

Session: P-42. HAI: Surgical Site Infections

**Background.** Beta-lactam allergies (BLA) are common, but the prevalence and impact on solid organ transplant (SOT) recipients is largely unknown. We assessed the prevalence of BLA labels in SOT recipients at the time of transplant and evaluated their influence on surgical site infection (SSI) prophylaxis and SSI incidence.

**Methods.** All patients undergoing first heart, kidney, liver SOT at our institution were retrospectively reviewed (1/1/2015-12/31/2019). Antibiotic allergies, surgical antibiotic prophylaxis, and SSIs were abstracted from the electronic medical record. Reported BLA reactions were classified as potentially IgE-mediated, delayed, or non-allergic based on documentation. SSIs were reported according to NHSN definitions, and the incidence of SSI was compared between patients with and without reported BLA. SSI prophylaxis regimens were compared to institutional guidelines. Basic descriptive statistics were performed.

**Results.** Out of a total cohort of 751 patients (122 heart, 435 kidney, 209 liver, 4 multi-organ), 129 (17%) reported at least one BLA, with 104 (15%) with reactions to penicillins, 26 (3%) to cephalosporins, and 1 (0.1%) to carbapenems. Commonly reported reactions were rash (38%), hives (25%), and "other" (21%); 28% of documented reactions were not documented or classified as non-allergic. SSI developed in 7 (6.1%) of heart, 10 (2.5%) of kidney, and 16 (9.4%) of liver transplant recipients. Excluding 44 patients already on antibiotics for treatment of systemic infection, guideline concordant beta-lactam antibiotic surgical prophylaxis was administered to 6 (5.2%) of BLA group vs 490 (85.8%) in the non-BLA group ( $p < 0.01$ ); among the BLA group who did not receive a beta-lactam, 96 (83%) received a regimen concordant with institutional guidelines for penicillin allergy and 14 (12%) received guideline non-adherent regimens. Patients reporting BLA did not have a higher incidence of SSIs compared to those without BLA: 6 (4.8%) vs 27 (4.5%) respectively,  $p=0.86$ .

**Conclusion.** BLA prevalence in our SOT population was similar to previously reported rates, but many reported reactions were not allergic in nature. Pre-transplant allergy evaluation for patients with reported BLA may improve SSI antibiotic prophylaxis compliance.

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### 885. Feasibility of Observing Traffic Patterns (FOOT Patter) in Veterans Health Administration Operating Rooms

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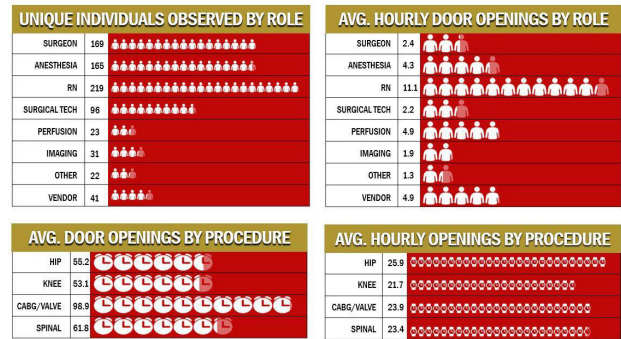
**Background.** Surgical site infections (SSIs) complicate nearly 6% of surgeries performed in Veterans Health Administration (VA) hospitals and occur despite adoption of practices known to reduce them. SSIs are associated with prolonged hospitalization and an increased risk of readmission, reoperation and mortality. Operating room (OR) door openings may increase SSI through disruption of desired OR air flow patterns and increased wound microbe counts. Our study objectives were to: 1) develop a methodological approach for collecting data on entry/exit traffic patterns in VA ORs and 2) characterize patterns across different surgery types.

**Methods.** Trained researchers from 10 VA-Centers for Disease Control and Prevention (CDC) Practice-based Research Network sites observed staff entering and exiting VA ORs. Staff were categorized and identified by role. Exits/entries were recorded on a standardized tracking sheet. Surgery type and observation duration from incision to closure were noted. Mean hourly door openings across procedure and role types were compared via a one-way ANOVA using Stata ver. 15.0.

**Results.** We observed 56 surgeries on 55 patients (Fig. 1). During 9,801 observation minutes, 766 staff opened doors 3,882 times. Door openings by role differed significantly ( $p < 0.001$ ) with nurses, perfusionists, anesthesia and vendors having the highest mean door-opening rate. Coronary artery bypass grafts (CABGs) accounted for most door openings and significantly greater surgical duration than other procedures

( $p=0.012$ ). Time-adjusted OR door opening rate was similar across procedure types at ~22-26 hourly openings ( $p=0.186$ ).

Figure 1. FOOT Patter results



**Conclusion.** The hourly rate of door openings varied notably by staff role. Our data show that measurement of OR movements is feasible although gaining access and approval to observe, achieving ideal observer positioning in complex floor plans, and potential misidentification of entering/exiting staff are challenges of direct methods. Scaling this study up may require automated processes. Studies exploring influences of traffic patterns on OR air quality metrics and impact on risk of SSI, identifying rationale and necessity for door openings and effective strategies for reducing unneeded door openings are needed.

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### 886. Impact of Type of Surgical Management on the Incidence of Recurrent Surgical Site Infections Following Hip and Knee Replacements in Calgary, Alberta

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**Background.** Recurrent surgical site infections (SSIs) are associated with decreased quality of life for patients and increased economic burden to healthcare systems. Positive cultures at reimplantation and patient co-morbidities have been shown to increase the risk of recurrent SSI in hip and knee surgical site infections. Two-stage exchange has been considered for the most appropriate surgical management for these SSIs, however, it is unclear whether the type of revision arthroplasty and pathogen of the first SSI impacts recurrence rates.

**Methods.** A retrospective review of prospectively collected data on all complex SSIs following primary hip and knee arthroplasties between April 1 2012 and March 31, 2019, in Calgary, Alberta was performed. Patients were followed for two years post-index arthroplasty to determine initial management of first complex SSI (Debridement, antibiotics and implant retention (DAIR) vs DAIR+liner exchange vs one-stage vs two-stage), rate of recurrent complex SSI, and microbiological data for first and subsequent SSIs.

**Results.** Of the 142 complex SSIs, 95 (66.9%) were managed with DAIR and liner exchange, 25 (17.6%) were managed with DAIR, 13 (9.1%) with one-stage and 8 (5.6%) with two-stage procedures. The recurrence rate was 19/95 (20%) for DAIR and liner, 8/25 (32%) for DAIR alone, 2/13 (15%) with one stage, and 3/8 (37.5%) with two-stage. There was no significant difference in recurrence rates of complex SSI when stratified by surgical management. Of the pathogens, *Staphylococcus aureus* (*S.aureus*) (including methicillin-resistant *S. aureus* (MRSA)) accounted for 35.2% of total first SSI and 50% of recurrences. A significantly higher proportion of *S.aureus* infections (including MRSA) ended up with a recurrent infection compared to all other pathogens ( $p=0.045$ ). Of the 32 recurrences, 28.1% were due to the same pathogen as the initial SSI.

**Conclusion.** *S.aureus* was the most common pathogen causing initial and recurrent SSIs. This reinforces that *S.aureus* complex SSIs would likely benefit from early recognition and aggressive treatment. Recurrence of SSI was not impacted by type of revision arthroplasty. This study is limited by a small sample size. These findings contribute to the paucity of literature in this area and suggest a need for expansion to larger populations.

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### 887. Implementation of a Surgical Site Infection (SSI) Prevention Bundle: Patient Compliance and Experience

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