Table 1. Clinical variables independently associated with ICU antimicrobial utilization rates

Variables associated with increased ICU-AURs			
Comorbidities	**Medical Interventions**	**Diagnoses**	**Labs & Vitals**
Bronchiectasis Paraplegia Immunocompromised status Metastatic malignancy	Use of central line Vasopressor use Stress dose steroids use	Bacteremia Urinary tract infection Pneumonia Surgical site infection Intraabdominal infection	Abnormal WBC Elevated SOFA score Positive respiratory culture
Variables associated with decreased ICU-AURs			
Comorbidities	**Medical Interventions**	**Diagnoses**	**Labs & Vitals**
Coronary artery disease	Receipt of invasive nonsurgical procedure (i.e. endoscopy, catheterization)	COVID-19	Oliguric AKI

care, academic medical center. Data were extracted from the electronic medical record using a structured query. Admission-level data were captured, including patient demographics, medical comorbidities, *International Classification of Disease, Tenth Revision* (ICD-10) admission diagnoses, as well as calendar day-level data including vital signs, clinical and microbiologic laboratory data, measures of acute severity of illness, ventilator–supplemental oxygen metrics, and procedural interventions using current procedural terminology (CPT) codes. ICU AURs were defined as total antibiotic days of therapy per patient per 100 ICU days. Associations between clinical variables and ICU AURs were calculated as rate ratios (RRs). Multiple imputation using fully conditional specification was performed to create 25 imputation data sets. Negative binomial regression models were constructed for each data set using backward selection. Variables retained in >50% of models were included in a final multivariate model. **Results:** In total, 15,177 ICU patient admissions were captured. Age, sex assigned at birth, and race did not independently associate with ICU AURs. Comorbidities, medical interventions, admission diagnoses, and laboratory data that independently associated with ICU-AURs are shown in Table 1. The clinical variables most strongly associated with increased ICU-AURs were pneumonia (RR, 1.55; 95% CI, 1.451.64), bacteremia (RR, 1.35; 95% CI, 1.25– 1.46), intraabdominal infection (RR, 1.35; 95% CI, 1.18–1.55), SOFA score (RR, 1.27; 95% CI, 1.14–1.42), abnormal WBC (RR, 1.26; 95% CI, 1.20–1.32), and immunocompromised status (RR, 1.20; 95% CI, 1.10–1.31). Clinical variables most strongly associated with decreased ICU-AURs were cardiac ICU (RR, 0.56; 95% CI, 0.52–0.60), COVID-19 (RR, 0.62; 95% CI, 0.56–0.70), and receipt of an invasive nonsurgical procedure (RR, 0.90; 95% CI, 0.82–0.98). **Conclusions:** In this single-center retrospective cohort study, several clinical variables were independently associated with ICU-AURs. These results may be used to identify patient subgroups for potentially high-yield ICU-based stewardship interventions and to account for sources of bias in before-and-after studies of ICU-based stewardship interventions.

Disclosures: None

Antimicrobial Stewardship & Healthcare Epidemiology 2023;3(Suppl. S2):s38–s39
doi:10.1017/ash.2023.269

Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Antibiotic Stewardship

Congruence between *International Classification of Disease, Tenth Revision (ICD-10)* code and written documentation for outpatient encounters with antibiotic prescriptions

Charles Oertli; Milner Owens Staub and Sophie Katz

Background: Antimicrobial stewardship programs (ASPs) often rely on *International Classification of Diseases, Tenth Revision* (ICD-10) codes to assess antibiotic appropriateness for provider feedback. Concordance between encounter ICD-10 codes and documented indication for antibiotics based on manual chart review varies greatly (74%–95%) in the inpatient setting. Data on concordance between documented indication and ICD-10 code in the outpatient setting are scarce. **Methods:** We conducted a retrospective cohort study of 650 randomly selected outpatient encounters with antibiotic prescriptions from walk-in and retail clinics between July 15 and September 15, 2021, at Vanderbilt University Medical Center. We performed chart review to compare documented antibiotic indication to the 3 most frequent encounter-associated ICD-10 codes. Also, 12 encounters were excluded due to insufficient available written documentation. The 95% CI for proportion of encounters with concordant antibiotic indications was calculated using Stata version 15.1 software. **Results:** Of the 638 antibiotic prescriptions with written documentation available for chart review, 204 (32%) were for amoxicillin, 102 (16%) were for amoxicillin-clavulanate, 61 (10%) were for cefdinir, and 56 (9%) were for azithromycin. Overall, 540 (84.6%; 95% CI, 81.6%–87.4%) of 638 encounters had concordant antibiotic indication based on documentation in the note and associated ICD-10 for the encounter. Of the 540 encounters with concordant ICD-10 and documented indications, 348 (64%), 130 (24%), and 35 (6%) were listed as the first, second, and third ICD-10 codes, respectively. An additional 27 (5%) had a concordant ICD-10 code listed beyond the third position. In total, 125 (19.6%) of 638 encounters did not have the intended antibiotic indication as documented in the note in the 3 most frequent encounter-associated ICD-10 codes (whether a lower position or incongruent ICD-10 code with documentation). Of those 125 encounters, 42 (34%) had a documented diagnosis of strep pharyngitis, 16 (13%) had a documented diagnosis of skin or soft-tissue infection, 11 (9%) had a documented diagnosis of urinary tract infection, and 11 (9%) had a documented diagnosis of acute otitis media. **Conclusions:** Our data suggest that outpatient antimicrobial prescriptions correlate relatively well with encounter ICD-10 codes. However, most ASP prescribing goals aim to reduce inappropriate prescribing to 10% or fewer of prescriptions based on indication. Therefore, providers may not trust individual prescribing feedback that is based on data that is only correct 85% of the time. For ASPs to accurately assess prescribing and provide trusted, meaningful recommendations and specific feedback to individual prescribers, more reliable and valid data are needed. We intend to evaluate whether requiring outpatient antibiotic indications on prescriptions increases data reliability and validity.

Disclosures: None

Antimicrobial Stewardship & Healthcare Epidemiology 2023;3(Suppl. S2):s39
doi:10.1017/ash.2023.270

Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Antibiotic Stewardship

Pneumonia panel results and antibiotic prescribing in COVID-19 patients in 2020 versus 2022

Aysha Hussain; Trevor Van Schooneveld; Scott Bergman; Molly Miller; Paul D. Fey and Erica Stohs

Background: Antibiotics are frequently prescribed in patients with COVID-19 infections to treat secondary bacterial pneumonia. The pneumonia panel (PNP) is a molecular diagnostic tool that rapidly detects 33 bacterial and viral targets. The utility of this panel in COVID-19 patients and how it may direct antibiotic use is unknown. We sought to understand the utilization of PNP in patients with COVID-19 pneumonia over time by comparing clinical parameters, microbiologic results, and antibiotic use between May–December 2020 and January–July 2022. **Methods:** We implemented the PNP in May 2020 with antimicrobial stewardship guidance, provider education, and order restriction to critical care and infectious disease clinicians. From February–July 2021 prescribers received regular structured antimicrobial stewardship feedback regarding PNP results; from August 2021 to January 2022, no antimicrobial stewardship feedback was provided; from February to July 2022, intermittent feedback was provided. We compared PNP and culture results from sputum or bronchoalveolar lavage samples and antibiotic use and modification within 24 hours of PNP result from patients with confirmed COVID-19 pneumonia between May–December 2020 and January–July 2022. Clinical data and antibiotic use were abstracted through chart review. We excluded patients who died within 72 hours of PNP, those who had concurrent nonpulmonary infections, and those whose COVID-19 test was >30 days prior. **Results:** We included 114 patients in 2020 and 71 patients in 2022. The overall median age was 61 years, 71% were male, and 66% were mechanically ventilated without statistical differences between the cohorts,

Table 1. Pneumonia Panel and Culture Results in 2020 vs. 2022

Target Identified	2020 (n=114) N (%)	2020 (n=114) Target growth on culture	2022 (n=71) N (%)	2022 (n=71) Target growth on culture
None	50 (44%)		32 (45%)	
MSSA	26 (22.8%)	12/26 (46.2%)	16 (22.5%)	7/16 (43.8%)
Hemophilus influenza	15 (13.2%)	3/15 (20%)	12 (17%)	5/12 (41.7%)
Streptococcus agalactiae	10 (8.8%)	1/10 (10%)	2 (2.8%)	0
Streptococcus pneumoniae	10 (8.8%)	4/10 (40%)	4 (5.6%)	1/4 (25%)
MRSA (mecA+)	7 (6.1%)	3/7 (43%)	7 (10%)	3/7 (43%)
E. coli CTX M+	4 (3.5%) 2 (1.8%)	2/4 (50%)	2 (2.8%) 1 (1.4%)	0
Serratia marcescens	5 (4.4%)	1/5 (20%)	1 (1.4%)	1/1 (100%)
Moraxella Catarrhalis	4 (3.5%)	1/4 (25%)	6 (8.5%)	3/6 (50%)
Pseudomonas aeruginosa	2 (1.8%)	1 /2 (50%)	7 (10%)	7/7 (100%)
Proteus spp.	2 (1.8%)	0	1 (1.4%)	0
Klebsiella oxytoca	1 (0.9%)	2/1 (200%)	2 (2.8%)	0
Enterobacter cloacae complex	1 (0.9%)	1/1 (100%)	2 (2.8%)	0
Streptococcus pyogenes	0	0	1 (1.4%)	1 (100%)
Klebsiella pneumoniae	8 (7%)	5/8 (62.5%)	0	0

Table 2. Empiric Antibiotics Usage and 24-hour Modifications in Patients in 2020 vs. 2022

Antibiotic Usage	2020 (n=114)	2022 (n=71)	p
Empiric antibiotics on date of PNP			
No antibiotics	20 (18%)	19 (27%)	0.143
Vancomycin	41 (36%)	28 (39%)	0.643
Cefepime	52 (46%)	27 (38%)	0.360
Meropenem	9 (8%)	3 (4.2%)	0.377
Piperacillin-tazobactam	2 (2%)	3 (4.2%)	0.374
Levofloxacin	1 (1%)	1 (1.4%)	1.0
Ceftriaxone	37 (33%)	18 (25%)	0.326
Azithromycin	22 (19%)	13 (18%)	1.0
Antibiotic modifications			
Any antibiotic modification	63 (67%)	42 (68%)	0.649
Antibiotic escalation	10 (9%)	10 (14%)	0.331
Anti-MRSA agent cessation	32 of 41 (78%)	18 of 28 (64%)	0.275
Anti-Pseudomonal agent cessation	18 of 64 (28%)	18 of 34 (53%)	**0.027**
Stopped all antibiotics	11 of 94 (12%)	11 of 52 (13%)	0.150

including their comorbidities. Acute or worsening hypoxia remained the predominant indication for PNP (77% in 2020 vs 75% in 2022, NS). The median number of days between admission and PNP was 4 (IQR, 1–8) in 2020 versus 3 (IQR, 1–7), and the difference was not significant. PNP and culture results in Table 1 show that *Staphylococcus aureus* and *Hemophilus influenzae* were the pathogens most commonly identified. Table 2 describes empiric prescribing and modifications for commonly prescribed antibiotics. Prescribers used empiric cefepime and ceftriaxone more in 2020 and vancomycin more in the 2022 group; however, these were not statistically significant. Cefepime de-escalation was more common in 2022 (53% vs 28%; $P = .03$). Antibiotic modifications within 24 hours of PNP remained similar in 2020 vs 2022. Although vancomycin cessation was more common in 2020 (78%) versus 2022 (57%), the difference was not statistically significant. **Conclusions:** With ASP guidance, PNP may be a useful tool to stop or target antibiotics for secondary bacterial pneumonia in COVID-19 pneumonia. Early vancomycin cessation (prior to culture results) may be an enduring consequence of PNP implementation.

Disclosures: None

Antimicrobial Stewardship & Healthcare Epidemiology 2023;3(Suppl. S2):s39–s40
doi:10.1017/ash.2023.271

Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Antibiotic Stewardship

Ambulatory antibiotic prescribing for children in a practice research network

Lauren Mitchell; Matthew Kronman; Allison Cole and Nicole Poole

Background: Most antibiotic use occurs in ambulatory settings. Antibiotic prescribing for children living in the United States in medically underserved areas or in populations is not well understood. **Objective:** To characterize antibiotic prescribing for children in a practice-based research network (PBRN). **Design and Methods:** In this retrospective cohort study, we characterized oral antibiotic prescribing in a large PBRN. Patients aged 0–17 years with at least 1 in-person visit between January 1, 2014, and December 31, 2018, at 1 of 25 primary-care clinics located within the WWAMI (Washington, Wyoming, Alaska, Montana, and Idaho) region of the Practice and Research Network (WPRN) were included. Data were extracted from DataQUEST, a centralized data repository from included primary-care clinics. Encounters for wellness visits or those lacking a diagnosis code and patients with complex chronic conditions were excluded. Diagnoses were categorized using *International Classification of Disease, Ninth Revision* (ICD-9) and ICD-10 codes. Oral antibiotics prescribed within 3 days of an encounter were associated with that encounter. Demographic data included age, sex, race, and ethnicity. Antibiotic appropriateness was determined using a previously published 3-tiered classification system using diagnosis codes as always, sometimes, or never appropriate. Patient-level data (ZIP codes) were used to designate medically underserved areas (MUAs) and medically underserved populations (MUPs). Antibiotic prescribing was then analyzed within these groups. **Results:** In total, 37,314 patients across 206,845 encounters were included, of which 34,601 encounters (17%) resulted in antibiotic prescription (Table 1). Of those, appropriateness data were available for 34,286 (99%). Of the antibiotics prescribed, 14% were always appropriate, 57% were sometimes appropriate, and 27% were never appropriate (1% missing). In total, 64% and 35% of encounters occurred with patients from an

Table 1: Ambulatory Antibiotic Prescribing in the WPRN Ages 0-17

		Medication Prescribed No	Medication Prescribed Yes	Total	p-value
n (number of encounters)		172244(100%)	34601(100%)	206845	
Mean age at encounter		7.8	7.8	7.7	
Sex	Female	85771(49.8%)	17362(50.2%)	103133	0.195
	Male	86473(50.2%)	17239(49.8%)	103712	
Race	American Indian or Alaska Native	2871(1.7%%)	567(1.6%)	3438	<0.001
	Asian	2454(1.4%)	381(1.1%)	2835	
	Black or African American	5153(2.9%)	761(2.2%)	5914	
	Caucasian	143837(83.5%)	29780(86.0%)	173617	
	Native Hawaiian or Other Pacific Islander	3369(2%)	648(2%)	4017	
	No Information	14560(8.4%)	2464(7.1%)	17024	
Antibiotic Appropriateness	Always	4259(2.5%)	5001(14.4%)	9260	0.841
	Sometimes	19240(11.2%)	19856(57.4%)	39096	
	Never	143436(83.3%)	9429(27.2%)	152865	
	No Information	5309(3%)	315(1%)	5624	