Results. The overall number of UC encounters during the study period was 1,559,403 and 41.5% were for respiratory conditions. The percentage of patients with respiratory conditions that received an antibiotic prescription declined from 49.9% pre-intervention to 35.3% during the intervention (OR 0.73, 95% CI 0.71, 0.76), reaching a low of 30% during February 2020 (Figure). Prescribing for conditions where antibiotics are not indicated decreased (OR 0.31, 95% CI 0.26–0.36) and first line recommended therapy increased (OR 1.28, 95% CI 1.20–1.26) during the intervention.

Conclusion. After 7 months of a planned 12 month intervention, the UC stewardship program was associated with improved antibiotic prescribing.

Disclosures. Rajendra Srivastava, MD, AHRQ, NIH, CDC (Grant/Research Support, I hold grants from AHRQ, NIH and CDC for a variety of clinical research and implementation studies); IPASS Patient Safety Institute (Other Financial or Material Support, I am a physician founder of this company to spread handoff best practices and reduce adverse events. My employer holds my equity in this company.)

17. Comparative Safety of Antibiotic Therapy for Outpatient Treatment of Uncomplicated Urinary Tract Infections

Anne M. Durkin, MD, MPH; Matthew R. Keller, MS; Timothy S. Olsen, PharmD, MPH; William P. Powellery, MD; Margaret A. Olsen, PhD, MPH; William Knepper, MD

Background. Urinary tract infection (UTI) is one of the most common indications for antibiotic therapy in the emergency department. We compared the risk of adverse drug events by antibiotic treatment regimen among premenopausal women with uncomplicated UTI.

Methods. Using the IBM MarketScan Commercial Database (2006–2015), we identified healthy, non-pregnant women aged 18–44 who were diagnosed with UTI and prescribed a same-day antibiotic with activity against common uropathogens. Patients were followed for outcomes with varying follow-up periods: 3 days (ana phylaxis), 14 days (acute renal failure, skin rash, urticaria/hives, nausea/vomiting, abdominal pain), 30 days (vaginitis/vulvovaginal candidiasis, non-C. difficile diarrhea) and 90 days (C. difficile diarrhea, pneumonia, tendinopathy, retinal detachment). We estimated propensity score-weighted hazard ratios (HR) and 95% confidence intervals (CI) using Cox proportional hazards models.

Results. Of 1,140,602 eligible women, the distribution of antibiotic receipt was fluoroquinolones (44%), trimethoprim-sulfamethoxazole (TMP/SMX) (28%), nitrofurantoin (24%), narrow-spectrum β-Lactam / β-Lactamase inhibitor combinations (β-Lactams) (3%), broad-spectrum β-Lactams (1%) and amoxicillin/amoxicillin (1%). In our main analyses, we observed higher risk of outcomes among TMP/SMX vs. nitrofurantoin initiators: acute renal failure (HR 2.46, 95% CI 1.46–4.14), skin rash (HR 2.43, 95% CI 2.13–2.77), urticaria (HR 1.35, 95% CI 1.18–1.56), nausea/vomiting (HR 1.19, 95% CI 1.10–1.29) and abdominal pain (HR 1.14, 95% CI 1.09–1.19). Compared to nitrofurantoin, non-first-line agents (fluoroquinolones, broad-, and/or narrow-spectrum β-Lactams) were associated with higher risk of acute renal failure, skin rash, nausea/vomiting, abdominal pain, vaginitis/vulvovaginal candidiasis, diarrhe a (C. difficile & non-C. difficile), pneumonia and tendinopathy.

Conclusion. The risk of adverse drug events differs widely by antibiotic agent, with substantial differences in first-line agents. Understanding antibiotic safety is critical to prevent suboptimal antibiotic prescribing and reduce adverse events.

Disclosures. Margaret A. Olsen, PhD, MPH, Merck (Grant/Research Support); Pfizer (Consultant, Grant/Research Support)

18. Durations of Antibiotic Therapy and Factors Associated With Longer Than Recommended Durations for Common Ambulatory Infections in an Integrated Healthcare System

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Session: O-4. Antimicrobial Stewardship in Special Populations/Non-Acute Care

Background. Duration of antibiotic therapy is an important focus for antibiotic stewardship, but the extent and drivers of excessive durations are not well understood. This project aimed to describe durations of therapy prescribed for common infections across the ambulatory care settings of an integrated health system and identify factors associated with longer than recommended durations.

Methods. This was a retrospective, cross-sectional evaluation conducted from July 1, 2018 to June 30, 2019. We identified antibiotic prescriptions for adults age 18 years or older presenting to a Denver Health ambulatory care facility ( urgent care, emergency department, family medicine clinic, or internal medicine clinic) for an infection with a recommended duration of therapy of 5 days or less based on institutional guidance. Infections included purulent and non-purulent cellulitis, uncomplicated subcutaneous abscess, acute bacterial sinalitis (ABS), acute otitis media (AOM), community acquired pneumonia, cystitis, and pyelonephritis treated with an indicated fluoroquinolone. Prescriptions for more than 5 days were classified as longer than recommended. We evaluated whether the following factors were associated with longer than recommended durations: location of visit, type of infection, patients’ age, race/ethnicity, sex, infection type, and prescribing provider type.

Results. 5331 prescriptions met inclusion criteria. Of those, the duration of therapy was longer than recommended for 2095 (39%) (Table 1). Durations varied significantly across locations (p<0.0001). In the sub-group analysis family medicine clinics had the highest proportion of longer than recommended durations (46%). Durations also varied significantly by type of infection. For cellulitis, AOM, and AOM, the duration was longer than recommended in 50%, 54%, and 75% of cases, respectively. Other factors associated with longer than recommended durations included male sex (p<0.0001) and prescriptions by advanced practice providers (p=0.0008).

Table 1: Antibiotic Duration of Therapy for Common Outpatient Infections

| Variable | ≤5 days (n=3236) | >5 days (n=2095) | P-value |
|----------|-----------------|-----------------|---------|
| Age [yrs] | 18-49           | 50-69           | >69     |
| Race/Ethnicity | White        | Black           | Hispanic/Latin       |
| Sex       | Male            | Female          | Other       |
| Location  | Urgent care     | Emergency department | Family medicine clinic |
| Infection | Skin and soft tissue infections | Upper respiratory tract infections | Community acquired pneumonia | Cystitis | Pneumothorax treated with an indicated fluoroquinolone |

* Common outpatient infection include purulent and non-purulent skin cellulitis, uncomplicated subcutaneous abscess, acute bacterial sinusitis, acute otitis media, community acquired pneumonia, cystitis, and pyelonephritis treated with an indicated fluoroquinolone. 

** American Indian or Alaskan Native, Asian, and unknown race/ethnicity 

*** Physician assistant, nurse practitioner, and medical assistant

† Purulent and non-purulent skin cellulitis and uncomplicated subcutaneous abscess 

‡ Acute bacterial sinusitis and acute otitis media 

Disclosures. All Authors: No reported disclosures

19. A Global Prevalence Survey of Antimicrobial Use in Neonatal Intensive Care Units

Pavel Prusakov, PharmD1; Debra A. Goff, PharmD2; Phillip Wozniak, BS3; Pablo J. Sanchez, MD1; Nationwide Children's Hospital, Columbus, Ohio; 2The Ohio State Univ Wexner Med Ctr, Columbus, Ohio; 3The Ohio State University School of Medicine, Columbus, Ohio, Nationwide Children's Hospital - The Ohio State University Columbus, Ohio

No MAS-R Study Group

Session: O-5. Antimicrobial Stewardship: Population Trends in Antibiotic Use

Background. Antimicrobials are one of the most commonly used medications in the NICU. We aimed to gather baseline global data on antimicrobial use to facilitate subsequent antimicrobial stewardship efforts.

Methods. We conducted a one-day global NICU point prevalence study on July 1, 2019 with a 30-day follow up. Data collection included patient demographics, antimicrobial therapy, site location, antimicrobial stewardship (AS) practices as well as the duration of antimicrobial therapy and in-hospital mortality were recorded.

Results. Eighty-two NICUs from twenty-eight different countries identified 1,163 admitted patients of which 570 (26%) were prescribed at least one antimicrobial. Three NICUs did not have any patients on antimicrobial therapy, all had less than 15% prescribed.

Disclosures. All Authors: No reported disclosures
inappropriate prescription of antibiotics for respiratory tract infections (RTIs) in ambulatory care settings is common, increasing the risk of adverse health outcomes. Behavioral and educational interventions targeting primary care providers have the potential to optimize MRSA and other antibiotic use across hospitals.

Conclusion. Higher hospital-level MRSA prevalence was associated with significantly higher rates of antibiotic utilization, even after adjusting for case-mix and reported antibiotic stewardship strategies. Future benchmarking of anti-MRSA antibiotic use across hospitals may need to risk-adjust using baseline rates of MRSA prevalence.

Disclosures. All Authors: No reported disclosures

22. Patient Satisfaction Remains Unchanged Following Implementation of an Antibiotic Stewardship Intervention in Primary Care Zachary Hostetter, MD, PhD; Keith W. Hamilton, MD; Leigh Cressman, MA; McVillega H. Todman, MS (expected 2023); Ebbing Lautenbach, MD, MPH, MSCE; Lauren Dutcher, MD; Well Cornell Medical College, New York; Division of Infectious Diseases, Philadelphia, Pennsylvania; University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania; University of Pennsylvania Health System, Philadelphia, Pennsylvania; University of Pennsylvania, Philadelphia, New York

CDC Prevention Epicenters Program

Session: O-5. Antimicrobial Stewardship: Population Trends in Antibiotic Use

Background. The prevalence of methicillin-resistant Staphylococcus aureus (MRSA) varies across geographic regions, which could contribute to regional variation in antibiotic use. In this study, we evaluated whether local MRSA prevalence rates were associated with hospital-level antibiotic use across the Veterans Health Administration (VHA).

Methods. This retrospective cohort included all acute-care patients admitted in VHA hospitals during 2016. Anti-MRSA antibiotics were identified per National Healthcare Safety Network definitions and use was quantified as days-of-therapy (DOT) per 1000 days-present. Hospital-level MRSA prevalence (colonization and/or infection) was determined by calculating the proportion of admissions with a positive MRSA nasal swab and/or a MRSA-positive clinical culture obtained ≤1 day before or ≤2 days after admission. Negative binomial regression models were used to determine the association between a hospital’s MRSA prevalence and its antibiotic use, after accounting for intra-hospital clustering, patient case-mix, month of admission, and use of hospital-based stewardship strategies.

Results. There were 548,476 admissions across 122 hospitals. The median rate of MRSA prevalence at admission was 8.0% (IQR 6.7–9.7%). Hospital level median use of anti-MRSA and total antibiotics was 96.5 (interquartile range [IQR] 81.1–116.9) and 56.21 (IQR 505.9–631.6) DOT per 1000 days-present, respectively. In a hospital-level risk-adjusted analysis, a hospital’s MRSA prevalence was significantly associated with its monthly use of both anti-MRSA and total antibiotics (IRR=1.05, 95% 1.02–1.07; IRR=1.02, 95% CI, 1.01–1.03). A 5% increase in the hospital’s MRSA prevalence was associated with an increase in the monthly use of anti-MRSA antibiotics and total antibiotics by 23.6 and 8.3 DOT per 1000 days-present, respectively.

Conclusion. Higher hospital-level MRSA prevalence was associated with significantly higher rates of antibiotic utilization, even after adjusting for case-mix and reported antibiotic stewardship strategies. Future benchmarking of anti-MRSA antibiotic use across hospitals may need to risk-adjust using baseline rates of MRSA prevalence.

Disclosures. Daniel J. Livorsi, MD, MSc, Merck and Company, Inc (Research Grant or Support); Rajeshwari Nair, PhD, Merck and Company, Inc (Research Grant or Support)

21. Association of MRSA Prevalence and Hospital-level Antibiotic Use: A Retrospective Study Across 122 Acute-care Hospitals Daniel J. Livorsi, MD, MSc; Rajeshwari Nair; PhD; Brian Lund, PharmD; Bruce Alexander, PharmD; Bruce Beck, MA; Michihiko Goto, MD, MS; Eli N. Perencevich, MD MS; University of Iowa Carver College of Medicine and Iowa City VA Health Care System, Iowa city, Iowa; Iowa City VA Health Care System, Iowa city, Iowa; University of Iowa Carver College of Medicine, Iowa City, Iowa; University of Iowa, Iowa city, Iowa

Session: O-5. Antimicrobial Stewardship: Population Trends in Antibiotic Use

Background. The prevalence of methicillin-resistant Staphylococcus aureus (MRSA) varies across geographic regions, which could contribute to regional variation in antibiotic use. In this study, we evaluated whether local MRSA prevalence rates were associated with hospital-level antibiotic use across the Veterans Health Administration (VHA).

Methods. This retrospective cohort included all acute-care patients admitted in VHA hospitals during 2016. Anti-MRSA antibiotics were identified per National Healthcare Safety Network definitions and use was quantified as days-of-therapy (DOT) per 1000 days-present. Hospital-level MRSA prevalence (colonization and/or infection) was determined by calculating the proportion of admissions with a positive MRSA nasal swab and/or a MRSA-positive clinical culture obtained ≤1 day before or ≤2 days after admission. Negative binomial regression models were used to determine the association between a hospital’s MRSA prevalence and its antibiotic use, after accounting for intra-hospital clustering, patient case-mix, month of admission, and use of hospital-based stewardship strategies.

Results. There were 548,476 admissions across 122 hospitals. The median rate of MRSA prevalence at admission was 8.0% (IQR 6.7–9.7%). Hospital level median use of anti-MRSA and total antibiotics was 96.5 (interquartile range [IQR] 81.1–116.9) and 56.21 (IQR 505.9–631.6) DOT per 1000 days-present, respectively. In a hospital-level risk-adjusted analysis, a hospital’s MRSA prevalence was significantly associated with its monthly use of both anti-MRSA and total antibiotics (IRR=1.05, 95% 1.02–1.07; IRR=1.02, 95% CI, 1.01–1.03). A 5% increase in the hospital’s MRSA prevalence was associated with an increase in the monthly use of anti-MRSA antibiotics and total antibiotics by 23.6 and 8.3 DOT per 1000 days-present, respectively.

Conclusion. Higher hospital-level MRSA prevalence was associated with significantly higher rates of antibiotic utilization, even after adjusting for case-mix and reported antibiotic stewardship strategies. Future benchmarking of anti-MRSA antibiotic use across hospitals may need to risk-adjust using baseline rates of MRSA prevalence.

Disclosures. All Authors: No reported disclosures

20. Fluoroquinolone and Overall Outpatient Antibiotic Prescribing Trends in Adults, 2011 to 2018 Katryna A. Gouin, MPH; Laura M. King, MPH; Monina Bartoces, PhD; Sarah Kabbani, Rebecca M. Roberts, MD; Sharon Tsay, MD; Lauren Hicks, DO; Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia; Centers for Disease Control and Prevention, Atlanta, Georgia; CDC, Atlanta, Georgia

Session: O-5. Antimicrobial Stewardship: Population Trends in Antibiotic Use

Background. Fluoroquinolones (FQs) are the third most commonly prescribed antibiotics among U.S. outpatients, and the second most commonly prescribed class among adults ≥65 years of age. However, FQ use has been associated with severe adverse events, especially among older adults. As a result, in 2016 the U.S. Food and Drug Administration (FDA) issued warnings against FQ use when other agents may be effective. We assessed changes in outpatient FQ prescribing relative to overall antibiotic prescribing from 2011 to 2018.

Methods. We estimated annual antibiotic prescription rates in adults ≥20 years of age for all classes and FQs using national prescription dispensing count data from IQVIA Xponent (enumerator) and census estimates (denominator) for 2011 to 2018. We used Poisson models to estimate prevalence rate ratios (PRR) and 95% confidence intervals (CIs) comparing antibiotic prescription rates overall and stratified by age group from 2011 to 2018. The Chi-square test was used to compare the percent decrease in rates between age groups.

Results. From 2011 to 2018, prescription rates in adults for all antibiotics decreased by 2% (PRR 0.98, 95% CI: 0.98–0.98); FQ prescription rates decreased by 30% (PRR 0.70, 95% CI: 0.69–0.70), with the largest decline from 2015–2018 (Figure 1). Adults ≥65 years had the highest FQ prescription rates for 2011 to 2018, at a rate of 2.37 (95% CI: 2.32.2.42) times that of adults 20–64 years (Figure 2). The FQ prescribing rate in adults 20–64 years experienced a greater decrease from 2011 to 2018 than the rate in adults ≥65 years (p<0.0001), with a 35% decrease (PRR 0.65, 95% CI: 0.65, 0.65) in adults 20–64 years compared to a 29% (PRR 0.71, 95% CI: 0.71–0.71) decrease in adults ≥65 years (Figure 2).

Conclusion. Increases in outpatient fluoroquinolone prescriptions per 1,000 persons by age group in the United States from 2011 to 2018

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