The Use Of a Nursing Screening Tool and a Clinical Decision Support Order in the Electronic Health Record to Reduce *Clostridium difficile* LabID Events.

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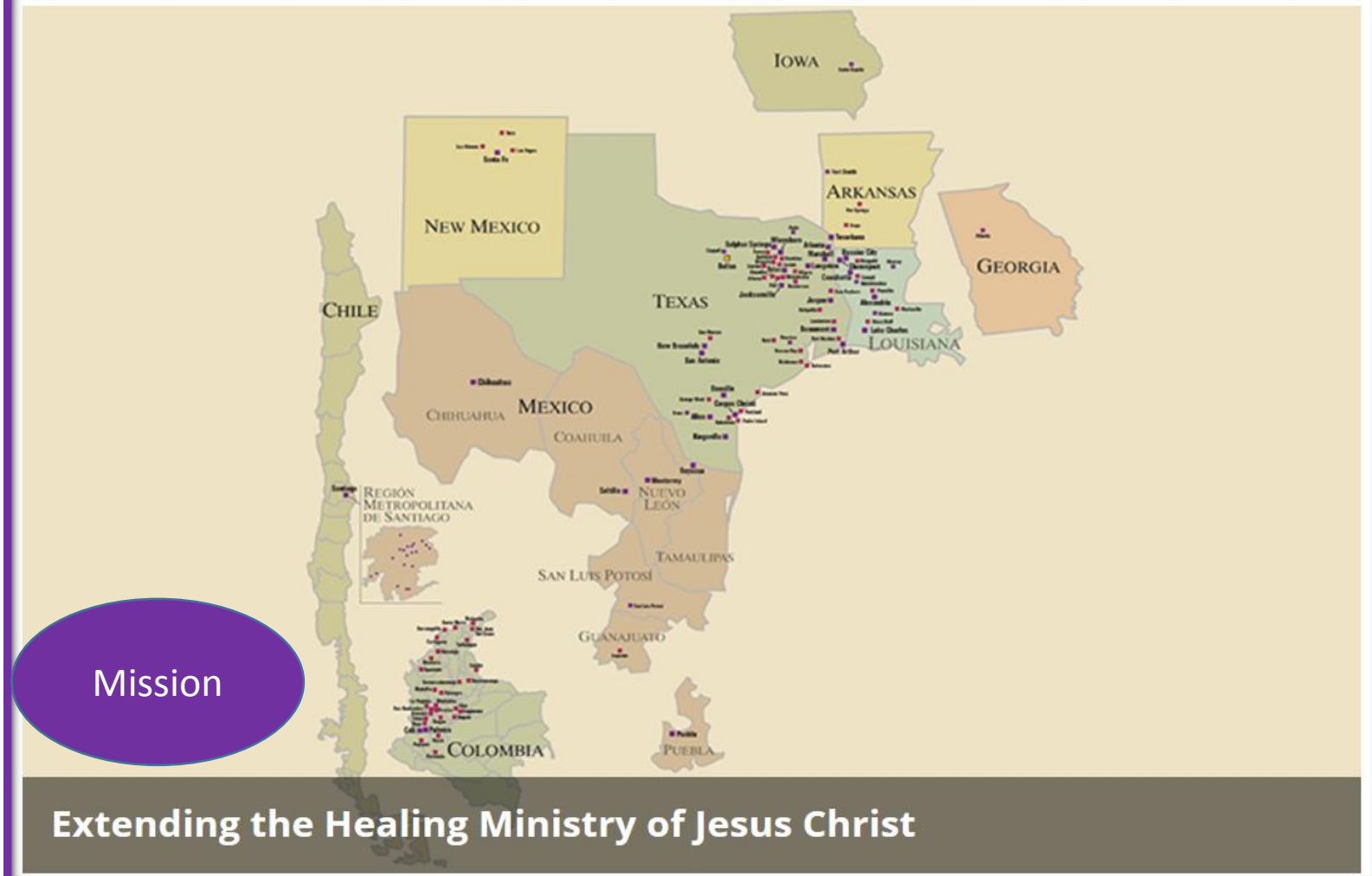
Conflict of Interest Disclosure

No real or conflicts of interest to report for:

- Michelle Charles MSN, RN or
- Karen Vallejo MSN, RN, CIC

Christus Health



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Objectives

- Describe the process for the development of a nursing screening tool for *Clostridium difficile* (*C. diff)*and Clinical Decision Support (CDS) order in the EHR.
- Discuss the workflow and the implementation process of the Emergency Department and inpatient screening tools in the EHR.
- Describe the Impact of the implementation of the screening tool and CDS ordering for *C. diff* and the reduction of inappropriate testing and LabID events.
- Discuss lessons learned from the implementation of *C. diff* initiative.
- Next Steps

What is *C. difficile?*

https://youtu.be/WNfFQI18ABI

All Hands on Deck

Clinical Education

Clinical Standards

Health Informatics

Lab

Infection Prevention

Quality

Pharmacy

Physicians

Nurses

C. *difficile* Testing Guidelines

To facilitate enhanced diagnostic practices, the following guidelines are recommended:

C. difficile testing should only be performed on patients with clinically significant diarrhea defined as **3 or more loose or liquid stools that occur in a 24-hour period**. Providers should ensure that the patient has not been administered laxatives in the prior 24-48 hours as a possible explanation of diarrheal symptoms. C. *difficile* testing should NOT be ordered on patients who have an ileostomy.

C. difficile testing is not recommended as part of a fever workup or evaluation of an elevated WBC unless there is accompanying diarrhea as defined above.

C. difficile testing should not be performed on formed or hard stool samples or on patients who have had a positive specimen within the preceding 21 days as the test may remain positive for months despite clinical response to treatment.

Due to the sensitivity of the PCR test only one specimen will be tested per seven days if it tests negative. When repeat testing is performed for CDI within a 7-day period, the pre-test probability for the second assay is so low that the ratio of true-positive results to false-positive results becomes very unfavorable; this could result in misdiagnosis for some patients.

To operationalize these guidelines, the laboratory will not perform a *C. difficile* PCR test in the following:

- Patients who have previously had a positive PCR for *C. difficile* in the last 21 days
- If stool specimen is received > 72 hours after being ordered
- When the specimen received in the laboratory is formed stool or Type 1 -6 on the Bristol Stool Chart
- Only one specimen will be tested by PCR per 7 days if tested negative

Solutions

- Elimination of inappropriate testing
  - Ensure screening tool is utilized
  - Notify Infection Preventionists to review protocol to ensure appropriate testing
    - The House Supervisor is notified after hours, weekends and holidays until everyone understands the process
- Appropriate testing
  - Prompt testing of patients with diarrheal illness within the first 3 days of hospital admission
  - Ensure patients meet criteria in testing guideline/algorhythm
- Notification of positive screening
  - Charge nurse, Infection Preventionist, Nurse Manager, Pharmacist House Supervisor, and Physician

NHSN *C diff* LabID Event Reporting

- CDC NHSN Definition:
  - *C. difficile* LabID Event: A healthcare facility onset (HO) of a specimen collection date >3 days after inpatient admission to the facility.
    - which can result in over reporting due to asymptomatic C. difficile colonization.

- The purpose of LabID event reporting is to enable laboratory testing data to be **used without clinical evaluation of the patient** and is least subjective

- Prompt *C difficile* testing of patients with diarrheal illness within the first 3 days of hospital admission will improve hospital onset C. difficile LabID reporting accuracy

Goals: Early, Rapid Identification, Diagnosis and Treatment of *C. Diff*

Primary Goal

Rapid Diagnosis that will prompt treatment and implementation of contact precautions that can limit the spread of *C. diff* in the environment of care.

- Screening tool in the ED and inpatient settings to Rapidly Identify Possible *C. diff* patients.
- Established testing criteria to rule in or rule out *C. diff* when test is being placed

Secondary Goal

Rule out C. Difficile in patient with Diarrhea

- Proper documentation of Stool in regards to consistency of stool, amount and over what time period
- Lab Policy with established criteria to process *C. diff* test based on the stool consistency and stated protocol.
- Hardwiring of placing patient on Contact precautions when suspected of C. diff or positive for *C. diff*.

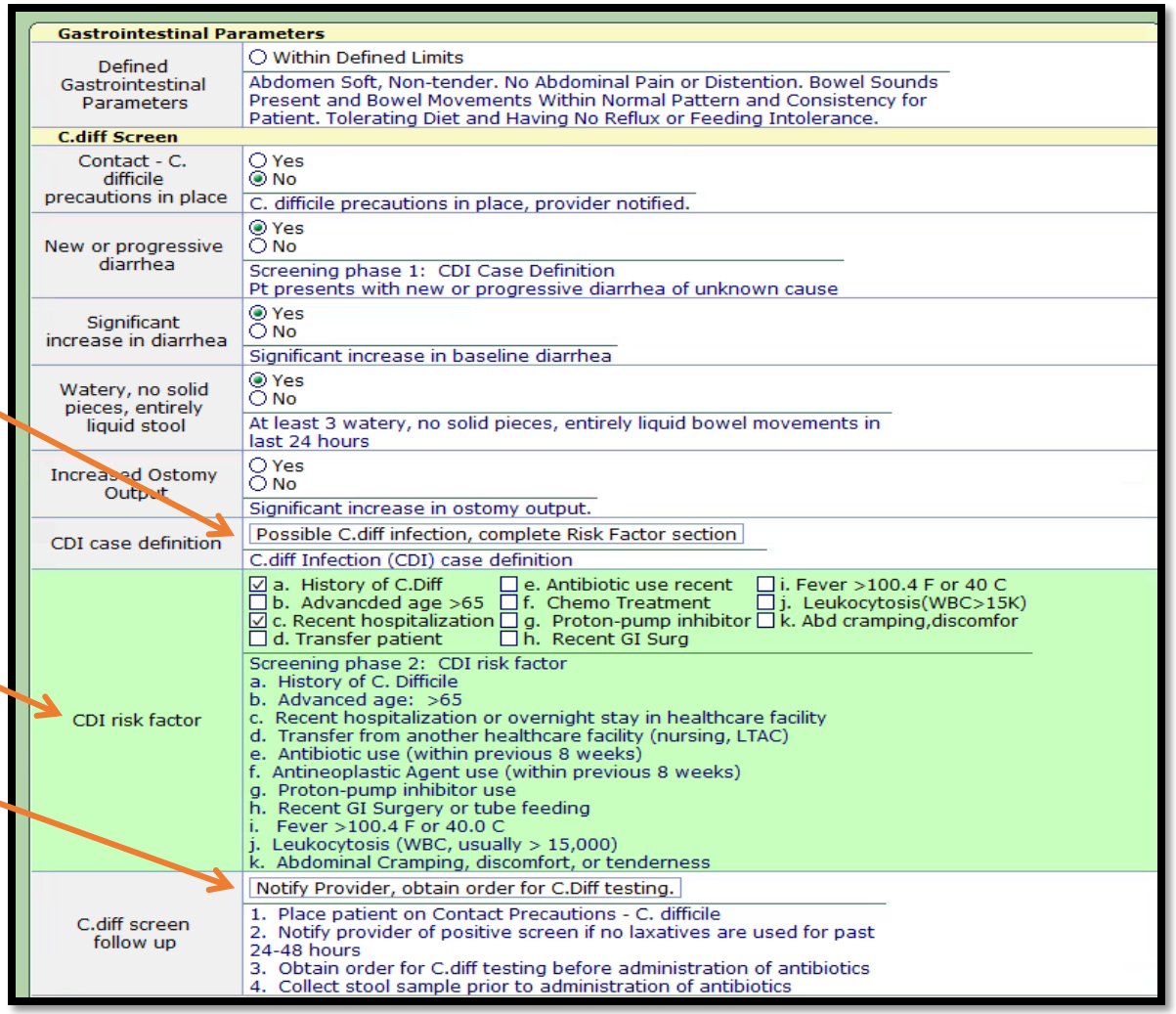
Methods

- A multidisciplinary *C. diff* Collaborative team formed that included Infection Prevention, Health Informatics, Lab, Pharmacy, Quality, Clinical Standards, Physicians and Nurses.
- A nursing screening tool based on the approved *C. diff* testing guideline was built within the ED and inpatient GI assessment.
- A *C. diff* order was built with clinical decision support to guide the provider(s) with appropriate guidelines for the ordering of a *C. diff* test.
- Job aids were developed and distributed 2 weeks prior to implementation.
- Notification *to C. diff* orders to the Infection Preventionists was placed in the EHR.
- A post-collaborative *C. diff* meeting for Phase 1 was held 6 months after implementation to evaluate the processes and the outcomes of the initiative.

Nurse Screening Tool

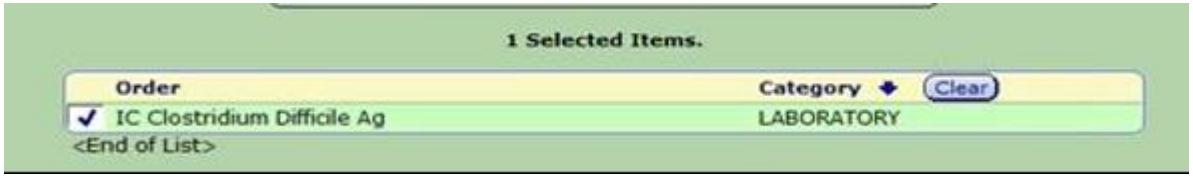
If the top of the *C. diff* screen is positive and meet the case definition the *C. diff* risk factors are required to performed.

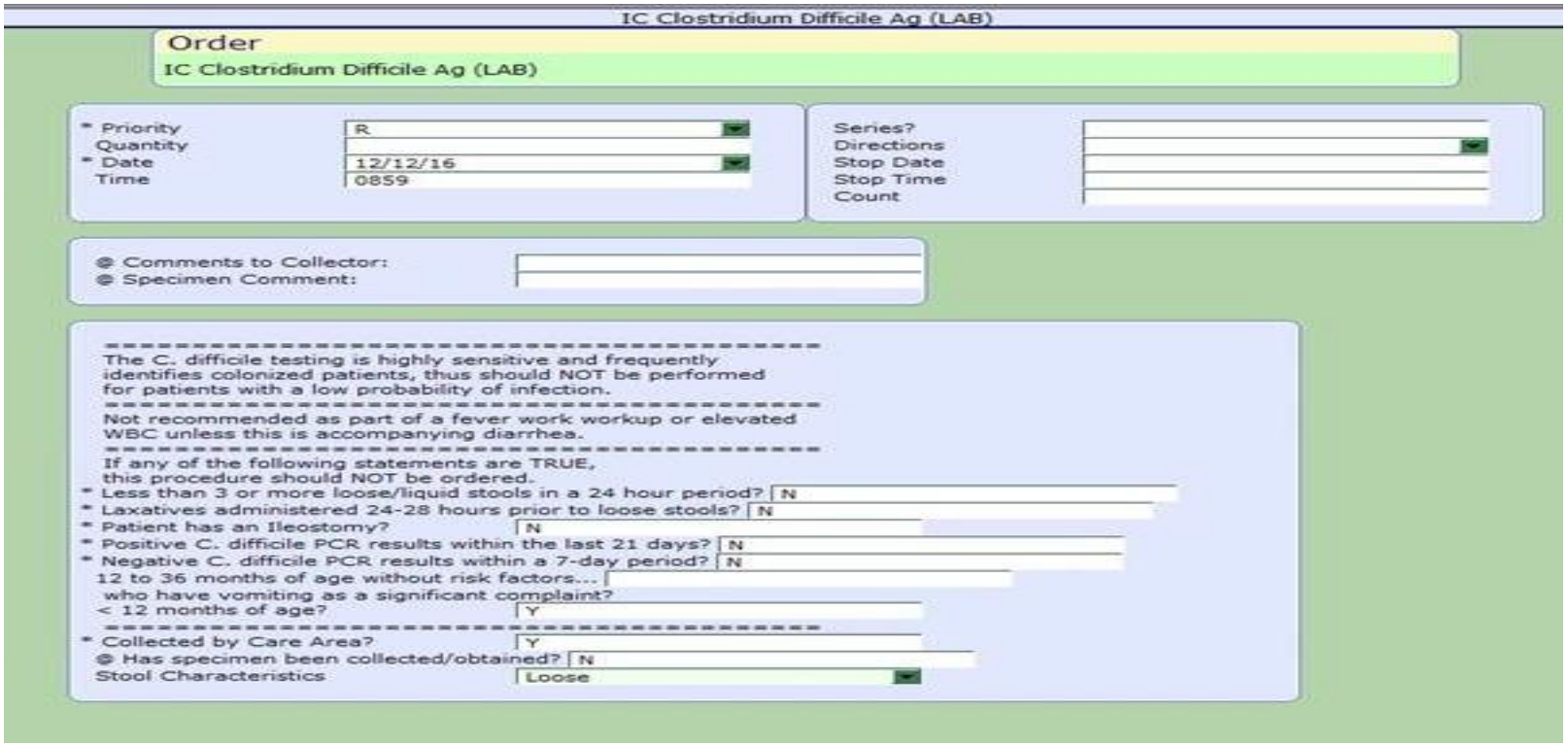
If the *C. diff* risk factors are positive then the nurse is required to per the popup to" **notify the provider and obtain an order for *C. diff* testing"**



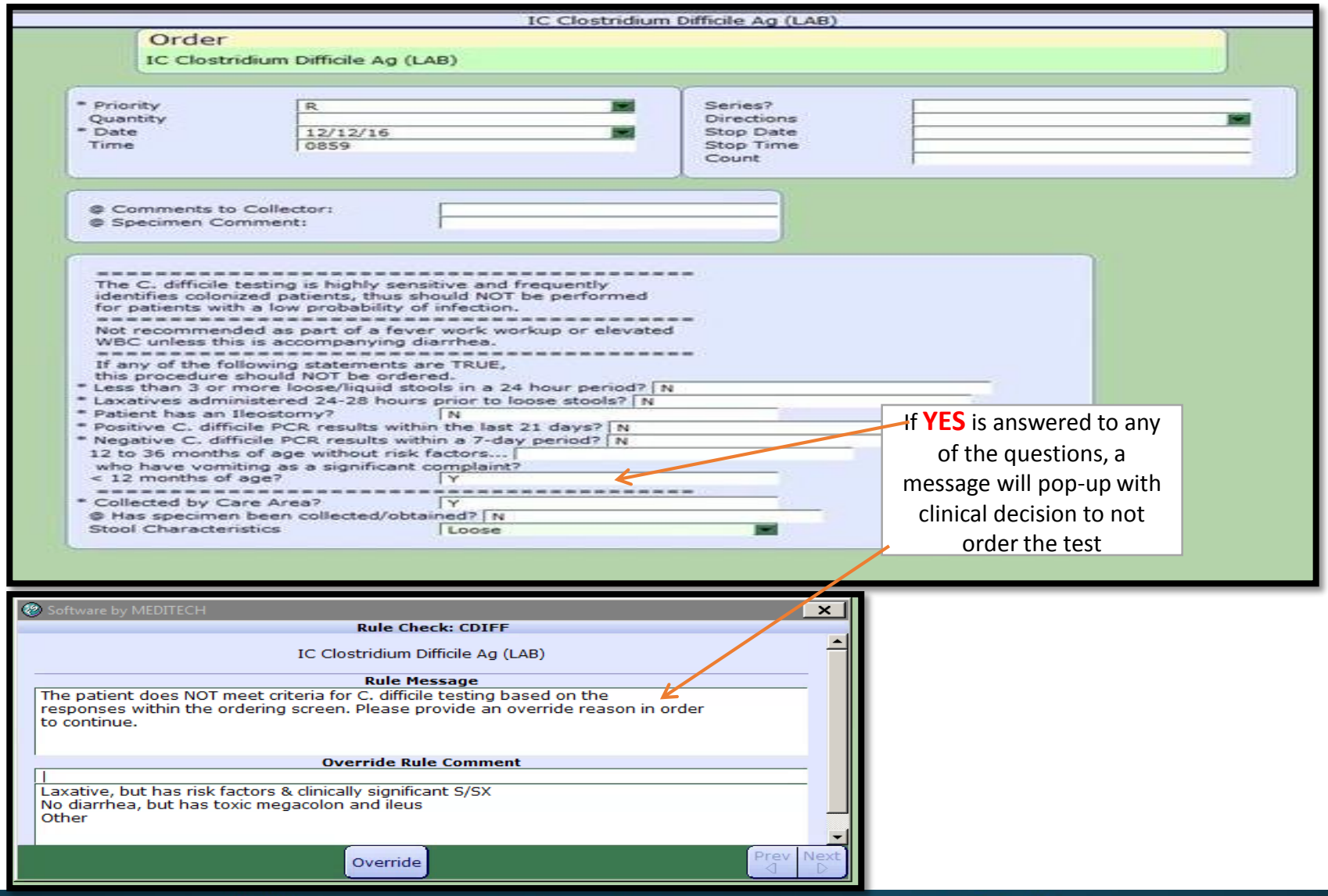
Gastrointestinal Parameters	
Defined Gastrointestinal Parameters	○ Within Defined Limits Abdomen Soft, Non-tender. No Abdominal Pain or Distention. Bowel Sounds Present and Bowel Movements Within Normal Pattern and Consistency for Patient. Tolerating Diet and Having No Reflux or Feeding Intolerance.
C.diff Screen	
Contact - C. difficile precautions in place	○ Yes ◉ No C. difficile precautions in place, provider notified.
New or progressive diarrhea	◉ Yes ○ No Screening phase 1: CDI Case Definition Pt presents with new or progressive diarrhea of unknown cause
Significant increase in diarrhea	◉ Yes ○ No Significant increase in baseline diarrhea
Watery, no solid pieces, entirely liquid stool	◉ Yes ○ No At least 3 watery, no solid pieces, entirely liquid bowel movements in last 24 hours
Increased Ostomy Output	○ Yes ○ No Significant increase in ostomy output.
CDI case definition	Possible C.diff infection, complete Risk Factor section C.diff Infection (CDI) case definition
CDI risk factor	☑ a. History of C.Diff ☐ e. Antibiotic use recent ☐ i. Fever >100.4 F or 40 C ☐ b. Advancded age >65 ☐ f. Chemo Treatment ☐ j. Leukocytosis(WBC>15K) ☑ c. Recent hospitalization ☐ g. Proton-pump inhibitor ☐ k. Abd cramping,discomfor ☐ d. Transfer patient ☐ h. Recent GI Surg Screening phase 2: CDI risk factor a. History of C. Difficile b. Advanced age: >65 c. Recent hospitalization or overnight stay in healthcare facility d. Transfer from another healthcare facility (nursing, LTAC) e. Antibiotic use (within previous 8 weeks) f. Antineoplastic Agent use (within previous 8 weeks) g. Proton-pump inhibitor use h. Recent GI Surgery or tube feeding i. Fever >100.4 F or 40.0 C j. Leukocytosis (WBC, usually > 15,000) k. Abdominal Cramping, discomfort, or tenderness
C.diff screen follow up	Notify Provider, obtain order for C.Diff testing. 1. Place patient on Contact Precautions - C. difficile 2. Notify provider of positive screen if no laxatives are used for past 24-48 hours 3. Obtain order for C.diff testing before administration of antibiotics 4. Collect stool sample prior to administration of antibiotics

Clinical Decision Support Tool

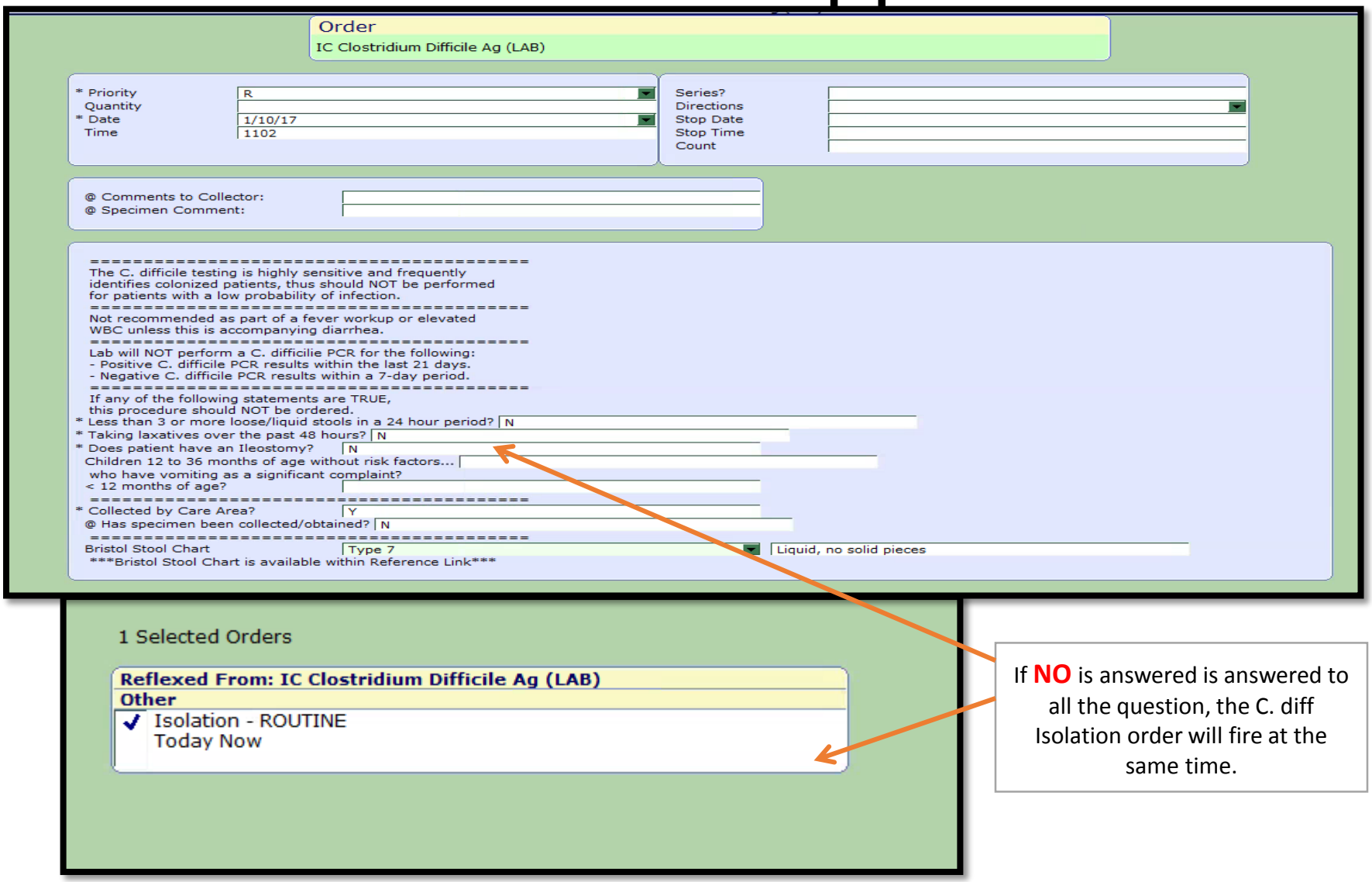




Clinical Decision Support Rule

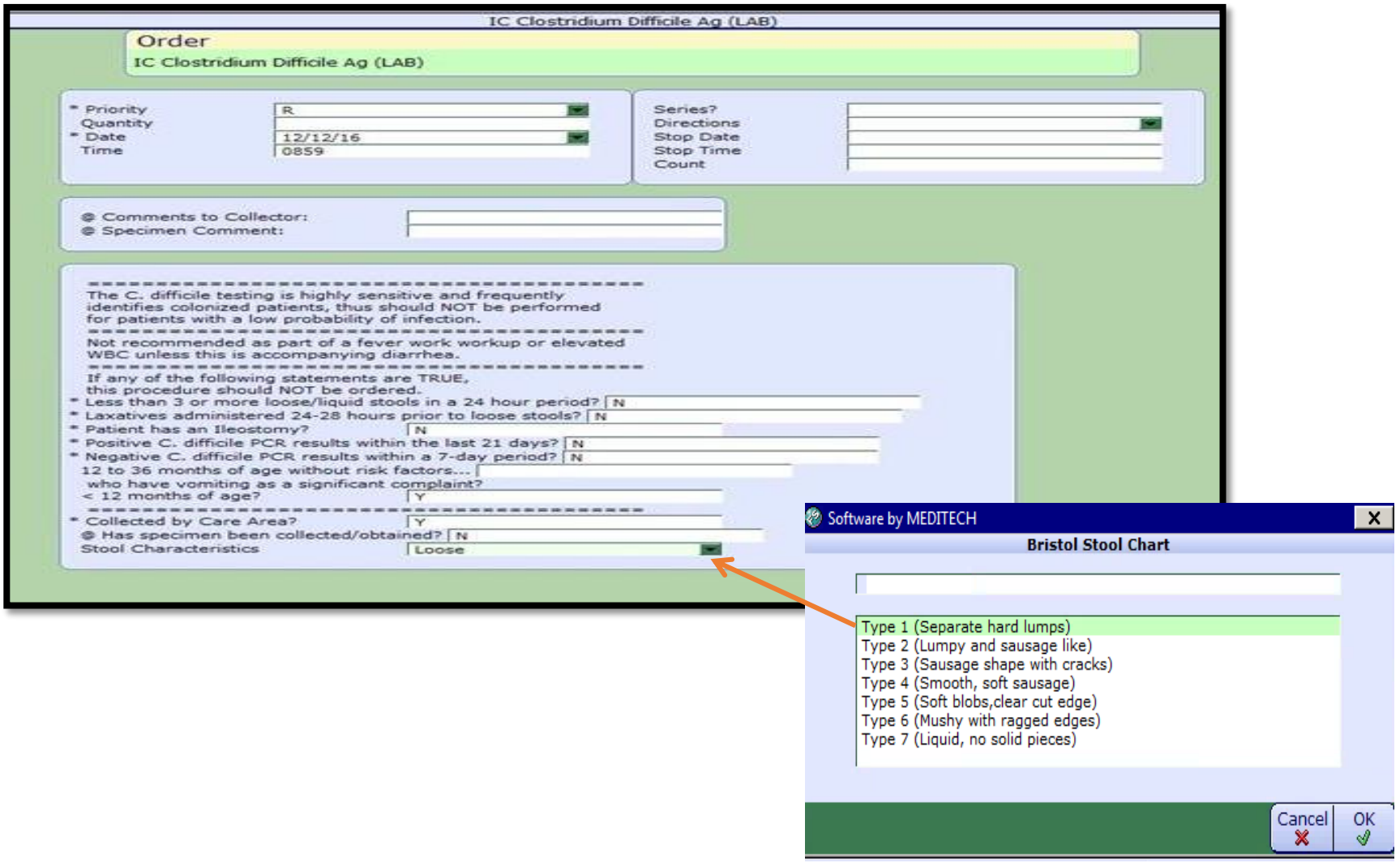


Clinical Decision Support Tool



If **NO** is answered is answered to all the question, the C. diff Isolation order will fire at the same time.

Bristol Stool Chart – Stool Documentation



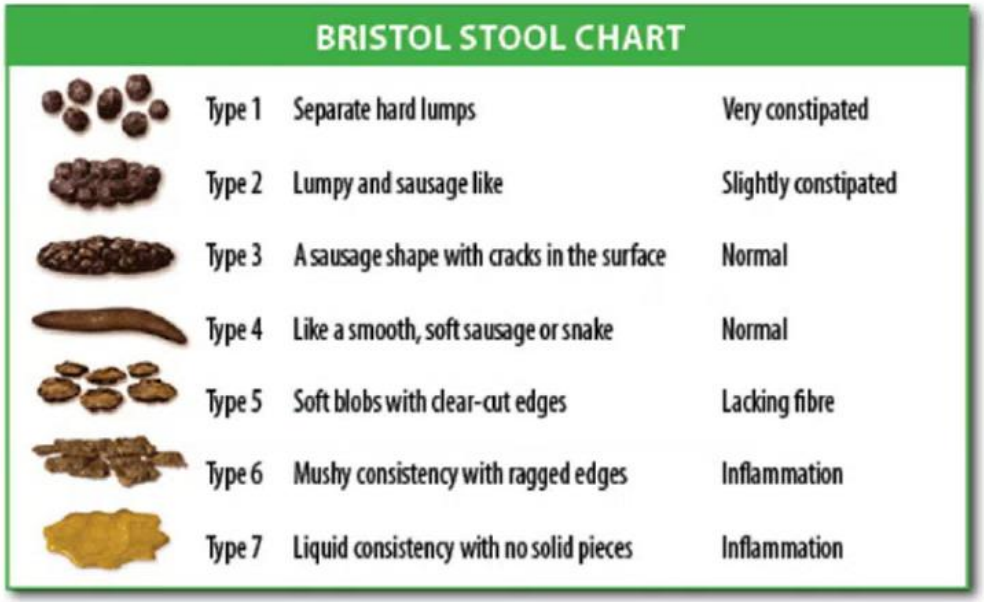
Link to Bristol Chart from *C. diff* Order

Bristol Stool Chart | Type 7 | Liquid, no solid pieces

Bristol Stool Chart is available within Reference Link

Cancel | OK

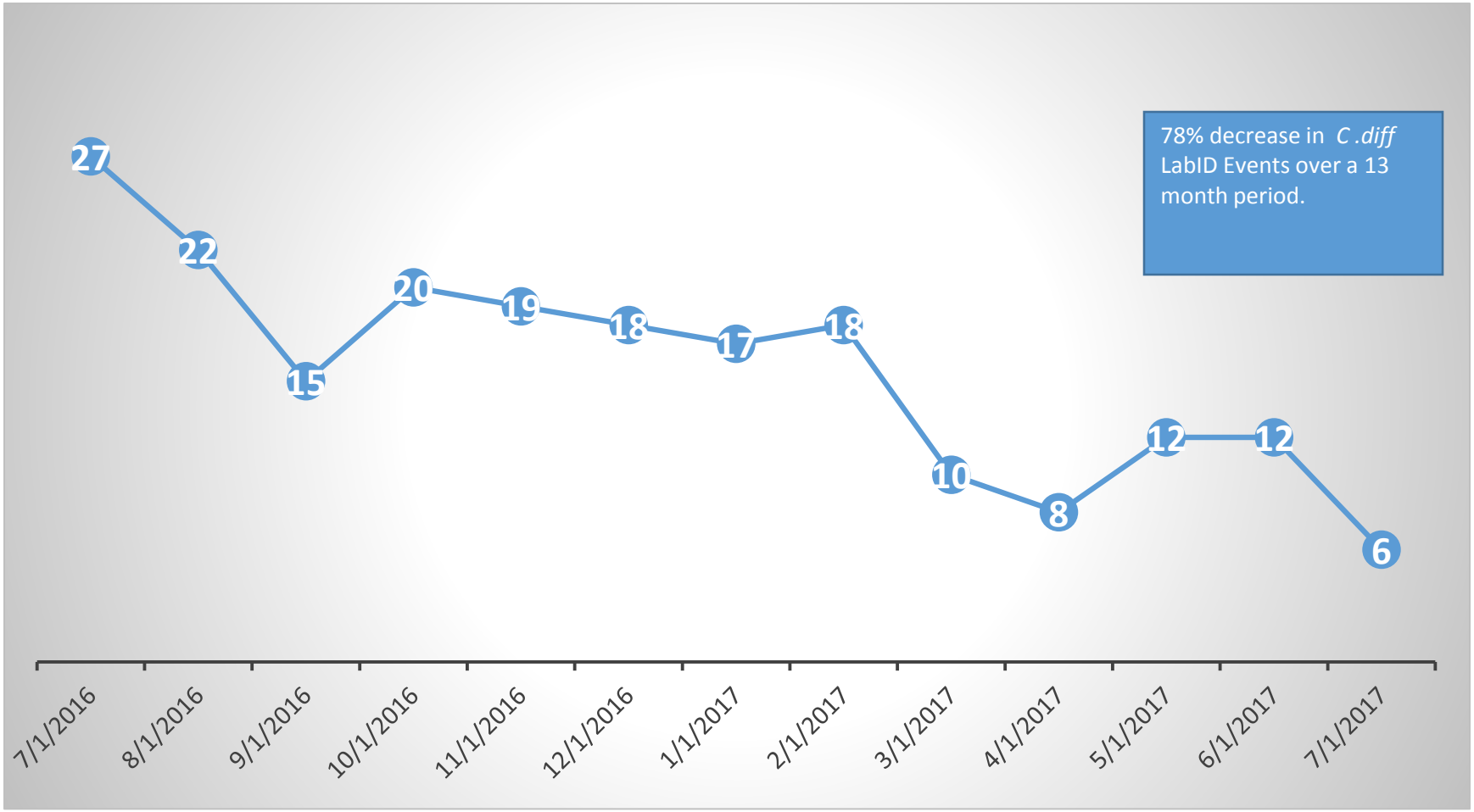
- Antibiogram
- Bristol Stool Chart
- HPF WEBSTATION
- PDOC Template Suggestion Form
- Post Fall Management Protocol
- Sound Color Numbers -Shoreline
- Sound Color Numbers -South



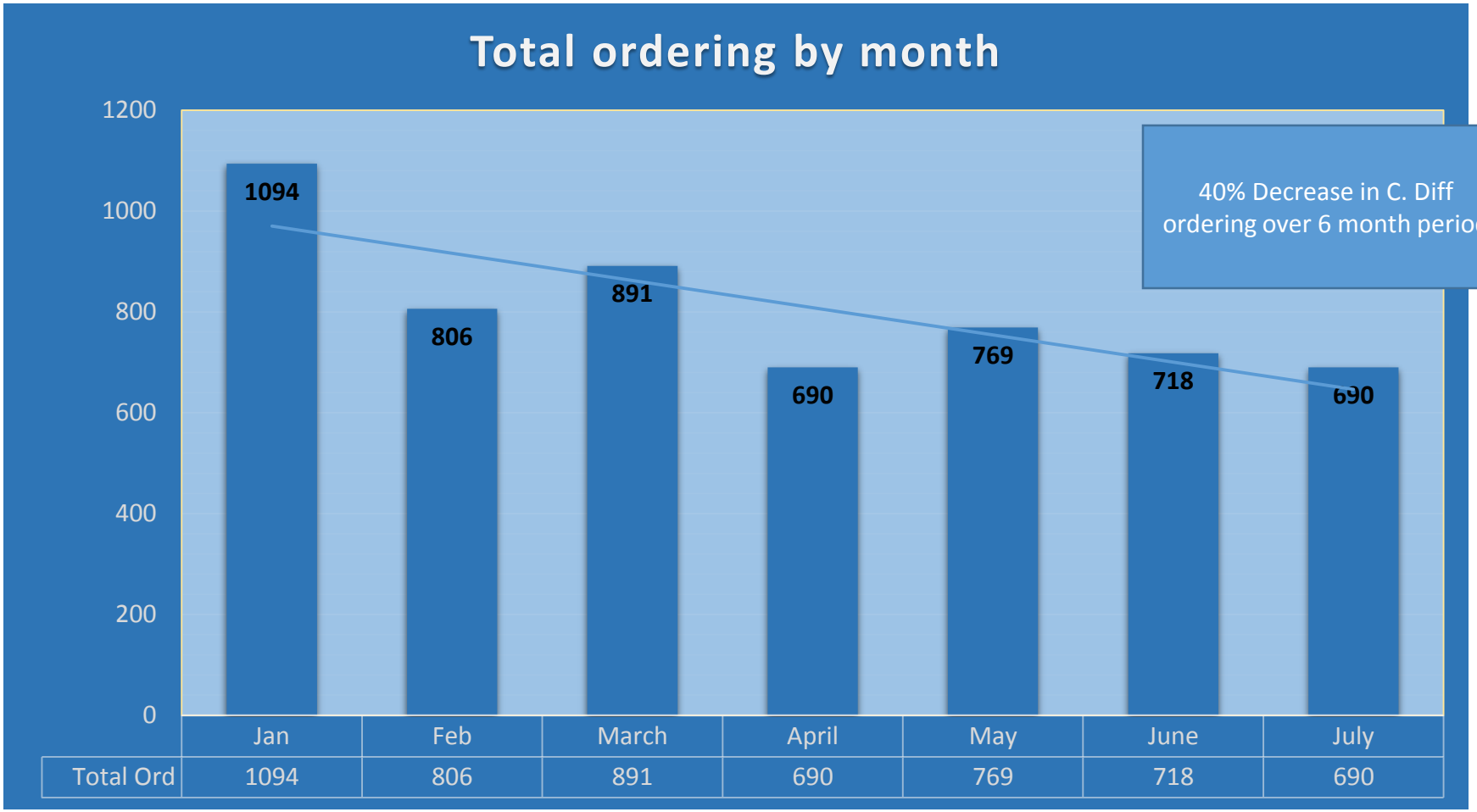
Process Measures - 6 months

- *C. difficile* monthly rates per Compass 2020
- *C. difficile* testing
- Usage of ED and inpatient screening tool
- Cost savings – *C. difficile* testing

C. difficile LabID Events

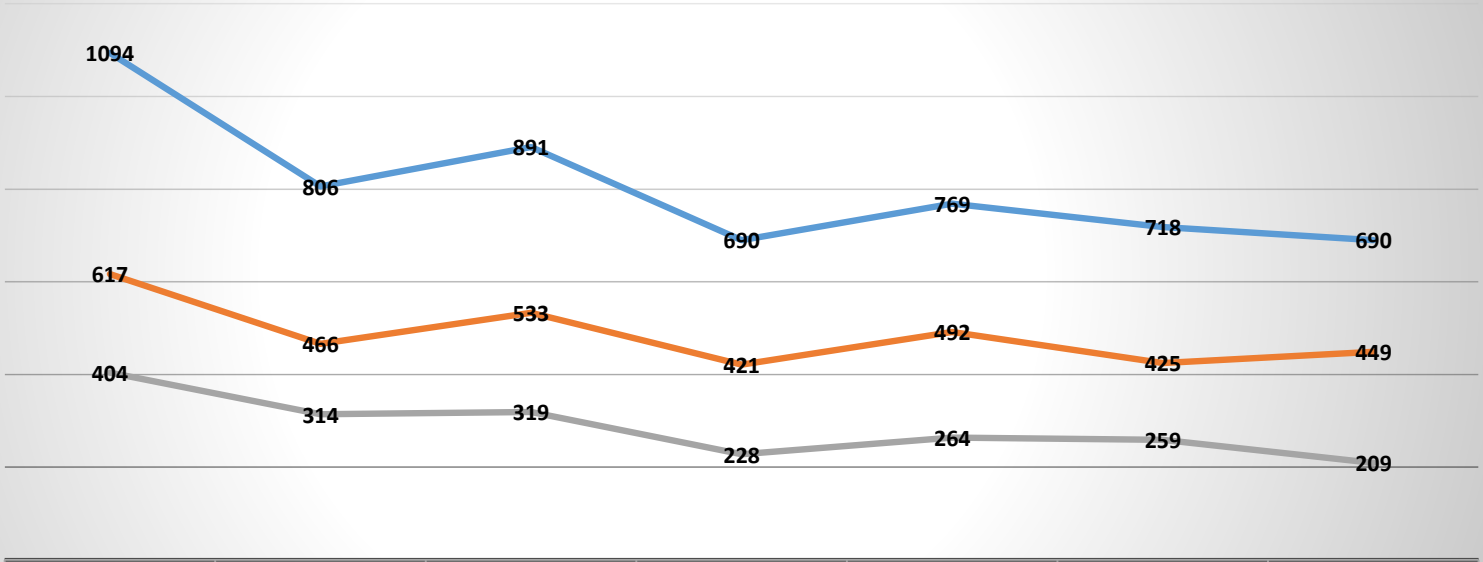


C. difficile Ordering Results



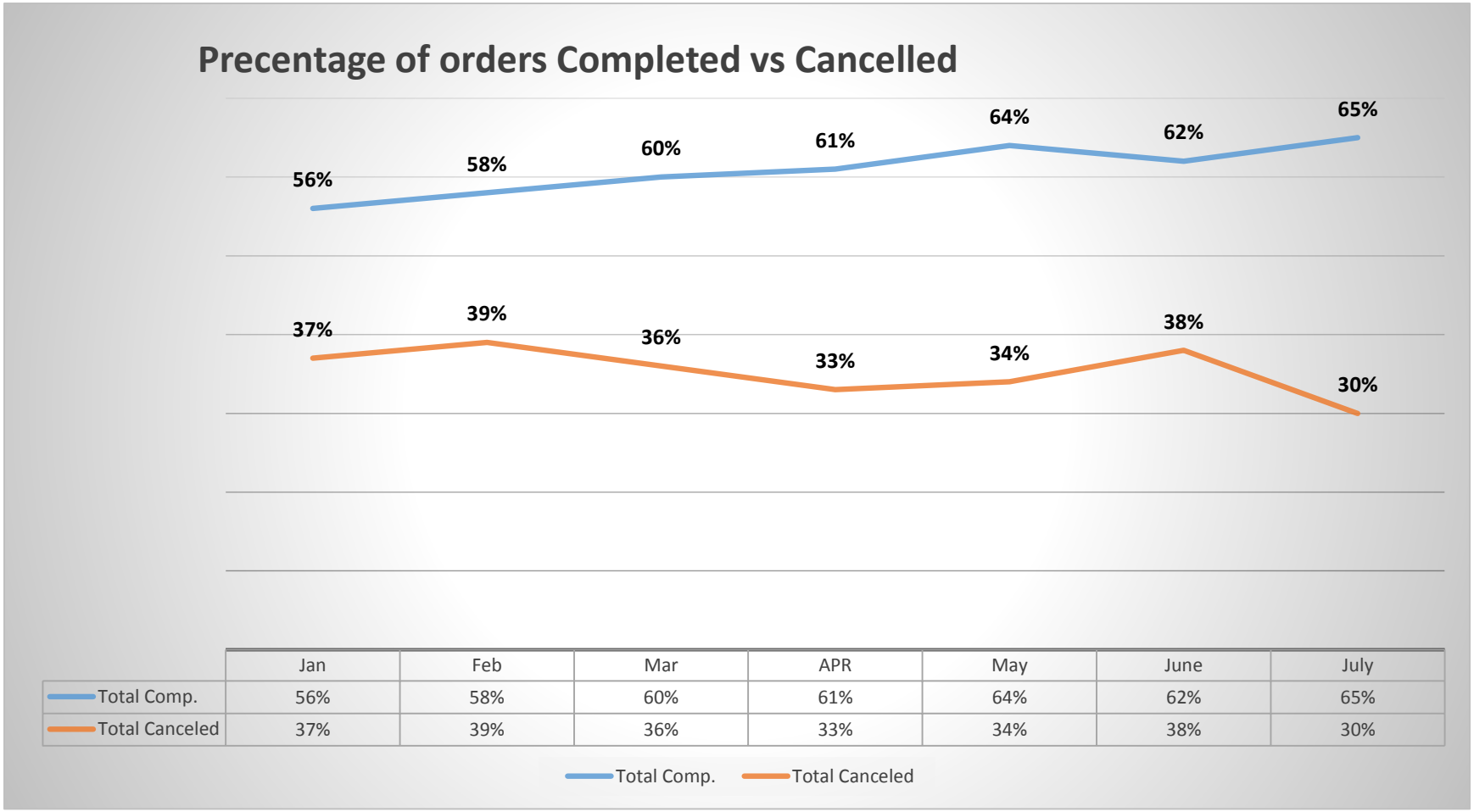
C. difficile Ordering Results (cont.).

C. diff Ordering by Month: 37% decrease in inappropriate ordering: total ordering, completed and cancelled orders



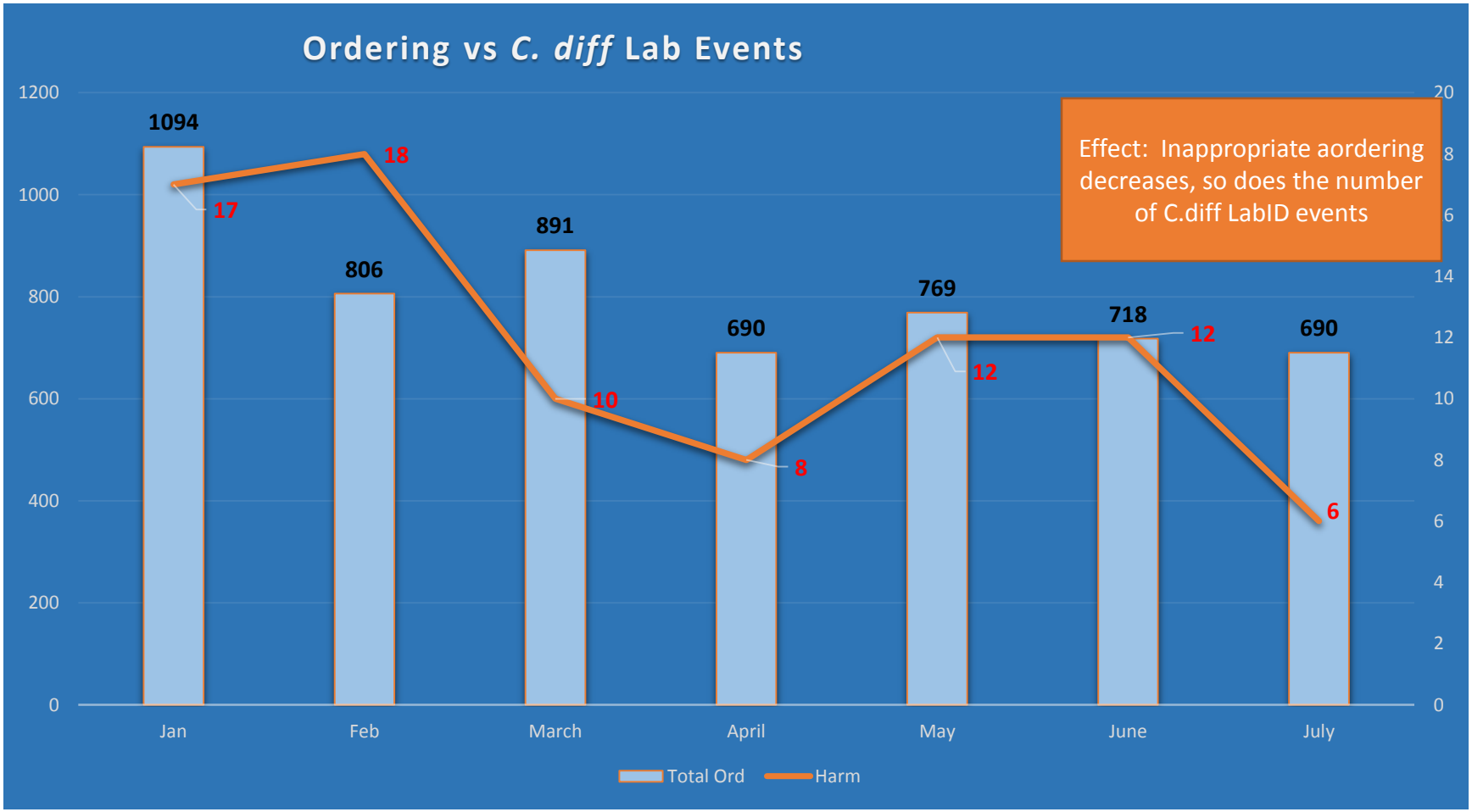
	Jan	Feb	March	April	May	June	July
Total Ord	1094	806	891	690	769	718	690
Completed	617	466	533	421	492	425	449
Cancelled	404	314	319	228	264	259	209

C. difficile Inappropriate Testing

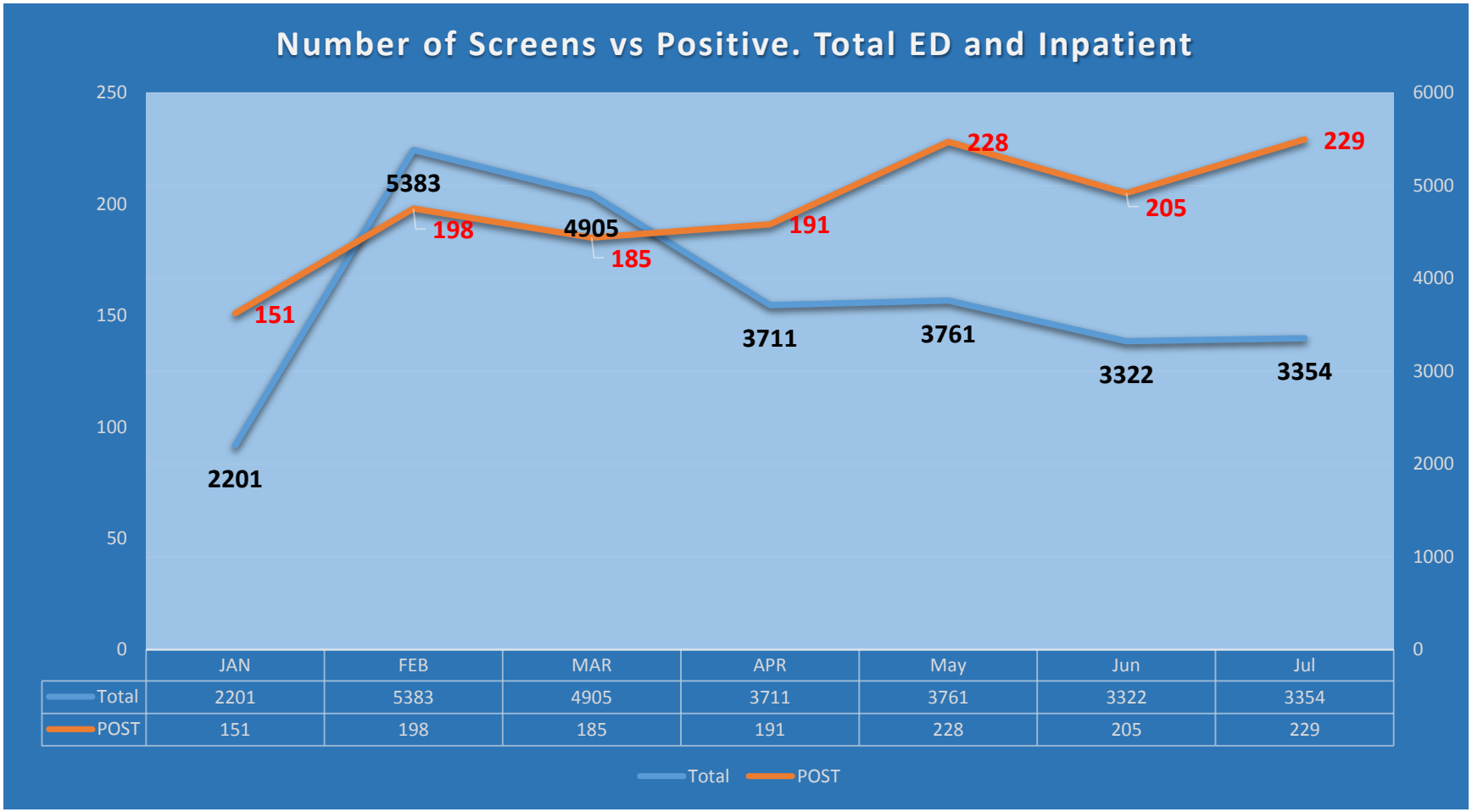


	Jan	Feb	Mar	APR	May	June	July
Total Comp.	56%	58%	60%	61%	64%	62%	65%
Total Canceled	37%	39%	36%	33%	34%	38%	30%

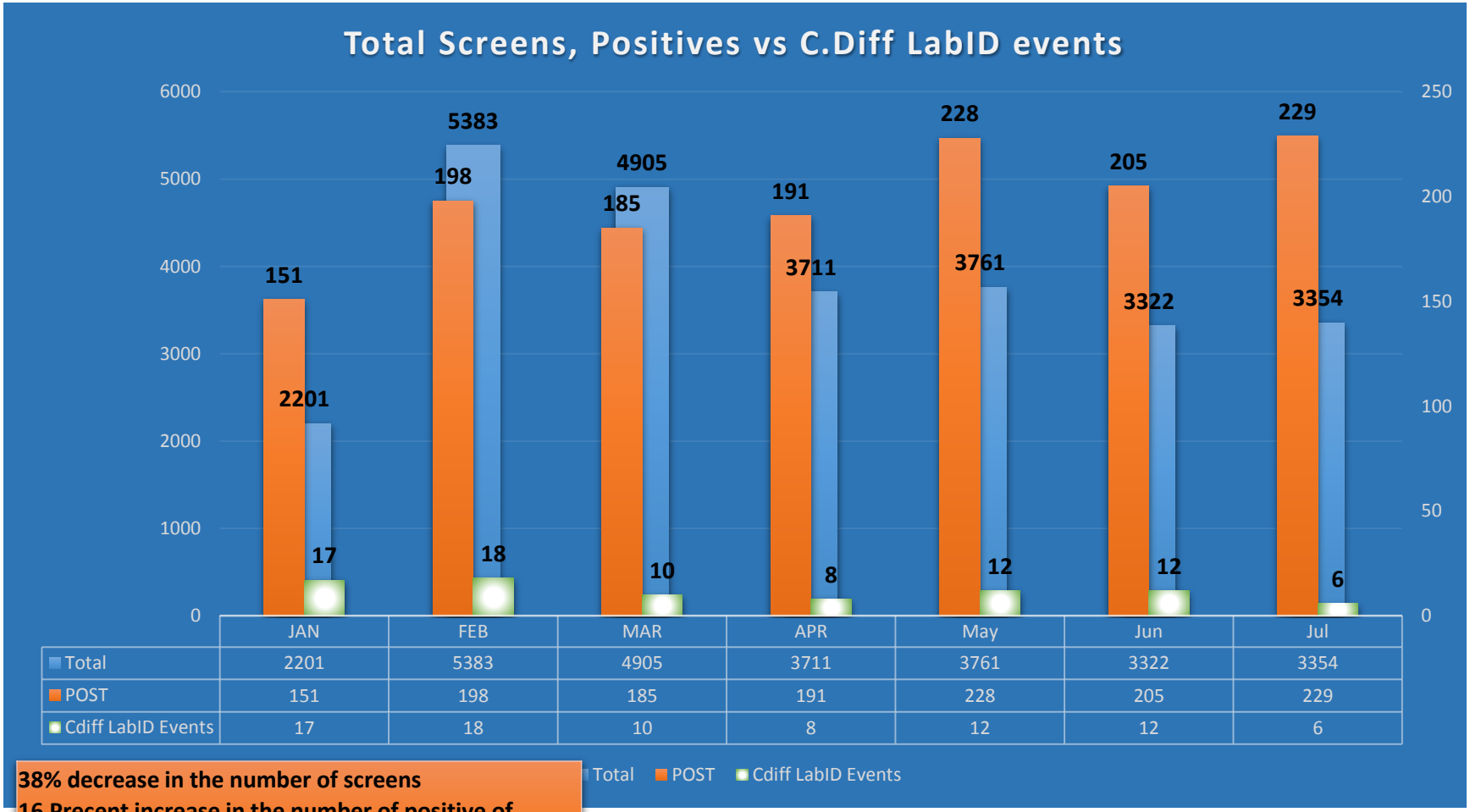
Effect: Ordering and *C. difficil*e Events



Nurse Screening Tool



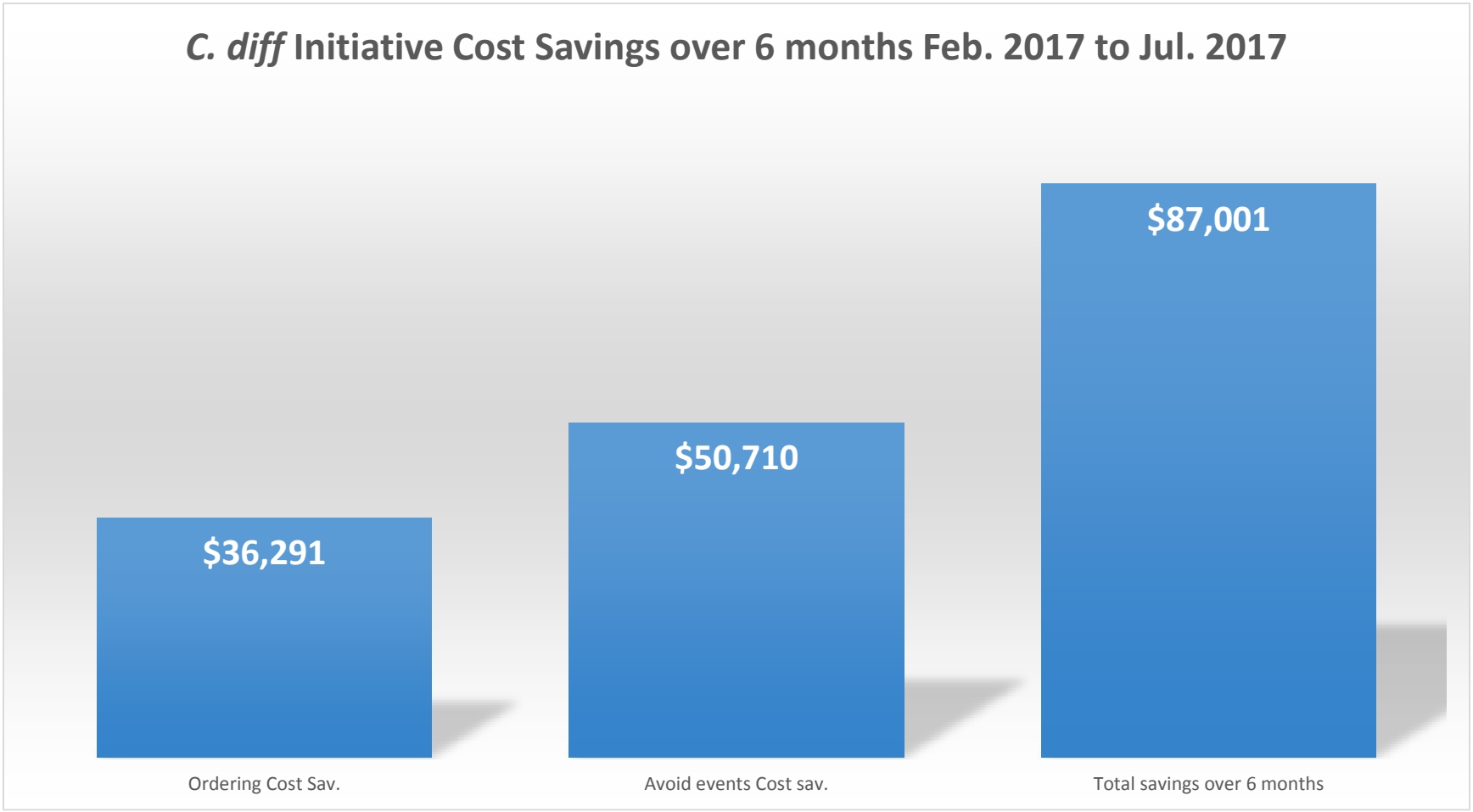
Effect: Screening and Effects



	JAN	FEB	MAR	APR	May	Jun	Jul
Total	2201	5383	4905	3711	3761	3322	3354
POST	151	198	185	191	228	205	229
Cdiff LabID Events	17	18	10	8	12	12	6

38% decrease in the number of screens
16 Precent increase in the number of positive of screens
67 decrease in *C diff* LABID Events

Cost Savings



Lessons Learned

- Education of screen and order takes time to get hardwired with nurses and physician
- Pediatric population: Screen discontinued.
- Overriding of the *C. diff* test by professionals
- Re-educate that test for cure is not best practice
- Importance of early identification and prompt isolation

Next Steps

Next steps during Phase 2, the multidisciplinary team will continue to focus on:

- Reducing inappropriate testing
- Revising the screening tool
- Incorporating antibiotic stewardship
- Hand hygiene

Conclusion

- The use of a screening tool and a clinical decision support order based on a *C. difficile* testing guidelines resulted in positive outcomes

- **67% reduction in *C. difficile* LabID events over 6 months**

- **40% reduction** in inappropriate testing over a 6 month

- **$87,000 dollars cost savings**
  - due to a decrease in inappropriate testing and *C. difficile* avoidable events from the previous year.

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Questions