was evaluated using ATP bioluminescence assays, fluorescent ultraviolet (UV) markers, and quantitative bacterial surface cultures. For flat surfaces (eg, tables, incubators, trolleys), a 10×10-cm template was used to standardize the swab inoculum; for small equipment and devices with complex surfaces (eg, humidifiers, suction apparatus, stethoscopes), a standard swabbing protocol was developed for each item. Swabs in liquid transport medium were processed in the laboratory by vortexing for 30 seconds, plating onto blood and MacConkey agars, and incubating at 37°C for 48 hours. Manual counting of bacterial colony forming units was performed, followed by conventional biochemical testing and/or VITEK automated identification. **Results:** Of 100 swabs (58 from surfaces and 42 from equipment), 11 yielded growth of known neonatal pathogens (Enterobacteriaceae, *A. baumannii*, *P. aeruginosa*, *S. aureus*, *S. agalactiae*, and enterococci), 36 isolated potential neonatal pathogens (mostly coagulase-negative staphylococci). In addition, 4 grew environmental organisms and 49 showed no growth. The highest aerobic colony counts (ACCs) were obtained from swabs of suction tubing, milk kitchen surfaces, humidifiers, and sinks; the median ACC from swabs with any bacterial growth (n = 51) was 3 (IQR, 1–22). Only 40% of the 100 surface and equipment swabs had ATP values <200 relative light units (RLU) threshold for cleanliness. Median ATP values were 301 (IQ range, 179–732) RLUs for surface swabs versus 230 (IQ range, 78–699) RLUs for equipment swabs (P = .233). Of the 100 fluorescent UV markers placed on near-patient surfaces and high-touch equipment, only 23% had been removed after 2 staff shift changes (24 hours later). Surfaces had a higher proportion of UV marker removal than equipment (19 of 58 [32.8%] vs 4 of 42 [9.5%]; P = .008). **Conclusions:** Environmental cleaning of this neonatal ward was suboptimal, especially for equipment. Improvement of environmental cleaning practices is an important intervention for neonatal infection prevention in resource-limited settings. Future studies should evaluate the impact of staff training, environmental cleaning tools and repeated audit with feedback, on the adequacy of cleaning in neonatal wards.

Funding: Funding: for the laboratory work was provided by The Society for Healthcare Epidemiology of America (SHEA) International Ambassador Alumni Research Award and a South African Medical Research Council Self-initiated Research (SIR) Grant to Angela Dramowski, who is supported by a NIH Fogarty Emerging Global Leader Award K43 TW010682.

Disclosures: None

Doi:10.1017/ice.2020.533

Presentation Type:

Oral Presentation

Significant Regional Differences in Antibiotic Use Across 576 US Hospitals and 11,701,326 Million Admissions, 2016–2017

Katherine Goodman, University of Maryland School of Medicine; Sara Cosgrove, Johns Hopkins University School of Medicine; Lisa Pineles, University of Maryland School of Medicine; Laurence Magder, University of Maryland School of Medicine; Deverick John Anderson, Duke University Medical Center; Elizabeth Dodds Ashley, Duke University; Ronald Polk, Virginia Commonwealth University; Hude Quan, University of Calgary, Department of Community Health Sciences; William Trick, Cook County Health & Hospitals System; Keith Woeltje, Washington University School of Medicine; Surbhi Leekha, University of Maryland Baltimore; Anthony Harris, University of Maryland School of Medicine

Background: Reducing inappropriate antibiotic use is critical for fighting antibiotic resistance. Quantifying the amount and diversity of antibiotic use in US hospitals is foundational to these efforts but hampered by limited national surveillance. The current study aims to address this knowledge gap by examining adult inpatient antibiotic usage, including regional, facility, and case-mix differences, across 576 hospitals and nearly 12 million encounters in 2016–2017. **Methods:** We conducted a retrospective cohort study of patients aged ≥18 years discharged from hospitals in the Premier Healthcare Database, a repository of nearly 1 of every 4 annual US hospitalizations, between January 1, 2016, and December 31, 2017. Detailed hospital- and patient-level data were extracted for each admission. Facilities were classified geographically by census division. Using daily antibiotic charge data, we mapped antibiotics to 18 mutually exclusive classes and to categories based upon spectrum of activity. Patient-level data were transformed into hospital case-mix variables (eg, hospital mean patient age), and relationships between antibiotic days of therapy (DOTs), and these and other facility-level variables were evaluated in negative binomial regression models. **Results:** The study included 11,701,326 adult admissions, totaling 64,064,632 patient days across 576 US hospitals. Overall, antibiotics were used in 65% of all hospitalizations, at a rate of 870 DOTs per 1,000 patient days. The most commonly used classes per patient days were

β-lactam/β-lactamase inhibitor combinations (206 DOTs), third- and fourth-generation cephalosporins (128 DOTs), and glycopeptides (113 DOTs) (Fig. 1). By spectrum of activity, antipseudomonal agents (245 DOTs) were the most common. Crude usage rates varied by geographic region (Fig. 2). In multivariable analyses, teaching hospitals, and/or larger bed sizes were independently associated with lower use across a range of antibiotic classes (adjusted IRR ranges, 0.90–0.94 and 0.96–0.98, respectively). Significant regional differences also persisted. Compared to the South Atlantic region (chosen as the reference category because it had the largest representation in the cohort), rates of total antibiotic use were 6%, 15%, and 18% lower on average in the Pacific, New England, and the Middle Atlantic regions, respectively. By class, carbapenems reflected the most geographic variability. **Conclusions:** In a large, diverse cohort of US hospitals, adult inpatients received antibiotics at a rate similar to, but higher than, previously published estimates. In adjusted models, lower antibiotic

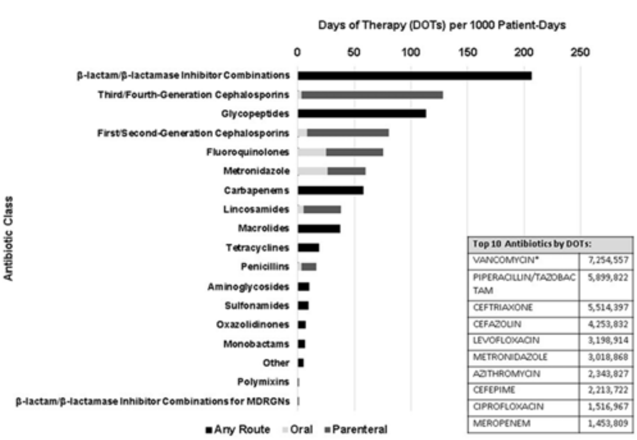


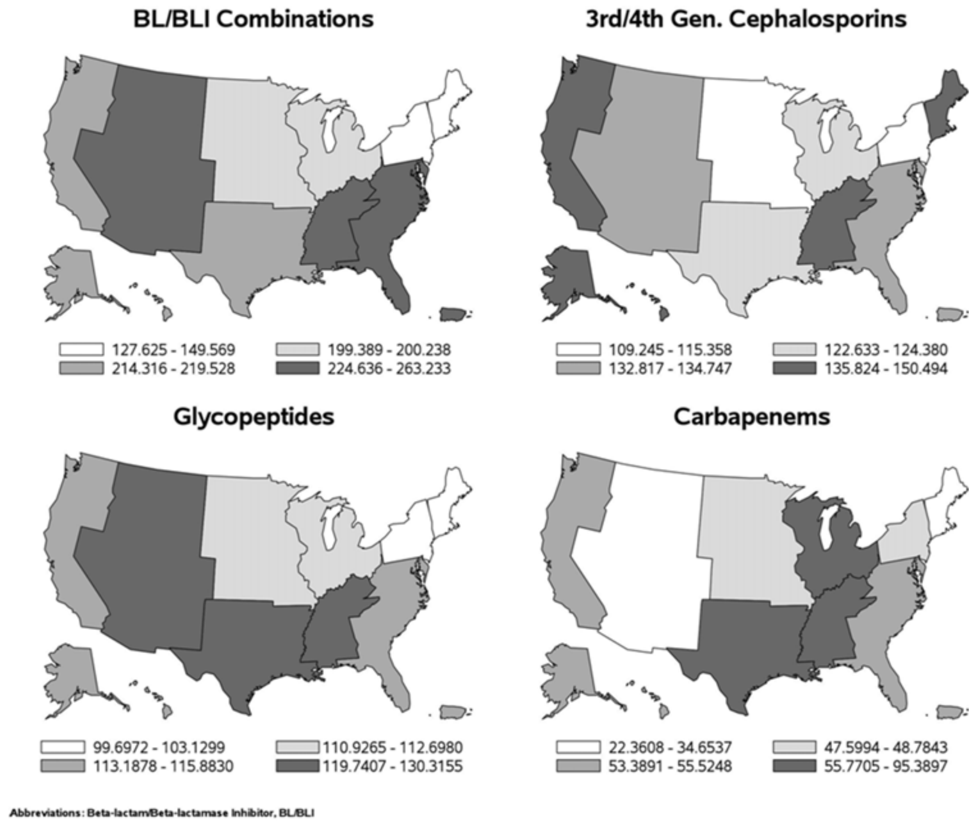
Figure 1. Inpatient Antibiotic Days of Therapy (DOTs) per 1000 Patient-Days, by Antibiotic Class and Administration Route for Selected Agents

Abbreviations: Multidrug-resistant Gram-Negative Organisms, MDRGNs.

*Vancomycin routes of administration, by DOT: Parenteral = 6,555,702; Oral = 627,706; Miscellaneous = 71,149.

Fig. 1.

https://doi.org/10.1017/ice.2020.534 Published online by Cambridge University Press



use was frequently associated with facilities likely to have robust antibiotic stewardship programs—those with teaching status and larger bed size. Further research to understand other reasons for regional differences in antibiotic use such as different rates of resistance is needed.

Funding: This work was supported by Funding: from the Agency for Healthcare Research and Quality (AHRQ) (R01-HS026205 to A.D.H.).

Disclosures: None

Doi:10.1017/ice.2020.534

Presentation Type:

Oral Presentation

Surgical Antibiotic Prophylaxis in Hysterectomy: Is Cefazolin Still the Best?

Alyssa Valentyne, University of Wisconsin School of Medicine and Public Health; Fauzia Osman, University of Wisconsin School of Medicine and Public Health, Department of Medicine; Ahmed Al-Niaimi, University of Wisconsin School of Medicine and Public Health Nasia Safdar, University of Wisconsin, Madison; Aurora Pop-Vicas, University of Wisconsin School of Medicine and Public Health

Background: Prior studies suggest that cefazolin, widely used for antibiotic prophylaxis in hysterectomy, might not prevent surgical site infections (SSIs) as well as antibiotics with a broader antianaerobic antimicrobial spectrum. We compared the effectiveness of cefazolin versus antibiotic regimens with a broader antimicrobial spectrum in a ≥500-bed regional referral center. **Methods:** Study design: retrospective cohort. Population and setting: patients ≥18 years old who underwent hysterectomy between 1998 and 2018 at the University of Wisconsin Hospital. Analysis: propensity score matching with a caliper of 0.2 to select controls for cefazolin treatment, matching on: age, body mass index (BMI), diabetes, length of stay, duration of surgery, and preoperative renal function. We conducted a crude SSI incidence analysis and adjusted for additional covariates (malignancy, intraoperative temperature, and preoperative glucose level) using a Cox proportional hazards model. All analyses were conducted using STATA SE v15 software. **Results:** We had 4,087 hysterectomy patients, with 123 SSIs (3%). Among these SSIs, 46%, 11%, and 42% were superficial, deep, and organ-space, respectively. Malignancies were present in 83% of SSI patients, with 30% being ovarian cancer. Risk factors for SSI in the unmatched sample multivariable analysis (MV) were length of stay (aHR, 1.1; 95% CI, 1.05–1.1; $P < .001$), duration of surgery (aHR, 1.2; 95% CI, 1.1–1.32; $P < .001$), and BMI (aHR, 1.04; 95% CI, 1.02–1.06; $P < .001$). After propensity matching, 2,282 hysterectomies remained. In the crude incidence analysis, cefazolin (IR, 6.0) had a protective SSI effect compared to cefoxitin (IR, 7.1), ciprofloxacin/metronidazole (IR, 27.2), clindamycin/gentamicin (IR, 14.1), any antianaerobic regimen (IR, 8.0), and regimens not guideline recommended (IR, 11.7). In our MV analyses of cefazolin versus comparator antibiotic regimens, we found that hypothermia was consistently associated with a higher SSI risk ($P \leq .03$). Receipt of a β-lactam antibiotic regimen was associated with a significantly lower SSI risk (aHR, 0.31; 95% CI, 0.11–0.89, $P = .03$), but cefazolin's protective SSI effect was no longer statistically significant. **Conclusions:** We found that cefazolin had a lower SSI risk compared to other antibiotic regimens, including those with better antianaerobic spectrum, in our tertiary-care hospital's 11-year high-risk cohort. Our analysis suggests that maintaining intraoperative normothermia and administering β-lactam antibiotic prophylaxis are important modifiable risk factors for SSI prevention.

https://doi.org/10.1017/ice.2020.534 Published online by Cambridge University Press