Antimicrobial Stewardship & Healthcare Epidemiology (2024), **4** S1–S159
doi:10.1017/ash.2024.96

SHEA Spring 2024 Abstracts

Presentation Type:
Poster Presentation - Top Oral Abstract
Subject Category: Antibiotic Stewardship
Identifying Outpatient-Specialized High-Volume Prescribers of Antibiotics in Older Adult Populations – Philadelphia, PA 2021
Giovanny Zapata, Philadelphia Department of Public Health; Jenna Scully, Philadelphia Department of Public Health; Tiina Peritz, Philadelphia Department of Public Health and Jane Gould, Philadelphia Department of Public Health

Background: Inappropriate antibiotic use promotes antibiotic resistance which poses a threat to public health. Outpatient settings are responsible for 80-90% of all antibiotic use, yet up to 50% of these prescriptions may be inappropriate and at least 33% completely unnecessary. To promote outpatient antibiotic stewardship (AS), the Philadelphia Department of Public Health (PDPH) identified outpatient high-volume prescribers (HVPs) in Philadelphia and provided them with peer comparison letters along with evidence-based AS educational resources. **Method:** We identified HVPs using overall and drug specific antibiotic volume and rates from the Centers of Medicare and Medicaid Services (CMS) Part D Prescribers by Provider and by Provider and Drug publicly available datasets for 2021. We restricted analyses to Philadelphia prescribers specializing in internal medicine, family practice, or general practice with antibiotic and beneficiary claim counts ≥ 11. We further restricted the Provider and Drug dataset to prescribers of high-consequence drugs: levofloxacin, ciprofloxacin, and azithromycin. Prescribers with subspecialities where these three drugs are commonly used appropriately were excluded from letter distribution. We analyzed U.S. Census Bureau American Community Survey (ACS) data for overall HVPs on census tract-level to describe health equity demographic characteristics. **Result:** A total of 1,001 prescribers with 67,145 total antibiotic claims, and 306 unique prescribers (77 levofloxacin, 176 ciprofloxacin, and 250 azithromycin) with 37,057 total antibiotic claims met the inclusion criteria in the Provider and the Provider and Drug datasets, respectively. There were 101 overall HVPs, and 89 unique drug-specific HVPs (20 levofloxacin, 45 ciprofloxacin, and 63 azithromycin) based on the highest 10% and 25% of prescribers by antibiotic volume, respectively. The overall HVPs contributed 42.0% of all antibiotic claims. The drug-specific HVPs contributed 60.5% of all antibiotic claims and 55.5% of levofloxacin, ciprofloxacin, and azithromycin claims. These 3 drugs contributed 45.1% of all antibiotic claims. Among the overall and drug-specific HVPs, we sent peer comparison letters to the top 10 by rate per 1,000 beneficiaries (overall) and per 1,000 antibiotic claims (drug-specific), who fell within the following prescribing rates: overall 954-2,714, levofloxacin 84-396, ciprofloxacin 288-723, and azithromycin 496-1,000. **Conclusion:** This initiative identified prescribers at risk for inappropriate use of antibiotics, and empowered these same prescribers to self-reflect on how they prescribe antibiotics. Efforts by local health departments to provide HVPs with peer comparison feedback and AS educational resources may improve the provider knowledge and prescribing habits across different healthcare systems, targeting prescribers at highest risk for misuse or overuse of antibiotics.

Disclosure: Jane Gould: Spouse receives salary support- Incyte

Antimicrobial Stewardship & Healthcare Epidemiology 2024;4(Suppl. S1):s1
doi:10.1017/ash.2024.96

Presentation Type:
Poster Presentation - Top Oral Abstract
Subject Category: COVID-19
Association between hospital-onset SARS-CoV-2 and ending universal admission testing and masking at five US hospitals
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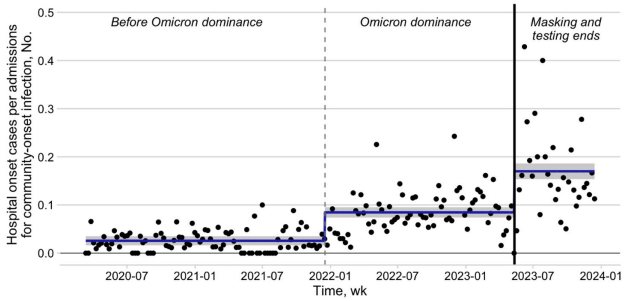
Background: Many US hospitals have stopped universal masking and testing all patients on admission for SARS-CoV-2. We assessed the association of ending universal masking and admission testing with the incidence of hospital-onset SARS-CoV-2 infections in five Massachusetts hospitals. **Method:** We conducted a retrospective study of all patients admitted between March 6, 2020 and December 14, 2023 and identified hospital-onset SARS-CoV-2 infections (newly positive SARS-CoV-2 PCR tests >4d after arrival) and community-onset infections (newly positive ≤4d after arrival). We excluded cases if local infection control teams discontinued precautions within 4d (suggesting a false positive or remote/resolved infection). We calculated weekly ratios between hospital-onset and community-onset SARS-CoV-2 cases to account for changes in community SARS-CoV-2 incidence over time. We then performed interrupted time series analysis, looking for changes in the ratio of hospital-onset to community-onset cases across three periods: pre-Omicron period with universal testing and masking in place (March 6, 2020–Dec 16, 2021); Omicron period with universal testing and masking in place (Dec 17, 2021–May 11, 2023); and Omicron period without universal testing and masking (May 12, 2023–Dec 14, 2023). We performed medical record reviews on 100 randomly selected hospital-onset cases after May 12, 2023 to examine if community-onset cases were being misclassified as hospital-onset cases. **Result:** During the study period, there were 626,908

Figure. Ratio of new hospital-onset SARS-CoV-2 infections to admissions for community-onset SARS-CoV-2 infection at five Massachusetts hospitals.



Mean weekly ratios of new hospital-onset SARS-CoV-2 infections versus new community-onset SARS-CoV-2 admissions. Hospital-onset infections were defined as a diagnosis >4d after arrival, and community-onset infections diagnosed ≤4d from arrival. The dashed vertical line denotes when Omicron became the dominant variant in Massachusetts (>50% of sequenced samples). The solid vertical line demarcates when universal admission testing and masking ended. Horizontal lines indicate the mean values for each period, and the shaded areas represent a 95% confidence interval.

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.

Antimicrobial Stewardship & Healthcare Epidemiology 2024;4(Suppl. S1):s1–s2

doi:10.1017/ash.2024.97

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.

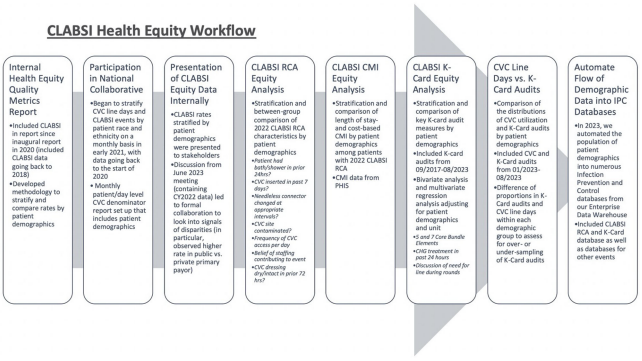
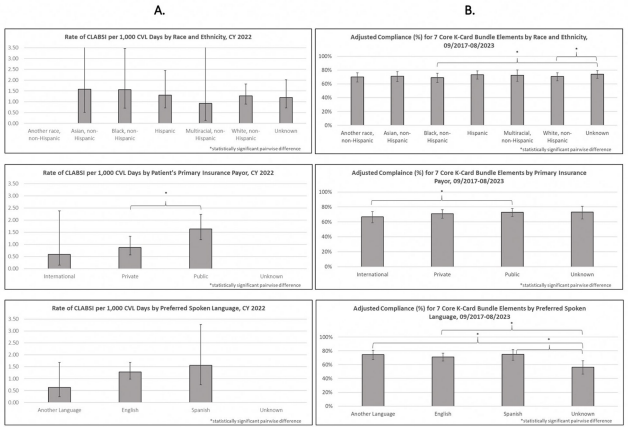


Figure 2. A) Rates of CLABSI per 1,000 CVL days by patient demographics, 01/2022-12/2022 and **B)** Adjusted compliance (%) for 7 core K-card bundle elements by patient demographics, 09/2017-08/2023. CLABSI: central line-associated bloodstream infection; CVL: central venous line; CY: calendar year; K-card: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



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