time at 22:57 followed by a 16 minute dry time. This process was initially intended for a single instrument (e.g., a one of a kind item that may have been dropped during the surgical procedure). Although efforts to minimize flash sterilization at our institution have been successful (we saw only 11 instances in February 2018), immediate-use sterilization remains common in some operating rooms (OR).

Methods. We conducted a prospective 30-day study in our sterile processing department (SPD) of the causes of surgical tray errors, which resulted in need for immediate-use sterilization in the OR. Mistakes were categorized as tray assembly errors, sterilization mistakes, and cart or other errors.

Results. Over 3,174 trays were processed in our SPD department for a total of 1,868 surgical procedures. During this time a total of 86 errors were identified: 38 assembly errors (e.g., 10 trays with missing or incorrect instruments and 10 trays with improper filter placement); 30 sterilization errors (17 documentation errors; 10 case cart mistakes (four missing trays); and eight mistakes categorized as other.

Conclusion. We have identified two key opportunities for improvement in tray assembly in our SPD to decrease the need for immediate-use sterilization. Recognition of the causes of surgical tray defects can help identify opportunities to decrease errors that result in need for immediate-use sterilization.

Disclosures. All authors: No reported disclosures.

2143. Incidence of Infection in Patients Receiving Short vs. Long Duration of Antimicrobial Prophylaxis in Neurosurgery

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Session: 235. Healthcare Epidemiology: Surgical Site Infections
Saturday, October 6, 2018: 12:30 PM

Background. Surgical site infections in neurosurgery occur in up to 10% of procedures. The American Society of Health-System Pharmacists guidelines promote antimicrobial prophylaxis (AP) for up to 24 hours from neurosurgery using cefazolin while the National Neurocritical Care Society guidelines promote single pre-procedural dose of AP for atraumatic drain (EVD) monitoring. Despite these guidelines, practice variation exists with often longer antimicrobial exposure and subsequent complications.

Methods. This retrospective study included patients admitted to Baylor University Medical Center from January 1, 2014 to September 20, 2017 and underwent cranial or spinal neurosurgery requiring AP. This study excluded patients with basilar skull fracture, presence of cerebrospinal fluid leak, penetrating trauma, meningitis, and patients receiving antibiotics for documented or suspected infection unrelated to neurosurgery. Patients who received AP for greater than 24H (short course) were compared with patients who received AP for greater than 24H (long course) at 90 days. Data were analyzed using the Fisher exact test, Student's t-test and Wilcoxon rank-sum tests as applicable.

Results. A total of 183 patients were included with 90 and 93 patients receiving short or long courses of AP, respectively. Baseline characteristics were similar for the groups. Patients in the short course AP group received a mean antibiotic duration of 16.9 ± 4.3H while those in the long course AP group received 72.2 ± 50.9H (P < 0.001). The mean number of antimicrobials prescribed was 1.1 vs. 1.8 (P < 0.001) in the short vs. long groups, respectively. At 90 days, there were no significant differences in the rate of surgical site infections (1.1% vs. 2.1%, P = 0.099), development of multi-resistant infections (2.2% vs. 2.2%, P = 0.99), and Clostridium difficile infection (0% vs. 1%, P = 0.99) in the short vs. long groups, respectively.

Conclusion. The rate of surgical site infections was not significantly different in patients who received short vs. long durations of antimicrobial prophylaxis. These results highlight an opportunity to improve antibiotic use and promote principles of antimicrobial stewardship in neurosurgery.

Disclosures. All authors: No reported disclosures.

2144. Vital Signs Are Vital in Identifying High-Risk Postoperative Patients

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Session: 235. Healthcare Epidemiology: Surgical Site Infections
Saturday, October 6, 2018: 12:30 PM

Background. Changes in vital signs are frequently the first sign to point to pathology in the postoperative setting. There is no prediction model that exists that evaluates risk of postoperative complications in real-time. We are interested in understanding if we are able to risk stratify patients after surgery using novel predictors, trajectories of the various vital signs, and evaluating their ability to risk stratify their patients.

Methods. We reviewed patients who underwent pancreaticectomy at an academic health system from January 2015 to February 2018. Postoperative complications were abstracted using definitions set by the National Surgical Quality Improvement Program (NSQIP) and vital signs, including pain score, were extracted from the Data Warehouse. Group-based trajectory modeling, a technique used to identify distinct clusters of patients with similar trajectories, was used to group patients with similar temperature, heart rate, blood pressure and pain scores. Postoperative complications were tabulated for each risk group and chi-square test was used to compare categorical variables.

Results. A total of 195 patients with pancreatocectomy were evaluated and the rate of NSQIP complications was 35.4%. Pancreatocectomy patients clustered into two distinct clusters for temperature, heart rate, systolic blood pressure and pain score. All four of these vital signs were able to stratify infectious and inflammatory complications between low- and high-risk groups but only systolic blood pressure was significant in stratifying readmission risk and heart rate and pain score for stratifying sepsis risk (Table 1).

Conclusion. Trends of vital signs may be important predictors of complications. Some vital signs may be better at predicting distinct complications. More work is required to understand if different covariates within trajectory analysis can be combined to further enhance risk stratification for any and specific postoperative complications.

Table 1: Rates of Complications by Trajectory Analysis

| Variable       | Temperature high | Temperature low | HR high | HR low | SBP high | SBP low | Pain score high | Pain score low |
|----------------|-----------------|-----------------|---------|--------|----------|---------|----------------|---------------|
| Rate of Complication % | 27.0*          | 41.9*          | 25.7*   | 15.7*  | 23.0*    | 41.2*   | 27.0*          | 41.2*         |
| Sepsis %          | 14.8            | 16.2            | 13.8    | 17.5   | 9.2*     | 20.8*   | 15.7           | 14.9          |

* Significant at P < 0.05

Disclosures. All authors: No reported disclosures.

2145. Etiology, Incidence and Risk Factors for Meningitis after Craniotomy

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Session: 235. Healthcare Epidemiology: Surgical Site Infections
Saturday, October 6, 2018: 1:30 PM

Background. Meningitis after craniotomy can be devastating. The objective of our study is to answer four questions: (a) what is the risk of meningitis after craniotomy? (b) what are the main microorganisms causing meningitis after craniotomy? (c) what is the impact of meningitis in the hospital length of stay and mortality? (d) what are risk factors for meningitis after craniotomy?

Methods. Surveillance data based on NHSN/CDC protocols were collected between 2013 and 2017 from nine hospitals at Belo Horizonte, Brazil. Outcome: meningitis, hospital death and total length of hospital stay. Twenty-three independent variables were analyzed using Epi Info and applying statistical two-tailed test hypothesis with significance level of 5%.

Results. A sample of 4,549 patients submitted to craniotomy was analyzed: risk of meningitis = 1.9% (IC 95% = 1.6%; 2.4%). Mortality rate in patients without infection was 9% rising to 33% in infected patients (P < 0.01). Hospital length of stay in non-infected patients (days): mean = 18, median = 7, std. dev. = 36. Hospital stay in infected patients: mean = 56, median = 37, std. dev. = 63 (P < 0.001). The duration of procedure was the main risk factor for meningitis: 1.5% risk of meningitis in surgery less than or equal to 4 hours vs. 2.5% if the duration of procedure was more than 4 hours (relative risk = 1.7; P = 0.041). From 88 meningitis, in 68 (77%) the etiologic agent was identified: Klebsiella pneumoniae (29%), Staphylococcus aureus (16%), Acinetobacter baumannii (13%), Pseudomonas aeruginosa (9%), Staphylococcus sp. (8%), Acinetobacter sp. (7%), Staphylococcus epidermidis (5%), and other (2%).

Conclusion. The study showed how much meningitis is devastating, rising the death risk and length of hospital stay.

Disclosures. All authors: No reported disclosures.

2146. Efficacy and Patterns of Antimicrobial Prophylaxis for Gastroshunt Wound Infection in a South African Hospital Setting: a Prospective Study Using Propensity Score-Based Analyses

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Poster Abstracts • OFID 2018:5 (Suppl 1) • S631