process (eg, before implementation, during implementation, and after implementation) to assess how an organization effectively negotiates the phases and transitions, ultimately influencing the impact of the intervention. We have used a contextual determinant framework (CFIR) that has enabled us to perform a systematic and comprehensive exploration and identification of potential explanatory themes or variables to shed light on the complex social phenomenon of implementation. **Results:** Participants who will be a part of our poster presentation will learn about implementing a BPA, the potential barriers to implementation, and strategies for overcoming these barriers. Stakeholders within our study include site coordinators, medical doctors, nurses, pharmacists, and clinical informaticists. Our analysis synthesizes their experiences implementing and sustaining this evidence-based antimicrobial stewardship intervention. It includes (1) a detailed description of the process of change, (2) work-system factors (eg, inner setting and outer setting) that they believe influenced the success of the intervention, (3) barriers and facilitators (eg, CFIR constructs) within the implementation process; and (4) description of how these could have influenced the outcomes of interest (eg, implementation and intervention effectiveness). **Conclusions:** Our research is expected to advance patient safety research and initiatives by providing a more robust approach to performing systematic intervention evaluations. By outlining stakeholders' experiences within our study, implementation leaders within healthcare systems will utilize our findings to aid them in their design and implementation process when designing and implementing similar types of healthcare interventions.

Disclosures: None

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Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Antibiotic Stewardship
Antimicrobial stewardship during COVID-19: An analysis of culture negative patients receiving extended antimicrobial agents
Swetha Srialluri; Curtis Collins and Holly Murphy

Background: COVID-19 is associated with symptoms, clinical findings, and laboratory abnormalities that raise concern for secondary infections. Excess antimicrobial use despite low rates of secondary infections has been reported and presents a continuing challenge for antimicrobial stewardship programs (ASPs), particularly during COVID-19 surges. The objective of this study was to analyze the appropriateness of antimicrobial use in patients with extended antimicrobial therapy during 2 distinct COVID-19 hospital surges. **Methods:** We conducted an observational, retrospective, cohort study of COVID-19 patients admitted to our 548-bed community teaching hospital between November and December 2021 (ie, the SARS-CoV-2 delta-variant predominant phase) and January–February 2022 (ie, the SARS-CoV-2 omicron-variant predominant phase) and who received antibiotics for >4 days without positive cultures. Demographic and clinical data were obtained from the institutional data warehouse. Infectious diseases–trained researchers evaluated the appropriateness of antimicrobials based on diagnostic and clinical reporting and institutional antimicrobial stewardship guidelines. Patients were considered to have probable secondary bacterial infection if they had 2 of the following symptoms: fever, unexplained leukocytosis, worsening secretions, or hypoxia and/or imaging. The outcomes of interest included confirmed infections and excess antimicrobial days. Categorical and continuous variables were analyzed using χ^2 tests, Fisher exact tests, and Mann-Whitney U tests, respectively. Statistical significance was defined as $P \leq .05$. **Results:** In total, 87 patients were included in the study. Moreover, 56 patients were identified in the SARS-CoV-2 delta-variant predominant phase and 31 patients were identified in the SARS-CoV-2 omicron-variant predominant phase. The groups were similar, with higher vaccination rates in the SARS-CoV-2 omicron-variant predominant group (37.5% vs 64.5%; $P = .016$). Patients in the SARS-CoV-2 omicron-variant predominant group required less mechanical ventilation (39.3% vs 16.1%; $P = .025$). There were no significant differences in infectious diseases consultation, immunomodulator or remdesivir use, antimicrobials classes prescribed, or antimicrobial days of therapy or duration between cohorts. There were no significant differences in length of stay, 30-day mortality, or 30-day readmissions. Infections were confirmed in 78.6% in the delta-variant group versus 83.9% in the omicron-variant group ($P = .55$). Pneumonias accounted for 60.7% in the delta-variant group and 40.9%, in the omicron-variant group. Excess antibiotic use occurred in 14.3% of patients in the delta-variant group and in 3.1% of patients in the omicron-variant group ($P = .149$). There was no significant difference in the duration of inappropriate antimicrobial use between groups in patients without infections: 5 days in the delta-variant group versus 5 days in the omicron-variant group ($P = .24$). **Conclusions:** Results demonstrated that most antimicrobial use was appropriate in a challenging patient population lacking positive cultures to guide therapy. Inappropriate antimicrobial utilization occurred demonstrating continued opportunities for our institutional ASP.

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Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Antibiotic Stewardship
Diagnostic accuracy of antibiograms in predicting the risk of antimicrobial resistance for individual patients
Shinya Hasegawa; Jonas Church; Eli Perencevich and Michihiko Goto

Background: Many clinical guidelines recommend that clinicians should use antibiograms to decide on empiric antimicrobial therapy. However, antibiograms aggregate epidemiologic data without consideration for any other factors that may affect the risk of antimicrobial resistance (AMR), and little is known about an antibiogram's reliability in predicting antimicrobial susceptibility. We assessed the diagnostic accuracy of antibiograms as a prediction tool for *E. coli* clinical isolates in predicting the risk of AMR for individual patients. **Methods:** We extracted microbiologic and patient-level data from the nationwide clinical data warehouse of the Veterans Health Administration (VHA). We assessed the diagnostic accuracy of the antibiogram for 3 commonly used antimicrobial classes for *E. coli*: ceftriaxone, fluoroquinolones, and trimethoprim-sulfamethoxazole. First, we retrospectively generated facility-level antibiograms for all VHA facilities from 2000 to 2019 using all clinical culture specimens positive for *E. coli*, according to the latest Clinical & Laboratory Standards Institute guideline. Second, we created a patient-level data set by including

Figure 1. Receiver operating characteristic curves for prediction of antibiograms for ceftriaxone, fluoroquinolones, and trimethoprim-sulfamethoxazole.
Abbreviations: AU-ROC, area under the receiver operating characteristic curve; Sn, sensitivity; Sp, specificity.

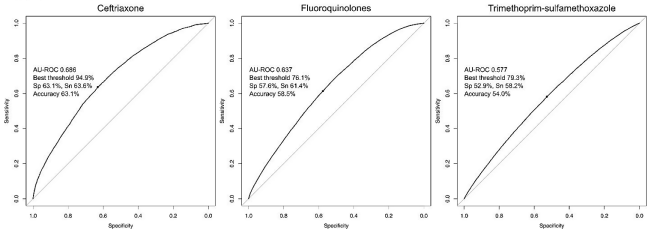

Figure 2. The diagnostic performance of the three major antimicrobial groups for *E. coli*.
(Footnote) Data presented as %. Abbreviations: Ac, accuracy; Sn, sensitivity; Sp, specificity.

E. coli	Prevalence of Susceptibility	Threshold														
		80%			85%			90%			95%			98%		
		Sn	Sp	Ac	Sn	Sp	Ac	Sn	Sp	Ac	Sn	Sp	Ac	Sn	Sp	Ac
Ceftriaxone	94.7	2.9	99.6	94.4	6	98.9	94.0	10.8	97.5	92.9	65.0	61.4	61.6	100	0	5.3
Fluoroquinolones	76.6	76.4	42.2	50.2	91.8	22.8	38.9	98.8	7.2	28.6	100	0	23.4	100	0	23.4
Trimethoprim-sulfamethoxazole	79.1	64.9	45.9	49.9	93.7	11.4	28.6	100	0.1	21.0	100	0	20.9	100	0	20.9

only patients who did not have a positive culture for *E. coli* in the preceding 12 months. Then we assessed the diagnostic accuracy of an antibiogram for *E. coli* to predict resistance for the isolates in the following calendar year, using logistic regression models with percentages in the antibiogram as dependent variables. We also set 5 stepwise thresholds at 80%, 85%, 90%, 95%, and 98%, and we calculated sensitivity, specificity, and accuracy for each antimicrobial. **Results:** Among 127 VHA hospitals, 1,484,038 isolates from 704,779 patients were available for analysis. The area under the ROC curve (AU-ROC) was 0.686 for ceftriaxone, 0.637 for fluoroquinolones, and 0.578 for trimethoprim-sulfamethoxazole, suggesting their relatively poor prediction performances (Fig. 1). The sensitivity and specificity of the antibiogram widely varied by antimicrobial groups and thresholds, with substantial trade-offs. Along with AU-ROC, these metrics suggest poor prediction performances when antibiograms are used as the sole prediction tool (Fig. 2). **Conclusions:** Antibiograms for *E. coli* have poor performances in predicting the risk of AMR for individual patients when they are used as a sole tool, and their contribution to the clinical decision making may be limited. Clinicians should also consider other clinical and epidemiologic data when interpreting antibiograms, and guideline statements that suggest antibiogram as a valuable tool for decision making in empiric therapy may need to be reconsidered. Further studies are needed to evaluate the contribution of antibiograms when combined with other patient-level factors.

Disclosures: None

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Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Antibiotic Stewardship
Using state claims data to explore first-line antibiotic prescribing for acute respiratory conditions—Minnesota, 2018–2019
Mari Freitas; Ashley Fell; Susan Gerbensky Klammer; Ruth Lynfield and Amanda Beaudoin

Background: Nationally, >30% of all outpatient antibiotics are unnecessary or inappropriate, and only 52% of outpatients with sinusitis, otitis media, or pharyngitis receive recommended first-line antibiotics. The Minnesota All Payer Claims Database (MN APCD) collects medical claims, pharmacy claims, and eligibility files from private and public healthcare payers. We analyzed claims to describe overall and firstline antibiotic prescribing for acute bronchitis, adult acute sinusitis, and pediatric patients. **Results:** We analyzed 3,502,013 respiratory events from 1,612,501 members. Acute bronchitis accounted for 179,723 events (5.1%), acute sinusitis accounted for 236,901 adult events (10%), and otitis media accounted for 232,226 pediatric events (19%). Also, 73,385 bronchitis diagnoses (~40%) had no associated antibiotic. Antibiotics were associated with 199,445 adult sinusitis events (84.2%), of which 89,386 (44.8%) were firstline antibiotics, and 190,962 pediatric otitis media events (82.2%), of which 126,859 (66.4%) were firstline antibiotics. Common antibiotic classes used when a firstline drug was not selected were macrolides (28.9%) and tetracyclines (26.8%) for adult acute sinusitis and cephalosporins (61.4%) and macrolides (30.6%) for pediatric otitis media. Compared to the least vulnerable quartile, the most vulnerable social vulnerability index (SVI) quartile had lower odds of receiving firstline antibiotics for adult acute sinusitis if antibiotics were prescribed (OR, 0.90; 95% CI, 0.87–0.94) and higher odds of receiving firstline antibiotics for pediatric otitis media if antibiotics were prescribed (OR, 1.16; 95% CI, 1.12–1.21). **Conclusions:** Improvement is needed in avoiding antibiotics for acute bronchitis and selecting firstline drugs for sinusitis and otitis media. Additional analyses adjusting for demographic, geographic, and prescriber factors are planned to better understand differences in prescribing appropriateness among Minnesotans.

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Presentation Type:
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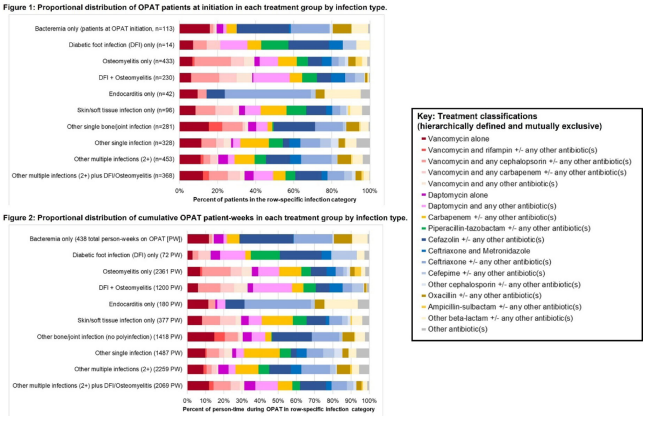
Subject Category: Antibiotic Stewardship
Heterogeneous OPAT regimens within and across infection diagnoses: Day-level medication use patterns among 2072 OPAT patients
Madison Ponder; Renae Boerneke; Asher Schranz; Michael Swartwood; Claire Farel and Alan Kinlaw

Background: Patients receiving outpatient parenteral antimicrobial therapy (OPAT) are often medically complex and require carefully tailored treatments to address severe and often concomitant infections. Our objective was to illustrate the heterogeneity in antimicrobials used for patients in OPAT, within and across infection diagnosis groups. **Methods:** We abstracted electronic health record data regarding day-level treatment into a registry of 2,358 OPAT courses (n = 2,072 unique patients) treated in the University of North Carolina Medical Center OPAT program during 2015–2022 (total, 11,861 person weeks; average, 7 OPAT weeks per patient). We classified infection diagnoses into 10 hierarchical or mutually exclusive categories (eg, bacteremia only, diabetic foot infection (DFI) only, osteomyelitis only) (Fig., vertical axes). Accounting for 64 antimicrobial medications and 520 cocktails administered for at least 1 patient day in our OPAT registry, we also defined 18 hierarchical or mutually exclusive classifications of treatment (eg, "daptomycin alone" or "daptomycin and any other antibiotic(s)" (Fig. key). We conducted 2 stratified analyses to describe the heterogeneity across infection diagnoses with respect (1) to medications used at OPAT initiation (patient as unit of analysis) and (2) to medications used throughout OPAT (person time as unit of analysis, allowing for differential OPAT course to other treatment classifications during follow-up). We present stacked bar charts to visualize the intersection between infection diagnosis and treatment group. **Results:** Among patients in this OPAT registry, 34.6% had osteomyelitis and/or DFI, 4.8% had bacteremia, and 44.6% had multiple infections (Fig. 1). The most common medications in initial OPAT regimens were vancomycin (30.8%



of OPAT patients), ceftriaxone (15.0%), and daptomycin (10.9%). We observed overall similarity between the distribution of treatment groups at initiation compared to cumulative person-time during the OPAT course (Figs. 1 and 2). However, we observed heterogeneity in medications by infection diagnosis (Figs. 1 and 2); for example, vancomycin was used in 39% of osteomyelitis cases but only 14% for endocarditis (Fig. 2). For several infection groups (eg, osteomyelitis, DFI, multiple infections, "other" single infections), no treatment classification exceeded 20% use (Figs. 1 and 2). **Conclusions:** Day-level data on medication use in this monitored registry of patients provided evidence of heterogeneity in the types of medications used throughout treatment in OPAT, which varies within and across infection diagnoses. These data highlight the need for multilayered ascertainment of medication exposure in this medically complex patient population to inform surveillance for adverse effects and guide comparative effectiveness research for postdischarge antibiotic treatment.