

phenotypes of outpatient antibiotic prescribing practices using an unsupervised machine learning clustering algorithm.

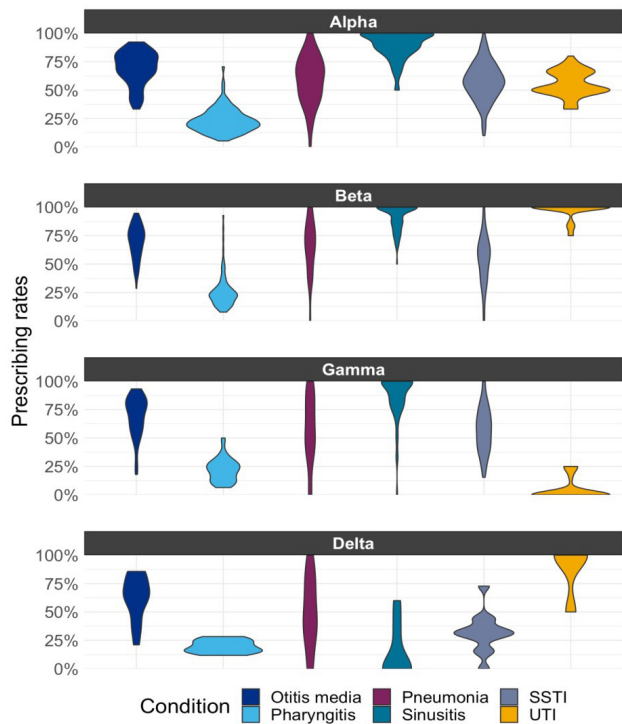
Methods: We extracted diagnoses and prescribing data on all problem-focused visits with a physician or nurse practitioner between 6/11/2018 – 12/11/2018 for a state-wide association of pediatric practices across Massachusetts. Clinicians with fewer than 100 encounters were excluded. The proportion of encounters resulting in an antibiotic prescription were calculated. Proportions were stratified by diagnoses: otitis media (OM), pharyngitis, pneumonia (PNA), sinusitis, skin & soft tissue infection (SSTI), and urinary tract infection (UTI). We then applied consensus *k*-means clustering, a form of unsupervised machine learning, across all included clinicians to create clusters (or phenotypes) based on their prescribing rates for these 6 conditions. A scree plot was used to determine the optimal number of clusters.

Results: A total of 431 clinicians at 77 practices with 234,288 problem-focused visits were included (Table 1). Overall, 42,441 visits (18%) resulted in an antibiotic prescription. Individual clinician prescribing proportions ranged from 5% of visits up to 44%. The optimal number of clusters was determined to be four (designated *alpha*, *beta*, *gamma*, *delta*). Antibiotic prescribing rates were similar for each phenotype across AOM, pharyngitis, and pneumonia but differed substantially for sinusitis, SSTI, and UTI (Figure 1). The *beta* phenotype had the highest median rates of prescribing across all conditions while the *delta* phenotype had the lowest median prescribing rates except for UTI.

Table 1. Patient demographics and clinician characteristics

Characteristics	
Patient Demographic	(n = 234,288)
Age, median (IQR), y	6.8 (2.0-11.6)
Females, No. (%)	114,801 (49)
Insurance type, No. (%)	
Private	161,659(69)
Public	72,629 (31)
Complex chronic condition, No. (%)	24,600 (10.5)
Clinician Characteristics	(n = 431)
Age, median (IQR), y	49 (31-67)
Females, No. (%)	321 (74)
Clinician Type, No. (%)	
Physician (MD/DO)	333 (77)
Nurse Practitioner	93 (22)
Physician Assistant	5 (1.2)

Figure 1. Novel phenotypes of antibiotic prescribing practices across six common conditions



Note--Wider plots indicate more clinicians prescribing at that given rate

Conclusion: Antibiotic prescribing varies by both condition and individual clinician. Clustering algorithms can be used to derive phenotypic antibiotic prescribing practices. Antimicrobial stewardship efforts may have a higher impact if tailored by antibiotic prescribing phenotype.

Disclosures: All Authors: No reported disclosures

135. Designing And Evaluating A Pharmacist-Driven Approach to Outpatient Azithromycin Stewardship

Christina Tran, PharmD¹; Paul Lata, PharmD, BCPS¹; Kristin Tindall, RPh¹; Susanne Barnett, PharmD, BCPS¹; Prakash Balasubramanian, MD¹; ¹William S. Middleton Memorial Veterans Hospital, Middleton, Wisconsin

Session: P-5. Antimicrobial Stewardship: Non-Inpatient Settings

Background: After collecting data on diminishing *S. pneumoniae* susceptibility rates, the Madison VA aimed to optimize azithromycin prescribing practices by enhancing the involvement of outpatient pharmacists. This study aimed to develop effective pharmacy-led stewardship teams in the outpatient setting and assess their collective impact on promoting judicious azithromycin prescribing.

Methods: Madison VA outpatient pharmacists initiated an azithromycin stewardship protocol in 4/2019 to intervene on prescriptions suspected to be discordant with expert guidelines for COPD exacerbations, sinusitis, or bronchitis. After pharmacist follow-up with providers to discuss potentially inappropriate prescriptions, recommendations and outcomes were subsequently documented in the electronic health record. Given the longitudinal nature of outpatient pharmacist interventions, a post-hoc survey was provided to assess pharmacists' perceptions of this protocol, barriers to intervention, and areas for improvement.

Results: Between 10/2018 and 4/2020, 18 pharmacists intervened on 42 outpatient azithromycin prescriptions to recommend alternative antibiotics with improved streptococcal coverage or supportive care alone. Indications warranting the most intervention included COPD exacerbations, upper respiratory infections, and bronchitis. Factors most often cited by pharmacists as barriers to intervention included negative impact on workload, provider reluctance, and insufficient time for follow-up. All surveyed pharmacists believed that prescribers, most commonly primary care providers, were fairly or very receptive to their recommendations. Data evaluated from 10/2018 to 12/2019 revealed a 45% decrease in azithromycin prescribing.

Conclusion: Azithromycin prescribing has steadily declined at the Madison VA, reinforced by the implementation of an outpatient pharmacist stewardship team. To more seamlessly integrate recommendation-making into pharmacist workflow, determining solutions to identified barriers is currently underway. It is hoped that continued pharmacist involvement in outpatient antibiotic stewardship can be a sustainable practice and transferrable strategy to other antimicrobial agents in the future.

Disclosures: All Authors: No reported disclosures

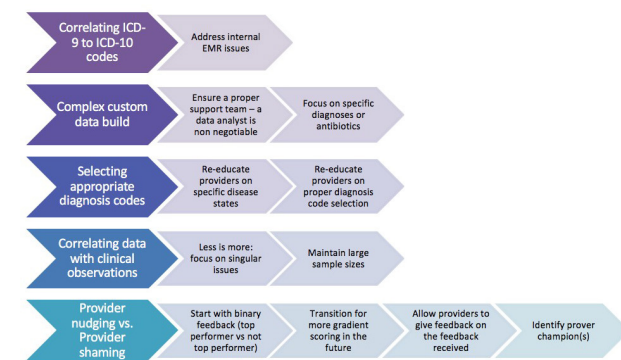
136. Don't Sweat the Small Stuff: Solutions for Large-Scale Stewardship Obstacles

Joanne Huang, PharmD¹; Zahra Kassamali Escobar, PharmD²; Rupali Jain, PharmD³; Jeannie D. Chan, PharmD, MPH⁴; John B. Lynch, MD⁵; Marisa A. D'Angeli, MD, MPH⁶; Larissa May, MD, MSPH, MSHS⁷; Chloe Bryson-Cahn, MD³; ¹UW Medicine, Mercer Island, Washington; ²UW Medicine Valley Medical Center, Renton, Washington; ³University of Washington School of Medicine, Seattle, WA; ⁴UW Medicine, Harborview Medical Center, Seattle, WA; ⁵University of Washington, Seattle, WA; ⁶Washington State Department of Health, Shoreline, Washington; ⁷University of California Davis, Sacramento, CA

Session: P-5. Antimicrobial Stewardship: Non-Inpatient Settings

Background: In an effort to support stewardship endeavors, the MITIGATE (a Multifaceted Intervention to Improve Prescribing for Acute Respiratory Infection for Adult and Children in Emergency Department and Urgent Care Settings) Toolkit was published in 2018, aiming to reduce unnecessary antibiotics for viral respiratory tract infections (RTIs). At the University of Washington, we have incorporated strategies from this toolkit at our urgent care clinics. This study aims to address solutions to some of the challenges we experienced.

Challenges and Solutions



Methods: This was a retrospective observational study conducted at Valley Medical Center (Sept 2019-Mar 2020) and the University of Washington (Jan 2019-Feb 2020) urgent care clinics. Patients were identified through ICD-10 diagnosis codes