Figure 2.

Other: CNS infection (3), ensure drug clearance (2), pediatric (1), incorrectly drawn prior level (1), concern for adherence (1)
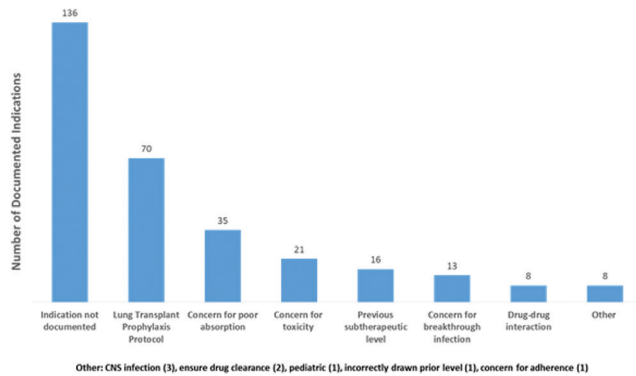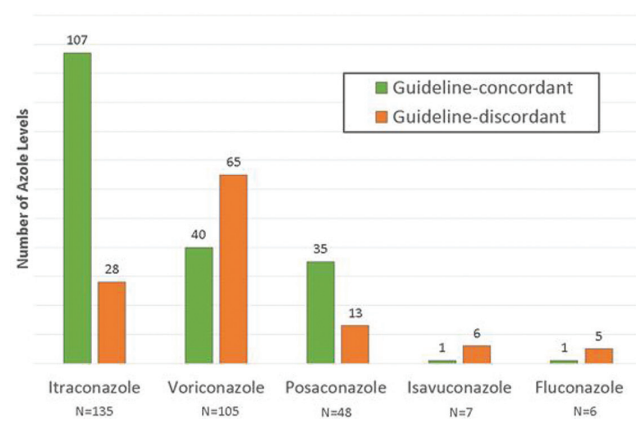
Figure 3.

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

1811. Minimizing Time to Optimal Therapy for Enterobacteriaceae Bloodstream Infections: Is Organism Identification Enough?

Laura N. Cwengros, PharmD[1]; Ryan P. Mynatt, PharmD[1]; Tristan T. Timbrook, PharmD, MBA, BCPS[2] and Jason M. Pogue, PharmD, BCPS-AQ ID[1]; [1]Detroit Medical Center, Detroit, Michigan, [2]University of Utah Health Care, Salt Lake City, Utah

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Background. BSI due to ceftriaxone (CRO)-resistant ENT are increasing in frequency, and are associated with delays in time to appropriate therapy. However, treating all patients at risk for CRO-resistant organisms with empiric carbapenem (CARB) therapy risks over exposure. Strategies are needed to appropriately balance these competing interests. The purpose of this study was to compare three methods for accomplishing this balance.

Methods. Retrospective observational study of patients at the Detroit Medical Center with ENT BSI from July 1, 2016 to July 31, 2017. Patients with *E. coli*, *K. oxytoca*, *K. pneumoniae*, or *P. mirabilis* were included if both Verigene® GN-BC and traditional microbiology detected the organism. Patients were excluded if CARB resistance was detected via genetic markers. This study assessed the effectiveness of three methods to predict CRO resistance at the time of organism isolation. The first two methods were based on applying published scoring tools for extended spectrum β-lactamase BSI. If the patient met the cutoff score proposed by the authors they were hypothetically placed on a CARB, otherwise they were placed on CRO. Method 3 was based on results from Verigene. If the CTX-M marker was present patients were hypothetically placed on a CARB, and if not CRO. The methods were compared for their sensitivity, specificity, predictive values, and the number of times they would have resulted in inappropriate therapy or unnecessary escalation to CARB.

Results. Four hundred fifty-one ENT were included, 73 (16%) of which were CRO-resistant. The comparative performance of the three methods is listed in the figure. Verigene performed well and was associated with fewer cases of early under treatment and over treatment. Published ESBL scoring tools performed poorly, missing two-thirds of CRO-resistant isolates and unnecessarily exposing many patients to CARB. Given the improved sensitivity and specificity of Verigene similar overall CARB use would be seen in the cohort despite roughly 40 patients getting placed on CARB 2 days earlier when CRO-resistant BSI was present.

Conclusion. Vergiene significantly outperformed published ESBL scoring tools for identifying CRO-resistant ENT BSI. Institutions should validate scoring tools prior to implementation.

Method	Cutoff	Sens	Spec	PPV	NPV	Under treatment (N)	Over treatment (N)	CARB days per 1000 patient days
Verigene	CTX-M	85	99.7	98	97	11	1	136
Lee	2	32	90	38	87	50	35	134
Augustine (1)	3 OR 1-2 and critically ill	37	88	36	88	46	48	142
Augustine (2)	3	29	89	34	87	52	41	134

Disclosures. **T. T. Timbrook**, BioFire Diagnostics: Scientific Advisor, Speaker honorarium. Roche Diagnostic: Scientific Advisor, Speaker honorarium. GenMark Diagnostics: Scientific Advisor, Speaker honorarium.

1812. Impact of Rapid Identification of Blood Cultures With Antimicrobial Stewardship at Three Community Hospitals Within a Health System

Christy Su, PharmD[1]; Jessica Babic, PharmD[2]; Amy Schilling, PharmD[3] and Audrey Wanger, PhD[4]; [1]Memorial Hermann Greater Heights Hospital, Houston, Texas, [2]Memorial Hermann Southeast Hospital, Houston, Texas, [3]Memorial Hermann The Woodlands Medical Center, The Woodlands, Texas, [4]Department of Pathology and Lab Medicine, Department of Pathology and Laboratory Medicine, McGovern Medical School, Houston, Texas

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Background. The use of rapid diagnostic tests (RDT) in microbiology decreases time to pathogen identification (ID). When coupled with an Antimicrobial Stewardship Program (ASP), time to optimal antibiotics can be significantly reduced. The purpose of this study was to evaluate the impact of Verigene® Gram-Positive Blood Culture Test (BC-GP) and Gram-Negative Blood Culture Test (BC-GN) implementation with an ASP at three community hospitals within a health system with centralized microbiology services.

Methods. A retrospective analysis was conducted to compare time to targeted antibiotics for treatment of bloodstream infections (BSI) before and after implementation of Verigene®. Patients were included with a positive blood culture for organisms detectable by Verigene BC-GP and BC-GN during September 2016 (pre-implementation group) and September 2017 (post-implementation group). Patients were excluded if positive blood culture had more than one organism, patient was actively being treated for an infection unrelated to blood culture or blood culture results were available after patient expired, was discharged or transferred. Targeted antibiotic therapy was defined as antibiotic therapy tailored toward pathogen based on ID and sensitivities. Each ASP pharmacist received Verigene® notifications in real-time. Secondary endpoints were in-hospital mortality, hospital length of stay (LOS), and days of vancomycin therapy.

Results. A total of 93 patients were included in the final analysis with 42 patients in pre- group and 51 in post-group. Patients achieving targeted therapy during their hospital stay was 38 of 42 (90%) in the pre-group and 47 of 51 (92%) in the post-group. Of those who achieved targeted therapy, time to targeted therapy was 78.4 hours vs. 43.1 hours in pre-group vs. post-group, respectively ($P < 0.001$). No significant difference was detected for in-hospital mortality or hospital LOS. Length of vancomycin therapy was decreased from 85.8 hours to 48.6 hours in post-group ($P < 0.001$).

Conclusion. Implementation of RDT in three community hospitals with a centralized microbiology laboratory resulted in a significantly improved time to targeted antibiotics in patients with BSI when combined with ASP pharmacist real-time notification.

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

1813. Development and Validation of Novel Ambulatory Antibiotic Stewardship Metrics

Keith W. Hamilton, MD[1]; Kathleen O. Degnan, MD[2]; Valerie Cluzet, MD[3]; Leigh Cressman, MA[4]; Afia B. Adu-Gyamfi, BA[4]; Pam Tolomeo, MPH[4]; Michael Z. David, MD, PhD[3] and for the CDC Prevention Epicenters Program; [1]Medicine - Infectious Diseases, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, Pennsylvania, [2]Infectious Diseases, Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania, [3]Division of Infectious Diseases, Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania, [4]Center for Clinical Epidemiology and Biostatistics, University of Pennsylvania, Philadelphia, Pennsylvania

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Background. Over 260 million antibiotic courses are prescribed in ambulatory settings per year in the United States: 41% of which are for acute respiratory tract infections (ARTI). Over 50% of these antibiotic courses are inappropriate. However, interventions to improve ambulatory prescribing are little studied, and metrics to track antibiotic use are not well validated.

Methods. To validate metrics for ARTIs in adults, we conducted a retrospective cohort study from January 1, 2016 to December 31, 2016 at 32 primary care practices. We randomly selected 1,200 office visits with a coded respiratory tract diagnosis and determined by medical record review the proportion of visits in which antibiotic prescription was inappropriate using modified Infectious Diseases Society of America treatment guidelines. We determined clinic and provider characteristics associated with inappropriate prescribing. By linear regression, we also determined the aggregate metrics best correlated with inappropriate antibiotic prescribing.

Results. An antibiotic was prescribed in 37% of visits in which a respiratory tract diagnosis was coded. Of these prescriptions, 69% were inappropriate. Demographics associated with inappropriate prescribing included advance practice provider vs. physician (72% vs. 58%, $P = 0.02$), family medicine vs. internal medicine (75% vs. 63%, $P = 0.01$), board certification after vs. before 1997 (75% vs. 63%, $P = 0.02$), and practice in a non-teaching vs. teaching clinic (73% vs. 51%, $P < 0.001$). Rate of antibiotic prescribing in visits where any respiratory tract diagnosis was coded ($R^2 = 0.23$, $P < 0.001$) and rate of antibiotic prescribing in visits where a respiratory tract diagnosis that almost never requires an antibiotic was coded ($R^2 = 0.24$, $P < 0.0001$) were most strongly correlated with inappropriate prescribing.

Conclusion. Rate of antibiotic prescribing in visits where any respiratory tract diagnosis was coded and rate of antibiotic prescribing in visits where a respiratory tract diagnosis that almost never requires an antibiotic was coded may be useful proxies to estimate the rate of inappropriate prescribing for ARTIs. This study could inform ambulatory antibiotic benchmarking metrics and interventions to decrease inappropriate antibiotic prescribing for ARTIs in ambulatory settings.

Disclosures. All authors: No reported disclosures.

1814. External Validation of Precision Antibiotic Therapy for Enterococcal Bloodstream Infections

Tiffany Lee, PharmD[1]; Melissa White, PharmD[1]; Shannon Overly, MS[2]; Jimish Mehta, PharmD, MSCE[2]; Shawn Binkley, BS, PharmD[1]; Steven Morgan, PharmD, BCPS, AQID[1]; Stephen Saw, PharmD[1] and Keith Hamilton, MD[3]; [1]Department of Pharmacy, Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania, [2]ILÚM Health Solutions, Kenilworth, New Jersey, [3]Division of Infectious Diseases, Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania

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Background. ILÚM Heath Solutions, an infectious diseases software platform, developed precision antibiotic therapy (PAT) software to guide selection of therapy using data science, patient-specific factors, as well as historical patient, pharmacy, and microbiologic data. PAT reports percentages reflecting likelihood of susceptibility across a panel of antibiotics, identifying patients at high risk for resistant organisms. PAT has previously demonstrated high accuracy for predicting susceptibility of *Enterobacteriaceae* in bloodstream infections (BSIs) and risk for multi-drug resistance. The objective of this study was to validate PAT predictive capabilities in enterococcal BSIs and to assess accuracy in risk-stratifying patients for vancomycin-resistant *Enterococcus* spp. (VRE).

Methods. This retrospective cohort study included patients with an index enterococcal BSI from January 2016 through December 2016. The primary outcome was the performance characteristics of PAT in accurately predicting the risk of VRE, elaborated with sensitivity and specificity rates across varying PAT thresholds. Receiver operating characteristics (ROC) curve analyses were performed to identify an acceptable PAT threshold to define high risk for VRE. Brier score calculations were used to compare accuracy of PAT predictions to that of the institutional antibiogram.

Results. ROC curve analysis (Figure 1) demonstrated an area under the curve of 0.94, indicating excellent discrimination. The Brier scores for the institutional antibiogram and PAT software were 0.067 and 0.075, respectively, representing a similar degree in accuracy. Species-level Brier scores for the institutional antibiogram and PAT were 0.043 and 0.065, respectively, for *E. faecalis* and 0.093 and 0.073, respectively, for *E. faecium*.

Conclusion. PAT software was able to discriminate enterococcal BSIs resistant and susceptible to vancomycin. Similar to previous results seen with *Enterobacteriaceae*, PAT may be useful to accurately predict susceptibilities for *Enterococcus* spp., particularly for *E. faecium*.

Figure 1.

Area under ROC curve = 0.9435
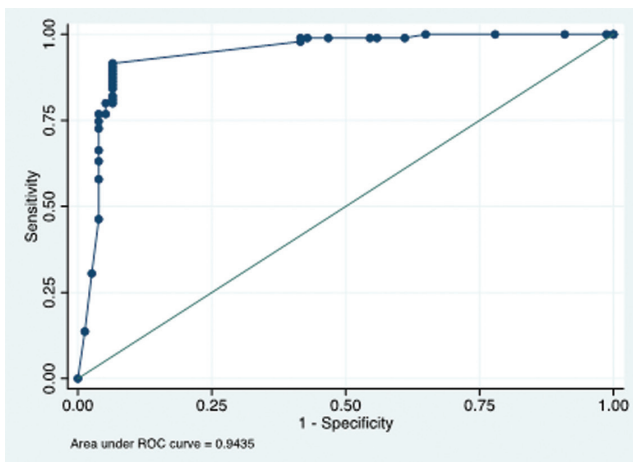
Disclosures. **S. Overly**, ILÚM Health Solutions: Consultant, Salary. **J. Mehta**, ILUM Health Solutions: Consultant, Salary.

1815. Effects of Syndrome-Based Antimicrobial Stewardship Prospective Audit and Feedback Interventions on Antimicrobial Use in an Urban Community Hospital

Alfredo J. Mena Lora, MD[1,2]; Martin Cortez, PharmD[2]; Rick Chu, PharmD[2]; Ella Li, PharmD[2]; Scott Borgetti, MD[1]; Yolanda Coleman, PhD, RN[2]; Sherrie Spencer, RN, MSN[2]; Candice Krill, BSN, MBA[2]; Eden Takhsh, MD[2] and Susan C. Bleasdale, MD[1]; [1]Division of Infectious Diseases, University of Illinois at Chicago, Chicago, Illinois, [2]Saint Anthony Hospital, Chicago, Illinois

Session: 219. Antimicrobial Stewardship: New Methods and Metrics
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Background. Establishing antimicrobial stewardship programs (ASP) in community hospitals with limited resources can be challenging. Many hospitals do not have infectious disease (ID) trained pharmacists (PharmD) available. We implemented a comprehensive ASP with syndrome-based prospective audit and feedback at an urban community hospital.

Methods. ASP was implemented at a 151-bed urban community hospital in October 2017. PharmD training on syndrome-based treatment guidelines, including definitions, severity, empiric regimens, de-escalation, and duration was created. Prospective audit by PharmDs was established. This program was implemented and overseen by an ID physician. Days of therapy per 1,000 patient-days (DOT/1,000) was assessed 3 months before and after ASP. Prospective audit and feedback data were reviewed.

Results. At 3 months, antimicrobial use decreased (370 vs. 350 DOT/1,000) while the proportion of oral antimicrobials used increased (32% vs. 43%). Antibiotic expenditures decreased by 11% ($42,500 vs. $37,900). Most cases reviewed by prospective audit (58%) fit pre-determined syndromes (Figure 1). Soft tissue and urinary tract infections were the most common syndromes. Interventions occurred in 53% of cases. De-escalation from broad-spectrum agents was more successful in noncritical care settings (Figure 2).

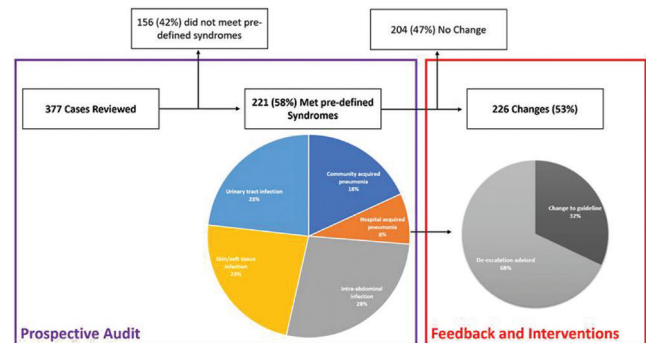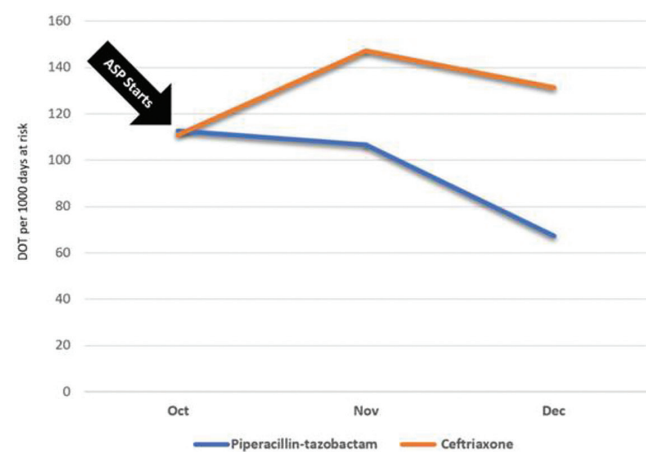**Figure 1.** ASP syndrome-based prospective audit and feedback.

Figure 2. Antimicrobial use in medical surgical units after implementation of ASP.

Conclusion. Syndrome-based prospective audit and feedback was successfully implemented in an urban community hospital with non-ID trained PharmDs using ID physician leadership. Our program led to a decrease in antibiotic use, increase use of oral alternatives, and decreased antibiotic expenditures. Empiric use of broad-spectrum agents was common at our facility. ASP likely contributed to an increase in ceftriaxone and decrease in piperacillin–tazobactam use in medical-surgical floors. Stewardship in critically ill patients remains a challenge. Clear guidelines and access to an ID physician are necessary to provide adequate support for PharmDs without ID-specific training and can help curb antibiotic use. Expanding the list of syndromes may further impact antimicrobial use.

Disclosures. All authors: No reported disclosures.