

Diagnostic Stewardship Interventions for *Clostridioides difficile* (*C. difficile*) Infection

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Objectives

- Describe difference between hospital onset *C. difficile* and clinical syndrome of *C. difficile*
- Describe how colonization (not infection) of *C. difficile* can result in a positive test
- Identify diagnostic stewardship interventions for *C. difficile* testing

Hospital Onset *C. difficile* Infection Criteria

1. **Positive lab test*** greater than 3 days after admission
2. Greater than 8 weeks since most recent positive test

**This is not a clinical diagnosis*

Hospital onset *C. difficile* impacts hospital ratings

UNM HOSPITAL

2211 LOMAS BOULEVARD NE
ALBUQUERQUE, NM 87106
(505) 272-2111

Overall rating :
★●●●●
[Learn more](#)

Distance : 3.2 miles
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PRESBYTERIAN HOSPITAL

1100 CENTRAL AVENUE SE
ALBUQUERQUE, NM 87106
(505) 724-8386

Overall rating :
★●●●●
[Learn more](#)

Distance : 4.3 miles
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LOVELACE MEDICAL CENTER

601 DR MARTIN LUTHER KING JR AVE NE
ALBUQUERQUE, NM 87102
(505) 727-8000

Overall rating :
★★★★●
[Learn more](#)

Distance : 4.6 miles
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UNM HOSPITAL

PRESBYTERIAN HOSPITAL

LOVELACE MEDICAL CENTER

New Mexico

← Lower Numbers are Better ←

Hover over the caret for estimated range of results

Hospital	Rate
UNM HOSPITAL	1.530
PRESBYTERIAN HOSPITAL	1.050
LOVELACE MEDICAL CENTER	0.760

Hospital Compare data, 2019

The presence of *C. difficile* is not equivalent to an active *C. difficile* infection

The presence of *C. difficile* toxin is necessary for active infection to exist



C. difficile



Toxigenic



Non-toxigenic



Active Toxin



*No active
toxin =
colonization



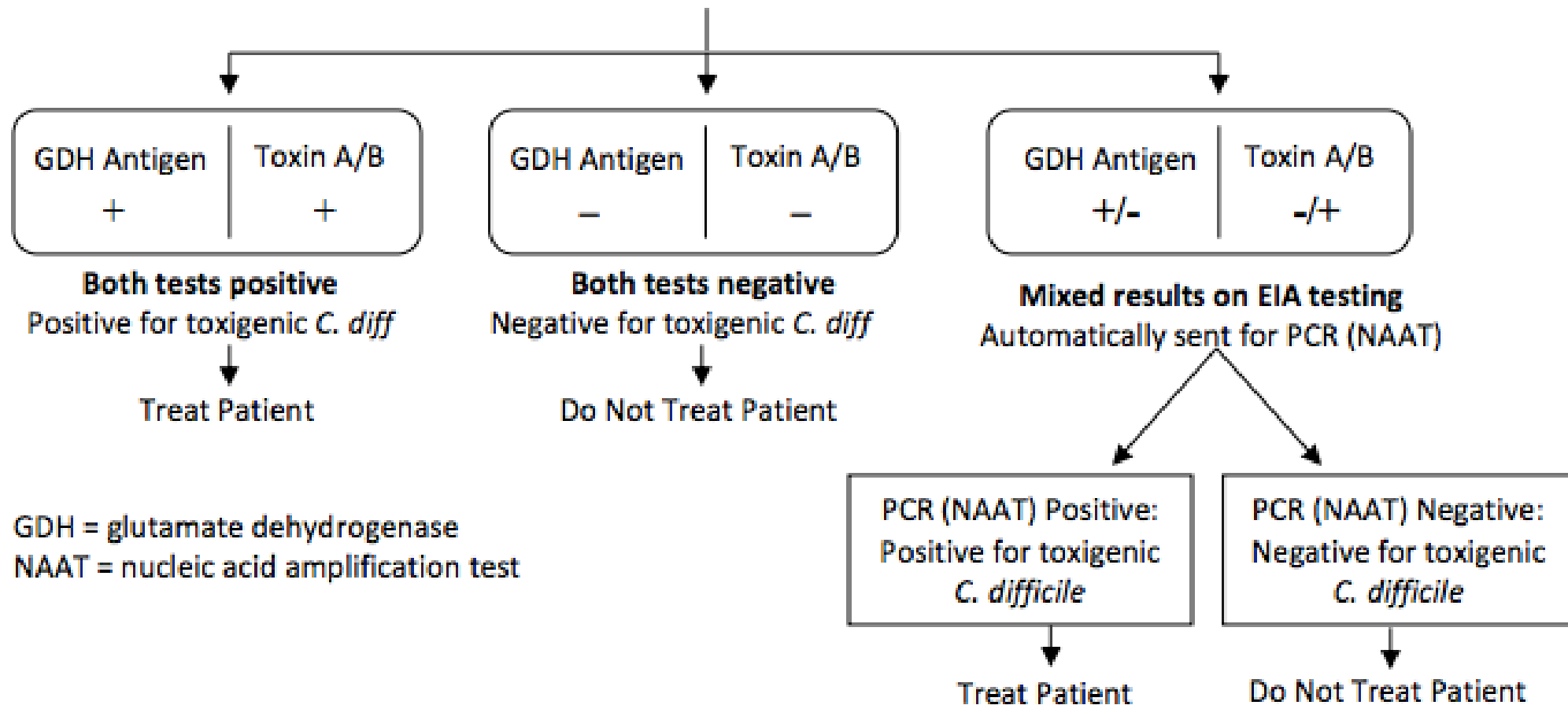
Non-toxin
producing

As of now, it is NOT standard of care to treat someone who does not have the syndrome of infection (i.e. treatment of colonization)

C. difficile colonization can result in positive *C. difficile* test even when infection is not present

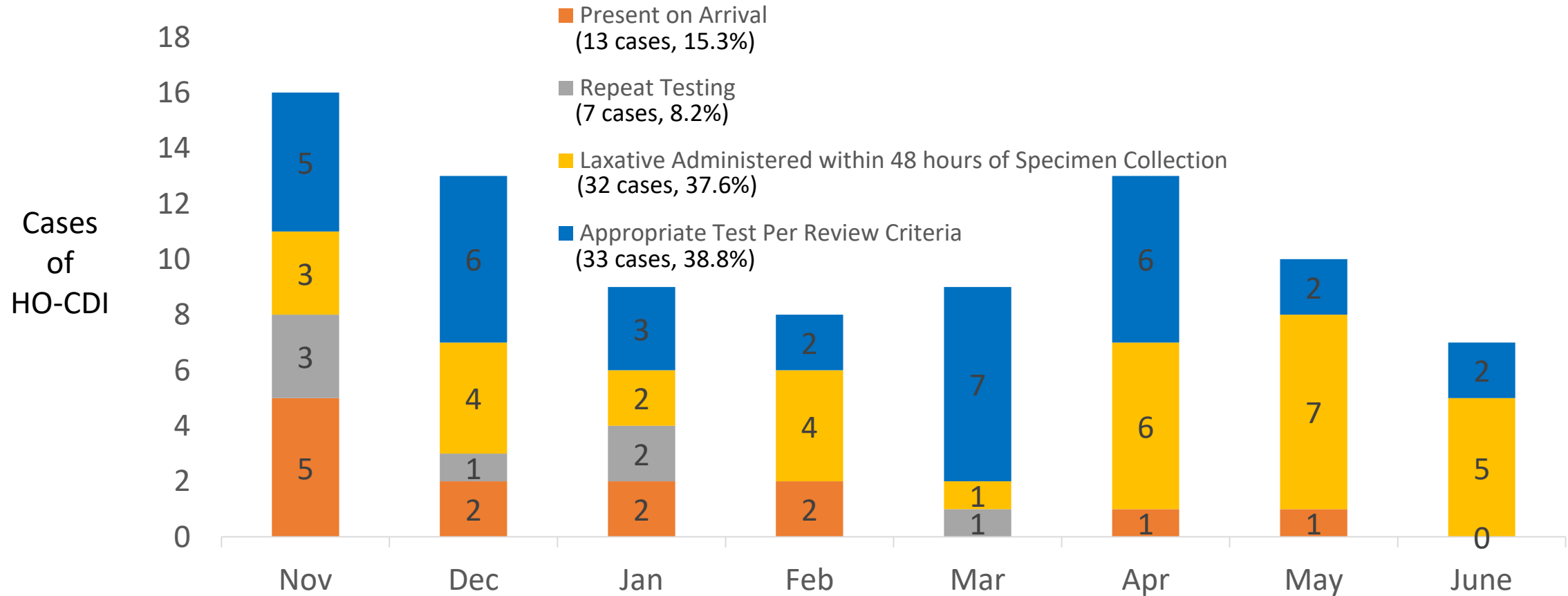
C. difficile colonization can result in positive *C. difficile* test even when infection is not present

Liquid stool sent to lab



GDH = glutamate dehydrogenase
NAAT = nucleic acid amplification test

Inappropriate *C. difficile* Testing at UNM



Bundled Intervention to Reduce *C. difficile*

- Diagnostic Stewardship
- Infection Control
- Antimicrobial Stewardship

Bundled Intervention to Reduce *C. difficile*

- **Diagnostic Stewardship**
- Infection Control
- Antimicrobial Stewardship

Diagnostic Stewardship: Intervention #1

- Clinical Decision-aid Tool (“pilot”)
 - Implemented on selected nursing units
 - Providers and nurses educated
 - Provided recommendation, did not preclude testing

PROVIDER QUESTIONS

- Has your patient had 3 or more loose stools in the last 24 hours?
 - ☐ Yes
 - ☐ No → STOP Cdiff testing NOT recommended. (Unless concern for toxic megacolon/ileus)
- Has your patient received laxatives within the last 48h?
 - ☐ Yes → STOP Cdiff testing NOT recommended. (Can consider holding laxatives)
 - ☐ No
- Does your patient have at least one of the following?
 - ☐ Fever ☐ Leukocytosis ☐ Cramping
 - ☐ Lower abdominal pain ☐ Abdominal distention
 - ☐ None → STOP Cdiff testing NOT recommended, first assess for alternative causes of diarrhea.
- Has your patient been tested within the last 7 days and been negative for Cdiff?
 - ☐ Yes → STOP Cdiff testing NOT recommended.
 - ☐ No

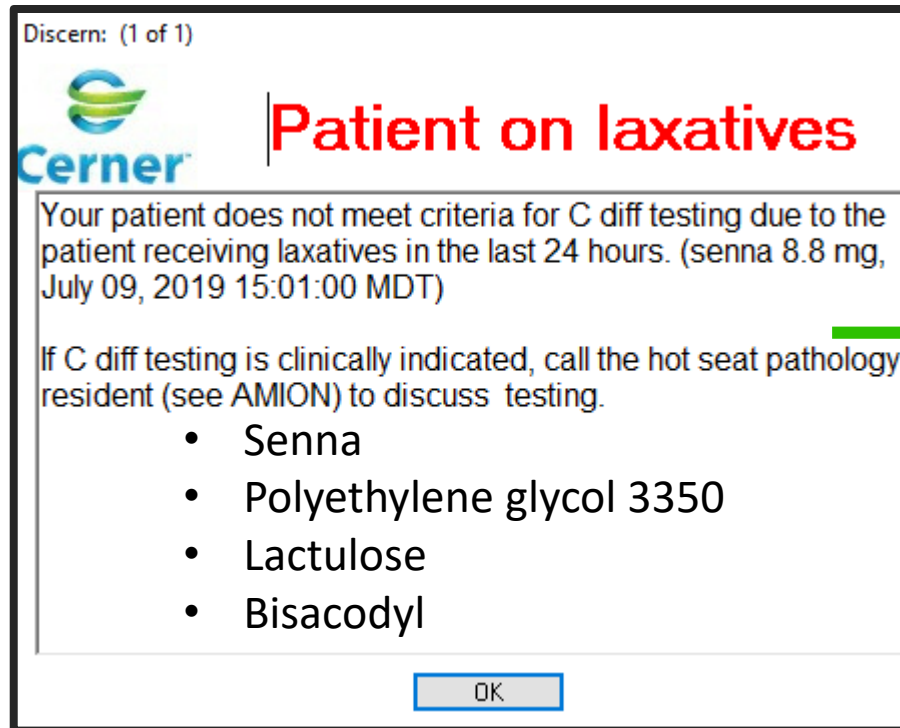
NURSE QUESTIONS

- Has your patient had 3 or more loose stools in the last 24 hours?
 - ☐ Yes
 - ☐ No → STOP Cdiff testing NOT recommended. (Unless concern for toxic megacolon/ileus)
 - Has your patient received laxatives within the last 48h?
 - ☐ Yes → STOP Cdiff testing NOT recommended.
 - ☐ No
-
- ☐ Cdiff testing recommended (provider to place order, nurse will collect)
 - ☐ Cdiff testing NOT recommended and NOT ordered
 - ☐ Cdiff testing NOT recommended, provider disagrees, testing ordered (provider to place order and provide reason below, nurse will collect)

Diagnostic Stewardship: Intervention #2

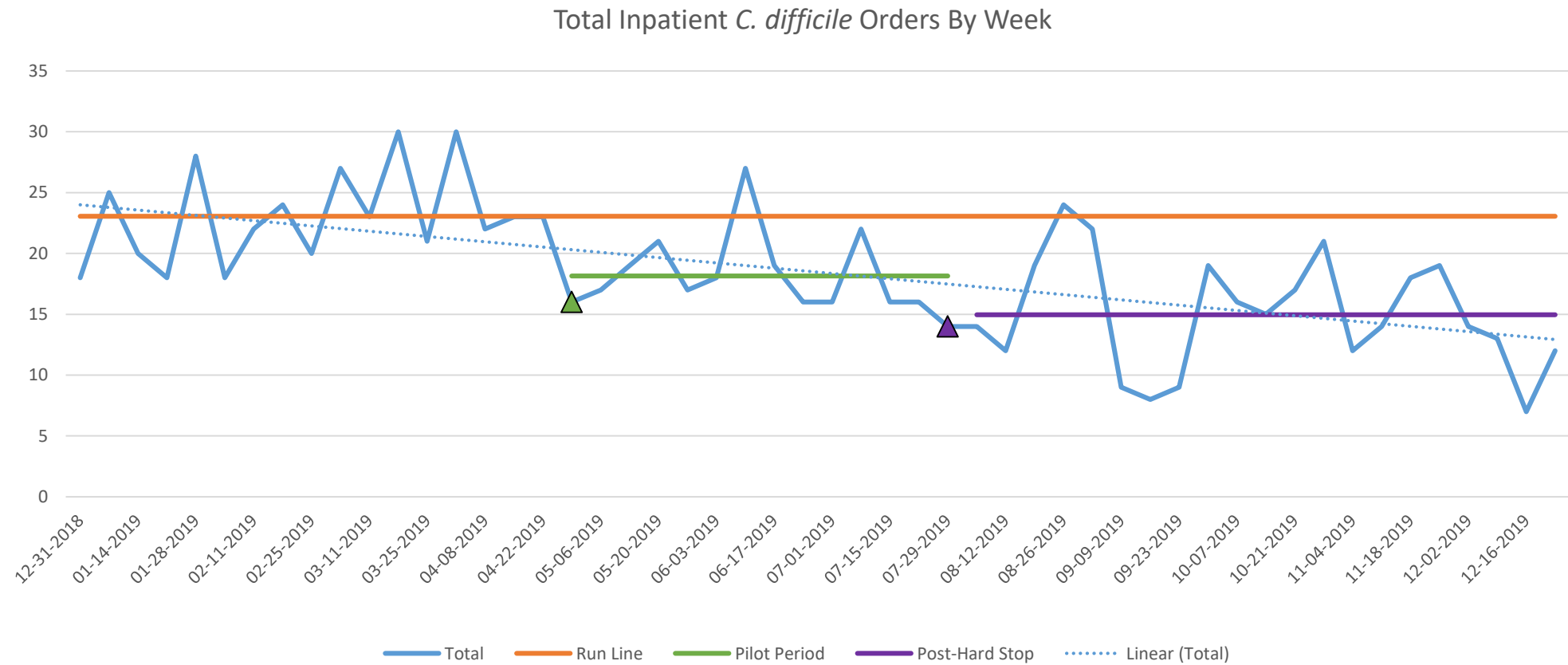
- Electronic Medical Record (EMR) Hard Stop
 - *Can be bypassed* by paging hot seat pathology resident
- Automatically prevent testing order if at least one of the following was present:
 - Laxatives administered within last 24 hours
 - Processed *C. diff* test within last 7 days

EMR Hard Stop



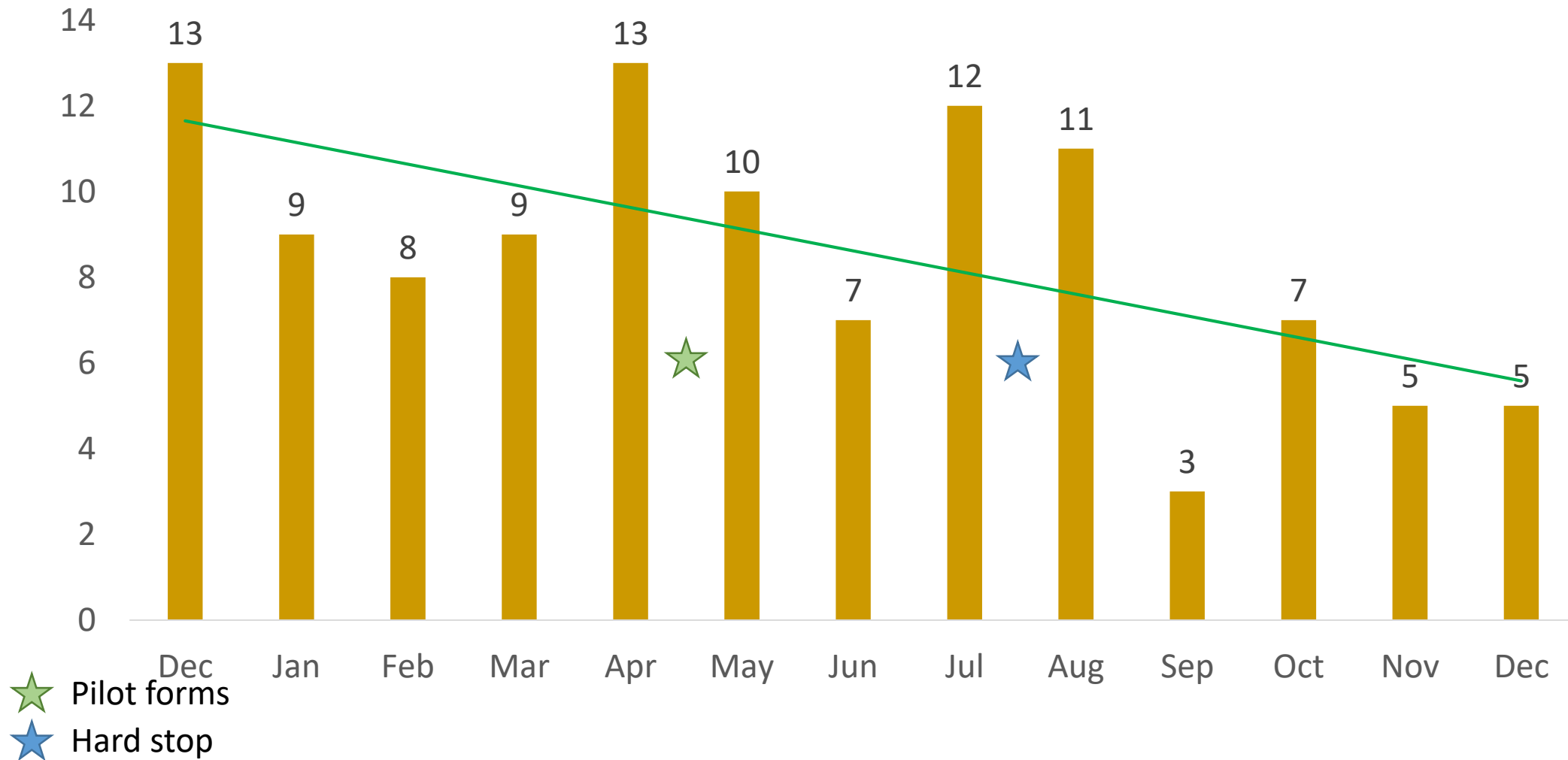
- ~ 9 hard stop calls
- 0 positive tests

Following the interventions total *C. difficile* tests ordered decreased
~ 30%

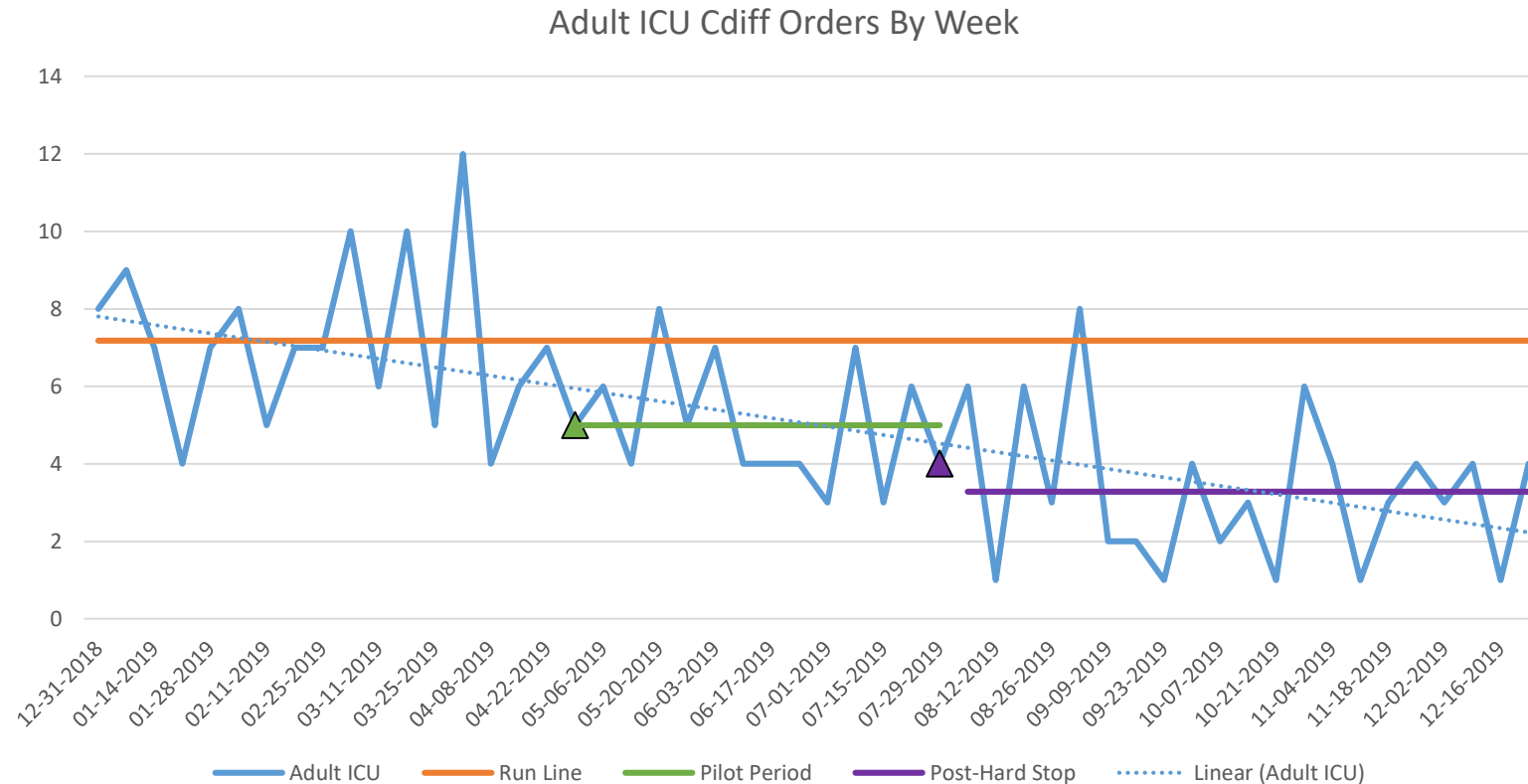


Hospital acquired *C. difficile* infections observed decreased

Total Hospital Onset *C. difficile* Infections FY19-FY20



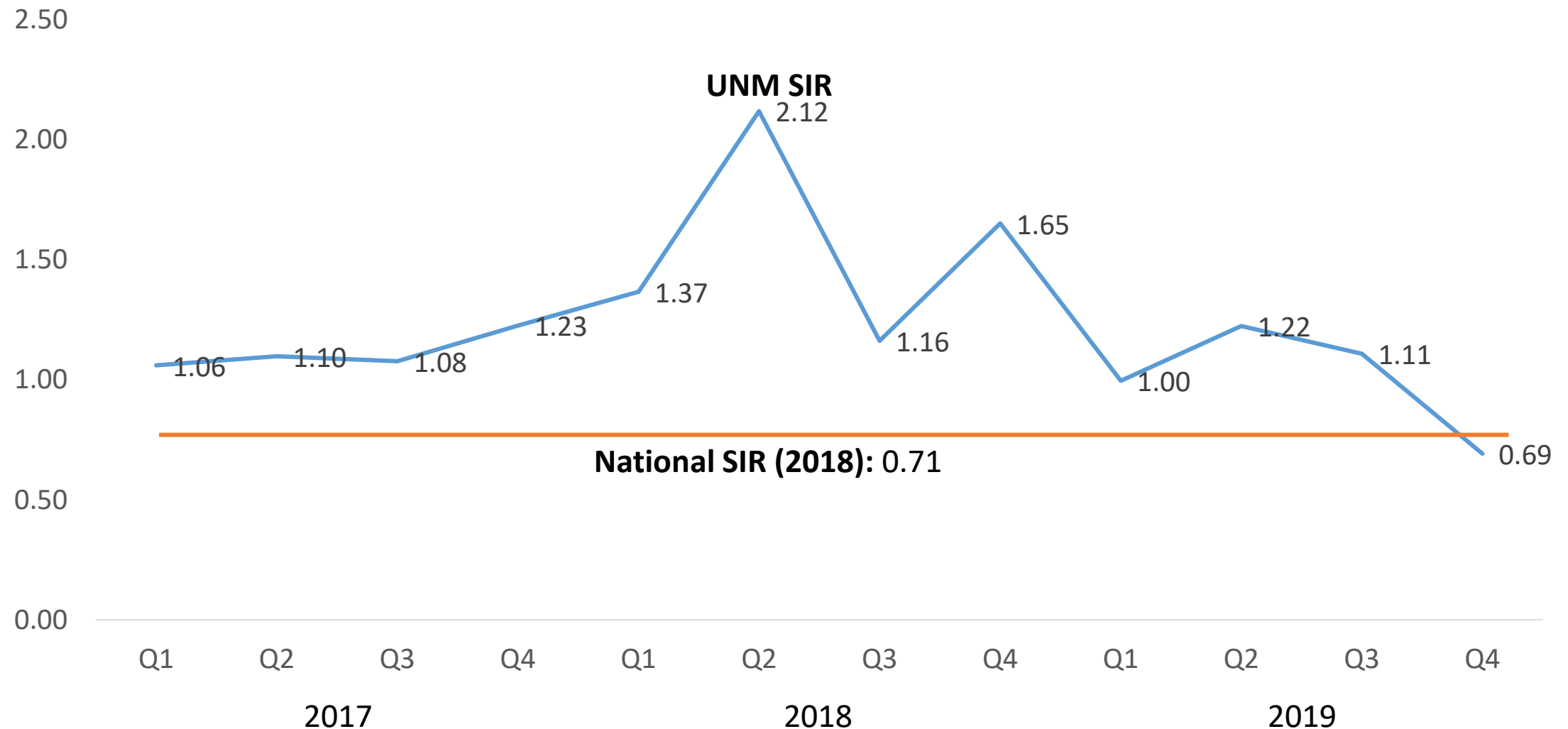
Intensive Care Unit (ICU) *C. difficile* tests ordered decreased by ~ 50%



Hospital acquired *C. difficile* infections observed in ICU decreased

Location	2018	2019	% Change
ICU	51	17	67% decrease
PCU	84	76	10% decrease

Hospital Onset *C. difficile* SIR trends below National SIR



Take Home Points

- Hospital onset *C. difficile* is not equivalent to clinical syndrome of *C. difficile*
- Positive *C. difficile* test can reflect colonization and not infection
- Diagnostic stewardship interventions may
 - Reduce number of *C. difficile* tests ordered
 - Associated with lower rates of hospital onset *C. difficile* infection

Acknowledgments

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Thank You

