Conclusion. We identified an outbreak of RSV-B associated with severe disease among urban Minnesota children during a time of expected low RSV circulation. Complete genome sequencing data suggested emergence of a new lineage distinct from viruses circulating in Minnesota during the previous season. Genomic characterization can provide useful insights into epidemiologic variations.

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1629. Targeted Antimicrobial Use Admission Provides an Actionable Denominator for Antimicrobial Stewardship Programs Evaluating Inpatient Length of Therapy
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Background. Actionable, easy to interpret antibiotic use (AU) metrics provide antimicrobial stewardship programs (ASPs) with clear targets. Current aggregate AU metrics lack the ability to discriminate between long courses in a limited number of patients versus short courses in a large number of patients.

Methods. We developed a novel AU denominator termed “targeted antimicrobial use admission,” defined as an inpatient admission in which a selected agent or group of agents was administered. When used with length of therapy (LOT), it provides the average number of days patients receive the targeted agent(s) during inpatient hospital admissions. To demonstrate the added utility of this metric, we used descriptive statistics to compare it to LOT, LOT/1,000 patient days, LOT/1,000 admissions, and LOT/admission to quantify intravenous (IV) vancomycin use among 25 hospitals in the Duke Antimicrobial Stewardship Outreach Network (DASON) for calendar year 2017. The metric was also used to compare hospitals to one another and track durations at an example hospital over time.

Results. Total LOT included 128,680 days of IV vancomycin (table). LOT/targeted antimicrobial use admission is the only metric that allows programs to quickly assess agent durations.

Table: Comparison of IV Vancomycin Consumption by Metric Among 25 Hospitals in DASON, 2017

| Metric | LOT (days) | LOT/Admission | LOT/1,000 Patient Days | LOT/Targeted Antimicrobial Use Admission |
|--------|------------|---------------|------------------------|-----------------------------------------|
| Mean ± standard deviation | 5,147±2,994 | 0.4±0.1 | 111±24.5 | 3.2±0.5 |
| Median | 5,093 | 0.4 | 103.5 | 3.2 |
| Range | 512–13,026 | 0.2–0.7 | 68.9–163.6 | 2.6–4.1 |

Conclusion. Stewardship programs seeking to shorten durations of therapy can track this metric over time to determine the impact of their ASP efforts (Figure 1). The metric can also be used to compare average durations of IV vancomycin by hospital to determine which ASPs may benefit from focused audit and feedback or antibiotic treatment may be useful (Figure 2). The network mean provides a target for agent-specific de-escalations, in days, for facilities with longer durations. LOT/targeted antimicrobial use admission provides an actionable metric for quantifying antimicrobial durations. This metric is easy to interpret and can feasibly be captured through the electronic prescribing record to aid in selecting ASP strategy.

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1630. Antibiotics Prescribed for Infection Prophylaxis Prior to Dental Procedures Are Frequently Unnecessary in the United States
Kj Stula, D. M. S. 1,2; Suthi Adimadhyam, MS, 3,4; Greg Calip, PhD, 3,4; Susan Rowan, DDS, 3,4; Alan E. Gross, PharmD, BCPS-AQ ID 3,4; Rose Perez, MPH 3,4; Ronald Hershov, MD 3; Jeesu C. McGregor, PhD 3 (14.7%) whose work was funded by a Merck-Funded Project 4 and Charlesnika Hershov, MS 1,2,3,4,5,6,7,8,9 dental visits were associated with IV antibiotic prophylaxis at Chicago, Chicago, Illinois, 3 Pharmacy Practice, University of Illinois at Chicago, College of Pharmacy, Chicago, Illinois, 4 School of Public Health, University of Illinois, Chicago, Illinois, 5 Department of Pharmacy Practice, Oregon State University/Oregon Health and Science University, College of Pharmacy, Portland, Oregon and Center of Innovation for Complex Chronic Healthcare, Edward Hines Jr. Veterans Affairs Hospital, Hines, Illinois

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Background. Antibiotics are recommended prior to certain dental procedures (“antimicrobial prophylaxis”) in patients with select comorbidities to prevent serious distal site infections. Our objective was to assess the appropriateness of antibiotic prophylaxis by dentists using Triene, a national integrated medical, dental, and prescription (Rx) claims database of 350 commercial plans.

Methods. Cross-sectional study of 8.7 million adult dental visits in 2015. Antibiotic prophylaxis was defined as Rx with <3 days supply dispensed within 7 days before a dental visit. Medical diagnoses were evaluated in medical/hospital claims data from 2009 to 2015. Patients with hospitalizations and infection diagnoses 14 days prior to the Rx date were excluded. Appropriate antibiotic prophylaxis was defined as a dental visit with a procedure that manipulated the gingiva/tooth periapex in patients with an appropriate cardiac diagnosis. Chi Square and logistic regression were applied.

Results. In 2015, 30,726 antibiotics were prescribed for dental infection prophylaxis for 21,986 patients (mean age=58.6 ± 15.0 years; 55.9% female). Amoxicillin (68.5%) and clindamycin (14.7%) were most common. 29,879 dental visits were associated with 69,639 dental codes (CDTs); range 1–14 CDTs/visit. Most dental visits were diagnostic (65.9% of visits with >1 diagnostic CDT), preventatives (53.0%), and restorative (11.2%). 98.4% of dental visits had an appropriate CDT for antibiotic prophylaxis. Comorbidities included orthodontic (45.4%) and caries diagnosis (40.6%) at the highest risk of infective endocarditis (22.2%). Per guidelines, 78.0% of dental visits with antibiotic prophylaxis were inappropriate. Amoxicillin was more likely to be inappropriate than other agents (OR=1.65; 95% CI: 1.55–1.76). Orthopedic implants (OR=3.35; 95% CI: 3.14–3.56), tooth implant procedures (OR=3.30; 95% CI: 3.14–3.56), and periodontal therapy (OR=3.30; 95% CI: 3.14–3.56) were associated with inappropriate prophylaxis. Using an antibiotic prophylaxis score, only 9.1% visits were deemed appropriate prophylaxis.

Conclusion. Antibiotic prophylaxis is prescribed for indicated dental procedures, but is not appropriately limited to patients with cardiac diagnoses per guidelines. Implementing antimicrobial stewardship efforts in dental practices may be an opportunity to improve antibiotic prescribing for infection prophylaxis.

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1631. Made to Measure: Development of a Scoring Tool to Customize Antimicrobial Stewardship Goals Across a Large Health System Andrea T. Logan, PharmD 1,2; Julie E. Williamson, PharmD 1,2; Steven Jarrett, PharmD 1,2 and Tina E. Davidson, MD 1,2. Quality and Patient Safety, Atrium Health, Charlotte, North Carolina, 3 Division of Infectious Diseases, Atrium Health, Charlotte, North Carolina

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Background. The 2015 National Action Plan for Combating Antimicrobial Resistance called for a 20% decrease in antibiotic use among inpatients. Atrium Health (AH), formerly Carolinas HealthCare System, established reductions in antibiotic use (determined by days of therapy [DOT] per 1,000 patient days [PD]) as a yearly system-wide quality goal since 2016. Hospitals in the AH inpatient network vary by size, scope, and antimicrobial stewardship program (ASP) maturity. Prior to our third year, we recognized the need to develop an objective method for determining antibiotic use reduction goals (AURGs); understanding that as ASPs mature, opportunities for reduction stabilize over time and may eventually plateau with...
consistent ASP. We sought to develop a tool that would better identify hospitals in need of aggressive AURGs.

Methods. A scoring tool was developed to assess ASP implementation and metric achievement at individual hospitals to determine AURGs. Tool components were developed from ASP best practices and consensus among a multi-disciplinary team. The tool yields a maximal score of 41.5 points, with higher scores corresponding to more established ASPs who require less aggressive AURGs. An additional 6 points could be earned for tracked intervention data.

Figure 1. Scoring Tool Components

The tool was applied and a score calculated for each of 27 hospitals. Achieved score placed each hospital into one of 4 AURG ranges: maintain, 1–2.5%, 2.5–5%, and 5–7.5% of DOT/1000 PD goals. Goals were defined in relation to the median and 75th percentile scores. A minimum score of 39.5, representing full implementation of ASP score components, was required for a maintenance goal.

Results. Scores ranged from 3 to 34.5 points across facilities (median 27.5; 75th percentile 31). Twelve facilities scored below 27.5 points, 10 hospitals between 27.5 and 31 points, and 5 facilities between 31 and 39.5 points corresponding to 5–7.5%, 2.5–5%, and 1–2.5% AURGs, respectively.

Conclusion. Scores and corresponding AURGs were generally well accepted by stakeholders at facilities within the AH network. Next steps include examining the feasibility of achieving AURGs and obtaining feedback from facilities to refine the tool. The tool will also be applied to other healthcare networks to assess external validity.

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1632. Non-Visit-Based and Non-Infection-Related Ambulatory Antibiotic Prescribing

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Background. Antibiotics are prescribed in approximately half of emergency department (ED) and urgent care center (UCC) visits for antibiotic inappropriate or presumed viral acute respiratory infection (ARI). Unnecessary antibiotic use increases adverse events, antibiotic resistance, and healthcare costs. Antibiotic stewardship in the ED and UCC requires specific implementation tailored to these unique settings.

Objective. To evaluate the comparative effectiveness of patient and provider education adapted for the acute care setting (adapted intervention) to an intervention with behavioral nudges and individual peer comparisons (enhanced intervention), on reducing inappropriate antibiotic use for ARI in EDs and UCCs.

Methods. Pragmatic, cluster randomized clinical trial conducted in 3 academic health systems (1 pediatric-only, 2 serving adults and children) that included 5 adult and pediatric EDs and 4 UCCs. Sites were block randomized by health system, and providers at each site assigned to receive the adapted or enhanced intervention. Implementation science strategies were employed to tailor interventions at each site. The main outcome was the proportion of antibiotic inappropriate ARI diagnosis visits that received an antibiotic. We estimated a hierarchical mixed effects logistic regression model for visits that occurred between November and February for 2016–2017 (baseline) and 2017–2018 (intervention), controlling for organization and provider fixed effects.

Results. Across all sites, there were 45,160 ARI visits among 534 providers, with overall antibiotic prescribing at 2.6%; the pediatric-only system had a lower baseline rate (1.6%) compared with the other 2 systems (5.0% and 7.1%), P < 0.001. Despite the unusually low rate, we found a significant reduction in inappropriate prescribing after adjusting for health-system and provider-level effects from 2.6% to 1.4% (odds ratio 0.52; 0.38–0.72). Reductions in prescribing between the 2 interventions were in the expected direction, but not significantly different (P < 0.06).

Conclusion. Implementation of antimicrobial stewardship for ARI is feasible and effective in the ED and UCC settings. The enhanced behavioral nudging methods were not more effective in high-performance settings.

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1634. A 9-Point Risk Assessment for Patients Who Inject Drugs Requiring Intravenous Antibiotics May Allow Health Systems to Focus Inpatient Resources on Those at Greatest Risk of Ongoing Drug Use

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Background. There were 509,534 antibiotic prescriptions made to 279,169 unique patients by 2,413 clinicians in 514 clinics. Patients had a mean age of 43 years old, were 60% women, and 75% white. Clinicians were 54% women; were 63% attending physicians, 18% residents/fellows, 10% nurse practitioners, and 7% physician assistants; and were 41% medical specialists, 21% primary care clinicians, and 7% surgical specialists. The most common antibiotic classes were penicillins (30%), macrolides (23%), cephalosporins (14%), fluoroquinolones (11%), tetracyclines (10%), and sulfa-namides (6%). Clinicians prescribed 20% of antibiotics outside of an in-person visit; prescription encounters were in-person (80%), telephone (10%), order-only (4%), refill (4%), and online portal (1%). Clinicians prescribed 46% of antibiotics without an infection-related diagnosis: 54% of antibiotic prescriptions were infection-related, 29% were non-infection-related, and 17% were associated with no diagnosis. Various look-back and look-forward durations for diagnosis codes changed the results only slightly.

Conclusion. Clinicians prescribed 20% of antibiotics outside of in-person visits and 46% of antibiotics without an infection-related diagnosis. Interventions that target visit-based, diagnosis-specific prescriptions miss a large share of antibiotic prescribing.

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