Reduction in Inappropriate C. difficile Testing through Just-in-Time Education upon Order Entry

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BACKGROUND
C. difficile infection is one of the most common health care-associated infections.1 Lehigh Valley Health Network (LVHN) uses a C. difficile polymerase chain reaction (PCR) test to diagnose suspected C. difficile colitis. This test is highly sensitive but cannot distinguish between infection and asymptomatic colonization. Exclusive reliance on molecular testing without regard to clinical symptoms may result in overdiagnosis.2 There are multiple evidence-based interventions that can safely and effectively decrease inappropriate testing3-4

OBJECTIVE
We aimed to provide education and implement changes in computerized-order entry to provide just-in-time feedback regarding the appropriateness of C. difficile testing.

METHODS
We presented education to providers regarding C. difficile clinical criteria for appropriate testing beginning in February 2017. We implemented changes to our C. difficile testing computerized-order entry on Jan. 1, 2018 and provided the following alerts (Figure 1):

1. If the patient had not had ≥3 loose stools documented in the past 24 hours
2. If the patient had received a laxative in the past 48 hours
3. If the patient had negative C. difficile in the past 7 days
4. If the patient had a positive C. difficile test in the past 14 days

We retrospectively reviewed all hospitalized patients who had C. difficile testing for a one-year period prior to (Jan. 1, 2016–Dec. 31, 2016) and after education (Jan. 1, 2017–December 31, 2017), as well as prior to (January 1, 2017-Dec. 31, 2017) and after changes to order entry (Jan. 1, 2018–Dec. 31, 2018). We reviewed how many tests were performed during this period, laxative use, and if patients met the clinical definition of diarrhea (≥3 loose bowel movements/24 hours).

RESULTS
After education was provided regarding appropriate C. difficile testing, we found a 22% decline in C. difficile testing. After the implementation of changes to order entry, we found an additional 12% decline in C. difficile testing (Figure 2). We were not able to detect a significant change in appropriate testing with regards to the percentage of patients tested who had diarrhea in the 24 hours prior to testing (Figure 3) or to the percentage of patients who received a laxative in the 48 hours prior to testing (Figure 4).

CONCLUSIONS
Education provided in lecture-format and as just-in-time education upon order entry can successfully reduce inappropriate C. difficile testing.

CLINICAL IMPLICATIONS
Reduction in inappropriate C. difficile testing can prevent overdiagnosis, inappropriate treatment, and has potential implications for cost-savings.

REFERENCES

Figure 1: C. difficile Order Entry Real-time Educational Screen

Figure 2: # C. difficile Tests per 1,000 Patient Days from Jan. 2016–Dec. 2018

Figure 3: % Patients with ≥3 Stools/24 hours from Jan. 2017–Dec. 2018

Figure 4: % Patients Who Received a Laxative ≥48 hours Prior to Testing from Jan. 2017–Dec 2018