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 (SMH) is a 438-bed tertiary care community hospital. In 2014, the CDI standardized infection ratio (SIR) was 1.41 (2010-2011 baseline) with a p-value of 0.0005. We report the results of a multi-disciplinary approach that reduced our HO CDI SIR.

Objective
To assess the impact on the HO CDI SIR by implementing various interventions and partnering with leadership, frontline staff, physicians, microbiology laboratory, Environmental Services (EVS), and the Antimicrobial Stewardship Program (ASP).

Methods
Ongoing strategies known to reduce HO CDI were re-emphasized and various multi-disciplinary interventions were implemented at SMH over a 12-month period (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 frontline staff, leaders from the units with the highest HO CDIs, Infection Prevention (IP), and EVS. The RPI work group identified five key elements of focus (Figure 1). IP developed a CDI testing algorithm to assist nursing in assessing and identifying patients appropriate for testing. National Healthcare Safety Network (NHSN) LabID surveillance definitions and the 2010-2011 NHSN baseline was used for SIR analysis.

Results

Compared to the intervention period, the post-intervention period (April 2016 through March 2017) documented an increase in the number of specimens submitted for CDI testing ≤ 3 days after admission and a decrease in the number of samples submitted > 3 days after admission (Figure 2). Overall, there was a decrease in the number of specimens submitted between the three periods. There was a decrease in the CDI SIRs between the pre-intervention and post-intervention periods from 1.28 to 0.86 (P = 0.0228) (Figure 3) as well as quinolone days of therapy from 265 to 246 (P = 0.0001).

Conclusions

Efforts to decrease HO CDI were in place in 2014, but there was no significant impact on HO CDI SIRs until there was enhanced administrative support and when HO CDI reduction became an institutional priority that we were able to achieve a significant decrease in our HO CDI SIRs. A multi-pronged approach that highlighted a return and reinforcement to back-to-basics infection prevention principles was used. We did not employ other technologies such as hands-free disinfection devices; rather, emphasized the importance of disinfecting surfaces with bleach solution known to be effective against C. difficile spores. High SIRs in previous years may indicate missed community-onset and community-onset healthcare facility-associated cases. Each HO CDI was discussed at the CDI Steering Committee to identify and address opportunities for improvement. Ownership of HO CDI reduction was gradually shifted to the units. Root Cause Analyses identified common opportunities for improvement. An “auto-cancel” order if a sample was not submitted to the laboratory in 24 hours also decreased the number of inappropriate samples. There was increased visibility of healthcare-associated infection data with the development of a hospital-wide and unit specific data scorecard. Patient hygiene and appropriate specimen collection remain top opportunities at our facility. Future challenges include: sustaining current processes, continuing education of staff, identifying patients who need to be assessed for CDI testing, addressing inappropriate treatment of colonized patients, ensuring proper environmental hygiene, and full implementation of ASP strategies to optimize antimicrobial usage.

References


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