October 31, 2023, were identified from the electronic medical record. Data on preoperative intravenous antibiotic choice and timing, history of allergy and methicillin resistant staphylococcus aureus (MRSA) history was collated. SSI were identified using NHSN definitions by trained infection preventionists. SSI identified as present at the time of surgery were excluded. Antibiotic choice and timing were compared to institutional guidelines and patients were categorized as having received GC, GSL or NGC antibiotic choice, and GC or NGC antibiotic timing. Descriptive statistics were used to describe clinical data for patient population and subgroups who received GC, GSL and NGC antibiotics. Univariate logistic regression was performed to assess the association of procedural and clinical factors with the likelihood of an SSI. **Results:** GC was high overall for both antibiotic choice (94%) and timing (94%). (Table 1) NGC and GSL antibiotic choice were more common in colon surgery, urgent/emergent cases, patients with beta lactam allergies and those with a recent history of MRSA. GSL antibiotic choice was more frequent in inpatients. (Table 2). GC antibiotic timing was more common with GC antibiotic choice (98%) than with NGC (37%) or GSL (51$) antibiotic choice. Odds of SSI were lower in patients who were GC for both antibiotic choice and timing (OR 0.4, $p < 0 .001$) and increased in patients who received GSL antibiotic choice (OR 5.7 compared to GC, $p < 0 .001$), underwent urgent/emergent surgeries (OR 4.6, $p < 0 .001$) or had a history of MRSA in the past year (OR 8.4, $p < 0 .001$). We found a non-significant trend toward lower infections in patients with GC antibiotic timing (OR 0.5, p 0.08). (Table 3) **Conclusion:** Combined GC for antibiotic choice and timing was high and associated with lower odds of SSI. NGC and GSL antibiotic choice were associated with patient level factors such as history of MRSA and emergent procedures which may also impact risk of SSI.

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Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: SSI
Sustainability of Surgical Site Infection (SSI) Prevention Bundle for Pediatric Cardiothoracic Surgery Patients
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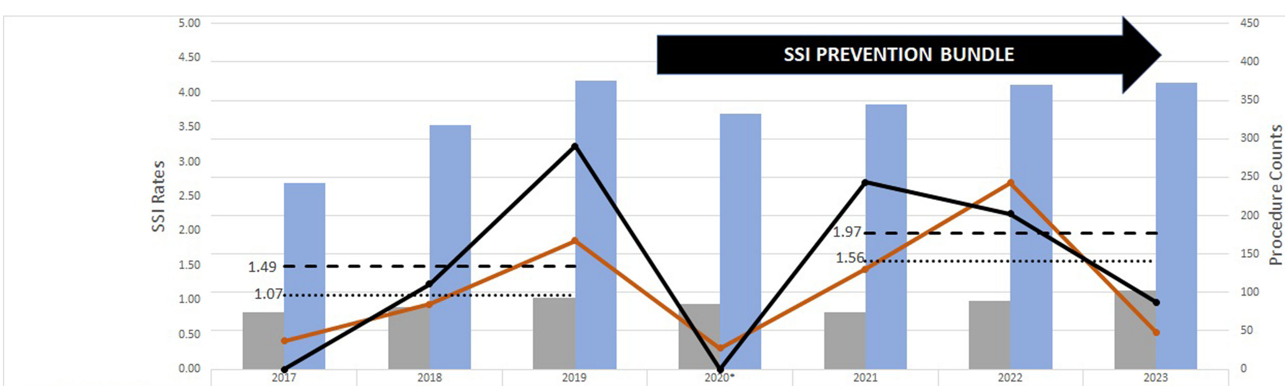
Background: Frequent use of delayed sternal closure and prolonged stays in critical care units contribute to surgical site infections among pediatric patients undergoing cardiothoracic (CT) procedures. Bundled interventions to prevent or reduce surgical site infections (SSIs) have shown prior success, but limited data exist on sustainability of these efforts especially during the Coronavirus Disease 2019 (COVID-19) pandemic. Here, we re-examine the SSI rates for pediatric CT procedures after the onset of the pandemic. **Methods:** In a single academic center providing regional quaternary care, we created a multidisciplinary CT-surgery SSI Prevention workgroup in response to rising CT SSI rates. Bundle elements focused on daily chlorhexidine bathing, environmental cleaning, monthly room changes, linen management, antimicrobial prophylaxis, and sterile techniques for beside and operating room procedures. CDC surveillance definitions were used to identify superficial, deep or organ space SSIs. To assess the bundle's sustainability, we compared SSI rates during years impacted by the COVID-19 pandemic (2021–2023, period 2) to pre-pandemic rates (2017–2019, period 1). Data from 2020 were excluded to account for bundle implementation, pandemic restrictions, and a minor decrease in surgical volumes. Rates were calculated as surgical site infection cases per 100 procedures. Mean rates across both periods were compared using paired t-tests (Stata/SE version 14.2). **Results:** Excluding the year 2020, the average SSI rate per 100 CT procedures increased from 1.07 in period 1 to 1.56 in period 2(p=0.55). Concurrently, the average SSI rate per 100 CT procedures with delayed closures increased from 1.49 in period 1 to 1.97 in period 2(p=0.67). Figure 1 shows SSI rates and procedure counts for 2017–2023. Coagulase negative Staphylococci most frequently caused SSIs in period 1 while methicillin-susceptible Staphylococcus aureus (MSSA) was most frequently identified in period 2. During period 2, the estimated compliance with SSI prevention bundle remained stable and reached 95% for pre-operative chlorhexidine baths and use of appropriate antimicrobial prophylaxis. Monthly room changes with dedicated environmental cleaning reached 100% compliance. **Conclusion:** Despite staffing shortages and resource limitations (e.g., discontinuation of contact isolation for MRSA colonization) during the COVID-19 pandemic, SSI rates for pediatric CT surgeries showed a slight, but non-statistically significant, increase in post-pandemic years as compared to pre-pandemic years. implementation of bundled interventions and improved surveillance



	2017	2018	2019	2020*	2021	2022	2023
Procedures with Delayed Chest Closures	74	81	93	85	74	89	103
Procedure Count	243	318	376	332	345	371	373
SSI Rate per 100 procedures	0.41	0.94	1.86	0.30	1.45	2.70	0.54
SSI Rate per 100 procedures with Delayed Closures	0.00	1.23	3.23	0.00	2.70	2.25	0.97
Average SSI rate	1.07	1.07	1.07		1.56	1.56	1.56
Average SSI rate for Delayed Closures	1.49	1.49	1.49		1.97	1.97	1.97

Figure 1 Summary of Pediatric Cardiothoracic Procedure Counts and Surgical Site Infection (SSI) rates from 2017 – 2023 in a Single Pediatric Center.
**Year 2020 rates were excluded from comparative analyses to account for bundle implementation*

methods may have sustainably impacted these SSI rates. Reinforcing bundle adherence as well as identifying additional prevention interventions to incorporate in pre-, intra-, and post-operative periods may improve patient outcomes.

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Advancing hospital infection surveillance: Automated detection of hospital-onset bacteremia in a large university hospital

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Background: Traditional manual surveillance of healthcare-associated infections often neglects certain hospital areas. This study investigated the potential of automated hospital-onset bacteremia (HOB) detection to enhance surveillance comprehensiveness. Our focus was on assessing baseline HOB levels across a large university hospital and demonstrating the algorithm's ability to discern infection patterns in different hospital areas. **Method:** Conducted at one of the three sites of Charité university hospital in Berlin, Germany, our study employed an automated HOB detection algorithm, collaboratively developed with the PRAISE (Providing a Roadmap for Automated Infection Surveillance in Europe) network. HOB was defined as a positive blood culture (BC) with a recognized pathogen or two positive BC with common commensals, occurring two days post-admission or later. A retrospective data analysis spanned 2018-2022, with data extraction in January 2024. HOB rates were calculated per 1,000 patient-days and correlated with BC sampling frequency. Trends over time were examined. A comparison was made between intensive care units (ICU) and non-ICU. **Result:** Data from 58 wards (10 ICU, 48 non-ICU) with 262,058 in-patient admissions and 1,634,793 patient-days were included. Baseline characteristics of the hospital site are summarized in Table 1. Aggregated HOB rates over a 5-year period (Table 2) were substantially higher in ICU compared to non-ICU, applicable to all HOB, HOB with common commensals, and HOB with pathogens. A scatterplot (Figure 1) illustrates a strong correlation between BC sampling frequency and HOB rates in ICU, while Figure 2 displays HOB rates and BC sampling frequency in ICU over time. Notably, HOB rates were higher in the years 2020 and 2021, followed by a decrease in 2022, despite a continually high BC sampling rate. Discussion: The algorithm consistently detected HOB, providing insights into distinctions between ICU and non-ICU. While fewer HOB occurred in non-ICU, continuous monitoring remains crucial, given that the total number of HOB in non-ICU was higher than in ICU, and HOB in non-ICU might currently be overlooked by established surveillance activities. The automated system also demonstrated its effectiveness in identifying trends over time. Although speculative, it appears likely that the higher HOB rates in 2020 and 2021 were at least partially attributable to the COVID-19 pandemic and accompanying factors. There was a notable correlation between HOB and BC sampling frequency. However, the fact that HOB incidence in ICU decreased in 2022 despite persistently high BC sampling frequency rates, indicates the influence of other factors on HOB rates.

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Table 1: Baseline characteristics of the university hospital site. Aggregated data from a five-year period (2018-2022)

Observation unit	No. of wards	No. of admissions	No. of PD	No. of BC	BC rate per 1,000 PD (pooled mean)	BC rate per 1,000 PD (median (IQR))
All wards	58	262,058	1,634,793	143,367	88	44 (9-134)
All ICU	10	31,572	207,213	65,144	314	261 (223-442)
All Non-ICU	48	255,932	1,427,580	78,223	55	22 (7-80)

Since patients can move between ICU and non-ICU during one hospital admission, the sum of ICU and non-ICU admissions is greater or equal the number of hospital admissions (all wards).
Abbreviations: BC - blood culture(s); ICU - intensive care unit(s); IQR - interquartile range; No. - number; PD – patient-day(s)

Table 2: Rates of hospital-onset bacteremia in intensive care units and non-intensive care units at a university hospital site. Aggregated data from a five-year period (2018-2022)

Type of HOB	Observation unit	No. of PD	No. of HOB	HOB rate per 1,000 PD (pooled mean)	HOB rate per 1,000 PD (median (IQR))
All HOB	All wards	1,634,793	3,513	2.1	1.5 (0.3-2.8)
	All ICU	207,213	1,204	5.8	4.6 (2.8-7.0)
	All Non-ICU	1,427,580	2,309	1.6	1.1 (0.3-2.0)
HOB with pathogen	All wards	1,634,793	2,861	1.8	1.2 (0.3-2.3)
	All ICU	207,213	998	4.8	3.6 (2.6-5.8)
	All Non-ICU	1,427,580	1,863	1.3	0.9 (0.3-1.6)
HOB with common commensal	All wards	1,634,793	765	0.5	0.2 (0.1-0.6)
	All ICU	207,213	240	1.2	1.0 (0.6-1.4)
	All Non-ICU	1,427,580	525	0.4	0.2 (0.0-0.4)

Multiple HOB with different microorganisms occurring within a two-day period were counted as one polymicrobial HOB. Since polymicrobial HOB with at least one pathogen and one common commensal were possible, the sum of HOB with pathogen and HOB with common commensal is greater or equal the number of all HOB.
Abbreviations: HOB - hospital-onset bacteremia; ICU - intensive care unit(s); IQR - interquartile range; No. - number; PD - patient-day(s)