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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Background: SSI results in increased mortality, morbidity, length of stay and healthcare costs. Use of nasal iodine for some surgeries has been proposed as an easy, economic alternative to 5-day preoperative chlorhexidine bath and intranasal mupirocin decolonization in SSI prevention but data on effectiveness is limited. We aim to assess the association between preoperative nasal iodine application and odds of SSI. **Methods:** We performed a retrospective study of all total hip replacement, total knee replacement, and spinal fusion surgeries performed between January 2023 through June 2024 in 10 facilities in a large healthcare system. Demographics, clinical risk factors, and procedural data were collated from the electronic health record and merged with SSI data obtained through routine surveillance by trained infection preventionists using standard NHSN (National Healthcare and Safety Network) definitions. Patients with SSI present at the time of surgery were excluded. Nasal iodine compliance was defined as documentation of nasal iodine administration in both nostrils on the day of surgery in the preoperative space. Surgeries where nasal iodine was documented as not given or that had absence of documentation were counted as noncompliant. Descriptive statistics were used to compare compliant and noncompliant patients. Multivariate logistic regression was performed to assess the association between nasal iodine compliance and SSI. **Results:** A total of 14,505 surgeries were included, of which 161 (1.1%) were complicated by SSI. 12,281 (84.6%) of patients were compliant with nasal iodine. Around 55% of the noncompliant surgeries had absent documentation. In the univariate analysis, compliance was associated with several clinical and procedural factors including older median age, female gender, White race, shorter procedure duration, elective procedure, outpatient procedure, and lower ASA score. Unadjusted SSI rate per 100 procedures was lower in those compliant with nasal iodine compared to noncompliant (1% and 1.6% respectively, p=0.01). (Table 1) After adjusting for age, gender, race, procedure type, and procedure duration, there was no significant difference in odds of SSI associated with nasal iodine compliance. (Odds ratio 0.78, p=0.23) (Table 2) **Conclusion:** Use of nasal iodine on day of surgery did not impact odds of SSI after adjusting for other clinical factors. This study is limited by inclusion of cases with absent documentation of nasal iodine and differences in clinical and procedural characteristics between compliant and noncompliant patients. Further studies are needed to assess effect of nasal iodine on SSI.

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Preoperative Nasal Povidone Iodine to Prevent Staphylococcus aureus Surgical Site Infections in Pediatric Patients

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Background: From October 2023-June 2024 increased surgical site infection (SSI) rates were identified in our large pediatric hospital, 38% were caused by Staphylococcus aureus. Nasal S. aureus colonization is associated with increased SSI risk and preoperative nasal decolonization decreases S. aureus SSI risk. Historically, our institution recommended a five-day course of nasal mupirocin decolonization prior to selected high-risk procedure types, though this process it not possible for urgent cases and outpatient compliance is low. Nasal povidone iodine (PI) is a topical antiseptic used commonly in adults as an alternative to nasal mupirocin for S. aureus decolonization and SSI prevention. This practice is less commonly described in pediatric patients. **Methods:** In addition to standard SSI prevention measures, universal nasal PI application was implemented preoperatively (as a single topical application following induction of anesthesia) in July 2024 for patients ≥34 weeks corrected gestational age (CGA) undergoing the following high-risk surgical procedures: ventricular shunts, spinal fusions, and all cardiothoracic (CT) procedures. Compliance with nasal PI application was monitored based on documentation in the electronic medical record. Mean monthly total SSI rates (per 100 procedures) and mean monthly S. aureus SSI rates for these procedure types were followed pre- and post-implementation of universal nasal PI and compared via unpaired t-test. **Results:** Documented compliance with nasal PI application was 51% overall, ranging from 22% for ventricular shunts to 75% for CT procedures. Implementation of universal nasal PI preoperatively was associated with a non-statistically significant decrease in composite mean SSI rates (Figure 1A): 3.5 per 100 procedures pre-implementation, 2.3 post-implementation (p=0.52). A statistically significant decrease in composite mean S. aureus SSI rates was observed (Figure 1B): 1.3 per 100 procedures pre-implementation, 0.0 post-implementation (p=0.02). **Conclusion:** Despite modest documented compliance, implementation of a universal preoperative nasal PI program, in conjunction with standard SSI prevention measures, was associated with decreased S. aureus SSI rates in pediatric patients undergoing high-risk surgical procedures.

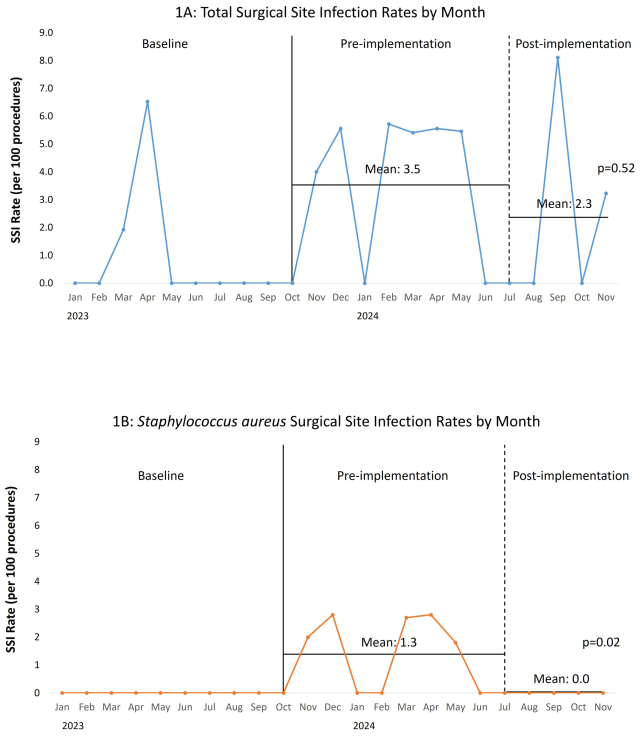

Figure 1. Total (1A) and Staphylococcus aureus (1B) surgical site infection (SSI) rate per 100 ventricular shunt, spinal fusion, and cardiothoracic procedures (combined) by month from January 2023 through November 2024. The solid vertical line indicates the beginning of the period with increased S. aureus SSI rates (pre-implementation period). The dashed vertical line indicates the start of the implementation period. Mean SSI rates for the pre- and post-implementation periods are indicated by the horizontal lines and compared via t-test.

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