patient admissions, including 24,980 with community-onset and 1,510 with hospital-onset SARS-CoV-2 infections. The mean weekly ratio of new hospital-onset to community-onset SARS-CoV-2 infections rose from 2.6% before Omicron, to 8.5% (95% CI, 7.0–9.9%) during Omicron, to 17% (95% CI, 15–19%) after universal admission testing and masking ended (Figure 1). There was a significant immediate level change after the pre-Omicron-to-Omicron transition (140% relative increase; 95% CI, 40–240%) and after universal admission testing and masking ended (110% relative increase; 95% CI, 73–150%). On medical record review of 100 randomly selected hospital-onset SARS-CoV-2 cases after universal admission testing had ended, 89% had new symptoms at the time of testing, 80% had PCR cycle thresholds ≤30, 27% had a known COVID-19 exposure, and 97% met at least one of these criteria. In-hospital mortality occurred in 8% of the 100 reviewed cases. **Conclusion:** Stopping universal masking and admission testing of all hospitalized patients at five Massachusetts hospitals was associated with a significant increase in hospital-onset COVID-19. Nosocomial COVID-19 remains a common complication of hospital care. Preventing nosocomial infections in this vulnerable population remains an important safety goal.

Disclosure: Theodore Pak: Founder/CEO - The East Harlem Software Company, Inc.

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Presentation Type:
Poster Presentation - Top Oral Abstract
Subject Category: DEI

Iterative Health Equity Analyses of Central Line-Associated Bloodstream Infection (CLABSI) Events at a Pediatric Hospital

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Background: Per the Centers for Disease Control and Prevention, health equity stipulates all have a fair, just opportunity to attain their highest level of health. Limited evidence exists for disparities in health equity and healthcare-associated infections (HAI), with no evidence on language or primary insurance payor. While reviewing quality metrics, a disparity signal in central line-associated bloodstream infections (CLABSIs) prompted a multidisciplinary deep dive, with iterative analyses to understand potential inequities to identify improvement opportunities. **Methods:** CLABSI data was stratified and analyzed for evidence of disparity by race/ethnicity, primary insurance payor, and preferred spoken language utilizing an internal methodology. Subsequent analyses included a root cause analysis (RCA), case mix index (CMI) analysis, analysis of CLABSI Kamishibai card (K-card) rounding to monitor maintenance bundle reliability, and comparison of distribution of central venous catheter (CVC) line days to K-card audits [Figure 1]. Chi-square tests were used to test for significant differences for categorical variables in RCA and K-card analyses. ANOVA was used to compare CMI between demographic groups. Multiple logistic regression was used to compare K-card compliance rates by demographic groups. **Results:** When stratifying CLABSI rate by primary payor, pairwise comparisons indicated patients with a public payor had a statistically higher rate of CLABSI compared to private (p=0.02) [Figure 2A]. RCA analysis revealed when compared to patients with private payors, those with public had significantly higher rates of overdue needless connector changes (p = 0.03) and increased number of daily CVC entries (p = 0.05), while patients speaking another language (p = 0.02) were significantly more likely to have CVC contamination events. CMI analyses on CLABSI cases did not show patient acuity to vary significantly between demographics. Bivariate analysis of K-card data revealed minor differences in reliability with 7 Core Maintenance Bundle Elements by demographics; adjusting for all demographics and accounting for unit, pairwise comparisons indicated public payors had significantly higher compliance than international [Figure 2B]. We found no major differences in demographic distribution of CVC line days compared to K-card audits, suggesting we representatively audit maintenance bundle process measures. **Conclusions:** Our review of health equity in CLABSI events ultimately led to subsequent questions requiring analysis of other data sets. Utilizing an exploratory approach and assembling a multidisciplinary team to identify potential drivers of identified disparities adds value to health equity analyses. This is the first description of HAI data beyond race and ethnicity and can assist other institutions in their process of evaluating healthcare disparities and HAIs.

Figure 1. CLABSI Health Equity Workflow. CLABSI: central line-associated bloodstream infection; CVC: central venous catheter; RCA: root cause analysis; CMI: case mix index; PHIS: Pediatric Health Information System; K-card: Kamishibai card; IPC: Infection Prevention and Control.

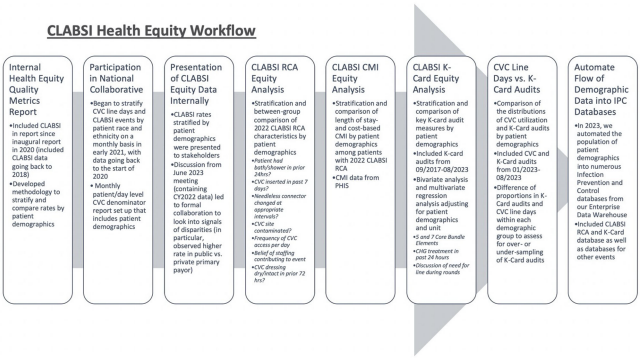
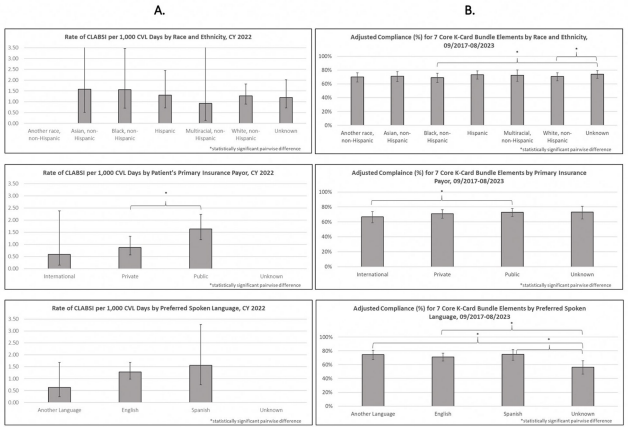


Figure 2. A) Rates of CLABSI per 1,000 CVL days by patient demographics, 01/2022-12/2022 and **B)** Adjusted compliance (%) for 7 core K-card bundle elements by patient demographics, 09/2017-08/2023. CLABSI: central line-associated bloodstream infection; CVL: central venous line; CY: calendar year; K-card: Kamishibai card.



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Presentation Type:
Poster Presentation - Top Oral Abstract
Subject Category: DEI

Exploring Socioeconomic Disparities in Surgical Site Infections

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Introduction: Social disparities have been shown to impact a wide variety of healthcare outcomes. Surgical site infections (SSIs) are associated with

substantial patient morbidity, but studies on the intersection of social disparity and SSI are limited. We sought to evaluate the association between SSI and the Center for Disease Control and Prevention's social vulnerability index (SVI). **Methods:** Patients with National Health Safety Network (NHSN) procedure codes for colon, abdominal hysterectomy, hip prosthesis, knee prosthesis and spinal fusion surgeries were retrieved from the electronic medical records of 20 hospitals across 4 geographic markets. SSIs were identified by trained infection preventionists using NHSN definitions. Descriptive statistics were used for baseline demographic and clinical characteristics. Univariate logistic regression was performed to assess the association of demographic, clinical, and procedural factors with the outcome of SSI. Further univariate subgroup analysis was completed by procedure. To account for the nonlinear relationship between the social vulnerability index and SSIs, smoothing splines were used in a Bayesian hierarchical logistic regression model, with random effects to account for the different market practices. Nonlinear effects of procedure duration were also investigated while adjusting for the patient age, procedure type, and health system market. **Results:** 23,864 surgical procedures among 22,319 unique patients identified between 1 August 2022 and 31 August 2023. 96 patients with infection present at time of surgery were excluded. The study population was mostly white (74%) and female (65%) (Table 1). Less than 13% of the patients had more than one procedure during this time. In a univariate analysis, we found evidence of market and procedure effects, with colon surgery being associated with the highest odds of SSI. Procedure duration was significantly associated with SSI in both univariate and multivariable models, with a drastic increase in the odds of SSI for procedures > 150 mins. In the multivariable model we found that SVIs lower than 0.4 (95% CI 0.28 to 0.55) are associated with an adjusted odds ratio (aOR) < 1. (Figure 1) **Conclusions:** Our study shows that the relationship of social vulnerability and adverse outcomes is highly complex with nonlinear dynamics at play. After adjusting for procedure type, duration, patient age, gender and health system market the odds of SSIs increase sharply in patients with higher SVI until leveling off at an elevated risk.

Figure 1: Odds of Surgical Site Infection by Social Vulnerability Index Adjusted for Patient Age, Gender, Health System Market, Procedure Type and Procedure Duration

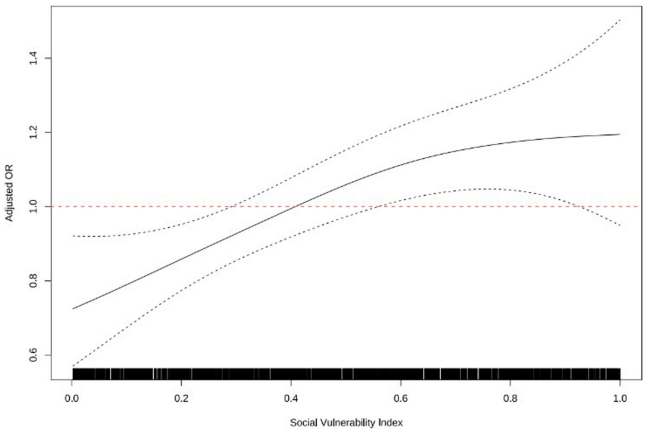

Table 1: Demographics of Patients Undergoing Colon, Abdominal Hysterectomy, Hip prosthesis, Knee Prosthesis and Spinal Fusion Surgery Between August 2022 and August 2023

	Patients (N =23,864)
Health System Market	
1	14,512 (61%)
2	1217 (5.1%)
3	2831 (12%)
4	5304 (22%)
Patient Clinical Characteristics, n (%)	
Median Age in years (IQR)	64 (52-73)
Gender	
Male	8455 (35%)
Female	15,403 (65%)
Other or missing	6 (<0.1)
Race	
Non-Hispanic White	17740 (74%)
Non-Hispanic Black	4548 (19%)
Hispanic	748 (3%)
Other	739 (3%)
Unknown	89 (0.4%)
Diabetes	4750 (20%)
Median BMI in kg/m^2 (IQR)	30 (26-35)
Trauma	703 (3%)
Procedure Information, n (%)	
Type of Surgical Procedure	
Knee Prosthesis	6824 (29%)
Hip Prosthesis	5390 (23%)
Colon Surgery	3100 (13%)
Abdominal Hysterectomy	4643 (19%)
Spinal Fusion	3907 (16%)
Number of Procedures	
1	20902 (88%)
2	2618 (11%)
3 or more	344 (1%)
Median procedure duration in minutes (IQR)	104 (80-147)
Surgical Site Infections	
All	536 (2%)
Superficial	144 (1%)
Deep or organ space	296 (1%)
Present at the time of surgery	96 (0.4%)

IQR Interquartile Range, BMI Body Mass Index

Table 2: Unadjusted Odds of Surgical Site Infection by Procedure

	All Surgeries N= 23,768		Colon Surgery N = 3017		Abdominal Hysterectomy N = 4641		Hip and Knee Prosthesis N=12204		Spinal Fusion N=3906	
	OR SSI (95% CI)	p-value	OR SSI (95% CI)	p-value	OR SSI (95% CI)	p-value	OR SSI (95% CI)	p-value	OR SSI (95% CI)	p-value
Health System Market		**0.02**		**0.04**		**0.05**		0.8		0.08
1	--		--		--		--		--	
2	**1.1 (0.7-1.8)**		**2.2 (0.5-2.4)**		**1.2 (0.5-3.0)**		1.3 (0.7-2.6)		n/a	
3	**1.1 (0.8-1.5)**		**1.4 (0.8-2.3)**		**1.9 (1.1-3.6)**		0.9 (0.4-1.8)		0.5 (0.3-1.1)	
4	**1.4 (1.1-1.7)**		**1.6 (1.2-2.3)**		**1.9 (1.1-3.1)**		1.0 (0.7-1.6)		n/a	
Patient Clinical Characteristics, n (%)										
Median Age (years)	**0.99 (0.98-0.99)**	**<0.001**	1.0 (0.99-1.01)	0.3	0.99 (0.97-1.01)	0.3	0.99 (0.98-1.01)	0.2	1.0 (0.98-1.01)	0.2
Gender		**0.03**		0.4				0.08		0.2
Male	--		--		n/a		--		--	
Female	**0.8 (0.7-1.0)**		0.9 (0.6-1.2)				0.7 (0.5-1.0)		1.4 (0.9-2.4)	
Race		0.3		0.2		0.4		0.3		1.0
Non-Hispanic White	--		--		--		--		--	
Non-Hispanic Black	1.2 (1.0-1.5)		1.3 (0.9-1.8)		1.4 (0.9-2.2)		0.5 (0.3-1.0)		1.0 (0.5-2.0)	
Hispanic	1.1 (0.6-1.8)		0.4 (0.1-1.2)		1.1 (0.5-2.6)		1.3 (0.4-4.2)		1.6 (0.4-6.7)	
Other	0.8 (0.3-1.3)		0.7 (0.3-1.7)		0.3 (0-2.0)		0.3 (0.1-2.4)		1.1 (0.3-4.8)	
Unknown	0.6 (0.1-4.5)		1.4 (0.2-11)		n/a		n/a		n/a	
Diabetes (yes)	**1.5 (1.2-1.8)**	**<0.001**	1.3 (0.9-1.8)	0.2	**3.3 (2.0-5.3)**	**<0.001**	1.2 (0.8-1.9)	0.3	1.4 (0.8-2.4)	0.2
BMI in kg/m^2	1.0 (0.99-1.0)	0.9	1.0 (0.99-1.0)	0.9	**1.05 (1.0-1.1)**	**<0.001**	1.0 (0.99-1.01)	0.3	1.0 (0.97-1.0)	1.0
Trauma	**2.5 (1.7-3.6)**	**<0.001**	**2.0 (1.2-3.5)**	**0.01**	n/a		1.8 (0.9-3.8)	0.1	**5.4 (2.3-13)**	**<0.001**
Procedure Information										
Type of Surgical Procedure		**<0.001**	n/a		n/a			**0.003**		
Knee Prosthesis	**Reference**						**Reference**			
Hip Prosthesis	**1.7 (1.2-2.5)**						**1.7 (1.2-2.5)**			
Colon Surgery	**8.2 (6.0-11)**						**n/a**			
Hysterectomy	2.5 (**1.7-3.5**						**n/a**			
Spinal Fusion	**2.0 (1.4-3.0)**						**n/a**			
Procedure duration > 150 minutes	**3.2 (2.7-3.9)**	**<0.001**	1.3 (1.0-1.8)	0.10	**3.3 (2.1-5.2)**	**<0.001**	**3.9 (2.5-6.0)**	**<0.001**	**2.9 (1.6-5.2)**	**<0.001**

OR Odds Ratio, SSI Surgical Site Infection (all depths), 95% CI 95% Confidence Interval, p-value considered significant at p<0.05, BMI Body Mass Index.

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Subject Category: Antibiotic Stewardship

Multifaceted Implementation Strategy to Improve the Comprehensive Assessment of Penicillin Allergies in Perioperative Patient

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Background: The CDC recommends that nurses improve the evaluation of penicillin allergies as part of antimicrobial stewardship programs. We evaluated the feasibility of a multifaceted implementation strategy to improve nurses' documentation of penicillin allergy histories and to encourage nurses to notify prescribers of patients with low-risk symptoms of reported penicillin allergy. The implementation strategy was guided by the COM-B model of behavior change and addressed nurses' capability, opportunity, and motivation to implement practices (Figure 1). The implementation strategy included education on the STORY mnemonic that details the questions of a penicillin allergy history, education on low-risk symptoms of penicillin allergy, dot phrases in EPIC to facilitate nurses' documentation of STORY and communication of patients with low-risk