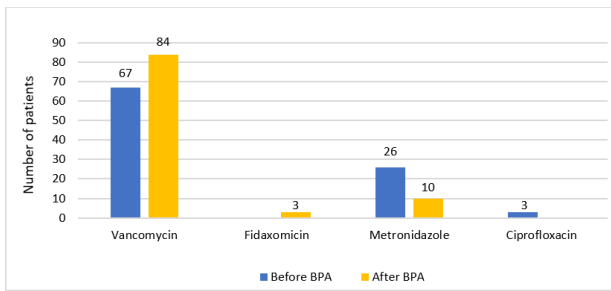


Figure 2. Specific CDI therapy



**Conclusion.** Clinical decision support increased prescribing of guideline-concordant CDI therapy in the outpatient setting. A targeted BPA is an effective stewardship intervention and may be especially useful in settings with limited antimicrobial stewardship resources.

**Disclosures.** Susan L. Davis, PharmD, Nothing to disclose Rachel Kenney, PharmD, Medtronic, Inc. (Other Financial or Material Support, spouse is an employee and shareholder)

### 99. Presence of Chronic Diseases and Compliance with Québec Provincial Guidelines for Outpatient Antibiotic Prescription, Québec, Canada, 2010-2017

Elise Fortin, Ph.D.<sup>1</sup>; Geneviève Deceuninck, M.Sc.<sup>2</sup>; Caroline Sirois, Ph.D.<sup>3</sup>; Caroline Quach, M.D. M.Sc.<sup>4</sup>; Marc Simard, Ph.D.(c)<sup>2</sup>; Sonia Jean, Ph.D.<sup>2</sup>; Alejandra Irace-Cima, M.D. M.Sc.<sup>2</sup>; Nadine Magali-Uftinema, M.Sc.<sup>5</sup>; <sup>1</sup>Institut national de santé public du Québec, Québec, Québec, Canada; <sup>2</sup>Institut national de santé publique du Québec, Québec, Québec, Canada; <sup>3</sup>Université Laval, Québec, Québec, Canada; <sup>4</sup>Montreal University, Montreal, Québec, Canada; <sup>5</sup>Ministère de la Santé et des Services sociaux, Montreal, Québec, Canada

**Session:** P-06. Antimicrobial Stewardship: Non-Inpatient Settings

**Background.** In Québec primary care, antimicrobial use is higher in patients with chronic diseases, but it is unclear whether this utilization may be reduced. We aimed to measure the proportion of compliant antimicrobial prescriptions according to the provincial guidelines for the treatment of common respiratory and urinary infections and measure variations in this proportion with certain chronic diseases.

**Methods.** Antimicrobial dispensing covered by the public drug insurance plan between April 2010 and March 2017, delivered within 2 days of an outpatient consultation for an infection was included. Infections targeted by provincial guidelines were studied: otitis media, pharyngitis, pneumonia, sinusitis, bronchitis and chronic obstructive pulmonary disease exacerbations, cystitis, and acute pyelonephritis. The proportion of prescriptions compliant with guidelines (right antimicrobial for children, and right antimicrobial and dosage for adults) was computed by age group (children or adults) and per category of chronic disease (respiratory, cardiovascular, diabetes, mental disorder, none of previous). For each infection and age group, multivariate robust Poisson regression was used to measure the impact of categories of chronic diseases on proportions of prescriptions compliant with guidelines.

**Results.** Between 14 677 and 312 786 prescriptions were included, for each infection. Compliance to guidelines was above 87% in children and was significantly lower ( $\leq 3\%$  below) in children with asthma. In adults, the choice of agent was compliant for at least 73% of prescriptions, except for cases of pharyngitis (between 53% and 61%). Accounting for dosage led to lower proportions of compliance, which varied between 19% (cystitis with diabetes) and 77% (pyelonephritis with none of the studied chronic disease categories). Compliant prescriptions were 2.4% to 20.4% less frequent in the presence of chronic diseases (statistically significant).

**Conclusion.** Non-compliant prescriptions could still be appropriate, but their high frequency suggests there is room for improvement. Dosage seems particularly problematic. Additional support could be offered to clinicians for the prescription of antimicrobials to patients with chronic diseases.

**Disclosures.** All Authors: No reported disclosures

### 100. Assessment of Emergency Department Prescribing Practices for Outpatient Treatment of Urinary Tract Infection, Community-Acquired Pneumonia, and Skin and Soft Tissue Infections

Matthew Thaller, PharmD<sup>1</sup>; Casey J. Dempsey, PharmD BCIDP<sup>2</sup>; Alexander Levine, PharmD, BCPS<sup>1</sup>; Kelly Shepard, PharmD<sup>1</sup>; <sup>1</sup>The Hospital of Central Connecticut, South Windsor, Connecticut; <sup>2</sup>Hartford HealthCare, Bolton, Connecticut

**Session:** P-06. Antimicrobial Stewardship: Non-Inpatient Settings

**Background.** Studies have found a need for improved antimicrobial stewardship in the outpatient setting. The literature is limited by the populations and disease states studied as many focus on viral infections. This study focuses on the adult emergency departments (EDs) in a large healthcare system and quantifies the proportion of antibiotic prescriptions deemed inappropriate for common outpatient infections.

**Methods.** A retrospective study was conducted in patients with selected common infections treated as an outpatient from the ED. Patients were reviewed for eligibility based

on the inclusion and exclusion criteria in Table 1. Appropriateness was analyzed based on: need for antimicrobial therapy; agent choice, dose, duration, and directions in concordance with national guidelines and local resistance patterns; and no clinically relevant drug interactions, unnecessary dual coverage, or a better or safer alternative available. The entire prescription was marked inappropriate if any factor was deemed inappropriate.

Table 1. Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> <li>Age <math>\geq 18</math> years and <math>&lt; 90</math> years</li> <li>ICD-10 codes for urinary tract infections, community acquired pneumonia, or skin/soft tissue infection (N39, J13-22, L08)</li> <li>Treated at one of five included emergency departments between October 1, 2018 and February 29, 2020, inclusive</li> </ul>	<ul style="list-style-type: none"> <li>Time in ED <math>\geq 24</math> hours</li> <li>Inpatient admission</li> <li>ID consultation</li> <li>Outpatient parenteral antibiotic therapy</li> <li>Concomitant bacterial infection</li> <li>Pregnant</li> <li>COPD exacerbation in past 30 days</li> </ul>

Based on the Epic report generated, a random sample of patients were selected for manual review. Only patients who met the following criteria were eligible for inclusion in the final analysis.

**Results.** Of the 318 patients reviewed, 274 were included. Treatment was deemed inappropriate 64% (174/274) of the time, significantly above the estimated 30% ( $p < 0.001$ ). The agent selection, duration, and dose were the most frequent factors deeming a prescription inappropriate. The most inappropriately used agents were fluoroquinolones and azithromycin. A positive culture required modification of therapy 31% (22/70) of the time and more so when the drug was guideline recommended. For example, when empiric antibiotic selection was per urinary tract infection guidelines, 31% (14/53) required modification compared to 19% (3/16) when the agent was not. This was most apparent when cephalexin was used.

**Conclusion.** The use of antibiotics at the studied EDs was not in concordance with guidelines in the study period. However, the cultures were sensitive less often to agents deemed appropriate per guidelines for empiric therapy. It is possible that the ideal treatments of bacterial infections in this community are not representative of national resistance patterns. Using ED-specific antibiograms to create order panels for common infections, as well as prospective pharmacist review at ED discharge, could increase appropriate utilization of preferred agents.

**Disclosures.** All Authors: No reported disclosures

### 101. Impact of an Integrated Tele-Antimicrobial Stewardship Program at a Rural Community Hospital

Sui Kwong Li, MD<sup>1</sup>; Erin K. McCreary, PharmD, BCPS, BCIDP<sup>2</sup>; Erin K. McCreary, PharmD, BCPS, BCIDP<sup>2</sup>; Tina Khadem, PharmD<sup>3</sup>; Nancy Zimmerman, RN, BSN<sup>1</sup>; Sarah Burgdorf, MD, PhD<sup>1</sup>; Nupur Gupta, DO<sup>3</sup>; Kate Gass, BSN<sup>4</sup>; Gary S. Fisher, PharmD<sup>4</sup>; James W. Backstrom, MD<sup>4</sup>; Robin L. Portman, PharmD<sup>4</sup>; Sara Schwarz, PharmD<sup>4</sup>; Kimberly Schultz, RPh<sup>4</sup>; Jenessa Heller, PharmD<sup>4</sup>; Kris Bearer, RPh<sup>4</sup>; Jayne Schreckengost, RPh<sup>4</sup>; Jennifer Prazenica, RPh<sup>4</sup>; John Mellors, MD<sup>5</sup>; Rima Abdel-Massih, MD<sup>5</sup>; Rima Abdel-Massih, MD<sup>5</sup>; J Ryan. Bariola, MD<sup>2</sup>; <sup>1</sup>UPMC, Pittsburgh, Pennsylvania; <sup>2</sup>University of Pittsburgh, UPMC, Pittsburgh, PA; <sup>3</sup>University of Pittsburgh Medical Center, Pittsburgh, PA; <sup>4</sup>Armstrong Center for Medicine & Health, Kittanning, Pennsylvania; <sup>5</sup>University of Pittsburgh, Pittsburgh, Pennsylvania

**Session:** P-07. Antimicrobial Stewardship: Program Development and Implementation

**Background.** Small hospitals in the US may lack access to infectious diseases (ID) expertise despite similar rates of antimicrobial use and drug-resistant bacteria as larger hospitals. A tele-antimicrobial stewardship program (TASP) is a force multiplier, expanding access to specialty care, training, and guidance on appropriate resource utilization. Data on the impact of TASPs in community or rural inpatient settings is limited.

**Methods.** We established a TASP at a 160-bed hospital in Armstrong County, PA (population < 5000) in September 2020. Tele-ID consult services were already being used (Figure 1). A non-local ID pharmacist or ID physician performed prospective audits and provided feedback with 1 local pharmacist on a 30-minute video conference call daily. At TASP implementation, all patients receiving intravenous (IV) fluoroquinolones, metronidazole, and azithromycin were reviewed. Figure 1 shows the additional support following TASP implementation, including addition of ceftriaxone, carbapenems, IV vancomycin, and tocilizumab to daily reviews. A patient monitoring form was developed to track interventions and the local pharmacists were trained in documentation. Table 1 lists other TASP features implemented.

Figure 1. TASP Timeline

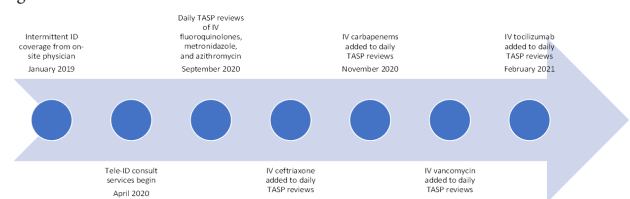


Table 1. TASP Accomplishments

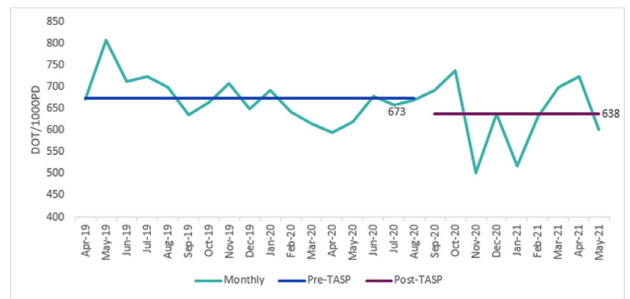
Patient Care	Guidelines	Microbiology Lab	Policies	Education
Prospective audit with feedback M-F	Empiric Antimicrobials for Common Infections	Updated local antibiogram	MDRO and Isolation	Introduction to Stewardship webinar
Patient monitoring form	COVID-19	Revised cascade reporting rules	Surgical prophylaxis	COVID-19 monthly updates and webinars
Stewardship intervention form	CAP	Updated AST panels and reporting rules to align with current breakpoints	Aminoglycoside dosing	Tocilizumab webinar
Available for patient-related questions via email outside of daily stewardship call	HAP/VAP	Added clinician comments to culture and laboratory test results	Renal dosing	Monthly stewardship pearl newsletter
Coaching on conducting thorough beta-lactam allergy history	Procalcitonin	Revised antibiotic reporting rules for <i>Enterococcus</i> spp. isolated in urine cultures	Indications for Use on electronic antibiotic orders	
	IV to PO conversion	Enhanced culture results display to providers in electronic health record for improved readability	Vancomycin dosing in dialysis	

**Results.** From 09/01/2020 to 04/30/2021, 304 stewardship opportunities were identified and 77% of interventions were accepted. Recommending a duration of therapy was accepted most frequently (93.5%) and de-escalation of therapy least frequently (69.6%) (Table 2). Recommending an ID consultation or diagnostic testing was always accepted but only comprised 6.2% of all interventions. Daily calls involved an average of 5 patient reviews. Monthly antimicrobial use declined on average from 673 DOT (days of therapy)/1000 PD (patient days) to 638 DOT/1000 PD (Figure 2). Daily calls were cancelled on 31/166 weekdays (18.7%) due to staffing shortages.

Table 2. TASP Interventions (9/2020 - 4/2021)

	9/2020	10/2020	11/2020	12/2020	1/2021	2/2021	3/2021	4/2021	Total
Discontinue	3/4	2/4	6/13	6/6	8/11	10/15	13/16	8/11	56/80 (70%)
De-escalate	3/4	3/3	6/6	10/15	8/11	6/11	12/18	7/11	55/79 (69.6%)
IV to PO	10/14	10/11	4/6	2/4	1/1	0/0	6/8	5/6	38/50 (76%)
Duration	2/2	4/4	5/5	5/5	3/5	2/2	11/11	11/12	43/46 (93.5%)
Dosing	2/4	0/0	1/1	0/0	3/3	0/0	4/4	4/4	14/16 (87.5%)
ID Consult	1/1	0/0	1/1	2/2	0/0	0/0	8/8	0/0	12/12 (100%)
Escalate	0/0	1/1	1/2	1/1	0/0	0/0	1/3	2/2	6/9 (66.7%)
Diagnostics	1/1	0/0	0/0	0/0	1/1	0/0	2/2	3/3	7/7 (100%)
Other	2/2	0/0	0/0	0/1	0/0	0/0	0/1	1/1	3/5 (60%)

Figure 2. Monthly Antimicrobial Use in Days of Therapy (DOT) per 1000 Patient Days (4/2019 - 5/2021)



**Conclusion.** Implementation of TASP in a community hospital resulted in a high percentage of accepted stewardship interventions and lower antimicrobial usage. Success is dependent on robust educational efforts, establishing strong relationships with local providers, and involvement of key stakeholders. Lack of dedicated stewardship time for local pharmacists is a very significant barrier.

**Disclosures.** Erin K. McCreary, PharmD, BCPS, BCIDP, AbbVie (Consultant)Cidara (Consultant)Entasis (Consultant)Ferring (Consultant)Infectious Disease Connect, Inc (Other Financial or Material Support, Director of Stewardship Innovation)Merck (Consultant)Shionogi (Consultant)Summit (Consultant) Erin K. McCreary, PharmD, BCPS, BCIDP, AbbVie (Individual(s) Involved: Self); Consultant; Cidara (Individual(s) Involved: Self); Consultant; Entasis (Individual(s) Involved: Self); Consultant; Ferring (Individual(s) Involved: Self); Consultant; Infectious Disease Connect, Inc (Individual(s) Involved: Self); Director of Stewardship Innovation, Other Financial or Material Support; Merck (Individual(s) Involved: Self); Consultant; Shionogi (Individual(s) Involved: Self); Consultant; Summit (Individual(s) Involved: Self); Consultant; Tina Khadem, PharmD, Infectious Disease Connect, Inc. (Employee) Nancy Zimmerman, RN, BSN, I'd connect (Employee) John Mellors, MD, Abound Bio, Inc. (Shareholder)Accelevir (Consultant)Co-Crystal Pharma, Inc. (Other Financial or Material Support, Share Options)Gilead Sciences, Inc. (Advisor or Review Panel member, Research Grant or Support)Infectious Diseases Connect (Other Financial or Material Support, Share Options)Janssen (Consultant)Merck (Consultant) Rima Abdel-Massih, MD, Infectious Disease Connect (Employee, Director of Clinical Operations) Rima Abdel-Massih, MD, Infectious Disease Connect (Individual(s) Involved: Self); Chief Medical Officer, Other Financial or Material Support, Other Financial or Material Support, Shareholder J Ryan. Bariola, MD, Infectious Disease Connect (Other Financial or Material Support, salary support)

**102. Evaluation of the Association between the Antibiotic Spectrum Index and Antibiotic Days of Therapy: A Retrospective Study across 124 Acute-care Hospitals**

Satoshi Kakiuchi, MD PhD<sup>1</sup>; Michihiko Goto, MD, MS<sup>2</sup>; Fernando Casado-Castillo, MD<sup>3</sup>; Eli N. Perencevich, MD MS<sup>3</sup>; Daniel J. Livorsi, MD, MSc<sup>4</sup>; <sup>1</sup>University of Iowa/Iowa City VAMC, Iowa City, Iowa; <sup>2</sup>University of Iowa Carver College of Medicine, Iowa City, Iowa; <sup>3</sup>University of Iowa, Iowa City, Iowa; <sup>4</sup>University of Iowa Carver College of Medicine and Iowa City VA Health Care System, Iowa City, Iowa

**Session:** P-07. Antimicrobial Stewardship: Program Development and Implementation

**Background.** Antibiotic stewardship programs often measure antibiotic days of therapy (DOT), but this metric does not reflect the antibiotic spectrum. In this study, we used the previously published Antibiotic Spectrum Index (ASI), which attaches a score (1-13) to the spectrum of each antibiotic, to evaluate the content of antibiotic use across all Veterans Health Administration (VHA) hospitals. We also assessed how benchmarking hospital performance changed when ASI was used instead of DOT.

**Methods.** We conducted a retrospective cohort study of patients admitted to 124 acute-care VHA hospitals during 2018. We obtained data on administered antibiotics, the days of antibiotic use (DOT), and days-present (DP) from the VHA Corporate Data Warehouse and then aggregated data to the hospital-level using the National Healthcare Safety Network's methodology. We modified the original ASI by changing 3.8% of the bug-drug scores to ensure consistency across all scores and adding 27 new antibiotics agents. For each hospital, we calculated ASI/DOT, ASI/1,000 DP, and DOT/1,000 DP and ranked hospitals on their performance. We performed a