Background. Antimicrobial Stewardship is a coordinated effort to improve and measure the appropriate use of antimicrobials. Antibiotic resistance is an emerging world health problem and unnecessary prescribing of broad-spectrum antibiotics is a major contributor to this. Skin and soft-tissue infections are a common reason to receive a prescription for antibiotics. Currently there exists a trend for using broad-spectrum intravenous antibiotics before or early in the course of severe infections where more narrow-spectrum options would be adequate. This study aimed to characterize the choice of antibiotic being prescribed for the management of outpatient cellulitis requiring intravenous antibiotics and evaluate the success of a clinical order set outlining optimal therapy.

Methods. This was a retrospective chart review looking at antibiotic prescribing through the Emergency Department at The Moncton Hospital, in Moncton, New Brunswick. Charts were reviewed before and after the introduction of a clinical order set outlining optimal antibiotic therapy. The goal was to review charts from the pre- and post-intervention group and compare antibiotic usage, treatment failure rates, and adverse events.

Results. Of the 54 patients receiving IV antibiotics in the pre-intervention group, 3 received cefazolin, 50 received ceftriaxone, while 1 received levofloxacin. The median duration of IV therapy was four days. After the introduction of the clinical order set there was an absolute increase of 53.8% (n = 35) in the use of cefazolin and absolute decrease of 53.7% (n = 23) in the use of ceftriaxone in the post-intervention group of 59 patients. Both results were statistically significant (P < 0.001). The median duration of IV therapy in this group was 3.5 days. In eligible patients, the clinical order set was utilized 61.1% of the time. There was no significant difference in rates of treatment failure or adverse events between cefazolin and ceftriaxone. 

Conclusion. The introduction of a clinical order set outlining the preferential use of once-daily cefazolin plus probenecid for the treatment of outpatient cellulitis lead to a statistically significant increase use of cefazolin, and decrease use of ceftriaxone, thus demonstrating a positive stewardship effect at a local level.

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1627. The Impact of Respiratory Viral Testing in Hospitalized Adult Patients at a Tertiary Care Facility

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Background. The use of multiplex nucleic acid amplification tests to detect respiratory viruses is increasing. However, these tests are expensive, and the clinical significance of a positive result is often unclear. Positive viral results have the potential to decrease antibiotic use and length of stay, but their actual impact is unknown.

Methods. We completed a retrospective review of all adult patients with positive respiratory viral testing (RVT) (RVP, GenMark) and rapid RSV/influenza PCR tests (Cepheid Xpert) collected within 48 hours of admission to the general inpatient or step-down units of an academic tertiary care hospital between September 1, 2015 and March 15, 2016. Data collected included demographics, comorbidities, clinical presentation, time of collection and result, additional diagnostic evaluation, and antibiotic use.

Results. A total of 221 positive respiratory viral tests were collected on 215 patients during the study period. The median age at admission was 56.8 years: 48% were female. Respiratory symptoms were documented in 92.8% of cases. COPD was the most common respiratory co-morbidity (20.2%), while 30% of patients had cancer, and 3.2% were HIV infected. Respiratory support on admission was common (51.6%). A rapid PCR and RVP were performed in 58.8% of cases, while 28.5% had only an RVP and 12.7% had only a rapid PCR. Of the patients who had a positive rapid PCR, 17.6% also had an RVP done. Antibiotics were started within 24 hours of presentation in 87.4% of all cases and 70.6% of patients with positive rapid PCR. RVT was the most common identified pathogen (44.6% of positive tests) followed by metapneumovirus (14%), respiratory syncytial virus (13.5%), and coronavirus (13.5%). Median time from specimen collection to result was 38.8 hours for RVP and 15.3% were resulted after patient discharge. For those who had a rapid PCR alone, median time from collection to result was 1.5 hours.

Conclusion. In this non-critically ill cohort, most patients with positive viral results received antibiotics, and a substantial number of RVPs were resulted after discharge. This suggests that there are many lost opportunities to impact clinical management with respiratory viral testing.

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1628. Epidemiology of Polymyxin Use in a Tertiary Care Setting of South India

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Background. Polymyxin B(PB) and Colistin (PE) use have increased in India due to emergence of resistant Gram-negative organisms. The Indian Council of Medical Research has identified carbapenems, polymyxins (PE and PB) as key antimicrobials which require restriction in hospitals. We describe epidemiology of PB and PE use following implementation of an Antimicrobial Stewardship Program (ASP) in a 1300-bed, private, tertiary-care center in Southern India.

Methods. An ASP was established at Amrita Hospital in Feb 2016 consisting of an administrative champion, hospitalist, microbiologist, intensivist and 5 pharmacists. Institutional guidelines for polymyxins were established and disseminated. The ASP team performed daily post-prescription reviews, evaluated and tracked appropriateness of PB and PE use, including administration of a loading dose (LD), maintenance dose (MD), frequency, route and duration of therapy. ASP recommendations and compliance were recorded.

Results. During the 12-month study period (Feb ’16-Jan ’17), 348 patients received 295 PE and 94 PB courses. Mean age was 50 yrs and 73% were male. Patients on Medicine and Hematology/Oncology teams accounted for 42% of all prescriptions. The most common infections were bacteremia (34%), pneumonia (29%) and UTI (23%). Pathogens were recovered in 69% (260/389) of cases. In the period prior to the introduction of the ASP program, the mean quick Sequential Organ Failure Assessment Score (qSOFA) score was 0.9. Of the 54 patients receiving IV antibiotics in the pre-intervention group, 3 received cefazolin, 50 received ceftriaxone, while 1 received levofloxacin. The median duration of IV therapy was four days. After the introduction of the clinical order set there was an absolute increase of 53.8% (n = 35) in the use of cefazolin and absolute decrease of 53.7% (n = 23) in the use of ceftriaxone in the post-intervention group of 59 patients. Both results were statistically significant (P < 0.001). The median duration of IV therapy in this group was 3.5 days. In eligible patients, the clinical order set was utilized 61.1% of the time. There was no significant difference in rates of treatment failure or adverse events between cefazolin and ceftriaxone.

Conclusion. The introduction of a clinical order set outlining the preferential use of once-daily cefazolin plus probenecid for the treatment of outpatient cellulitis led to a statistically significant increase use of cefazolin, and decrease use of ceftriaxone, thus demonstrating a positive stewardship effect at a local level.

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1630. Correlation Between Tennessee Antibiotic Use Point Prevalence Survey and NHSN AU Module in Four Acute Care Hospitals

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Background. The CDC’s Core Elements of Hospital Antibiotic Stewardship Programs includes tracking and reporting of antibiotic use (AU). In 2014, the Tennessee Department of Health (TDH) developed a voluntary point prevalence survey for hospitals to report AU, as an interim measure to reporting days of therapy (DOT) data into the AU Option of the National Healthcare Safety Network (NHSN). The objective of this analysis is to correlate AU data obtained from the TDH AU Survey to NHSN AU data from the institutions within the state which have reported data to the NHSN AU Module from October 2015-December 2016.

Methods. The TDH AU Survey is a quarterly assessment of the number of patients who received antibiotics during a 24-hour period, as a percent of daily hospital census. The metric used for NHSN is monthly DOT/days present. All available DOT data from institutions reporting to the NHSN AU Module from October 2015-December 2016 was pulled and aggregated by quarter. TDH AU data reported during the same time period was also pulled. A matched data point was usable when data existed from both the TDH Survey and NHSN. Trend lines and coefficients of determination were created using Excel 2010 and SAS 9.4.

Results. Four Tennessee hospitals reported into both the NHSN AU Option and the TDH AU survey during the study period. From those institutions, there were 117 matched data points for nine antibiotics or groups of antibiotics. A positive correlation was observed. The Pearson correlation analysis of all institutions’ reported antibiotic agents – r²=0.9747, P < 0.0001. Variation existed among the nine different drug/classes, with the strongest correlation existing for anti-pseudomonal carbapenems (r²=0.8402, P < 0.0001) and the weakest with respiratory fluoroquinolones (r²=0.0449, P=0.487). No strong influences were observed when data were analyzed by subgroups of quarters or institutions.

Conclusion. A positive correlation was found between the two AU metrics, indicating that the TDH AU Survey is a reasonable interim proxy of the NHSN AU data. It is frequently used by TN hospitals for evaluating individual institutional trends, but benchmarking institutions with it is not ideal. This illustrates the need for more hospitals in our state and nationwide to report into the NHSN AU Module.

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1631. Validation of NHSN Annual Hospital Survey Questions: Do Responses Differ Depending on the Professional Completing the Survey?

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Background. Facilities enrolled in the National Healthcare Safety Network (NHSN) provide annual information on their antibiotic stewardship programs (ASPs) via a mandatory survey. The survey contains 12 questions that are representative of CDC’s Core Elements for Hospital ASPs. Respondents (typically Infection Preventionists) are advised to seek benchmarking institutions with it is not ideal. This illustrates the need for more hospitals to report into the NHSN AU Module.

Methods. Individuals from 446 academic and community hospitals participating in the Vizient list-serve were surveyed in March 2016. The Vizient survey included the 12 ASP questions in the 2015 NHSN survey. Vizient responses were compared with NHSN survey responses to assess differences in reported uptake of core elements based on the professional completing the survey.

Results. 189 of the 211 hospitals completing the Vizient survey were successfully matched to NHSN hospitals. The majority of respondents were pharmacists; 83% were either Directors of Pharmacy or clinical pharmacists of which 48% and 61% reported assisting with the NHSN survey, respectively. Reported implementation of all 7 core elements in this subset of 189 hospitals was 58.2% in the Vizient survey compared with 48.6% in the NHSN AU Survey.

Conclusion. Overall similarities between NHSN and Vizient survey results indicate that ASP questions based on CDC’s Core Elements are interpreted in similar ways and answered consistently when analyzed overall. However, individual core element responses may differ based on position of respondent, ASP familiarity, ASP infrastructure, and/or hospital bed size. CDC is exploring improved wording of the survey questions to help further improve consistency in responses.

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1632. Map the Gap: Mapping the Spread of Antimicrobial Stewardship Programs with Those Fighting Infections Workforce

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Background. Antimicrobial resistance is the ability of a microbe to resist the effects of an antimicrobials. According to the CDC, every year, more than two million people in the United States get infections that are resistant to antibiotics and at least 23,000 people die as a result. Antibiotic resistance adds $20 billion in excess direct health care costs, with additional costs to society for lost productivity as high as $35 billion a year. Up to 50 percent of all the antibiotics prescribed for people are not needed and are prescribed appropriately.

Methods. We identified data about the number of board certified Infectious Diseases (ID) physicians by zip code was obtained from the Doximity physician database. The location of current ID fellowships was obtained from the NRMP public data. These data were mapped using Google fusion tables and the results compared with several CDC databases, mainly: percent of hospitals with antimicrobial stewardship programs (ASPs) and number of antibiotic prescribers by providers in the country.

Results. A total of 147 fellowship programs and 7129 board certified ID physicians were identified. Percent of hospitals with ASPs were the least in the North and South of the country which correlated well with higher number of antibiotics prescribed by providers, especially in the Southern belt. These locations also correlated with fewer fellows and board certified physicians. These physicians tend to have a heavy concentration in the Eastern and Western belt of the country which correlated well with a higher prevalence of ASPs.

Conclusion. The use of this novel social network mapping approach to assess the ID physician workforce has the potential of providing real time data regarding their geographical spread. The use of this dataset coupled with the spread of the ID work force. Antibiotic resistance being a problem of such massive implications, a consideration could be made to address the discrepancies between the prevalence of these stewardship programs and spread of the work force. This could be addressed by targeted rebalancing interventions that may include additional fellowship spots in ‘underserved’ areas as well as financial and practice incentives. This could be one way of addressing the problem of antimicrobial resistance.

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1633. Visual Analytic Tools for Automated Measurement and Tracking of Durations of Therapy for Pneumonia, Urinary Tract Infections, and Skin and Soft Tissue Infections

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