Figure 1. Primary and secondary outcomes

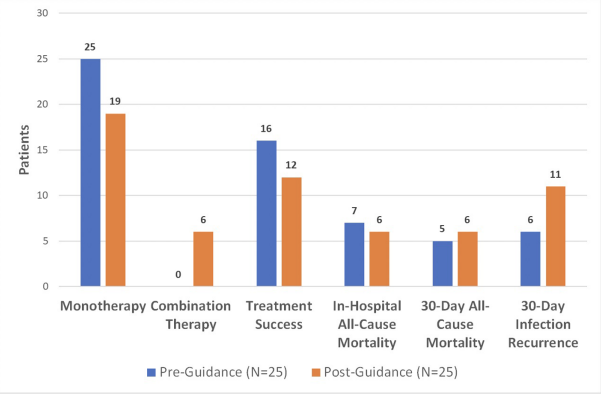
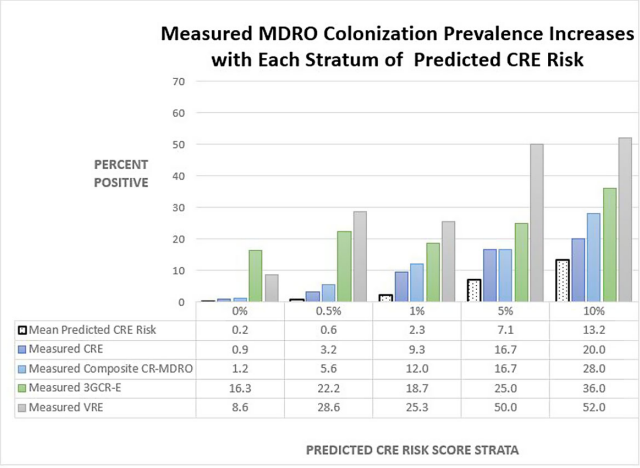


Table 1. Admission Prevalence and Model Prediction of CRE and Non-CRE MDRO Colonization at the Time of MICU Admission

Multidrug-Resistant Organism (MDRO) of Interest	Encounters with MDRO Detected at Admission n, % (N=1237)	Receiver Operator Curve C-statistic (95% CI)
Carbapenem-resistant Enterobacterales (CRE)	27 (2.2)	0.82 (0.72-0.91)
Carbapenem-resistant *Pseudomonas aeruginosa* (CRPA)	10 (0.8)	0.82 (0.66-0.97)
Composite carbapenem-resistant MDRO (including CRE and CRPA)	37 (3.0)	0.81 (0.74-0.90)
Vancomycin-resistant enterococcus (VRE)	160 (12.9)	0.76 (0.72-0.80)
Third-generation cephalosporin-resistant Enterobacterales (3GCR-E)	217 (17.5)	0.61 (0.57-0.65)
Methicillin-resistant *Staphylococcus aureus* (MRSA)	68 (5.5)	0.57 (0.50-0.64)

median Charlson comorbidity index was 5 (21% estimated 10-Year survival), and 76% of SM cultures were pulmonary isolates. Displayed in figure 1, combination therapy was given in 6 of 25 cases (24%) in the post-guidance group and zero patients in the pre-guidance group. Secondary endpoints of treatment success and all-cause mortality were similar between groups. Duration of therapy was similar between combination and non-combination therapy regimens (median 9 vs 10 days). Among patients who received combination therapy, all had ID consultation, 4 (66.7%) were admitted to the ICU, and 2 (33.3%) had treatment success. **Conclusions:** Patients treated for SM infection at our institution in the post-IDSA guidance period were more likely to receive combination therapy. A higher rate of treatment success was not observed in the post-IDSA guidance arm for SM infections. Limitations of this study include its small sample size and retrospective design, leading to inability to distinguish colonization from true infection. Additional studies are needed to evaluate the impact of combination antibiotic therapy on outcomes.

Antimicrobial Stewardship & Healthcare Epidemiology 2024;4(Suppl. S1):s110–s111
doi:10.1017/ash.2024.265



Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Medical Informatics

Application of a Model Using Prior Healthcare Information to Predict Multidrug-Resistant Organism (MDRO) Carriage

Sarah Sansom, Rush University Medical Center; Michael Lin, Rush University Medical Center; Anh-Thu Runez, Illinois Department of Public Health; Dejan Jovanov, Rush University Medical Center; Helen Zhang, Rush University Medical Center; Michael Schoeny, Rush University Medical Center; Mary Hayden, Rush University Medical Center and William Trick, Cook County Health

Background: Early identification of patients colonized with MDROs can help healthcare facilities improve infection control and treatment. We evaluated whether a model previously validated to predict carbapenem-resistant Enterobacterales (CRE) carriage on hospital admission (area under the curve [AUC]=0.86, Lin et al. OFID 2019) would generalize to predict a patient's likelihood of CRE and non-CRE MDRO colonization at the time of medical intensive care unit (MICU) admission. **Methods:** We analyzed data collected previously in a retrospective observational cohort study of patients admitted to Rush University Medical Center's MICU from 1/2017-1/2018 and screened within the first two days for rectal MDRO colonization. Organisms of interest included CRE, carbapenem-resistant Pseudomonas aeruginosa (CRPA), vancomycin-resistant enterococci (VRE), and third-generation cephalosporin-resistant Enterobacterales (3GCR-E). Methicillin-resistant Staphylococcus aureus (MRSA) nasal colonization at admission was determined by routine clinical screening. Each patient's first MICU admission during the study period was linked to Illinois' hospital discharge database and assigned a CRE colonization risk probability using the existing model. Model covariates were age, and during the prior 365 days, number of short-term acute care hospitalizations (STACH) and mean STACH length of stay, number of long-term acute care hospitalizations (LTACH) and mean LTACH length of stay, prior hospital admission with an ICD-10 diagnosis code indicating bacterial infection, and current admission to LTACH. Predictive value of the model was evaluated by receiver operating characteristic (ROC) curves. **Results:** We analyzed 1237 MICU admissions. MDRO admission prevalence is shown in the Table. The model performed well to predict carriage of healthcare-associated MDROs, including CRE, CRPA, composite CR-MDROs (CRE & CRPA), and VRE. However, the model performed poorly for MDROs with known community reservoirs, including 3GCR-E and MRSA (Table). In general, MDRO admission prevalence increased in parallel with predicted CRE colonization risk (Figure). The number needed to screen (NNS) to detect one healthcare-associated MDRO carrier was inversely related to the CRE colonization risk score. For example, NNS in the total cohort compared to those with CRE risk score of >0.5% was: CRE 111 vs 32 patients, CRPA 333 vs 42 patients, composite CR-MDRO 83 vs 18 patients, and VRE 12 vs 4 patients. However, higher CRE risk score cutoff was inversely related to screening sensitivity. **Conclusion:** A prediction model using prior healthcare exposure information successfully discriminated patients likely to harbor healthcare-associated MDROs upon MICU admission. Prediction scores generated by a public-health accessible database could be used to target screening/isolation or enact protective measures for high-risk patients.

Antimicrobial Stewardship & Healthcare Epidemiology 2024;4(Suppl. S1):s111
doi:10.1017/ash.2024.266