Background. Continuous infusion ceftazolin (CI) has been investigated as a means to optimize antibiotic exposure for prophylaxis against SSI, notably in patients undergoing cardiac procedures involving cardiac bypass (CPB). However, data are limited on its impact on late SSIs and adverse events. In 6/16, the Duke University Hospital (D-UH) Antimicrobial Stewardship Team implemented a program to promote CI. We compared the incidence of culture-confirmed SSIs through postoperative hospital day 90 (POD90) between patients receiving either intermittent infusion ceftazolin (INT) or CI intraoperatively. We also compared the rate of acute kidney injury (AKI) among these groups.

Methods. This retrospective quasi-experimental design included adult and pediatric patients undergoing cardiac surgery at D-UH between March 2014 and August 2018 and receiving intraoperative ceftazolin (alone or in combination with other antibiotics). Patients were categorized as CI (having received at least 1 intraoperative CI infusion) or INT. Confirmed SSIs utilizing NHISN definitions were recorded, and a relative risk (RR) determined. AKI was defined as a ≥0.3 mg/dL rise in serum creatinine within 2 days postoperatively.

Results. A total of 2,172 unique surgical procedures (from 2,143 unique patients) were included. Comparisons of groups are summarized in Table 1. Rates of SSIs were 1.1% and 1.6% in the CI and INT groups, respectively (RR [95% confidence interval] for CI 0.73, [0.35, 1.52]). AKI was reported in 12.9% and 17.4% of patients, respectively. We were unable to detect a difference in late SSIs between intraoperative CI and INT ceftazolin. Differences observed between AKI between groups requires further investigation, but likely impacted by confounders, including pre-existing renal dysfunction.

Conclusion. To determine the AKI incidence associated with intraoperative topical V A N. Total topical vancomycin dose and concomitant systemic was 5.3%.

increased odds of developing AKI (OR = 1.42, [1.08–1.86]). The incidence of SSI and total topical V A N dose. Each doubling of the topical dose was associated with

was 5.3%.

1244. Evaluation of Intraoperative Topical Vancomycin and the Incidence of Acute Kidney Injury

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Background. The use of intraoperative topical vancomycin (V A N) is a strategy aimed to prevent surgical site infections (SSI). Although there is evidence to support its efficacy in SSI prevention following orthopedic spine surgeries, data describing its safety, specifically acute kidney injury (AKI) risk, is limited. The purpose of this study was to determine the incidence of AKI associated with intraoperative topical V A N.

Methods. This is a retrospective cohort study reviewing patient encounters where intraoperative topical V A N was administered from February 2018 to July 2018. All adult patients (≥21 years) that received topical V A N in the form of powder, beads, rods, paste, cement spacers, or unspecified topical routes were included. Patient encounters were excluded for AKI or renal replacement therapy (RRT) at baseline, ≤90 (POD90) between patients receiving either intermittent infusion ceftazolin (INT) or CI intraoperatively. We also compared the rate of acute kidney injury (AKI) among these groups.

Results. A total of 2,172 unique surgical procedures (from 2,143 unique patients) were included. Comparisons of groups are summarized in Table 1. Rates of SSIs were 1.1% and 1.6% in the CI and INT groups, respectively (RR [95% confidence interval] for CI 0.73, [0.35, 1.52]). AKI was reported in 12.9% and 17.4% of patients, respectively. We were unable to detect a difference in late SSIs between intraoperative CI and INT ceftazolin. Differences observed between AKI between groups requires further investigation, but likely impacted by confounders, including pre-existing renal dysfunction.

Conclusion. To determine the AKI incidence associated with intraoperative topical V A N. Total topical vancomycin dose and concomitant systemic was 5.3%.

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increased odds of developing AKI (OR = 1.42, [1.08–1.86]). The incidence of SSI and total topical V A N dose. Each doubling of the topical dose was associated with

was 5.3%.

1245. Does Complexity of Infection Prevention Bundles Matter in Colorectal Surgery? A Systematic Review and Meta-Analysis

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Background. Surgical site infection (SSI) prevention bundles in colorectal surgery are common. The optimal bundle composition and impact of increasingly complex and resource-intensive bundled interventions on SSI remain unclear.

Methods. (1) A systematic review and meta-analysis of randomized and observational trials with post-implement development data for colorectal SSI prevention bundles to study their effect on superficial, deep, and organ-space SSI. (2) A meta-regression to determine whether the bundle size (number of different bundle elements) affects SSI. (3) A correlation analysis to identify individual bundle elements with greatest SSI reduction. We used the METAN, METAPE, and METAREG packages in STATA SE 15 for analysis.

Results. We included 38 studies in the systematic review, and 29 studies (49,589 patients) in the meta-analysis. Bundle composition was highly variable, ranging from 3 – 13 guideline-recommended elements per bundle. Meta-analyses showed bundles to be associated with relative risk reductions of 43% for any SSI (RR 0.57 [95% CI 0.48–0.67]; 44% for superficial SSI (RR 0.56 [95% CI 0.42–0.75]; 33% for deep SSI (RR 0.67 [95% CI 0.45–0.98), and 37% for organ/space SSI (RR 0.63 [95% CI 0.49 – 0.81]). On meta-regression, bundle size, especially 2 elements, was significantly associated with SSI reduction for any SSI (P = 0.04) and for superficial SSI (P = 0.005). Individual bundle elements correlated with strongest SSI reductions were mechanical bowel prep combined with oral antibiotics (R = −0.68, P = 0.0028) and pre-operative colonoscopy (R = 0.49, P = 0.04) for organ/space SSI. Protocol inclusion of separate instrument trays and glove ≥ gown change prior to surgical wound closure (R = −0.55, P = 0.009), and standardized postoperative wound dressing change at 48 hours (R = −0.30, P = 0.005) correlated with highest superficial SSI reductions.

Conclusion. Complex colorectal bundles with ≥10 clinical guideline-recommended prevention elements are associated with higher reductions in any SSI and in superficial SSI. Further research should evaluate how complex SSI prevention colorectal bundles can be implemented and sustained with high fidelity in the clinical setting in a cost-effective manner.

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1246. Outcomes of Extended Spectrum β-Lactamases Producing Enterobacteriaceae Colonization among Patients Underwent Abdominal Surgery

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Background. To evaluate the outcomes of surgical patients colonized with extended-spectrum β-lactamases (ESBL) producing enterobacteriaceae (EN).

Methods. A prospective cohort study was performed from February 1, 2016 to April 30, 2019. All patients who underwent abdominal surgical procedures were included. Enrolled surgical patients were screened for ESBL EN colonization by rectal swab culture 1 day before and 5 days after surgery. Data collection included clinical characteristics, risk of SSls, previous hospitalization, and type of surgical procedure, antibiotic prophylaxis and duration, ASA risk class, and 28-day postoperative outcomes, inclusive of SSls and associated microbiological data.

Results. Among 360 prospectively enrolled patients, 204 (56%) were male; the abdominal surgical types included 234 (65%) clean-contaminated, 90 (25%) contaminated, and 36 (10%) dirty cases. Pre-op,129 patients (36%) had ESBL EN colonization. Surgical prophylaxis included second generation cephalosporins (N = 224, 62%), third-generation cephalosporins (N = 92, 25%), and carbapenems (N = 44, 12%). Post-operative SSls were identified in 51 patients (14.1%) [superficial SSls (N = 41) and intra-abdominal SSls (N = 10)] by Multivariate analysis, ESBL EN colonization (aOR = 2.4; 95% CI = 1.19–19.91) and dirty abdominal wound classification (aOR = 3.6; 95% CI = 1.94–16.99) were independent risk factors for SSls. Culture detection of SSI pathogens differed for superficial vs. intra-abdominal SSls. Pathogens associated with superficial SSls included Staphylococcus aureus (10/41, 24%), Streptococcus anginosus (4/41, 12%), Pseudomonas aeruginosa (4/41, 15%) and non-ESBL EN (16/41, 39%). In contrast, all 10 cases of intra-abdominal SSls were attributed to ESBL EN.

Conclusion. Enteric colonization with ESBL EN was an independent predictor of intra-abdominal SSls during abdominal surgery. Carbapenems were associated with a variety of non-ESBL pathogens. Our study supports the need for awareness of the SSI risks associated with ESBL EN. Additionally, the findings support current surgical prophylactic guideline for the use of non-carbenemam among ESBL EN colonizer undergoing abdominal surgery.

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