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#### Session: 168. Stewardship: Improving Outcomes

*Friday, October 6, 2017: 12:30 PM*

**Background.** Inappropriate use of antimicrobials contributes to antimicrobial resistance, which increases hospital length of stay, mortality and health care costs. Antimicrobial Stewardship Programs (ASP) are coordinated quality-improvement efforts to promote the judicious and effective use of antimicrobials to optimize clinical outcomes while minimizing adverse effects. The present study was designed to determine the clinical improvement of patients with healthcare associated infections (HAI) using antimicrobial stewardship policies in Colombian acute care hospitals.

**Methods.** We conducted a quasi-experimental study between January 2007 and December 2014 in four acute care hospitals in two Colombian cities. The study variables were evaluated two years before and two years after ASP implementation. Adult patients with HAI episodes in intensive care units or general wards were included. Clinical and economic patient outcomes were compared between groups. Data was analyzed using descriptive and inferential statistics.

**Results.** Nine hundred patients with bacterial HAIs were hospitalized in four institutions. The cohort treated before the implementation of ASPs consisted of 471 patients. The cohort treated after ASP implementation consisted of 429 patients. The median age was 62; 70% of patients had at least one comorbidity. Urinary infection was the most common infection (28%), followed by bloodstream infections (26%). After the ASP was implemented, the rate of adherence to empiric treatment clinical guidelines increased from 9% to 45%, while the rate of de-escalating increased from 8% to 92%. Multivariate analysis showed that patients receiving treatment under ASP experienced 10 times clinical improvement compared with patients not treated under ASP. Septic shock after targeted therapy was observed as an independent risk for lack of clinical improvement. Compared with the pre-ASP cohort, the post-ASP cohort experienced a shorter length of stay (10.8 vs. 14 days) and lower total infection cost (\$3,307 USD vs. \$4,655 USD,  $P < 0.001$ ).

**Conclusion.** The use of ASPs results in substantial clinical improvement in patients and contributes to fewer infection complication, shorter length of stay, and decreased costs associated with treating patients.

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#### 1556. Outcomes of Bedside Nurse-Driven Interdisciplinary Antibiotic Stewardship and Infection Prevention Rounds

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**Background.** The bedside nurse is a frequently underutilized but potentially valuable contributor to antimicrobial stewardship. Minimal literature exists to demonstrate the impact of active intervention by bedside nurses in antimicrobial stewardship. We initiated bedside nurse-driven interdisciplinary rounds in a 31-bed inpatient telemetry unit of a community teaching hospital involving a pharmacist, infection preventionist and nurse practitioner. Rounds were focused on use of antibiotics, acid suppressants, urinary catheters and central venous catheters. Recommendations from rounds were communicated by the bedside nurse to the appropriate provider.

**Methods.** This was a prospective, observational pre- and post-intervention study (6 months in each cohort) to characterize the impact of bedside nurse-driven interdisciplinary rounds on use of antibiotics, acid suppressants, urinary catheters and central venous catheters in a telemetry unit.

**Results.** A total of 515 patient encounters occurred during rounds with 663 total therapies reviewed. Of these therapies 245 (37%) were antibiotics, 220 (33%) were acid suppressants, 159 (24%) were urinary catheters and 39 (6%) were central venous catheters. Mean monthly acid suppressant days of therapy per 1000 patient-days (DOT/1000PD) was significantly reduced in the pre- vs. post-intervention cohorts (592 vs. 375,  $P = 0.001$ ). Reductions in mean monthly antibiotic DOT/1000PD (2858 vs. 2668,  $P = 0.134$ ) and urinary catheter days (176 vs. 135,  $P = 0.087$ ) were observed but were not statistically significant. Central venous catheter days were similar in the pre- vs post-intervention cohorts (100 vs. 96,  $P = 0.657$ ).

**Conclusion.** Our data demonstrate that bedside nurses can contribute to antimicrobial stewardship and infection prevention outcomes when actively supported by a trained interdisciplinary team. Further study of strategies to engage bedside nurses in such activities is warranted.

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#### 1557. Vancomycin Safety Monitoring Using an Electronic Health Record Database

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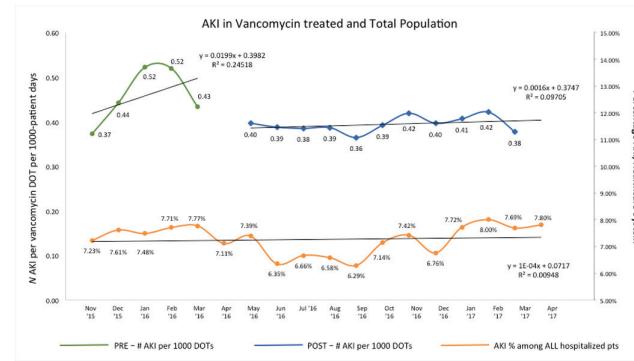
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**Background.** Measures of antimicrobial safety are important for antimicrobial stewardship programs (ASP) and health-system quality. Vancomycin (VAN) is a frequently used antibiotic in the inpatient setting, and its most common serious adverse effect, acute kidney injury (AKI), can be identified reliably from laboratory data within the electronic health record (EHR). Our ASP reviews monthly AKI in VAN-treated patients, excluding prior kidney disease, as a metric for harm. EHR-derived rates of AKI were selected as a metric for health system quality and safety reporting.

**Methods.** IRB-exempt cross-sectional study using aggregate data in a 4-hospital health system. We used interrupted time series methods to compare AKI before and after implementation of a simplified vancomycin dosing strategy: pre- 11/15 to 4/16, post- 5/16 to 4/17. Primary endpoint: number of patients per month with AKI, defined as an increase in serum creatinine of at least 0.5 mg/dL or 50% of baseline. Denominator: number of vancomycin days of therapy (DOT) per 1000-patient-days. Rate of AKI in the total hospitalized population was used for context.

**Results.** There were 10453 orders for vancomycin across the study period (3634 pre, 6819 post). The average rate of AKI in patients receiving vancomycin was 10.6% pre, 8.9% post, while AKI rate in the total hospitalized population was 7.26% across the study period. After implementation of simplified VAN dosing policy, AKI per VAN DOT/1000 patient-days decreased from 0.46 to 0.40 (Figure 1). The median (IQR) vancomycin levels were: 16.7 µg/mL (16.2–17.1) pre, 15.8 (15.3–16.6) post.

**Conclusion.** EHR-based measures of antibiotic-related harm are promising tool for ASPs to measure impact patient outcomes. We observed reduced AKI in VAN treated patients, improving safety with a simplified VAN dosing strategy.



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#### 1558. Efficacy and Safety of a Vancomycin (VAN) Dosing Protocol Developed for Morbidly Obese (MO) Patients

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**Background.** An optional VAN loading dose (LD) of 25–30 mg/kg (total body weight), followed by maintenance dose (MD) of 15–20 mg/kg intravenously (IV) Q8–12H is recommended for patients with normal renal function. Studies suggest MO patients may require lower mg/kg doses to achieve therapeutic trough concentrations (TTCs). Our institutional VAN dosing protocol for MO patients ( $BMI \geq 40 \text{ kg/m}^2$ ) was revised in 2015 to recommend: LD 25–30 mg/kg (max 3000 mg), MD 12.5–15 mg/kg (max 2000 mg) IV Q8–12H. We evaluated initial TTC attainment, clinical and safety endpoints post protocol revision.

**Methods.** MO adult patients who received IV VAN between June 1, 2012–May 31, 2013 (pre-protocol revision) and August 1, 2015–July 31, 2016 (post-protocol revision) were included. Perioperative VAN, one-time doses, pregnancy, cystic fibrosis, hemodialysis and patients receiving VAN prior to admission were excluded.

**Results.** A total of 615 patients were screened, with 200 included for analysis (100 per group). Baseline demographics and VAN dosing are shown in Table 1. Initial TCs were drawn for 86 patients in the pre-revision group, and for 69 patients in the post-revision group. Initial VAN TCs are displayed in Table 2. Duration of VAN therapy was significantly shorter post-revision (5 days vs. 2 days,  $p \leq 0.01$ ). Mortality (14% vs. 10%,  $P = 0.38$ ) and hospital length of stay (8.5 days vs. 7 days,  $p=0.09$ ) were comparable