Presentation Type:
Poster Presentation

Temporal Change of Risk Factors in Hospital-Acquired *Clostridioides difficile* Infection Using Time-Trend Analysis

Jiyoun Song, Columbia University; Bevin Cohen, Columbia University School of Nursing; Philip Zachariah, Columbia University Medical Center; Jianfang Liu, Columbia University School of Nursing; Elaine Larson, Columbia University School of Nursing

Background: In the past few decades, the epidemiology of *Clostridioides difficile* infection (CDI) has evolved. Given recent changes in the incidence of CDI and prevention efforts, we investigated temporal changes over a period of 8 years (2009–2016) in the incidence of and risk factors for CDI. **Methods:** Both pediatric and adult inpatients discharged from hospitals in metropolitan New York City were included. Individual and environmental (eg, pharmacological) risk factors were identified through a matched case-control by the length of stay at a ratio of 1:4. A Cochran–Armitage test or Mann-Kendall test was used to investigate trends of incidence and risk factors. **Results:** During the study period, 6,038 of 694,849 (0.87%) patients had a positive test for *C. difficile* during their hospitalization. Of these, 2,659 of 6,038 (44.04%) were identified as hospital-acquired CDI (HA-CDI) and just over half (3,379 of 6,038, 55.96%) were identified as community-acquired CDI (CA-CDI). There were no trends in total CDI incidence rates; rather, we detected downward trends in HA-CDI and upward trends in CA-CDI (P_{trend} < .05). Younger patients and patients with lower risk of illness had HA-CDI over time (P_{trend} < .05). Antibiotics were administered to more patients over time and in longer cumulative days (+3% and +3.1% per year). We detected a reduction in the receipt of high-risk antibiotics in all cohorts (−0.12% per year) and a decrease in cumulative days of high-risk antibiotics in the cohort with HA-CDI (−1.1% per year). When stratified by the type of high-risk antibiotics, the use of carbapenem, cephalosporins, clindamycin, and monobactam increased (+0.53%, +1.8%, +0.5%, and +0.39% per year, respectively), whereas the use of broad-spectrum penicillins and glycylcycline significantly decreased over time in all cohorts (−1.8% and −0.22% per year). Among the cohorts with HA-CDI, only cephalosporins showed a significant upward trend (+ 5.7% per year) and only fluoroquinolones showed a significant downward trend (−2.2% per year). Lastly, a reduction of proton pump inhibitors and an increased use of histamine-2 blockers were detected in all cohorts (−3.8% and +7.3% per year) (all P_{trend} < .05). **Conclusions:** Although the incidence of HA-CDI decreased, more effort to decrease all antibiotics use and cumulative days should be emphasized as part of antibiotic stewardship. The downward trends of high-risk antibiotics might have been associated with the decrease in the trend of HA-CDI; however, the impact of the trends of risk factors on the trend of HA-CDI should be further investigated.

Funding: None
Disclosures: None
Doi:10.1017/ice.2020.1050

Presentation Type:
Poster Presentation

Temporal Changes in Central-Line–Associated Bloodstream Infection Time Between Events, 2017–2018 Versus 2015–2016

Jonathan Edwards, Centers for Disease Control and Prevention; Katherine Allen-Bridson, Centers for Disease Control and Prevention; Daniel Pollock, Centers for Disease Control and Prevention

Background: The CDC NHSN surveillance coverage includes central-line–associated bloodstream infections (CLABSIs) in acute-care hospital intensive care units (ICUs) and select patient-care wards across all 50 states. This surveillance enables the use of CLABSI data to measure time between events (TBE) as a potential metric to complement traditional incidence measures such as the standardized infection ratio and prevention progress. **Methods:** The TBEs were calculated using 37,705 CLABSI events reported to the NHSN during 2015–2018 from medical, medical-surgical, and surgical ICUs as well as patient-care wards. The CLABSI TBE data were combined into 2 separate pairs of consecutive years of data for comparison, namely, 2015–2016 (period 1) and 2017–2018 (period 2). To reduce the length bias, CLABSI TBEs were truncated for period 2 at the maximum for period 1; thereby, 1,292 CLABSI events were excluded. The medians of the CLABSI TBE distributions were compared over the 2 periods for each patient care location. Quantile regression models stratified by location were used to account for factors independently associated with CLABSI TBE, such as hospital bed size and average length of stay, and were used to measure the adjusted shift in median CLABSI TBE. **Results:** The unadjusted median CLABSI TBE shifted significantly from period 1 to period 2 for the patient care locations studied. The shift ranged from 20 to 75.5 days, all with 95% CIs ranging from 10.2 to 32.8, respectively, and P < .0001 (Fig. 1). Accounting for independent associations of CLABSI TBE with hospital bed size and average length of stay, the adjusted shift in median CLABSI TBE remained significant for each patient care location that was reduced by ~15% (Table 1). **Conclusions:** Differences in the unadjusted median CLABSI TBE between period 1 and period 2 for all patient care locations demonstrate the feasibility of using TBE for setting benchmarks and tracking prevention progress. Furthermore, after adjusting for hospital bed size and average length of stay, a significant shift in the median CLABSI TBE persisted among all patient care locations, indicating that differences in patient populations alone likely do not account for differences in TBE. These findings regarding CLABSI TBEs warrant further exploration of potential

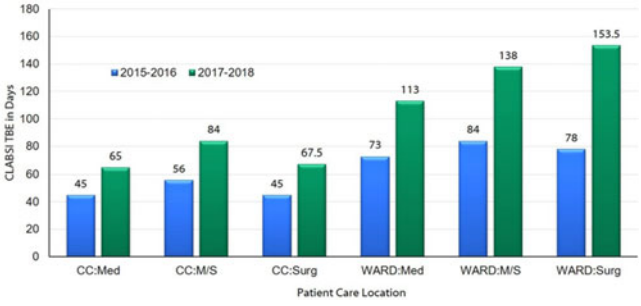

Fig. 1.

Patient Care Location	Number of CLABSIs	CLABSI TBE Shift of Median	95% Confidence Limits		P-value
CC:Medical	5027	17.0	12.1	21.9	<0.0001
CC:Med-surg	10475	25.0	20.3	29.7	<0.0001
CC:Surgical	2774	21.0	14.2	27.8	<0.0001
WARD:Medical	7494	42.0	34.2	49.8	<0.0001
WARD:Med-surg	7619	49.0	41.3	56.7	<0.0001
WARD:Surgical	3024	65.0	52.2	77.8	<0.0001

*Adjusted for hospital bed size and average length of stay

Fig. 2.