2097. Antimicrobial Stewardship Programs in Missouri Hospitals: Facilitators, Barriers, and Complexity of Implementation

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Background. Antibiotic stewardship programs (ASPs) in acute care hospitals reduce unnecessary antibiotic use and attendant complications. In the state of Missouri, all hospitals are required to have an ASP. Additionally, the Joint Commission mandates ASP implementation for accreditation based on core elements defined by the Centers for Disease Control (CDC). No studies have evaluated the uptake of ASP since the Missouri state law and Joint Commission mandate. Furthermore, data are limited examining barriers to implementation across hospitals with variable resources. We evaluated ASP uptake across Missouri hospitals, assessed differences in program complexity, and identified facilitators and barriers to implementation.

Methods. A 94-question survey was administered electronically in the spring of 2019 to 130 Missouri hospitals. Information was collected regarding implementation details of CDC-defined ASP core elements and tools used to overcome implementation barriers. Results were self-reported by the stewardship pharmacist, the director of pharmacy, or the person most familiar with antimicrobial stewardship if the former were not available.

Results. Preliminary results have been collected from 37 hospitals ranging in size from 15 to 1303 beds (IQR: 54, 274). 16% were critical access hospitals. 54% of hospitals had ASPs adherent to all 7 CDC core elements. Another 27% had implemented 6 of the core elements, with all of those reporting that they lacked a single pharmacist leader. All facilities had implemented at least some measures to improve antibiotic use, ranging from 4 to 13 measures. 45% of programs used state-based antimicrobial stewardship collaboratives, and 52% of those found such programs to be "very" or "extremely" useful.

Conclusion. All hospitals surveyed are performing ASP activities in concordance with Missouri state law. However, only half contain the 7 core elements required by the Joint Commission. Furthermore, ASP implementation and activities vary widely. While physician leadership was commonly defined, appropriate pharmacist support was frequently lacking. State-based collaboratives are the most widely used resource, and at least half who use them find them to be helpful.

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2098. Applying Antimicrobial Consumption Metrics to Characterize Inpatient Stewardship Opportunities

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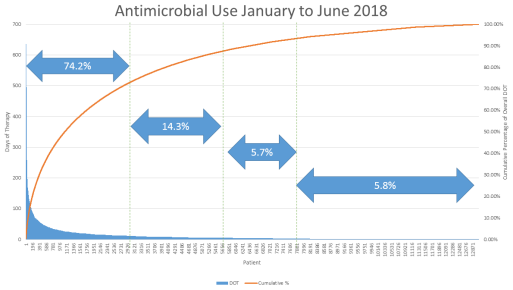
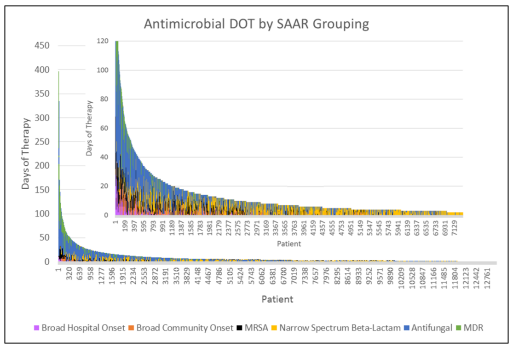
Background. The purpose of this study was to evaluate antimicrobial consumption metrics as a means for differentiating patient populations and antimicrobial stewardship (AMS) opportunities.

Methods. This single-center, retrospective, descriptive study included all patients from January 1, 2018 to June 30, 2018 that received ≥1 day of therapy (DOT) of any antimicrobial included in the National Healthcare Safety Network Antimicrobial Use and Resistance (NHSN AUR) module. The cohort was then grouped into 4 quartiles based on DOT (Q1 lowest; Q4 highest). The primary outcome was a Lorenz Curve of DOT per patient over the study period. Secondary outcomes included a comparison of patient characteristics and number/type of AMS-related opportunities present (using a randomized convenience sample of 25 patients per quartile). AMS opportunities were defined as any unnecessary, inappropriate, or suboptimal antimicrobial use with pharmacist intervention or potential for intervention occurring 24 hours after the antimicrobial initiation.

Results. During the 6 month study period, 24,743 patients accounted for 163,859 days present, and 13,039 (52%) received ≥ 1 DOT. After dividing the population into quartiles of antimicrobial use, median (range) DOT were as follows: Q1 [2 (1–2)], Q2 [4 (3–4)], Q3 [7 (5–10)], Q4 [20 (11–636)] (Figure 1). The top 24% of patients according to antimicrobial use accounted for 74% of total antimicrobial DOT. Patient-level DOT data are displayed by SAAR grouping in Figure 2. In the cohort of 100 patients, differences between quartiles included Infectious diseases consultation in 76% of patients in Q4 compared with 4–24% in other quartiles, ICU admission during hospitalization in 68% in Q4 compared with 28–40% in other quartiles, and any surgical procedure in 88% in Q1 compared with 48–60% in Q2–4. The number of AMS opportunities present were 4 (0.5/1000 DOT) in Q1, 13 (1.6/1000 DOT) in Q2, 28 (1.4/1000 DOT) in Q3, and 86 (0.8/1000 DOT) in Q4. The most common type of AMS opportunity differed by quartile: inappropriate prophylaxis for Q1-3, and de-escalation in Q4.

Conclusion. Evaluating antimicrobial consumption from a patient-level perspective at a large academic medical center reveals heterogeneity and variable AMS opportunities across quartiles





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2099. Use of Infectious Diseases Source-Specific Electronic Sepsis Order Sets is associated with Improved Survival in Sepsis: An Evaluation of 46 Hospitals in a Large Health Care System

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Background. Compliance with evidence-based treatment bundles in patients with sepsis can lead to improved survival in persons with sepsis or septic shock. A way to ensure the adoption of best practices is the early use standardized order sets based on suspected source of infection.

Methods. The patient population was built by connecting electronic health record (EHR) to administrative data. In the EHR, we identified patients who had a sepsis discharge diagnosis code based on the International Statistical Classification of Disease and Related Health Problems (ICD−10), from August 1, 2018 to February 28, 2019. We evaluated the empiric use of sepsis order sets and patient outcomes. We adjusted for age, gender, Elixhauser Comorbidity Score (ECS), intensive care unit (ICU) status, and admission type. For the analysis, we included patients age 18 and older from facilities where we were able to match greater than 70 percent of patients. Matching was done by facility on medical record number and discharge date.

Results. There were 26,604 patients included in the analysis. The overall mortality rate was 10.67% (n = 2,839). Mortality associated with sepsis in patients that had a sepsis order set used was 8.92% (791/8,872), while for those whom a sepsis order set was not used was 11.55% (2,048/17,732). When mortality data were adjusted for age, gender, ECS, ICU status, admission type and hospital size, the use of sepsis order sets was associated with an adjusted odds ratio of 0.793 (95% CI 0.722, 0.868). In addition, in all sepsis patients who had an ICU admission, the use of the sepsis order sets was associated with an adjusted odds ratio of 0.804 (95% CI 0.725, 0.890). Similarly, in all sepsis patients who did not have an ICU admission, the use of the sepsis order sets was associated with an adjusted odds ratio of 0.688 (95% CI 0.556, 0.847).

Conclusion. The use of the standardized sepsis order sets in patients with sepsis was associated with a 20.7% relative risk reduction in mortality. In conjunction with rapid recognition of sepsis, early initiation of the sepsis order sets may lead to improved mortality in patients with sepsis.

Figure 1: Sepsis Order Set Impact on Inpatient Mortality for Patients with Sepsis