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 ensure appropriate 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 a 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 ($33,307 USD vs. $46,655 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 Initial Post-Protocol Revision

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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. Rouns were focused 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. 176 vs. 135, P = 0.087) were observed (592 vs. 375, P = 0.001). Reductions in mean monthly antibiotic DOT/1000PD (2858 vs. 176 vs. 135, P = 0.087) were observed (592 vs. 375, P = 0.001). Reductions in mean monthly antibiotic DOT/1000PD (2858 vs. 176 vs. 135, P = 0.087) were observed (592 vs. 375, P = 0.001).

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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Background. Measures of antimicrobial safety are important for antimicrobial stewardship programs (ASP) as they help identify patients at risk for antimicrobial-related harm. We investigated vancomycin (VAN) use as a frequently used antibiotic in the inpatient setting and its 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 and 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 10,453 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 concentra tions (TTCs). Our institutional VAN dosing protocol for MO patient (BMI > 40 kg/m²) 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 = 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.
between groups. There was no difference in the incidence of VAN-associated nephrotoxicity (16% vs. 10%, \( P = 0.20 \)).

### Table 1. Baseline Demographics

|                      | Pre-Revision \((n = 100)\) | Post-Revision \((n = 100)\) | \( P \) Value |
|----------------------|-----------------------------|-----------------------------|--------------|
| Age, years           | 53.7 ± 13.7                 | 48.8 ± 15.6                 | 0.06         |
| Gender, male         | 21%                         | 17%                         | 0.47         |
| BMI, kg/m\(^2\)      | 44.5 (41.0–49.0)            | 45.5 (41.5–50.8)            | 0.33         |
| Frequency of LD      | 30%                         | 68%                         | <0.01        |
| Initial MD, mg/kg    | 15.0 (12.8–17.0)            | 14.0 (12.9–15.0)            | <0.01        |

### Table 2. Initial VAN TCs

|                      | Pre-Revision \((n = 86)\) | Post-Revision \((n = 69)\) | \( P \) Value |
|----------------------|-----------------------------|-----------------------------|--------------|
| Therapeutic          | 35%                         | 51%                         | 0.05         |
| TC, \( \mu \text{g/mL} \) | 171 (12.9 – 22.6)         | 174 (13.4 – 24.0)           | 0.57         |
| Subtherapeutic       | 34%                         | 19%                         | 0.04         |
| Supratherapeutic     | 31%                         | 30%                         | 0.90         |

**Conclusion.** The revised VAN dosing protocol for MO patients improved initial TTR attainment and decreased incidence of subtherapeutic TCS compared with current standard of care recommendations with no difference in clinical or safety outcomes.

**Disclosures.** All authors: No reported disclosures.

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1559. Balancing the Efficacy and Safety of Implementing a Piperacillin/tazobactam (PTZ) Antibiotic Time-out

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**Background.** The use of a 72-hour stop in the electronic medical system (EMS) for empiric PTZ orders. To mitigate the risk of orders inadvertently falling off, a dynamic scoring system was created in the EMS to alert pharmacists of expiring orders in real time. The primary objective of this study was to evaluate the duration of empiric PTZ prior to and after the implementation of the antibiotic time-out. Secondary outcomes included de-escalation, appropriateness of dosing, and safety.

**Methods.** A retrospective cohort study using the EMS was conducted. Cases were defined as adult inpatients who had empiric orders for PTZ without positive cultures. The control group consisted of patients from September to October of 2014, prior to the 72-hour stop. The intervention group included patients from September to October of 2016. Due to the nationwide shortage of PTZ in 2015, this year was excluded in addition to patients with culture documented infections, stem cell/solid organ transplants or febrile neutropenia. Data collected included baseline demographics, renal function, PTZ dose, frequency and duration, indication, and final antibiotic selection.

**Results.** The 537 random patients reviewed, 300 met inclusion criteria; 150 patients in the control group and 150 patients in the intervention group. The average duration of PTZ decreased from 4 days in the control group to 3 days in the intervention group (\( P = 0.003 \)). Overall antibiotic use decreased from 6 days in the control group to 5 days in the intervention group (\( P = 0.001 \)). There was an increase in the correct dose and frequency from 35% to 60% of orders in the intervention group compared with the control group (\( P = 0.004 \)). With the aid of the scoring system, there were no orders that fell of inappropriately in the intervention group.

**Conclusion.** Following the successful implementation of a 72-hour antibiotic timeout we saw a significant decrease in the duration of empiric use, inappropriate dosing and an increase in the rate of antibiotic de-escalation.

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1560. Safety of a Carbapenem Restriction Policy in Patients with Gram-Negative Bacteremia

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**Background.** The revised VANT dosing protocol for MO patients improved initial TTR attainment and decreased incidence of subtherapeutic TCS compared with current standard of care recommendations with no difference in clinical or safety outcomes.

**Methods.** A carbapenem restriction policy was implemented at the University of Washington Medical Center on 11/1/15. This policy required Infectious Disease consultation for meropenem and imipenem use beyond 72 hours (except for cystic fibrosis and neonatal patients). We conducted retrospective chart review on all inpatients with Gram-negative bacteremia and compared outcomes between the pre- and post-restriction periods. Medical records were reviewed for culture, antibiotic, APACHE score, and patient outcome data. Primary outcomes were (1) time from blood culture to effective antibiotic therapy and (2) number of drug-bug mismatches (DBM). Secondary outcomes included (1) inpatient mortality, (2) length of stay (LOS), (3) whether sepsis resulted in transfer to the intensive care unit (ICU), and (4) ICU LOS.

**Results.** There were 153 patients in the pre-restriction group and 163 in the post-restriction group. The mean time to effective antibiotic was 11.1 and 1.49 hours in the pre- and post-restriction groups, respectively (\( P = 0.13 \)), with median times of 2.8 and 3.3 hours. DBM occurred in 12% of cases before the restriction and 19% after (\( P = 0.11 \)). Hospital mortality rate was 16% pre-restriction and 17% post-restriction (\( P = 0.7 \)). ICU transfer due to sepsis occurred in 12% of cases pre-restriction and 17% post-restriction (\( P = 0.3 \)). There was a significantly longer mean LOS post-restriction (\( P = 0.04 \)). Among patients with ICU days >0, mean ICU LOS was 1.2 (95% CI: -1.6 to 4.3) days shorter before the restriction (\( P = 0.2 \)).

**Conclusion.** When carbapenem use was restricted, there was no statistically significant or clinically meaningful difference in time to effective antibiotic therapy, percent of DBM, hospital mortality, or ICU transfers. There was a statistically significant increase in mean LOS post-restriction in the adjusted analysis, which may not be clinically important. We conclude that carbapenem restriction may be safe, and we plan to continue this policy at our institution.

**Disclosures.** All authors: No reported disclosures.

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1561. Impact of an Antimicrobial Stewardship Bloodstream Surveillance Program (BSP) in Hospitalized Patients

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**Background.** Bloodstream infections (BSI) in hospitalized patients represent sentinel events characterized by increased mortality. These infections represent an attractive stewardship opportunity because they warrant rapid initiation of empiric antimicrobial therapy, and can result in a direct correlation to mortality. For this intervention, we adopted a priori code guidelines for BSI and began implementing a blood culture performance improvement initiative. We defined a positive blood culture as an infection associated with a positive culture, with or without antibiotics used for treatment.

**Methods.** Under a retrospective pre-post study design, a review of patient charts 18 months before and 18 months after initiation of a hospital BSP was carried out. Pre-intervention, the hospital ward and attending physician were notified of all positive blood cultures (standard of care). Post-intervention, an infectious disease pharmacist with an infectious disease consultant was notified in addition to standard notifications.

**Results.** 226 patients with BSI were identified prior to 195 patients post-intervention. The two cohorts were similar in baseline characteristics: the most common source of infection was the urinary tract (Figure 1). The most common blood stream isolates were \( E. coli \), \( S. aureus \), \( \beta \)-hemolytic streptococci and \( K. pneumoniae \) (Figure 2). 27.1% of infections were community acquired; 11.4% were polymicrobial. Empiric therapy was given in 82.6% of patients (16.3% non-susceptible). Directed therapy was given in 54.9% of patients (3.5% non-susceptible). The post-intervention cohort received directed therapy on average 4.36 hours earlier (\( P = 0.003 \)), were more likely to receive adequate definitive therapy (99.9% post vs. 79.1% pre, \( P < 0.001 \)) and were stepped down to oral therapy earlier (6 days vs. 8 days). Prescription of second generation cephalosporins (0.0% vs. 4.3%, \( P = 0.05 \)), quinolones (167.6% vs. 32.7%, \( P = 0.005 \)), dexamycin (2.6% vs. 10.3%, \( P = 0.03 \)) and aminoglycosides (6.1% vs. 14.6%, \( P = 0.05 \)) were decreased.

**Conclusion.** A hospital BSP can improve time to first dose of parenteral antimicrobial directed therapy and adequacy of definitive therapy, shorter time from IV to oral step-down and reduce prescription of targeted antimicrobial classes. A BSP can be an effective stewardship strategy in hospitalized patients.