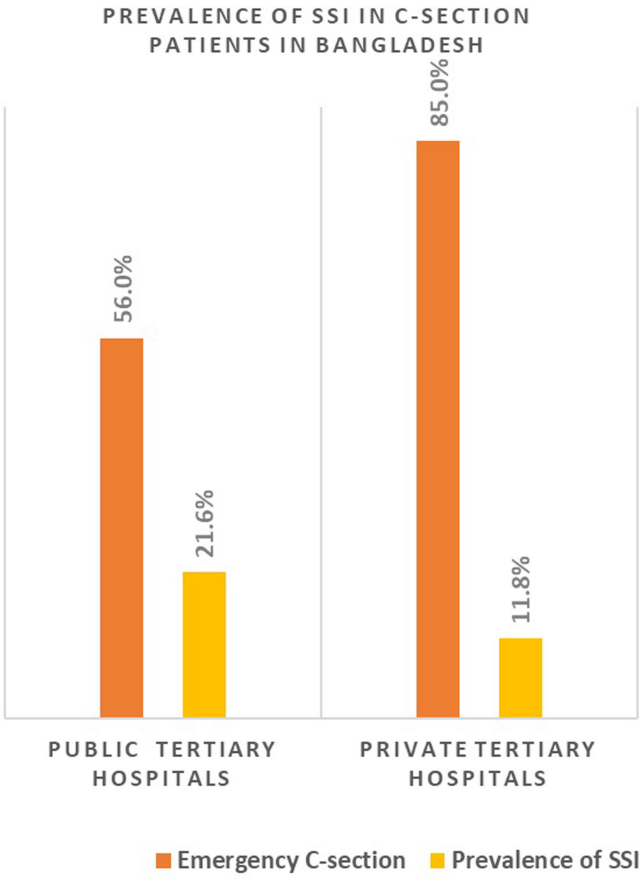

Presentation Type:
Poster Presentation
Subject Category: SSI
Can A Supplemental Hysterectomy Prevention Bundle Result In Reduction Of Surgical Site Infections?
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Background: Surgical Site Infections (SSIs) are a major cause of morbidity resulting in devastating patient outcomes following an Abdominal Hysterectomy (HYST) procedure. No single intervention has demonstrated reduction in SSI rates, however, bundling prevention strategies have demonstrated reduction in SSI. In addition to our organization's system-wide surgical site infection prevention bundle, we developed a supplemental bundle of focused strategies specific to abdominal hysterectomy procedures, to address a 37.26% increase in Abdominal Hysterectomy Standardized Infection Ratios (SIRs) in 2021. **Methods:** In 2021, a supplemental hysterectomy specific bundle was developed and implemented in three facilities within our health system that were experiencing increased HYST SIRs. After review of current literature, the following four strategies were included for the supplemental bundle for all abdominal hysterectomy procedures (open, laparoscopic, and robotic); the utilization of 500mg Metronidazole with Cefazolin as part of surgical antimicrobial prophylaxis, for cases where: anticipated bowel involvement occurs and for oncology patients with complex hysterectomies; the use of standardized vaginal and perineal preparation using either chlorhexidine (CHG) or Povidone Iodine (PVI); the use of a separate sterile closing tray; and changing of gown and gloves by surgical team, prior to going to abdomen from vaginal area. Compliance with the prevention strategies were measured during this period and SSI SIRs were reviewed monthly with overall trends monitored. The National Healthcare Safety Network (NHSN) criteria for SSI were used to assess for SSI after hysterectomy. **Results:** The SIR for HYST procedures in 2021 was 1.083 with 23 SSIs identified from 2339 abdominal hysterectomy procedures performed. Immediately following the implementation of the supplemental bundle at three facilities, the SIR decreased by 39% to 0.661 in 2022 with 11 SSIs identified from 1842 procedures performed. The HYST SIR outcomes were 0.782 in 2023 and currently at 0.979 through July 2024. Compliance during the intervention period ranged from 93.9% to 94.6%, and surgical antimicrobial prophylaxis compliance increased by 4% to 89.35% at these three facilities. **Conclusion:** Bundled interventions when employed, demonstrate benefit from the synergistic effects of multiple strategies decreasing the outcome rate of surgical site infections as compared to a single intervention. Establishing a standardized abdominal hysterectomy bundle, allows for minimal variation for patients undergoing abdominal hysterectomy procedures when adherence is at its maximum. Our goal is to expand systemwide based upon the successes from the three facilities, to achieve as close to zero postoperative infections by implementing evidence-based practices performed as a comprehensive bundle.

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Defining Nontuberculous Mycobacterium Surgical Site Infections at a Tennessee Ambulatory Surgery Center with NHSN Surveillance Protocol
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Background: Procedures performed at Ambulatory Surgical Centers (ASCs) have increased over the last decade in the United States. In Tennessee, surgical site infection (SSI) outbreaks in ASCs have been increasingly detected. Still, there is no mandated SSI reporting for ASCs through the National Healthcare Safety Network (NHSN) as there is for Acute Care Hospitals (ACHs). In 2023, the Tennessee Department of Health's Healthcare-Associated Infections (TDH HAI/AR) program responded to an outbreak of 14 nontuberculous mycobacteria (NTM) periprosthetic joint infections at an ASC. Despite extrapulmonary NTM being a reportable condition in Tennessee, detection of this outbreak was delayed due to gaps in reportable conditions practices at this ASC. Here, we evaluate how NHSN reporting could have impacted the surveillance and detection of infections for this investigation. **Methods:** Extrapulmonary NTM cases were detected through clinical laboratory and provider reporting. Chart abstractions were performed for cases by HAI/AR epidemiologists using a tool adapted from the Centers for Disease Control and Prevention (CDC). Infections were evaluated using standardized 2023 and 2024 National Healthcare Safety Network (NHSN) definitions depending on the infection date of event. **Results:** Initial reporting of cases was as mentioned above, resulting in five cases reported together in June 2023, two months after the first positive specimen. Eight (57%) cases met the NHSN definition for Surgical Site Infections (SSIs); four (29%) cases met the criteria for Deep Incisional SSIs, and four (29%) met the Organ/Space SSI. Six cases (43%) were not detected within the 90-day surveillance window; however, three of these cases had documented evidence of superficial infection within those 90 days. **Conclusions:** Despite its slow infection progression, most NTM infections in this outbreak would have been detected through NHSN surveillance. Even in cases where NHSN SSI criteria were not met, reviewing records and entering data within the NHSN framework may have facilitated faster facility-level detection. Although the nature of NHSN reporting is not suited for rapid detection of outbreaks, the standardized definitions, regular records reviews, and established data entry system would benefit ASC surveillance such as the facility described here, which had no formal mechanism for tracking infections. Additionally, the collection of summary data required through NHSN would better identify reporting gaps prior to outbreak occurrences.

The availability of SSI data for ASCs would help public health authorities identify and assist facilities in assessment and prevention activities. Patient safety would thus likely benefit from enhancing surveillance of ASCs through voluntary or

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Evaluation of Risk Factors for Fungal Infections Post Cardiac Surgery: a Single Center Study

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Background: Invasive candida infections (ICI)are rare but a serious complication following cardiac surgery, The incidence of ICI ranges between 1-2%. There are a few studies describing the risk factors associated with candidal infections in this population. This study aims to evaluate the risk factors of ICI post-cardiac surgery. We hypothesize that judicious antimicrobial use and comprehensive wound care play a key role in prevention of ICI. **Methods:** We conducted a retrospective case control study of adult patients undergoing cardiac surgeries at an academic medical center from January 2023 to June 2024. Patients who underwent heart transplantation were excluded. For each case, four controls who underwent similar surgical procedures, two before and two after the cases, were selected. ICI was defined as the detection of candida species by culture or histological examination from a normally sterile site like candidemia or mediastinitis. Cardiac surgery included valve replacement, coronary artery bypass graft and durable cardiac device insertion. Data were analyzed for demographics, type of surgery, temporary mechanical circulatory support (MCS) use and timing, chest tube duration, tracheostomy, dialysis and Candida sp, colonization, defined as the isolation of candida sp. in the urine or airways without evidence of infection. Categorical and continuous variables were presented as frequencies and medians respectively. The variables were compared using Chi-square and Mann-U-Whitney. **Results:** There were 36 controls, and 9 cases included in the study. Patients who were younger (54 vs 66.5 years) and who had temporary MCS (66.7% vs 8.0%) were more likely to be diagnosed with ICI. Moreover, we found that delayed chest closure, more days with chest tube in place, dialysis, tracheostomy and candida colonization after surgery were also associated with increased risk of ICI (table). However, antimicrobial use prior to surgery was not statistically significant (72.2% vs. 88.9%) In terms of clinical outcomes, there was no statistical difference in mortality between the two groups (66.7% vs 91.7%), however patients were more likely to have longer length of hospital stay (42 vs 11 days, p=0.03). **Conclusion:** This study identified several risk factors for ICI post-cardiac surgery including temporary MCS use, delayed chest closure, prolonged chest tube placement and tracheostomy. While antibiotic use prior to surgery was not statistically significant, candida colonization post-surgery was identified as a risk factor. These findings highlight the importance of infection prevention strategies in the environment of care, such standardizing temporary MCS device care and optimizing wound care management, as

	Controls (36)	Cases (9)	P-value
Age (median, IQR)	66.5 (58.5, 72.0)	54 (51.0, 59.0)	**0.016**
Type of surgery, n (%)			
Durable device insertion	8 (22.2)	2 (22.2)	1
Coronary artery bypass surgery	12 (33.3)	3 (33.3)	-
Valve replacement	16 (44.4)	4 (44.4)	
Male, n (%)	26 (72.2)	3 (33.3)	0.7
Ethnicity, n (%)			
Non-Hispanic	30 (83.3)	7 (77.8)	0.7
Hispanic	5 (13.9)	2 (22.2)	
Other	1 (2.8)	0 (0.0)	
White, n (%)	10 (27.8)	1 (11.1)	0.42
Elective, n (%)	21 (58.3)	2 (22.2)	0.071
Chronic kidney disease, n (%)	12 (33.3)	5 (55.6)	0.27
Diabetes, n (%)	17 (47.2)	5 (55.6)	0.72
Temporary mechanical circulatory support, n (%)	3 (8.3)	6 (66.7)	**<0.001**
Temporary mechanical circulatory timing, n (%)			-
Pre	2 (66.7)	1 (16.7)	
Post	1 (33.3)	4 (66.7)	
Both	0	1 (16.7)	
Antibiotics prior to surgery, n (%)	26 (72.2)	8 (88.9)	0.42
Antifungal prophylaxis post-surgery, n (%)	10 (27.8)	4 (44.4)	0.42
Delayed chest closure, n (%)	4 (11.1)	8 (88.9)	**<0.001**
Duration of open chest (days) (median, IQR)	2.5 (2, 3)	2 (1.5, 15)	1
Duration of chest tube (days) (median, IQR)	6 (3, 10.5)	28 (15.5, 40.5)	**0.002**
Candida colonization before surgery, n (%)	2 (5.6)	0 (0.0)	1
Candida colonization after surgery, n (%)	2 (5.7)	1 (11.1)	**<0.001**
Tracheostomy, n (%)	3 (8.3)	6 (66.7)	**<0.001**
Dialysis, n (%)	5 (13.9)	8 (88.9)	**<0.001**
Alive at 3 months post-surgery, n (%)	33 (91.7)	6 (66.7)	0.084
Length of stay (days) (median, IQR)	11 (7.5, 25.5)	42 (30, 63)	**0.03**

Table 1: Univariate analysis of all musculoskeletal surgeries separated by nasal iodine compliance.

	All Patients (n=14,505)	Nasal Iodine Compliant (n=12,281)	Nasal Iodine Noncompliant (n=2224)	p-value
Median Age (IQR)	68 (60-75)	68 (60-75)	67 (55-76)	0.02
Female Gender	8243 (56.8%)	7021 (57.2%)	1222 (54.9%)	0.05
Race/Ethnicity				<0.001
Non-Hispanic White	11473 (79%)	9794 (79.7%)	1679 (75.5%)	
Non-Hispanic Black	2457 (16.9%)	2058 (16.8%)	399 (17.9%)	
Other	401 (2.8%)	312 (2.5%)	89 (4.0%)	
Not documented	174 (1.2%)	117 (1.0%)	57 (2.6%)	
Procedure Type				<0.001
Spinal fusion	4410 (30.4%)	3413 (27.8%)	997 (44.8%)	
Total hip replacement	4327 (29.8%)	3602 (29.3%)	725 (32.6%)	
Total knee replacement	5768 (39.8%)	5266 (42.9%)	502 (22.6%)	
Median procedure duration, minutes (IQR)	99 (79-137)	97 (79-132)	115 (82-177)	<0.001
Non-elective procedure	2152 (14.8%)	1093 (8.9%)	1059 (47.6%)	<0.001
Inpatient	10011 (69%)	8106 (66%)	1905 (85.7%)	<0.001
Diabetes	3236 (22.3%)	2724 (22.2%)	512 (23%)	0.38
ASA Score				<0.001
1 or 2	5434 (37.5%)	4792 (39.1%)	642 (28.8%)	
3, 4 or 5	9071 (62.5%)	7489 (60.9%)	1582 (71.1%)	
BMI ≥ 40 m/kg²	645 (4.4%)	535 (4.4%)	110 (4.9%)	0.21
SSI				0.01
All	161 (1.1%)	125 (1.0%)	36 (1.6%)	
Superficial	29 (0.2%)	21 (0.2%)	8 (0.4%)	
Deep/Organ space	132 (0.9%)	104 (0.9%)	28 (1.2%)	

IQR: Interquartile range; BMI: Body mass index; ASA: American Society of Anesthesiologists

Table 2: Multivariate Analysis of Odds of SSI*

	Adjusted Odds Ratio SSI (95% Confidence Interval)	p-value
Procedure duration	1.01 (1.00-1.01)	<0.001
Type of procedure		0.02
Fusion	--	
Total hip replacement	1.12 (0.74-1.69)	
Total knee replacement	0.61 (0.39-0.96)	
Preoperative nasal iodine day of surgery	0.79 (0.54-1.16)	0.23

*Adjusted for age, race, sex, type of procedure, procedure duration and compliance with preoperative nasal iodine. Age, Race and Sex were not significant in the model so are not reported

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Effect of Preoperative nasal iodine Application on Musculoskeletal Surgical Site Infections (SSI)

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