respectively; both $P > 0.05$); however, the frequency of NAAT+tox– tests decreased hospital wide (1.8 to 1.3; $P = 0.0003$) and in heme-onc units (3.8 to 2.4; $P = 0.05$).

Conclusion. A *C. difficile* testing algorithm was successful decreasing the number of *C. difficile* tests performed and had a hospital-wide reduction of NAAT+tox– tests. The rate of NAAT+tox+ cases in heme-onc units and hospital wide remained unchanged despite active screening and isolation in selected units.

Figure 1. *Clostridioides difficile* testing algorithm

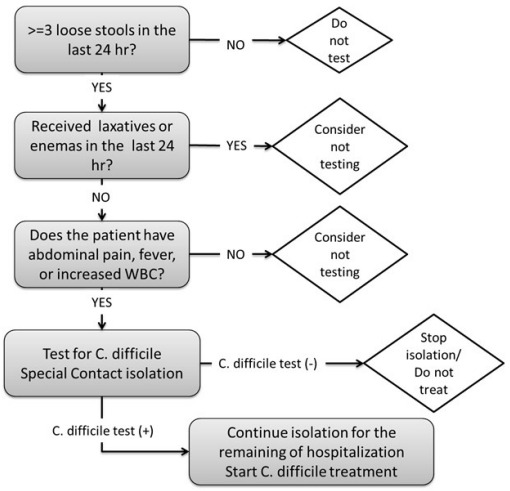
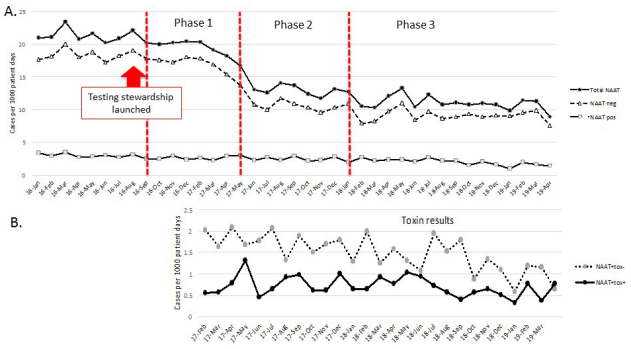
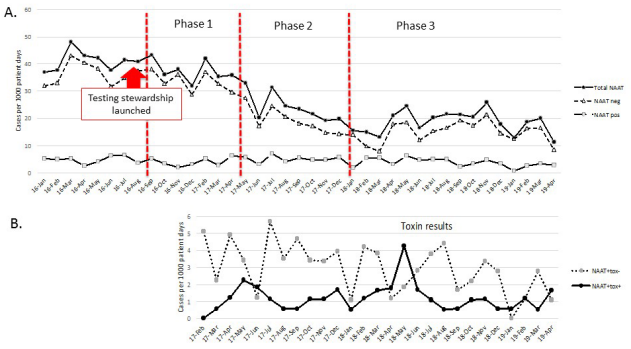


Figure 2. Hospital wide *Clostridioides* difficile test results



A. Nucleic acid amplification test (NAAT) performed and their respective results per 1000 patient days. Phases 1-3 corresponded to different *C. difficile* screening and isolation interventions primarily in hematology-oncology units.
B. NAAT positive results based on the toxin EIA positivity or negativity per 1000 patient days.

Figure 3. Hematology oncology units - *Clostridioides* difficile test results



A. Nucleic acid amplification test (NAAT) performed and their respective results per 1000 patient days. Phases 1-3 corresponded to different *C. difficile* screening and isolation interventions primarily in hematology-oncology units.
B. NAAT positive results based on the toxin EIA positivity or negativity per 1000 patient days.

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2340. Diagnostic Stewardship: Survey of Urine Culturing and *C. difficile* Testing Practices Amongst Oregon Microbiology Labs

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Background. Testing for urinary tract infection (UTI) and Clostridiodes difficile infection (CDI) poses diagnostic and antimicrobial stewardship challenges. Both diagnoses hinge on local microbiology laboratory algorithms. For UTI testing, the definition of "abnormal" urinalysis and the use of reflex urine cultures, both of which alter the frequency of bacteriuria detection, likely differs between laboratories. For CDI, pretest probability, choice and sequence of diagnostic tests are likely variable and impact the chances of accurate diagnosis.

Methods. To understand laboratory practices and determine variations in local testing algorithms, we deployed a self-administered survey to microbiology laboratories serving Oregon healthcare facilities via SurveyMonkey in September 2018. Responses were collected through April 2019. We analyzed a subset of questions focused on UTI and CDI diagnosis.

Results. Of 51 surveyed laboratories, response rate was 86% (n = 44). 91% of respondents (n = 40) process bacterial cultures. 47.5% (n = 19) primarily perform urine culture when ordered, whereas the remainder primarily perform cultures in a reflex algorithm when ordered (n = 12; 30%) or a reflex algorithm automatically (n = 9; 22.5%) (Figure 1). The definition of an abnormal urinalysis varied widely (Figure 2). 15% (n = 6) of laboratories reported considering changes to their workflow; two cited a goal of reducing unnecessary testing. Of the 32 laboratories that perform in-house *C. difficile* testing, the assays and sequence in which they were implemented in testing algorithms varied substantially (Figure 3) and most commonly included NAAT testing. Seven (21.8%) laboratories reported recently changed practices; these changes did not favor any particular algorithm. 84.2% (n = 32) reported stool rejection criteria to limit unnecessary testing, but these criteria varied (Figure 4).

Conclusion. Wide variation exists in laboratory workflows for UTI and CDI diagnoses in Oregon, suggesting lack of consensus on optimal practices. Encouragingly, multiple labs described recently implemented or planned interventions to reduce unnecessary testing for both infections. This snapshot will inform statewide education and interventions to optimize testing and help prevent patient and population harm.

Figure 1: Which is the most common circumstance by which urine cultures are performed?

Circumstance	Labs (n = 40)
When urine culture is ordered (as a stand-alone order)	47.5% (19)
Abnormal urinalyses +/- microscopy are reflexed to culture only if ordered	30% (12)
All abnormal UAs +/- microscopy are automatically reflexed to culture	22.5% (9)

Figure 2: Current criteria for abnormal urinalyses and plans for change

If reflex culturing is performed for abnormal UA and/or microscopy, what are the criteria used to define "abnormal" for general adult patients?	
Definition of Abnormal	**Labs utilizing definition (n = 40)**
Positive leukocyte esterase	52.5% (21)
Positive nitrite	55% (22)
WBC >5/HPF	22.5% (9)
WBC >10/HPF	25% (10)
Bacteria present	42.5% (17)
Blood present	5% (2)
Is your laboratory considering changing your UTI testing practice within the next year?	
Considering changes	**Labs (n = 40)**
Yes	15% (6)
No	85% (34)
If considering changes, why?	
N=2 Changing reflex criteria N= 2 Criteria "not stringent enough" N = 2 Algorithm is out of date/needs updating per clinicians	

Figure 3: Current *C. difficile* testing methods utilization and plans for change

C. difficile **testing techniques among labs with in-house testing (n=32)**		
Test Type	**Used as first line (1°) testing**	**Used as routine second line (2°) testing (n = 11)***
Enzyme immunoassay (EIA) Toxin A/B and Antigen (Simultaneous testing)	28.1% (9)	9.1% (1)
Nucleic Acid Amplification Test (NAAT) (e.g., PCR, Illumigene, Luminex, Biofire)	59.3% (19)	63.6% (7)
EIA for Toxin A and/or B only	12.5% (4)	27.3% (3)
Other	0	0
*11 labs perform second line testing. 4 different workflows were identified. Arrows indicate workflow from first to second line testing.		
Has your *C. difficile* lab testing algorithm changed since January 2016? (n=32)		
Yes	21.8% (7)	
No	68.8% (22)	
Unsure or N/A	9.3% (3)	
If yes, what was the previous order of testing?		
Number of Labs	**Current workflow**	**Prior workflow**
2	1° EIA toxin A/B + antigen 2° NAAT	NAAT alone
2	1° NAAT 2° EIA for toxin	NAAT alone
1	1° NAAT 2° EIA toxin A/B + antigen	EIA toxin A/B + antigen alone
1	NAAT	EIA toxin A/B + antigen alone
1	NAAT in-house	NAAT send out

Figure 4: Does your lab have a policy to reject stool specimens for C. difficile testing? Check all that apply.

Criteria	Labs (n = 38)
Yes, when stools are formed	84.2% (32)
If there is a stool specimen already positive within designated time period	36.8% (14)
If there is a stool specimen that tested negative for C. difficile within designated time period	21% (8)
No rejection policy	15.8% (6)

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2341. Effectiveness of Interventions Targeting Stewardship of *Clostridium difficile* Testing

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Background. *Clostridium difficile* infection (CDI) is the most common healthcare-associated infection. *C. difficile* PCR assays do not differentiate between colonization (seen in up to 21% of inpatients) and symptomatic disease, highlighting the importance of testing only symptomatic patients.

Methods. Interventions included system-wide implementation of *C. difficile* testing guidelines, face-to-face education of licensed providers, and Best Practice Alerts (BPAs) embedded in the electronic health record (EHR) *C. difficile* PCR order. The guidelines recommend testing only when ≥ 3 liquid bowel movements within a 24-hour period, without laxatives, oral contrast or new enteral feeds in the preceding 24 hours, and without recent *C. difficile* PCR test (negative ≤ 7 days or positive < 30 days). We reviewed 100 consecutive *C. difficile* PCR orders across two hospitals pre- and post-intervention to assess compliance with guidelines; performed weekly review of all *C. difficile* PCRs, all BPA responses and all hospital-onset CDI. Cost savings were calculated based on published estimates of CDI attributable costs.

Results. Hospital-onset CDI rates fell from 0.75 to 0.48 cases per 1000 patient-days, with an estimated costs savings of $259,555 per quarter and $1.04 million per year. There were no deaths due to CDI and no morbidity due to delayed CDI diagnosis. *C. difficile* PCR guideline compliance increased from 39% to 53%; orders decreased by 50% post-intervention. Receipt of laxatives and < 3 episodes of diarrhea were the most common reasons for guideline noncompliance. BPAs fired an average of 150 times/month. The most common trigger for BPA was laxative use. Providers canceled PCR orders in 40% of BPA events.

Conclusion. Interventions incorporating testing guidelines, face-to-face education, and EHR-embedded decision support resulted in fewer *C. difficile* PCRs orders, increased guideline compliance, lower rates of hospital-onset CDI and cost savings of $1 million per year without an increase in CDI-attributable death or morbidity.

Disclosures. **All authors:** No reported disclosures.

2342. Elimination of Reflexive *C. difficile* PCR Testing Among Inpatients Resulted in Cost Savings Without Adverse Events

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Background. Diagnosis of *C. difficile* infection is imperfect and various algorithms have been proposed. While PCR is sensitive for detecting toxin-carrying *C. difficile*, it leads to overdiagnoses resulting in antibiotic overuse and potentially unnecessary healthcare costs.

Methods. We performed a study of *C. difficile* cases after changing the testing protocol from reflexive vs. physician-requested PCR in cases of indeterminant EIA testing (antigen +, toxin −). The study was conducted among inpatient adults at four large hospitals in the southern California area and evaluated two 6-month periods: pre-intervention: (September 5, 2016–March 5, 2017) and post-intervention (3/6/2017–9/6/2017). Only the first *C. difficile* test during a period per patient was evaluated. Primary outcome was change in number of *C. difficile* diagnoses. Secondary outcomes included adverse events (missed cases of *C. difficile* and 30-day readmissions) and cost savings (accounting for PCR, isolation, and treatment costs).

Results. A total of 500 EIA indeterminant *C. difficile* test results were evaluated, 281 pre- and 219 post-intervention. There were no statistically significant differences in demographics, laboratory values (WBC, Cr), or hospital site between the study periods. A PCR was performed in 99.6% (280/281; one not performed due to an inhibitor) and 66% (144/219) in the pre- vs. post-intervention periods ($P < 0.01$); the PCR was positive in 65% ($n = 182$ and $n = 94$, respectively) in both periods. The change in testing strategy resulted in a 49% reduction in PCR testing and 48% fewer *C. difficile* cases. There were no differences between study periods in 30-day readmissions for all-cause ($P = 0.96$), GI-related illness ($P = 0.93$) or *C. difficile* ($P = 0.47$), nor in new or recurrent *C. difficile* cases ($P > 0.99$). No patient without a PCR and not treated was later diagnosed with *C. difficile* infection. Each reflexive PCR avoided led to a cost savings of $4,384/patient.

Conclusion. Diagnostic stewardship is an emerging area that can potentially reduce overdiagnosis and overtreatment of a variety of infectious diseases. Our study showed that changing *C. difficile* PCR testing among EIA-indeterminant cases from reflexive to requiring a physician order resulted in valuable cost savings without associated adverse events.

Disclosures. **All authors:** No reported disclosures.

2343. How Smart Is the Chart? Accuracy of the Medical Record in Documenting Diarrhea in Patients Tested for *Clostridium difficile* Infection

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Background. Inappropriate testing for *Clostridium difficile* infection (CDI) may result in diagnosis of CDI in asymptomatic carriers with diarrhea due to other causes such as laxatives. Current guidelines suggest that periodic chart review may be useful to assess the appropriateness of CDI testing, but it is not known how accurate the medical record is in documenting diarrhea.

Methods. We conducted a prospective cohort study of 80 patients tested for CDI to determine the accuracy of diarrhea documentation in the medical record in comparison to patient interviews and to assess the appropriateness of testing.

Results. Thirty-five of 80 (44%) CDI tests were deemed inappropriate because patients either did not have clinically significant diarrhea (i.e., 3 or more unformed stools per day) or had an alternative explanation for diarrhea. Seventy-four of 80 (93%) patients stated they had diarrhea, but only 53 (66%) had clinically significant diarrhea based on symptom review. Physician and/or nursing notes documented diarrhea in 67 of 80 (84%) patients, but the number of bowel movements and the consistency of stool were documented for only 36 (45%) and 41 (51%) patients.

Conclusion. In our facility, inappropriate CDI testing was common and the accuracy of the medical record in documenting diarrhea was suboptimal. Education of patients and providers may be beneficial in improving the accuracy of diarrhea documentation and the appropriateness of testing.

Disclosures. **All authors:** No reported disclosures.

2344. Evaluation of a Best Practice Alert (BPA) to Reduce Inappropriate Testing for *Clostridium difficile* Infection (CDI) Within a Multi-Hospital System

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Background. Hospital-acquired CDI contribute to significant morbidity, mortality, and cost burden in hospitalized patients. Clinical practice guidelines recommend strict testing criteria when employing nucleic acid amplification testing alone as to not test asymptomatic carriers. A BPA within the electronic medical record (EMR) may assist with this screening.

Methods. At our 9-hospital system, we created a BPA to help identify patients who may not meet criteria for CDI testing. Initial BPA (January 2018) asked if patient had 3 or more stools (yes/no) and if laxatives were administered in the last 48 hours (yes/no). An expanded BPA was updated to pull medication administration records for use of laxatives in the prior 48 hours (August 2018) and notified providers of recent *C. difficile* testing in the past 7 days (January 2019). *C. difficile* orders from March 2017 (historical), March 2018 (intervention 1), and March 2019 (intervention 2) were evaluated to assess impact of these interventions.

Results. *C. difficile* testing during 30,621 (historical), 31,299 (intervention 1), and 31,960 (intervention 2) patient-days were evaluated. Rates of *C. difficile* orders and infections are reported in the table. Ratio of positive *C. difficile* specimens to tested specimens were similar between the historical arm (51 of 402; 12.7%) and both intervention 1 (42 of 271; 15.5%) and intervention 2 (45 of 316; 14.2%) arms ($P = 0.3$ and $P = 0.5$, respectively). Intervention 1 and intervention 2 arms were similar in all metrics. Statistical analysis was performed using Stata, v.14.2.

Conclusion. Implementation of a decision support tool to assist with *C. difficile* testing significantly decreased order rates in both the initial and expanded BPA intervention arms. Compared with historical rates, incidence of CDI decreased in both intervention arms though these were not statistically significant. Similarly, ratio of positive specimens to specimens tested increased in both intervention arms, though not significant, indicating a trend toward improved patient selection. To improve appropriate CDI testing, further oversight and/or education is needed to accompany implementation of an EMR decision support tool, such as BPAs.