

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

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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 testing.³⁻⁴

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).

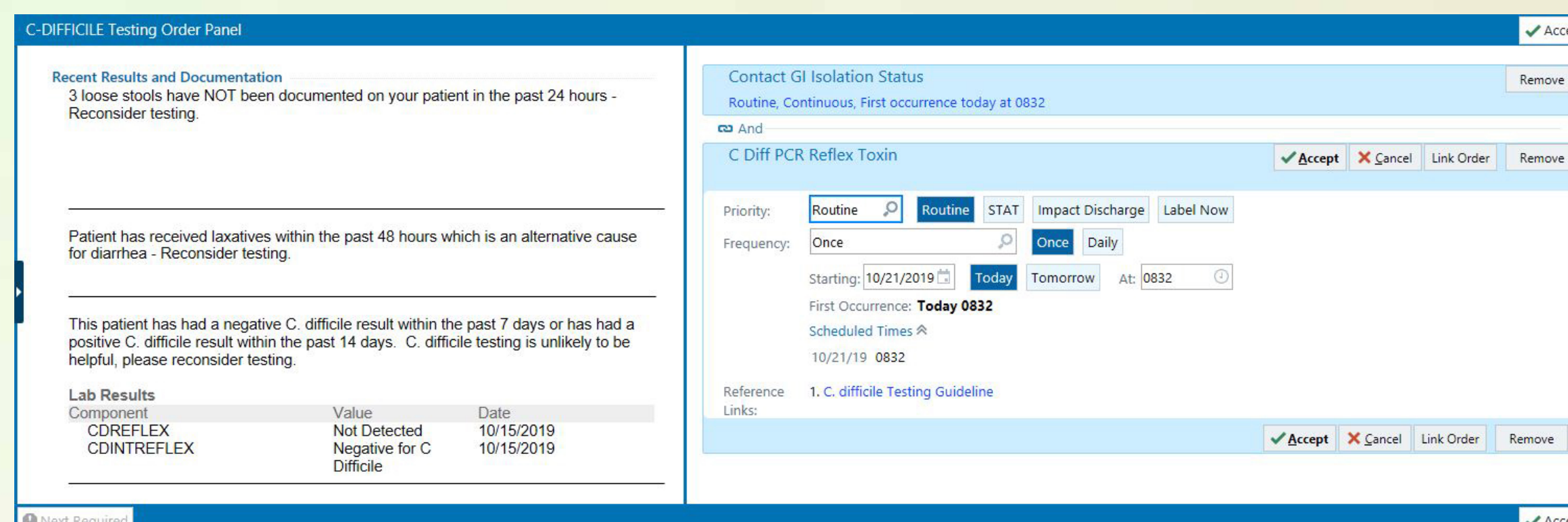


Figure 1: *C. difficile* Order Entry Real-time Educational Screen

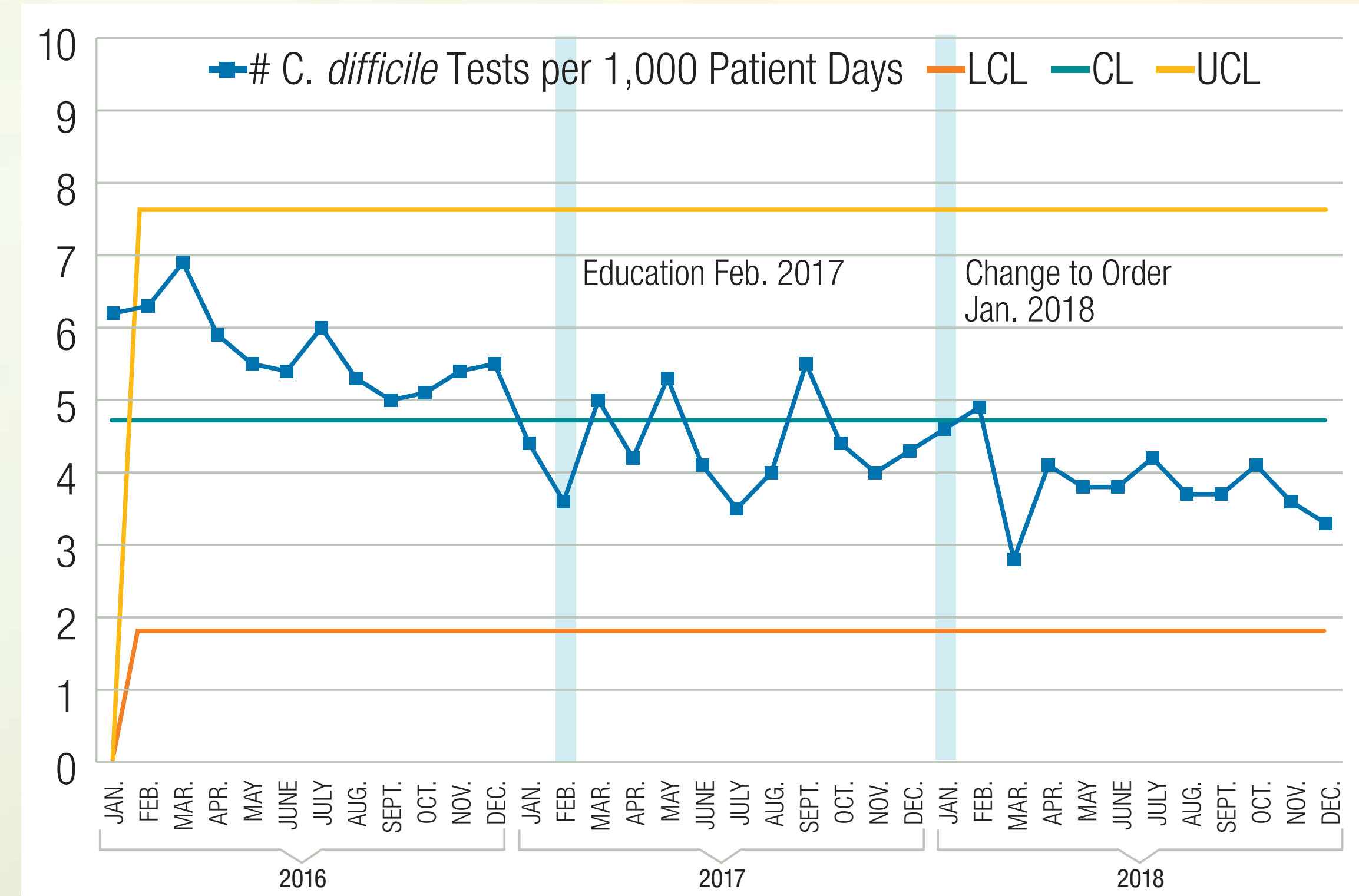


Figure 2: # *C. difficile* Tests per 1000 Patient Days from Jan. 2016–Dec. 2018

REFERENCES

- 1 McDonald LC, Gerding DN, Johnson S et al. Clinical practice guidelines for Clostridium difficile infection in adults: 2017 update by the Society for Health care Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA). Clin Inf Dis; 2018; 66:e2-48.
- 2 Polage CR, Gyorke CE, Kennedy MA et al. Overdiagnosis of Clostridium difficile Infection in the Molecular Test Era. JAMA Intern Med. 2015 Nov;175(11):1792-801
- 3 Katz DA, Lynch ME, Littenberg B. Clinical prediction rules to optimize cytotoxin testing for Clostridium difficile in hospitalized patients with diarrhea. Am J Med. 1996;100(5):487
- 4 Alerting Physicians during Electronic Order Entry Effectively Reduces Unnecessary Repeat PCR Testing for Clostridium difficile J. Clin. Microbiol. November 2013 51:11 3872-3874

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.

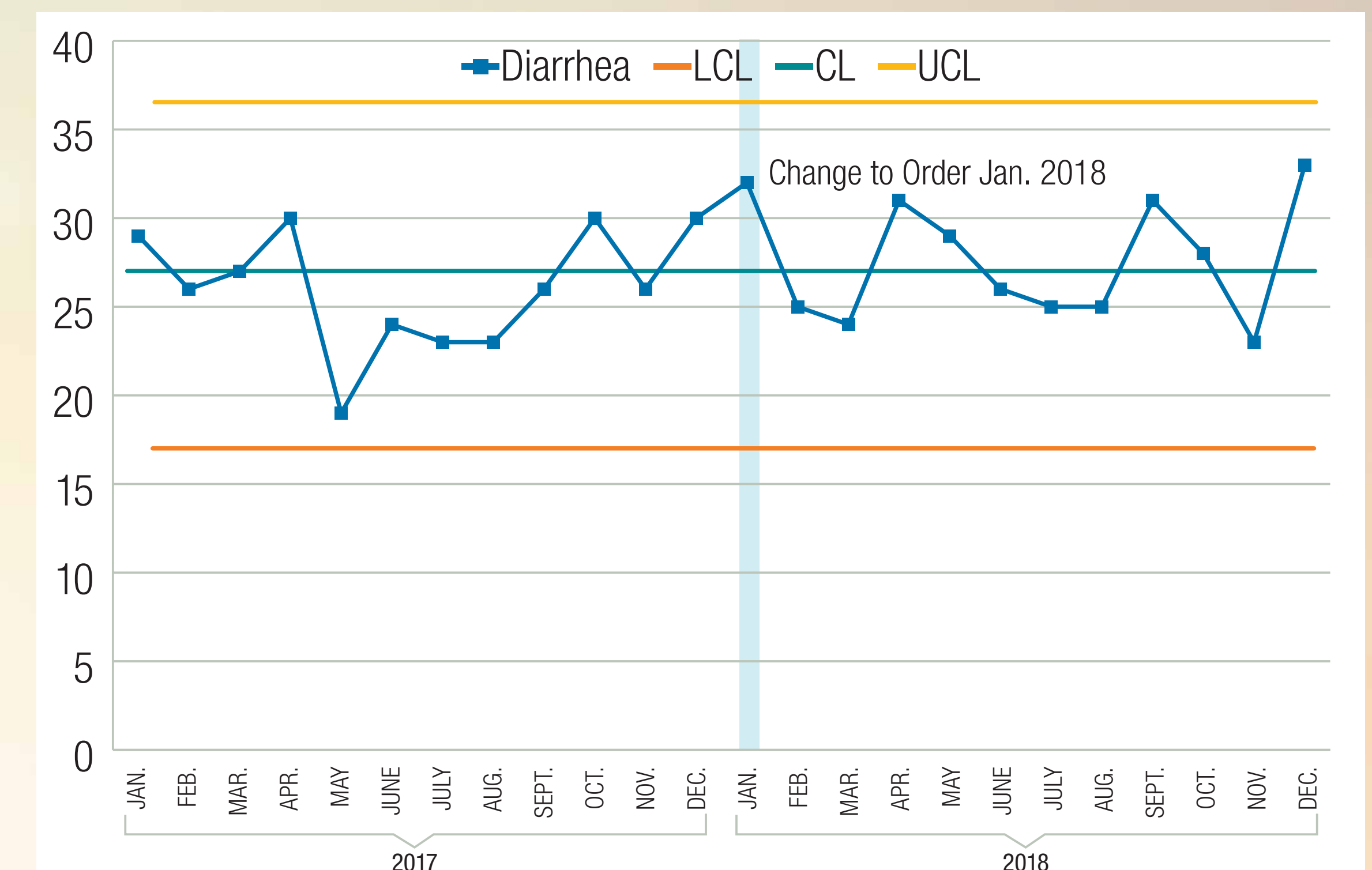


Figure 3: % Patients with ≥ 3 Stools/24 hours from Jan. 2017–Dec. 2018

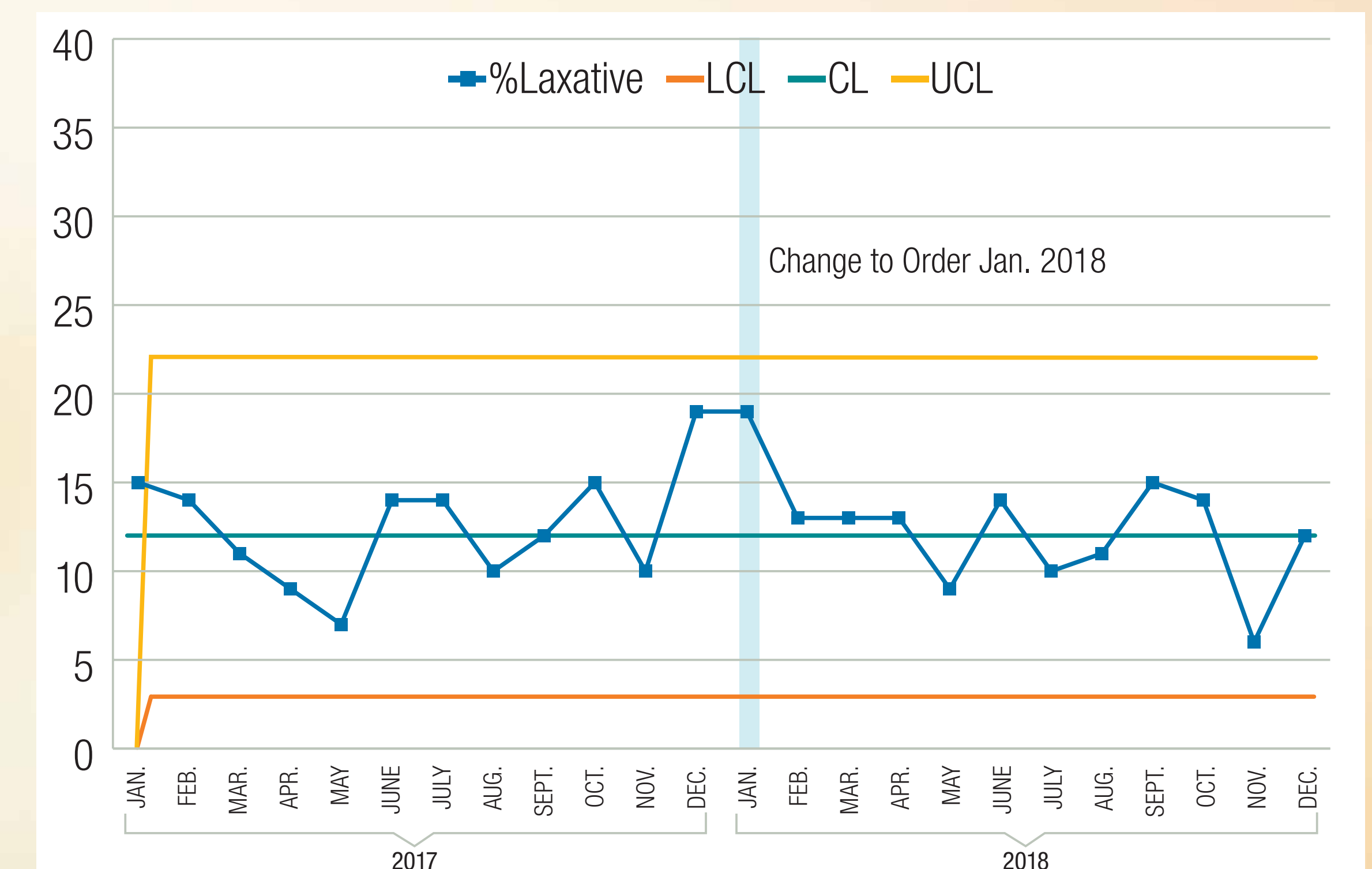


Figure 4: % Patients Who Received a Laxative ≤ 48 hours Prior to Testing from Jan. 2017–Dec. 2018