1316. A Multi-Pronged Approach to Control Healthcare Facility-Onset Clostridium difficile Infections
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Session: 150. HAI: C. difficile Risk Assessment and Prevention
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Background. Clostridium difficile infection (CDI) is one of the most common healthcare-associated infections. Timely diagnosis is key to reducing associated morbidity and costs. Healthcare-onset (HO) CDI is defined as infection diagnosed 72 hours after hospitalization. Centers for Medicare and Medicaid Services has established benchmarks for HO-CDI for hospitals, which are based on several factors including type of hospital and case mix index. There is a financial penalty if we are above the benchmark. In 2016, 20% of our community-onset C. difficile (CO-CDI) cases were misclassified as HO-CDI. In order to reduce this misclassification, we established a process to assist in early diagnosis.

Methods. We designed and implemented a nurse-driven C. difficile screening protocol to assist in early identification of CO-CDI. Every patient admitted to Keck Hospital (KH) (401 beds) and Norris Comprehensive Cancer Center (35 beds) was screened for diarrhea within the past 24 hours. If diarrhea was present, additional questions were used to capture CO-CDI cases. A nursing order for C. difficile testing was activated for patients who met any of these criteria. Additionally, we used Bristol stool scale (BSS) to standardize stool collection. Only Bristol stool type 7 was accepted by laboratory for processing. Our study period was January 1st through April 30th, 2017.

Results. Screening protocol and BSS were introduced on January 1st, 2017. During the baseline period, a total of 351 orders were placed with 31% within first 3 days of admission. During the study period, a total of 200 orders were placed with 43% within 3 days of admission. Compliance with using the screening tool was nearly 100%. Inter-rater reliability between nurses and lab for identifying the correct BSS was 100%. Baseline misclassification rate was 16%. With the introduction of this screening tool, misclassification decreased to 9%. The HO-CDI rate for the baseline period was 11.5 per 10,000 patient-days and it decreased to 6.27 per 10,000 patient-days in the study period.

Conclusion. We have demonstrated a reduction in HO-CDI rates by establishing a process to assist in early identification of CO-CDI.

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1317. A Multi-Pronged Approach to Control Healthcare Facility-Onset Clostridium difficile Infection in a Tertiary Care Community Hospital
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Background. Clostridium difficile infection (CDI) contributes to significant increases in healthcare-associated morbidity and mortality. Multiple strategies have been promulgated to accurately diagnose and to control healthcare facility-onset (HO) CDI. Sharp Memorial Hospital is a 438-bed tertiary care community hospital. In 2014, the standardized infection ratio (SIR) CDI was 1.406 (2006–2008 baseline) with a p value of 0.0085. We report the results of a multi-disciplinary approach that has reduced our HO-CDI SIR. The National Healthcare Safety Network definitions and methodologies were used throughout the study.

Methods. Various multi-disciplinary interventions were implemented over a 12 month period from April 2015 through March 2016 that included enhanced administrative support and the creation of a multi-disciplinary CDI Steering Committee (Figure 1). A Lean Six Sigma approach was launched that included a two-day rapid process improvement (RPI) workshop in July 2015 with participation of an interdisciplinary team of frontline staff, leaders from the 2 units with high CDIs, Infection Prevention, and Environmental Services. Subsequently, lessons learned from the RPI were disseminated throughout the hospital. The laboratory and information technology staff and the antimicrobial stewardship program also contributed.

Results. Compared with the intervention period, the post intervention period (April 2016 through March 2017) documented a significant increase in the number of samples submitted for CDI testing ≤ 3 days after admission and a significant decrease in the number of samples submitted > 3 days after admission. There were significant decreases in the HO-CDI SIR from 0.947 to 0.676 (p value 0.0485) and in quinolone days of therapy from 265 to 246 (p value 0.0001).

Conclusion. We have demonstrated a significant decrease in our HO-CDI using a multi-pronged approach that highlighted a return and reinforcement of back to basics infection prevention. High HO-CDI SIR in previous years might indicate missed community-onset, community-onset healthcare facility-associated cases. We did not employ other technologies such as the hands-free disinfection devices. Sustainability remains a future challenge.

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1318. Decrease of Hospital-Onset Clostridium difficile through Enhanced Electronic Decision Support
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Background. Literature supports appropriate testing as a key factor affecting hospital-onset (HO) Clostridium difficile (CDIF). It was recognized that our institution was a significant outlier in HO CDIF with a standardized infection ratio (SIR) of 2.567 in the second quarter of 2016 compared with a national SIR of 0.997. A February 2015 – April 2015 line list of CDIF LabID events were pulled from the National Healthcare Safety Network (NHSN) and medical records were reviewed for test appropriateness based on CDC/IDSA guidelines. Of these, 50% were related to inappropriate testing.

Methods. A report was created using our data warehouse to track specimens that were not collected within 24 hours of an order, as well as patients that had testing done in the previous 7 days. Physician and nurse education was completed on appropriate testing for CDIF, including symptoms and timely specimen collection. An enhanced order set was launched which embedded the testing algorithm into a series of cascading questions and best practice alerts (BPAs) which prompt the provider to reconsider ordering if the patient has less than 3 episodes of diarrhea in a 24 hour period, and/or has alternative diagnoses.

Conclusion. We have demonstrated a decrease in our HO-CDI using an enhanced electronic decision support tool. This tool was disseminated throughout the hospital, providing a return and reinforcement of back to basics infection prevention. High HO-CDI SIR in previous years might indicate missed community-onset, community-onset healthcare facility-associated cases. We did not employ other technologies such as the hands-free disinfection devices. Sustainability remains a future challenge.

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1319. First Environmental Investigation of Toxigenic *Clostridium difficile* at a Large Hospital in Bangladesh

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**Background.** *Toxigenic Clostridium difficile* is the most common cause of infectious diarrhea in hospitalized patients in the developed world and an emerging pathogen in developing countries due to increased use of broad-spectrum antibiotics. Although likely ubiquitous worldwide, the prevalence of toxigenic *C. difficile* spores in the hospital environs of developing countries is poorly understood. The objectives of the study are to isolate and characterize *C. difficile* from the hospital environs of a large hospital in Dhaka, Bangladesh.

**Methods.** As part of our environmental surveillance effort, we collected 330 shoe-bottom swab samples from hospital employees, patients, and visitors inside of a large hospital in Dhaka, Bangladesh. Samples were analyzed for *C. difficile* using anaerobic enrichment culture and molecular methods. Suspected colonies from shoe-bottom swab samples from hospital employees, patients, and visitors inside of the study are to isolate and characterize *C. difficile* from the hospital environs of a large hospital in Dhaka, Bangladesh.

**Results.** A total of 139 of 333 (41.7%) shoe-bottom swab samples were culture positive for *C. difficile* of which 19.8% samples were toxigenic (tetA, tcdA, cdtA, cdtB, and tpi genes) and strain typed using fluorescent PCR ribotyping, and MLVA methods. No reported disclosures.

**Conclusion.** We identified a high prevalence of toxigenic *C. difficile* with diverse ribotypes from hospital environmental shoe-bottom swabs in Bangladesh. This is the first hospital environmental report of *C. difficile* from Bangladesh.

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1320. Enhanced Cleaning and Education to Prevent Transmission of *Clostridium difficile* in Pediatrics

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**Background.** *Clostridium difficile* (CD) transmission via healthcare providers occurs directly or indirectly through a contaminated environment. At a tertiary-care cancer center, HA-CDI rates were higher for pediatric units than for other general oncology units. To address the problem, a multidisciplinary team including Infection Control, Nursing, and Environmental Services (EVS), was convened and identified refusals and room clutter as barriers to proper cleaning of rooms on the unit.

**Aim.** The aim of this study seeks to reduce HA-CDI in the inpatient pediatrics setting through environmental and educational interventions.

**Methods.** In the first phase of the study from February to April 2016, a baseline assessment of prevalent environmental disinfection practices was made among Nursing, EVS, Physicians, and Patient Representatives. Based on this feedback, the following were implemented during Phase 2, from June through October 2016:

1. Unit-wide disnfection with bleach twice a day including common and high traffic areas
2. Initiation of a ‘preferred time for cleaning’ program to engage families;
3. Enhanced visitor and family education on PPE use;
4. Creation of a communication plan in case of refusal to clean rooms;
5. Dedicated use of diaper scales.

**Results.** During the first phase of the study, the following barriers to cleaning were identified:
1. High refusal rate as cleaning was perceived as inconvenient by families due to timing;
2. Common perception among EVS staff that multiple requests for cleaning the room may appear intrusive to the families;
3. Excessive clutter in the room;
4. Lack of education regarding PPE use; and
5. Shared equipment for diapers.

To overcome these barriers, several interventions as outlined in methods were implemented.

In Phase 2, there were 0 cases of HA-CDI identified in pediatric patients starting in July through October, 2016.

**Conclusion.** Control of CDI on pediatric units poses unique challenges. Engagement of key stakeholders is essential to identify and meet these challenges and to devise effective strategies that will ultimately lead to reduced hospital-based transmission of CDI.

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