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

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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	

MUA and MUP, respectively. **Conclusions:** Targets to improve oral antibiotic prescribing for children in a large PBRN include antibiotic prescribing for diagnoses that never require an antibiotic. Larger comparative studies may focus on the role (if any) that MUA/MUP has on antibiotic prescribing.

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In-depth assessment of critical access hospital stewardship program adherence to the CDC Core elements in Iowa and Nebraska

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Background: Critical-access hospitals (CAHs) are required to meet the CDC 7 Core Elements of antimicrobial stewardship programs (ASPs). CAHs have lower adherence to the core elements than larger acute-care hospitals, and literature defining which core-element deficiencies exist within CAHs as well as barriers to adherence is lacking. **Methods:** We evaluated 21 CAH ASPs (5 in Nebraska and 15 in Iowa) that self-identified as potentially deficient in the Core Elements, via self-assessment followed by in-depth interviews with local ASP team members to assess adherence to the CDC Core Elements for ASPs. Core-element compliance was rated as either full (1 point), partial (0.5), or deficient (0), with a maximum score of 7 per ASP. High-priority recommendations to ensure core-element compliance were provided to facilities as written feedback. Self-reported barriers to implementation were thematically categorized. **Results:** Among the 21 CAH ASPs, none fully met all 7 core elements (range, 2.5–6.5), with a median of 5 full core elements met (Fig. 1). Only 6 ASPs (28.6%) had at least partial adherence to each of the 7 core elements. Action (21 of 21, 100%) and leadership commitment (16 of 21, 76.2%) were the core elements with the highest adherence, and accountability (4 of 21, 19%) and education (9 of 21, 42.9%) were the lowest. The most frequent high-priority recommendations were to provide physician and pharmacist leader ASP training (19 of 21, 90.5%), to track antimicrobial stewardship interventions (12 of 21, 57.1%), and to provide or track educational activities (12 of 21, 57.1%) (Fig. 2). One-third of programs were recommended to establish a physician leader. The most commonly self-identified barriers to establishing and maintaining an ASP were a lack of dedicated resources such as time of personnel (15 of 20, 75%), lack of infectious diseases expertise and training (8 of 20, 40%), and electronic medical record limitations (5 of 20, 25%) (Fig. 3). **Conclusions:** CAH ASPs demonstrate several critical gaps in achieving adherence to the CDC Core Elements, primarily in training for physician and pharmacist leaders and providing stewardship-focused education. Further resources and training customized to the issues present in CAH ASPs should be developed.

Core Element	Core Element Fully Met	Core Element Partially Met	Deficient
Leadership Commitment, N (%)	16 (76.2)	5 (23.8)	0 (0)
Accountability, N (%)	4 (19)	10 (47.6)	7 (33.3)
Drug Expertise, N (%)	10 (47.6)	10 (57.6)	1 (4.8)
Action, N (%)	21 (100)	0 (0)	0 (0)
Tracking, N (%)	15 (71.4)	5 (23.8)	1 (4.8)
Reporting, N (%)	15 (71.4)	5 (23.8)	1 (4.8)
Education, N (%)	9 (42.9)	0 (0)	12 (57.1)

Figure 1: Adherence to the Individual CDC Antibiotic Stewardship Core Elements at Small and Critical Access Hospitals Among 21 Critical Access Hospitals in Iowa and Nebraska

Recommendation Type	Number of Hospitals Given Recommendation, n=21 (%)
Leadership Support	
Establish ASP committee meetings	7 (33.3)
Improve ASP committee representation and define committee roles	2 (9.5)
Update ASP policy	1 (4.8)
Add ASP duties to job description	1 (4.8)
Accountability/Pharmacy Expertise	
Provide physician and pharmacist leader ASP training	19 (90.5)
Establish physician leader	7 (33.3)
Establish pharmacist leader	1 (4.8)
Collaborate between contract pharmacy and hospital	1 (4.8)
Action/Tracking	
Track antimicrobial stewardship interventions	12 (57.1)
Track antibiotic use	10 (47.6)
Implement antibiotic time-out and track usage	9 (42.9)
Implement order sets and track usage	8 (38.1)
Implement treatment guideline and track adherence	3 (14.3)
Collaborate with larger hospital system for EMR support with interventions	3 (14.3)
Implement intervention for treatment durations	2 (9.5)
Implement antibiotic indication and duration into ordering process	1 (4.8)
Establish system for missed culture follow-up	1 (4.8)
Reporting	
Report antibiotic use data to NHSN	6 (28.6)
Report antibiotic use to clinicians	4 (19)
Report via quality committee	4 (19)
Education	
Provide and track educational activities	12 (57.1)
Provide education on rapid identification panels	3 (14.3)

Figure 2: Top Recommendations Stratified by Core Element

Abbreviations: ASP: Antimicrobial Stewardship Program; EMR: Electronic Medical Record; NHSN: National Healthcare Safety Network

Barriers to ASP Initiation/Improvement	Number of Hospitals, n=20 (%)
Lack of dedicated resources, including time and personnel	15 (75)
Lack of infectious disease physician or knowledge	8 (40)
EMR limitations	5 (25)
Too few patients to make an impact	4 (20)
Need for clinician support and/or prioritization	5 (25)
Skilled beds antibiotic use	2 (10)

Figure 3: Self-Identified Barriers to Successful Antimicrobial Stewardship Program Initiation and/or Improvement. One hospital with missing data. Up to 3 responses per hospital.

Abbreviations: ASP: antimicrobial stewardship program; EMR: electronic medical record

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Examining the effects of organizational influencers on the implementation of clinical innovations: A qualitative analysis

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Background: The FIRST Trial is a 5-year study funded by the Agency for Healthcare Research and Quality. Our investigation is situated within a more extensive study to restrict fluoroquinolone antibiotics by requiring providers to obtain authorization from an infectious disease physician before prescribing fluoroquinolones. Our research team is performing a systematic evaluation to identify organizational characteristics and influencers of the fluoroquinolone preprescription authorization implementation process to understand variables that may facilitate or hinder implementation success. **Methods:** To address this critical gap, we present a qualitative analysis from our ongoing, multisite research project aimed at systematically assessing the adoption of an antimicrobial stewardship intervention in the form of an EHR-integrated best-practice alert (BPA) at each site to identify work system factors that impact uptake and variability in the implementation of the BPA at each location. The evaluation provides a detailed explanation of activities through the implementation