

Improving Bone Marrow Transplant Patient Outcomes by Implementing a *Clostridioides difficile* Screening Protocol

Kevin Smith MPH, MBA, CIC, CHEP & Christine Dolon MS, MLS(ASCP), CIC
Temple University Health System, Philadelphia, PA

Abstract

Clostridioides difficile (C.difficile) is the most common healthcare-associated infection in the United States. Due to multiple risk factors, Bone Marrow Transplant (BMT) patients are more susceptible to these infections. Due to increased C.difficile infection rates on our BMT unit throughout the years, we sought to implement a screening test to decrease our C.difficile infection rates and target antimicrobial prophylaxis. Stool samples were collected from each BMT patient, and marked to ensure it was not rejected by the lab. Two-step testing was performed. Patients who tested PCR positive were placed into isolation immediately and prescribed a prophylactic regimen of oral Vancomycin regardless of toxin status. The 2023 data showed our CDI rate was 0.77 per 1000 patient days, which is a 69% reduction from 2022 and an 81% reduction from 2021. These results support the use of admission screening as a tactic for reducing HAI C. difficile among the BMT patient population.

Objectives

- To reduce the incidence of hospital-associated C. difficile among our BMT patient population
- To better target antimicrobial prophylaxis for our BMT patients

Study Design

Upon admission, the electronic health record would require that stool sample was collected from each BMT patient upon admission. This specimen was specially marked to ensure it is not rejected by the laboratory and was sent to the lab for two-step testing. The specimen was tested regardless of form. Polymerase chain reaction (PCR) testing was completed first then reflexed to a toxin assay if the PCR result was positive. Patients who tested PCR positive (regardless of the toxin result) were placed into isolation immediately and prescribed a prophylactic regimen of oral Vancomycin. Patients with a positive PCR result remained isolated throughout the entirety of their inpatient stay to reduce the possible transmission within the unit. Patients who could not produce a stool specimen within the first 3 days of admission had their testing order cancelled and were not included in the trial. The process was outlined using tip sheets for nurses and physicians.

Results

Over the course of the trial (11/2022 to 11/2023), 354 BMT admission C. difficile tests were ordered. 49 tests (14%) were C. difficile PCR positive, 15 (4%) of which also tested positive for toxin production, and 22 (6%) were cancelled (Figure 2). The 2023 data showed our CDI rate was 0.77 per 1000 patient days, which is a 69% reduction from 2022 and a 81% reduction from 2021 (Figure 1). Additionally, zero HAI C. difficile infections were identified from July to December 2023.

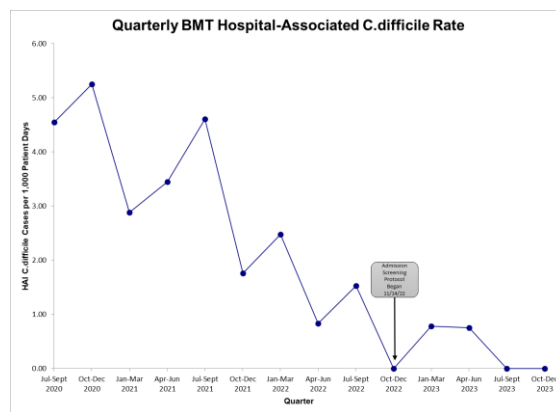


Fig. 1 HAI BMT Rate

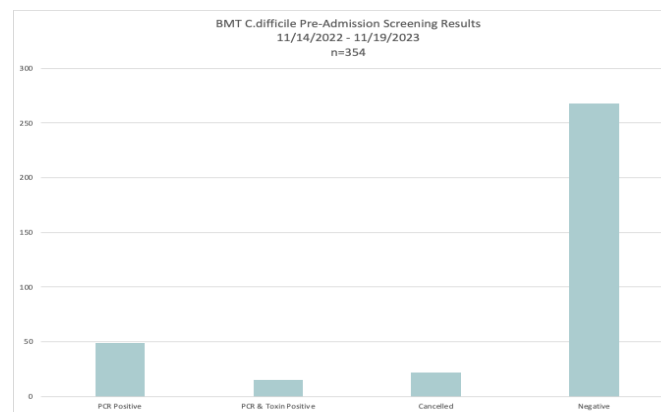


Fig. 2 C. difficile screening results

Conclusion

The implementation of a C. difficile admission screening protocol effectively reduced our CDI rate by: identifying and appropriately isolating patients colonized with C. difficile and providing additional guidance to physicians regarding whether prophylactic treatment was deemed necessary. These results support the use of admission screening as a tactic for reducing HAI C. difficile among the BMT patient population.

References

1. Magill, Shelley S., et al. "Changes in prevalence of health care-associated infections in US hospitals." *New England Journal of Medicine* 379.18 (2018): 1732-1744.
2. Tarabay J, Ayers M, Soni T, et al. Admission Screening for Clostridium difficile Infection (CDI) in Bone Marrow Transplant Populations. *Infection Control & Hospital Epidemiology*. 2020;41(S1):s113-s113. doi:10.1017/ice.2020.618.
3. Barker AK, Krasity B, Musuuzi J, Safdar N. Screening for Asymptomatic Clostridium difficile Among Bone Marrow Transplant Patients: A Mixed-Methods Study of Intervention Effectiveness and Feasibility. *Infection Control & Hospital Epidemiology*. 2018;39(2):177-185. doi:10.1017/ice.2017.286
4. Cho, Janice, et al. "Screening for Clostridium difficile colonization on admission to a hematopoietic stem cell transplant unit may reduce hospital-acquired C difficile infection." *American journal of infection control* 46.4 (2018): 459-461.

Disclosures

There are no disclosures to report.