

## Decennial 2020 Abstracts

### Presentation Type:

Top Oral Award

### Development of an Electronic Tool to Measure Daily Appropriateness of Inpatient Antibacterial Use

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**Background:** Assessing antimicrobial use (AU) appropriateness is a cornerstone of antimicrobial stewardship, largely accomplished through time-intensive manual chart review of specific agents or diagnoses. Efforts to evaluate appropriateness have focused on assessing the appropriateness of an entire treatment course. An electronic measure was developed to assess the appropriateness of each day of inpatient AU leveraging electronic health record data. **Methods:** We extracted contextual data, including risk factors for resistant organisms, allergies, constitutional signs and symptoms from diagnostic and procedural codes, and microbiological findings, from the electronic health records of patients in Veterans' Health Administration inpatient wards reporting data to the National Healthcare Safety Network (NHSN) AU option from 2017–2018. Only the antibacterial categories shown in Figure 1 were included. Respiratory, urinary tract, skin and soft-tissue, and other infection categories were defined and applied to each hospital day. Algorithm rules were constructed to evaluate AU based on the clinical context (eg, in the ICU, during empiric therapy, drug–pathogen match, recommended drugs, and duration). Rules were drawn from available

literature, were discussed with experts, and were then refined empirically. Generally, the rules allowed for use of first-line agents unless risk factors or contraindications were identified. AU was categorized as appropriate, inappropriate, or indeterminate for each day, then aggregated into an overall measure of facility-level AU appropriateness. A validation set of 20 charts were randomly selected for manual review. **Results:** Facility distribution of appropriateness, inappropriateness, and indeterminate AU by 4 of the adult, 2017 baseline NHSN Standardized Antimicrobial Administration Ratio (SAAR) categories are shown in Figure 1. The median facility-level inappropriateness across all SAAR categories was 37.2% (IQR, 29.4%–52.5%). The median facility-level indeterminate AU across all SAAR categories was 14.4% (IQR, 9.1%–21.2%). Chart review of 20 admissions showed agreement with algorithm appropriateness and inappropriateness in 95.4% of 240 antibacterial days.

**Conclusions:** We developed a comprehensive, flexible electronic tool to evaluate AU appropriateness for combinations of setting, antibacterial agent, syndrome, or time frame of interest (eg, empiric, definitive, or excess duration). Application of our algorithm in 2 years of VA acute-care data suggest substantial interfacility variability; the highest rates of inappropriateness were for anti-MRSA therapy. Our preliminary chart review demonstrated agreement between electronic and manual review in >95% of antimicrobial days. This approach may be useful to identify potential stewardship targets, in the development of decision support systems, and in conjunction with other metrics to track AU over time.

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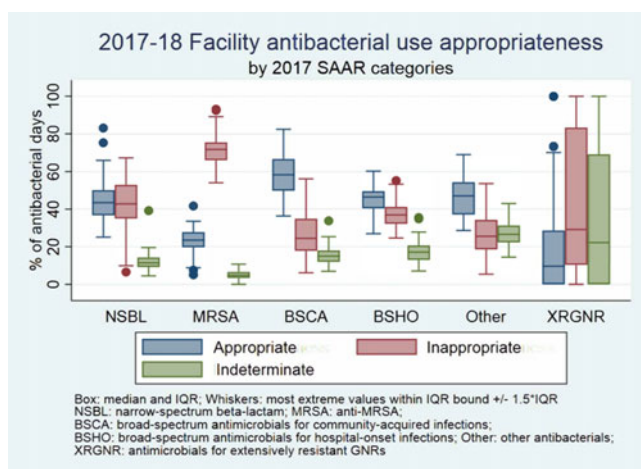


Fig. 1.

### Presentation Type:

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### Measuring Empiric Antibiotic Spectrum Patterns Across Space and Time

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