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 (R² = 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 (R² = 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.

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

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Background. ILUM Health 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 of 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.

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