

# BACKGROUND

- PCR-based testing for *Clostridioides difficile* infection (CDI) may be overly sensitive.<sup>1</sup>
- Health systems have adopted various approaches to encourage testing only in appropriate patients, known as diagnostic stewardship.<sup>2</sup>
- Behavioral economics approaches help to make the right thing to do the easiest thing to do, or "nudge" people to make the choice you want them to make.<sup>3</sup>
- Limiting testing of patients for CDI is recommended by SHEA's Choosing Wisely campaign to encourage testing only in patients with documented diarrhea, in the absence of laxative use.<sup>4</sup>
- Within our health system, we first employed an alert that did not prohibit testing ("soft stop"), followed by a hard stop (based on lack of documented diarrhea or laxative use), that could be overridden only by calling the laboratory.

# **OBJECTIVES**

- To increase or maintain gains made in limiting *C. difficile* testing via a "hard stop" approach
- To decrease ordering burden on clinicians
- To reduce our CDI standardized infection ratio (SIR)

## **METHODS**

**Study design:** Prospective performance improvement initiative

**Setting:** 2-hospital (913-bed and 250-bed) community-based academic healthcare system in northern Delaware

**Microbiology methods**: PCR-only *C. difficile* testing conducted since January 2015

### **Interventions**:

- March 2015: Initial laxative alert: notified clinicians if laxatives administered in past 24 hours; did not prevent testing
- April 2017: New "hard stop" alert: order cancelled if <3 diarrheal stools per 24-hour period documented OR laxative use within 24 hours of order. Prompted by increase in SIR after NHSN re-baselining.
- Provider could override cancellation by calling micro laboratory; asked to document name of person in text field in form
- No further justification required
- Form not restricted to avoid noncompliant entries
- Entries monitored periodically and noncompliant persons emailed/called
- August 2019: To decrease the call burden for the clinicians and the microbiology lab, clinicians were able to override an alert by entering a clinical justification during the lab ordering process. (Fig 1).

#### Analyses:

- Number of C. diff tests completed per month
- Number of overrides per month
- CDI standardized infection ratios, using NHSN methodology
- Times-series analysis to account for each test ordering change

# A Behavioral Economic Approach to C. difficile Testing Stewardship

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- (p <0.001; Fig 2). • After introduction of "hard stop" alert: another sustained decrease in monthly C. diff orders by additional 29% (p<0.001).
- Overall: alerts decreased C. diff orders by 40% and decreased trend by 3.5% per month. • Concurrently, C. diff SIRs decreased from 1.20 (95% CI, 1.05-1.37) in 2015 to 0.52 (95% CI, 0.42-0.64) in 2019 (quarterly SIRs shown in Fig. 3).
- After allowing clinical justification instead of requiring a call to the lab, to date we have not observed significant trends in C. diff override rates (Fig 4).





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clinical rationale.	



Figure 3. Quarterly *C. difficile s*tandardized infection ratios (SIR), 2015-2019.



# CONCLUSIONS

- An iterative process to improve C. diff testing stewardship resulted in sustained improvements in C. diff ordering and hospital-onset CDI cases.
- Behavioral economics studies the effects of psychological, cognitive, emotional, cultural and social factors on the decisions of individuals and institutions.
  - Alerts that do not modify behavior (i.e., "soft stops") become less effective over time.
  - "Hard stops" that require additional action (e.g., a phone call) more effective, but gaming can occur (e.g., documenting their own name instead of a laboratorian's)
- Behavioral economic approaches emphasizing the importance of clinical reasoning allowed us to reduce burden on clinicians and laboratory staff without increasing inappropriate testing.

# **SELECTED REFERENCES**

- 1. Fang FC et al. J. Clin Microbiol 2017; 55:670-80.
- 2. Emberger J et al. Curr Treat Options Infect Dis 2020; 12: 258-74.
- 3. Thaler R, Sunstein C. 2008. Nudge: Improving decisions about health, wealth, and happiness.
- 4. SHEA. <u>https://www.choosingwisely.org/societies/society-for-healthcare-epidemiology-of-america/</u>. Rev. 12.2.19.

- After initial laxative alert: sustained decrease in monthly C. diff orders by 17%

- Figure 4. The number of alert
- overrides did not significantly increase after the override process was changed to require entering a clinical
- justification during lab ordering, rather than a phone call to the lab.