Methods. We retrospectively reviewed discharge antibiotic prescriptions at Primary Children’s Hospital (PCH) from January 1st, 2016 – December 31st, 2016. PCH has a comprehensive stewardship program that focuses on inpatient prescribing and discharge prescriptions for IV antibiotics but does not review discharges with oral antibiotics. We characterized the overall percentage of hospital discharges prescribed antibiotics, route (IV/oral) and antibiotic classes. For a randomly selected sample of prescriptions, we conducted chart reviews to identify suboptimal prescribing in the following categories based on national/local guidelines in the following categories: incorrect antibiotic choice, formulation, dose and duration. We calculated the percentage of discharge antibiotic prescriptions determined to be suboptimal overall and within drug classes, route and clinical indications.

Results. During 2016, 2,835 patient discharges (22% of total discharges) were prescribed 3,487 discharge antibiotic prescriptions. An IV antibiotic was prescribed in 10% of patient discharges with antibiotics. The most common antibiotic classes were aminopenicillins (24%), sulfonylamides (13%), β-1(3rd generation cephalosporins (17%) and fluoroquinolones (7%). We reviewed 138 prescriptions for 110 patients of which 29% were considered suboptimal. The most common categories of suboptimal prescribing were duration (49%), drug selection (7%), and dose (7%). When prescriptions for medical prophylaxis were excluded, 35% were suboptimal. The percentage of suboptimal prescriptions was higher for oral (32%) than IV (5% P=0.01).

Conclusion. A large percentage of pediatric discharges include antibiotic prescriptions which are frequently suboptimal. Hospital-based stewardship programs can enhance value by including greater focus on discharge prescribing.

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1623. Antibiotic Utilization and Antimicrobial Stewardship in Community Hospitals
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Background. Overuse of antibiotics has been associated with the emergence of antibiotic resistance. This study aims to evaluate trends in antibiotic utilization as defined by days of therapy per 1000 patient-days (DOT/1000 PD) in various community hospitals across the US.

Methods. Eighteen network hospitals provided antibiotic utilization data (2012-2016) on overall antibiotic use and the following classes: narrow-spectrum β-lactams (amoxicillin, nafcillin, oxacillin, cefazolin, and cefpodoxime proxetil), β-lactam/β-lactamase inhibitors (piperacillin/tazobactam, ceftazidime, and cefepime), carbapenems (ampicillin, nafcillin, oxacillin, cefazolin, and cephalexin), non-carbapenem antipseudomonal β-lactams (piperacillin/tazobactam, ceftazidime, and ceftazime, and ceftipime), carbapenems, anti-methicillin-resistant Staphylococcus aureus (MRSA) agents (vancomycin, linezolid, daptomycin, and tigecycline), and fluoroquinolones. Antibiotic utilization and change in utilization trend during the study period was calculated using linear regression (β coefficient).

Results. Hospitals were primarily urban (72%) with an average of 209 total beds and 22 ICU beds. All hospitals have antimicrobial stewardship programs (ASPs) established during the study period. A decrease in antipseudomonal β-lactams and fluoroquinolones was observed during the study period, while other antibiotic classes had increased use (Table).

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1624. Assessing Appropriateness of Antimicrobial Treatment in Hospitalized Patients: A Point Prevalence Study
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Background. Between 20 and 50% of antibiotic therapy in hospitalized patients is considered inappropriate. Inappropriate antibiotic therapy is associated with increased morbidity and mortality. The aim of our study was to evaluate the ratio of appropriate antibiotic therapy among adult patients admitted to a secondary hospital and treated with at least one systemic antibiotic therapy, and to compare different methods for evaluation of appropriateness.

Methods. This was a point-prevalence study, in which all adult patients admitted to a secondary hospital and treated with systemic antibiotic therapy (orally or intravenously) were included. Appropriateness was evaluated by experts (infectious diseases specialists) according to clinical practice guidelines in antibiotic therapy, and by ranking 11 quality indicators based on literature recommendations. Agreement between all methods was analyzed.

Results. 106 patients were included in the study; most of them were treated empirically (78%). Almost half of the patients were treated for urogenital and abdominal infections (44%). Appropriateness ranged from 20-75%, depending on method of evaluation. We found a very low agreement between the more strict definition and experts’ opinion (kappa=0.068), and a medium agreement between the less strict definition and experts’ opinion (kappa=0.45). Respiratory tract infections were treated inappropriately most of the time, according to all evaluation methods. Appropriate blood cultures were taken before starting antibiotic therapy only in 22% of the cases.

Conclusion. We found a high rate of inappropriate antibiotic therapy in different scenarios that commonly lead to suboptimal or inappropriate use. The frequency of suboptimal use was higher in patients who were administered a carbapenem for more than 24h. We determined which carbapenem was used; patient location (ICU vs. floor); any patient history of multi-drug resistant organisms; infection site; allergy history; and whether Infectious Disease consultation and experts’ opinion (kappa=0.45). Respiratory tract infections were treated inappropriately most of the time, according to all evaluation methods. Appropriate blood cultures were taken before starting antibiotic therapy only in 22% of the cases.

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1625. A Multicenter Study to Optimize Carbapenem Use
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Background. Infection with carbapenem-resistant bacteria has become a major threat. Effective stewardship of antibiotics, particularly carbapenems, remains essential to control carbapenem-resistant bacteria. We attempted to determine the appropriateness of carbapenem use so that interventions to optimize carbapenem use can be specified formulated.

Methods. We developed criteria for appropriate, suboptimal, and inappropriate carbapenem use for empiric carbapenem use and non-empiric (after 48-72 hours with microbiology available culture results) carbapenem use. We conducted a multi-center, retrospective review across three of Emory-affiliated hospitals: the Atlanta Veterans Hospital (173 beds), Emory University Hospital (573 beds), and Emory University Midtown Hospital (511 beds). We reviewed 211 charts between July, 2015 and December 2015. The charts were randomly selected from patients ≥21 years old who were administered a carbapenem for more than 24h. We determined which carbapenem was used; patient location (ICU vs. floor); any patient history of multi-drug resistant organisms; infection site; allergy history; and whether Infectious Disease consultation and experts’ opinion (kappa=0.45). Respiratory tract infections were treated inappropriately most of the time, according to all evaluation methods. Appropriate blood cultures were taken before starting antibiotic therapy only in 22% of the cases.

Results. Of 211 cases, we classified 76% as appropriate use, 21% as suboptimal, and 3% as inappropriate. The most commonly identified reasons for suboptimal use were suspected severe intra-abdominal sepsis and limb or life-threatening soft-tissue infections in which other, more narrow-spectrum formulary antibiotics were available for use. Four of six cases of inappropriate use occurred in the setting of β-lactam allergy. For non-empiric carbapenem use, while we classified 69.7% (147/211) of use as appropriate, microbiology cultures were unrevealing in 19.9% (42/211) of cases. Cultures grew an organism necessitating carbapenem therapy in only 24% (51/211) of cases.

Conclusion. Interventions to optimize carbapenem use should focus on clinical scenarios that commonly lead to suboptimal or inappropriate use. The frequency of unrevealing microbiology cultures suggests that more sensitive microbiologic techniques to determine causative agents may help to decrease carbapenem use.

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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 assays 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 symptoms (RVS) 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 test, collected result, additional diagnostic evaluation, and antibiotic use.

Results. A total of 221 positive respiratory viral tests were collected on 213 patients during the study period. The median age at time of testing 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 a positive rapid PCR. The diagnosis was the most frequent isolated 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 hours 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 assays 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. Polymyxins (PB and PE) are key antimicrobials which require restriction in hospitals. We describe epidemiology of PB and PE use following implementation of an Antibiotic 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-prescriptive 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 (21%). Antibiotics were prescribed in 69% (269/389) of cases. Acinetobacter baumanni 23% (90/389) and Acinetobacter baumanii 6% (35/389) were most common. 290 (75%) of polymyxin course were judged to be inappropriate (78% of PE and 22% of PB). The most frequent reasons for inappropriate therapy included incorrect dose in 64% for PB and 58% for PE, inappropriate MD (60% for PB and 48% for PE) and wrong duration of therapy (54% for PE and 48% for PB). 95% of incorrect MD for both PE and PB were too low. The reasons for inappropriateness were similar for both polymyxins. While all inappropriate LD episodes for PB (n = 22 %) were due to lack of a LD, 4% for PE (n = 34%) involved either omission of LD or administration of LD that was too low.ASP recommendations were made in 190 instances with 58% provider compliance.

Conclusion. Review of PB and PE use in our hospital indicates a high percentage of inappropriate use and highlights stewardship opportunities for improving care of patients with resistant infections.

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