



Proof Source: Two-step algorithm-based *Clostridioides difficile* testing as a tool for antibiotic stewardship

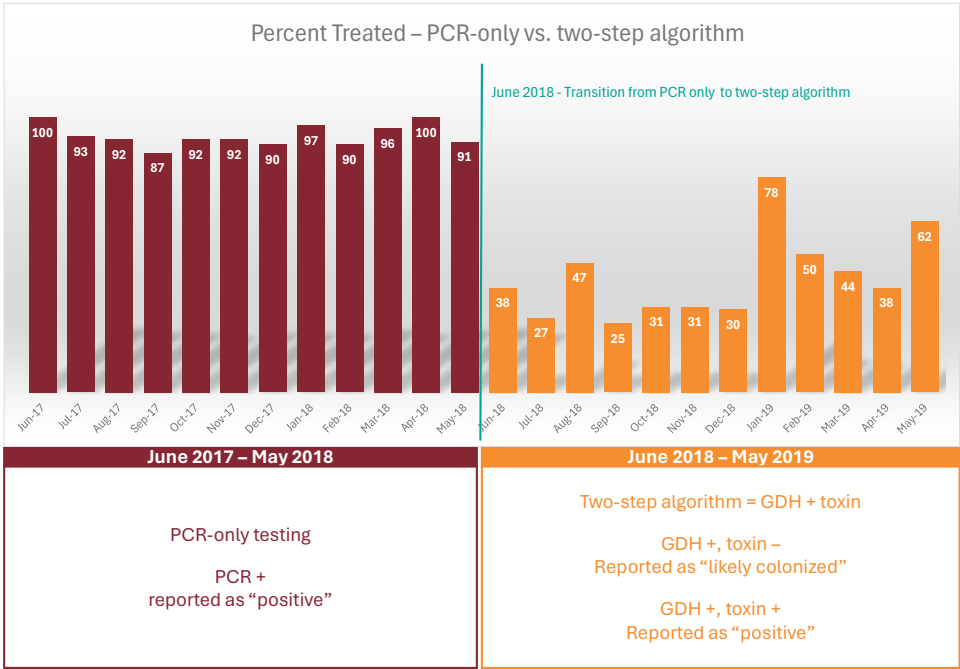
Dbeibo L, Lucky CW, Fadel WF, Sadowski J, Beeler C, Kelley K, Williams J, Webb D, Kara A. Two-step algorithm-based *Clostridioides difficile* testing as a tool for antibiotic stewardship. Clin Microbiol Infect. 2023 Jun;29(6):798.e1-798.e4. doi: [10.1016/j.cmi.2023.02.008](https://doi.org/10.1016/j.cmi.2023.02.008)

Proper diagnosis of *C. difficile* infection (CDI) in an inpatient population can be challenging. Non-infectious diarrhea is common in this patient population, which also exhibits high *C. difficile* colonization rates. While polymerase chain reaction (PCR) testing for CDI is very sensitive, it cannot differentiate between patients who are colonized and those with active CDI. This weakness can potentially result in overdiagnosis and overtreatment in those patients who are only colonized. To evaluate whether a change in testing protocol would affect treatment decisions, a retrospective analysis compared treatment rates before and after a transition from PCR-only testing to a two-step algorithm.

“We demonstrate that switching from a highly sensitive PCR test to a two-step test is associated with lower rates of treatment with *C. difficile*-specific antibiotic therapy.”

The transition from PCR-only to a two-step algorithm took place in June 2018 and data were analyzed for the 12 months before and 12 months following the transition. Treatment was defined as ≥ 2 days of *C. difficile*-specific antibiotics and treatment rates were compared based on test results over the study period (Figure 1).

Figure 1. Treatment with *C. difficile*-specific antibiotics over the study period.





There were 610 patients included in the study, with 354 patients reported as “positive” during the PCR-only testing period and 256 patients either reported as “positive” (n=114) or “likely colonized” (n=142) during the two-step testing period. Of those reported as “positive” during the PCR-only testing period, 93% (n=329) received treatment. During the two-step testing period, all 114 patients reported as “positive” received treatment, and 41% (n=59) of patients reported as “likely colonized” received treatment. Due to the lower treatment rates in patients who were reported as “likely colonized,” a significant decline in the overall rate of treatment with *C. difficile*-specific antibiotics corresponded with the change in testing. No association between other patient characteristics (age, immune suppression, inflammation, fever) and receipt of treatment was observed. The data analysis did show a strong correlation between study period and receipt of treatment, with “likely colonized” patients being 20 times less likely to receive antibiotics with no negative impact to patient outcomes.

Summary

- No negative impact was observed in “likely colonized” patients who did not receive treatment
- PCR-only testing may contribute to overdiagnosis of CDI and overtreatment with *C. difficile*-specific antibiotics
- A significant decrease in *C. difficile*-specific antibiotic treatment rates correlated with a change in testing from PCR-only to a two-step algorithm