for a rate of 1.37, while in 2011, there were 3173 line days and 4 infections, giving a rate of 1.26; however, the rates were higher than the benchmarks by the National Healthcare Safety Network.

Purpose: The purpose of this quality improvement project in patient care was to continue reducing central line–associated infection rate.

Implementation: Using a massive educational rollout by the safety nurses, numerous strategies were implemented to lower infection rates. Safety nurses and leadership post information on the incidence of central line infections so all staff are aware of proper practice. Use of central line bundles focused on maximum barriers during insertion and proper site selection. Bacteria at the catheter sites were decreased by using a chlorhexidine impregnated disc for all central line dressing changes and chlorhexidine bath cloths unless contraindicated. Standardizing the dressing change process helped eliminate any confusion about when the dressing is due to be changed. All tubing is changed every Monday and Thursday and new medication bags are used at the time of the tubing change. We have an extensive “scrub the hub” campaign aimed at ensuring the site is scrubbed sufficiently and adequately dried. In our institution, a lack of hand hygiene is considered a serious offense and a recent surveillance of hand hygiene revealed 100% compliance with hand hygiene before and after patient contact.

Evaluations: Overall, the infection rates continue to slowly decline per quarter.

Implications for Practice: The long-term goal of eradicating nosocomial infections is vital in this population to prevent delay in transplant and decrease length of stay. When one occurs, an investigation of the cause leads to an educational opportunity to improve patient care.

The Feasibility of Increasing Exercise Adherence Through Education and Weekly Exercise Reminders
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Background: Motivating initiation and maintenance of exercise-base lifestyle changes are often difficult. Exercise has been well-established as a positive adjunct for improving hemodynamic status and improving health-related quality of life in cardiovascular patients. Regardless, only 5% of adults in the United States engage in thirty minutes of exercise daily and only one in three achieve the recommended amount weekly. Thus, increasing patient motivation for initiation and maintenance of regular exercise becomes a point of clinical interest.

Purpose: To examine the affect of offering a single exercise education session with subsequent weekly exercise reminders on rates of engagement in regular exercise and disease parameters in a small cohort of patients with atrial fibrillation.

Design/Implementation: Adult patients, who exercised two hours or less weekly, were recruited and consented for participation from a local electrophysiology practice. Pre and post testing included blood pressure, SF-36 scores, and Symptoms Checklist: Frequency and Severity Scale. Each participant received an individual exercise education session and an exercise log. Participants engaged in the aerobic activity of their choosing on a Borg Perceived Exertion Scale over 12 weeks. Weekly exercise reminders were sent.

Evaluation of Outcomes: Seventy five percent of approached patients were interested in engaging in an exercise program. Education sessions typically lasted less than five minutes. Participants cited wanting to improve their health or wanting to engage in exercise for their own satisfaction as primary reasons for choosing to participate. At initial follow-up, patients reported varying levels of adherence, the most common barrier being time constraints. Satisfaction with exercise reminders was expressed.

Implications for Practice: When approached by health providers, the majority of patients express interest in increasing exercise. Exercise education can be completed with minimal time constraints for busy clinicians. Exercise reminders may increase patient adherence to exercise regiments.

Using the Clinical Nurse Leader to Improve Heart Failure Patient Education and Reduce Potential for Readmission: A CNL Student Project
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Background: Over 80% of heart failure (HF) costs are incurred during hospitalization. HF readmission rates
are escalating. Readmissions can be reduced with improved patient education. Only essential HF education should be provided in the hospital setting. The teach-back method (TBM) has been shown to increase retention of learned material.

**Purpose:** The Clinical Nurse Leader (CNL) uses evidenced-based practice to impact health across the care continuum. By educating nurses about TBM, the CNL can enhance the patient education experience, leading to reduced HF readmission. The purpose of this project was for the CNL student to increase nurses’ knowledge of TBM, with a focus on four key HF teaching topics.

**Design/Implementation:** Poster-education sessions that emphasized TBM process and four key HF topics were conducted on a 20-bed telemetry unit. Nurses were surveyed pre/post education, and chart reviews were conducted to assess HF education documentation pre/post project implementation.

**Evaluation/Outcomes:** All of the nurses on the participating unit received education. The overall survey response rate was 74%. Nurses recognized that TBM is not a test of patient knowledge. Nurses demonstrated increased knowledge of activity as a key HF teaching topic. Current HF documentation tool was identified as a barrier for capturing teach-back response and the four key HF teaching topics.

**Implications for Practice:** The Clinical Nurse Leader can teach nurses to use evidence-based practices to improve patient heart failure education and increase patient’s retention of knowledge, which can lead to fewer readmissions for heart failure.

Documentation tools that align with education practices are needed for nurses to capture patient response to teaching and to identify ongoing patient heart failure education needs.

**Heart Failure: Are You in the Zone?**
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**Purpose:** To determine whether discharge education using the teach-back method and a daily self-assessment model would reduce all-cause 30-day heart failure readmission.

**Background:** Heart failure has been targeted as a frequent yet preventable cause of hospital readmissions. Heart failure readmission rates are scrutinized and may negatively impact hospitals under the CMS Hospital Readmission Reduction Program. In 2012, a readmission collaborative was formed which launched a system-wide initiative to reduce 30-day heart failure readmission rates.

**Design/Implementation:** Heart failure patients on our telemetry unit received daily education from our charge nurses using teach-back methodology and a three-zone daily self-assessment tool. Patients were taught to recognize a state of optimum health (green zone), the presence of warning signs (yellow zone), and the need for emergency care (red zone). All-cause 30-day heart failure readmission rates were retrieved from retrospective hospital financial data.

**Evaluation/Outcomes:** During the 24-month pre intervention period, a total of 575 patients were discharged with a primary diagnosis of heart failure. Of these patients, 109 (19.0%) were readmitted for all causes within 30 days of discharge. During the 6-month period post intervention, a total of 144 patients were discharged with a primary diagnosis of heart failure. Of these patients, 13 (9.0%) were readmitted for all causes within 30 days of discharge.

**Implications for Practice/Conclusion:** Our results demonstrate that teach-back methodology for educating heart failure patients in the use of a three-zone daily self-assessment tool can reduce 30 day all-cause heart failure readmission rates. It is essential to provide patients with the information and resources they need for monitoring their health. Effective patient education at the bedside can be an important component in hospitals’ efforts to reduce readmission rates.

**Inpatient Cardiac Education and Cardiovascular Nurse Navigation Collaborate to Decrease Heart Failure Readmissions**
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**Background:** In addition to maintaining a low-sodium diet, exercise and medication adherence, heart failure patients must monitor their daily weight to preserve good health. In 2011, it was identified that the inpatient heart failure patients were not being weighed consistently during the hospital stay and this was not reinforced as a key part of each heart failure patient’s discharge plan.

**Purpose/Problem:** Identification of heart failure patients requiring daily weights should be clearly defined and the education provided to patients during their hospital stay and post-hospitalization should be clear and consistent.

**Design/Implementation:** In-house Information Technology was used to create an electronic alert to identify heart failure patients and also to alert nursing staff to weigh patients daily. In addition, an electronic Discharge plan was developed by the Nursing Informatics Department to improve discharge education. The cardiac nurse educator and the nurse navigator worked collaboratively to educate patients during the hospital stay and reinforce the education during a follow-up phone call to the patient 48 to 72 hours after discharge.

**Evaluation/Outcome:** Following the initiation of the electronic alert for daily weights, the compliance increased from 69% to 92%. With the introduction of increased patient education provided, the overall heart failure readmission rate decreased from 24% to 18%.
Implications for practice: Utilizing the innovation of information technology and maintaining the collaboration of nurse professionals can greatly improve patient care and decrease readmissions for patients at risk for exacerbation of heart failure.