on formed stool, the test has lower pre-test probability for *Clostridium difficile* (*C. difficile*) infection than traditional singleplex PCR. Furthermore, after 48hours of admission, most other targets on the GI mPCR are no longer clinically relevant. Any *C. difficile* testing on inappropriate specimens may increase the rate of Lab ID events (positive *C. difficile* tests after 3 days of admission) without improving detection of true infections.

Methods. In January 2018, our 700-bed academic medical center implemented an informatics-based intervention that restricted ordering of the GI mPCR to the first 48 hours of hospitalization. After 48 hours, providers were required to contact microbiology to request an exception (see Figure 1). Singleplex PCR testing for *C. difficile* was available throughout admission. Orders for the GI mPCR test require the provider to note whether the patient had >3 loose stools in the previous day. Statistical analysis performed with STATA software.

Results. A total of 282 late (after 48 hours of admission) GI mPCR tests were ordered in the 104 days before restriction and 210 late tests were ordered in the 104 days after. Late GI mPCR tests (before and after restriction) resulted in diagnoses other than *C. difficile* less than 5% of the time (20 of 492 tests). 11.7% (24 of 210) of late GI mPCR tests were ordered for patients who did *not* have >3 loose stools in the previous day. Prior to restriction, 15% (41 of 282) of Lab ID events from GI mPCR were for patients who had already tested positive for *C. difficile* earlier in the same admission. Following the intervention, there was a decreased proportion of GI mPCR tests that were positive for *C. difficile* (from 14.5% to 11.3%, $P = 0.26$), as well as a significantly decreased rate of Lab ID events detected by GI mPCR, from 7.2/10,000 patient days to 4.0/10,000 patient days ($P = 0.01$).

Conclusion. Accurate diagnosis of *C. difficile* infection is important for treatment and prevention efforts, yet these data show that many rapid GI mPCR tests are inappropriately ordered on patients who may not have loose stools and who are unlikely to have an alternate diagnosis. EMR-based restriction on the GI mPCR ordering time reduced Lab ID events of *C. difficile* infection without missing important alternate diagnoses.

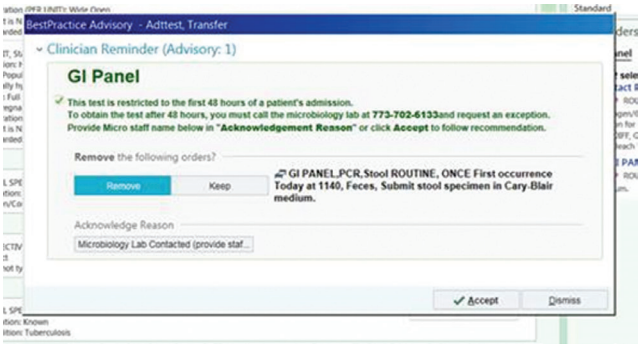

Figure 1.

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

527. New Robust Antimicrobial Stewardship Program (ASP) Results in Reduction of *Clostridium difficile* 30-Day Readmission

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Background. As the pipeline for antibiotics is decreasing and antibiotic resistance is increasing, it is critically important to be stewards of antibiotics. ASP has become a mandated program as of January of 2017 by Joint Commission and condition of participation for CMS on reimbursement. A pilot program of *C. difficile* treatment in the academic medical center proved to be quite useful to adapt to a larger healthcare system.

Methods. A dedicated Infectious Disease physician and three Antibiotics stewardship pharmacists (ASP) were hired to run this program. Goals of the program was to decrease broad-spectrum antibiotics use, and reduce *Clostridium difficile* readmission (CDR) for the healthcare system. Performance of CDR for each inpatient was accomplished with ASP making recommendations for treatment. Queries were built into the ASP software and alerts were generated in the electronic medical record (EMR). CDR was targeted daily for ASP pharmacists/ID physician. Comparison of fiscal year 2017 (control group) with 2018 (intervention group) was performed.

Results. CDR was reduced (control group 17.53% vs. intervention group 14.12%), respectively, for our healthcare system ($P > 0.05$). However, overall cost savings for the healthcare system was $1.3 million was realized. In the academic medical center specifically, with over 400 beds there was a significant reduction in CDR (control group 21% to intervention group 10.5% ($P < 0.05$). Cost savings estimated from CDR were $610,923. Finally, length of stay was reduced by 1 day for inpatients with *C. difficile* admission in the academic medical center.

Conclusion. ASP not only has immediate impact on patient care and safety but also can play a large role in treating the appropriate disease state and reduces unnecessary readmission to the acute care hospitals in our healthcare system.

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

528. Lab Stewardship for *Clostridium difficile* Testing Improves Appropriate Testing While Decreases Unnecessary Testing and Saves Laboratory Resources While Dramatically Helping to Reduce C diff Standardized Infection Ratios (SIR)

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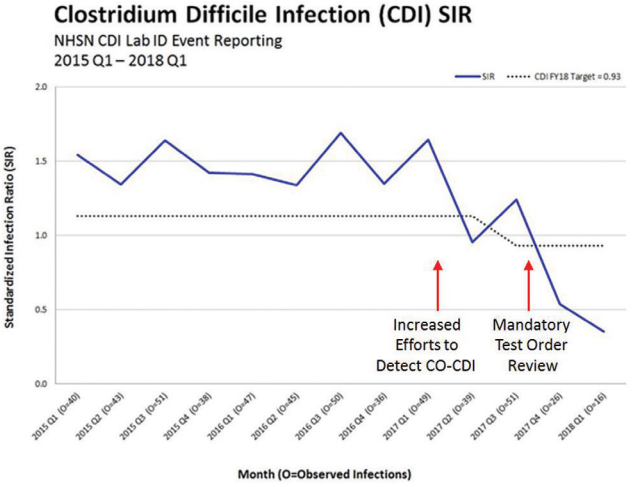
Background. Unnecessary testing for *Clostridium difficile* infection (CDI) can be both wasteful and contra productive—retesting the same positive patient after transfer to a new nursing unit will only to confirm the patient has CDI (already known) and likely be classified as a new case of hospital-onset (HO) CDI. Yet, it is also important to recognize community-onset (CO) CDI in hospital, not only because it prevents late recognition of CO CDI as being classified as an HO event, will also to afford appropriate contact precautions and therapeutic measures are instituted in a timely fashion. Laboratory stewardship (LS) can be helpful in improving appropriateness of *C. difficile* testing.

Methods. We developed 2 CDI testing algorithms. One focused on hospital days 1–3, the other for all *C. difficile* testing after hospital day 3 (AHD3). The LS quality improvement (QI) project was rolled out in 2 stages. During the first 6 months we focused on improving early detection of CO-CDI, while during the next 6 months a mandatory review of all *C. difficile* testing orders AHD3 was conducted by a 10 person team. Testing that concurred with the algorithm was approved. Nonapproval was communicated to the care teams. Appeals could be made on a case-by-case basis to the medical director of infection control. Validation audits of nonapproved cases were performed to determine whether testing algorithms were sound.

Results. CO-CDI detection steadily increased over the yearlong LS QI period (average of 6 cases/week at start vs. 12 cases/week at year's end). During the 6 months of the AHD3 mandatory order review 678 *C. difficile* orders were placed, 428 (63.1%) were approved, 250 (36.9%) were rejected. Reduced use of laboratory resources is estimated to have saved $14,950. LS and frequent communication with care teams contributed better recognition of CO-CDI, decreased inappropriate repeat testing, avoidance of diagnosing colonized patients as HO-CDI and was associated with a significantly drop our CDI SIR (Figure 1).

Conclusion. An algorithm-based guideline for a 2-step LS QI program focused on reviews of all *C. difficile* orders AFHD3 as well as improving early detection of CO-CDI and was associated with better laboratory resource utilization and markedly decreased *C. difficile* SIR. Efforts are currently underway to automate much of the review process.



Disclosures. **J. P. Parada**, Merck: Speaker's Bureau, Speaker honorarium. **A. Harrington**, Biofire: Grant Investigator and Scientific Advisor, Consulting fee, Research grant and Speaker honorarium. Cepheid: Grant Investigator and Speaker's Bureau, Research grant.

529. Overdiagnosis of *Clostridioides difficile* with a Multiplex PCR Panel

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Background. While advantageous by casting a wider diagnostic net, multiplex panels can be problematic if the pretest probability is low. A significant increase in reported *Clostridioides difficile* infections (CDI) was noted at our institution following introduction of a multiplex comprehensive GI (CGI) panel which includes an analyte for *C. difficile*. Owing to these concerns, the *C. difficile* analyte result was suppressed when reporting and providers were advised to order a standalone *C. difficile* PCR (CDPCR) test if CDI was a concern. The objective of this study was to investigate concerns of false positive *C. difficile* results from the CGI panel.

Methods. *C. difficile* diagnostic practices were prospectively evaluated from April to August 2017. Patient charts were reviewed in response to a positive *C. difficile* analyte on the CGI panel. CDPCR results were reviewed if ordered. If not ordered, chart review and discussion with the provider was conducted to investigate clinical suspicion for CDI. The results were analyzed to examine the performance of the *C. difficile* analyte on the CGI panel.

Results. Overall, a total of 1,611 CGI panels were performed with *C. difficile* being detected in 156 specimens. Of these positive results, a subanalysis was performed on 123 positive specimens for whom complete data was available. A CDPCR was performed in 80 (65%) of these specimens. Among those, only 44 (55%) were CDPCR positive and 22 (28%) were CDPCR negative (likely a false-positive CGI result), and 14 (17%) were rejected because of specimen consistency. For the remaining 43 *C. difficile*-positive CGI panel specimens that did not have an accompanying CDPCR, seven were in children below 2 years of age. Direct provider discussion occurred in the remaining 36 cases. Providers declined CDPCR testing in 24 of those cases due to a lack of clinical concern.

Conclusion. The use of the CGI panel for *C. difficile* led to over diagnosis of CDI. This could have significant consequences for clinical care and the reporting of hospital acquired infections.

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

530. The Perfect Storm for Improved Standardized Infection Ratio (SIR)—Recognizing More Community-onset *Clostridium difficile* Infections Increases the Expected Number of *C. difficile* Cases While also Helping to Decrease the Actual Observed Number of Hospital Onset *C. difficile* Cases

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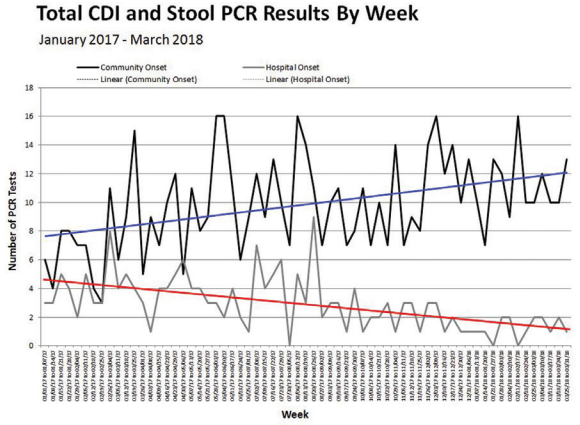
Background. It is essential to recognize the true burden of community-onset (CO) *Clostridium difficile* infection (CDI) in hospital, not only because it prevents late recognition of CO CDI as being classified as a hospital-onset (HO) event, but also to assure appropriate contact precautions and therapeutic measures are deployed in a timely fashion. We recognized that our timely diagnosis of CO-CDI was suboptimal and sought to improve early recognition of CO-CDI.

Methods. We developed an automated daily report of all patients noted to have loose stools documented in the nursing flow sheets during the first 3 days of hospitalization. This report was automatically forwarded to the nurse manager of the unit, as well as was reviewed daily, Monday–Friday, by the infection preventionists (IP) to determine whether stool testing had been sent on these symptomatic patients. If not, then the IP would call the nurse caring for the patient and encourage that a stool sample be sent ASAP and before the third hospital day was completed.

Results. With this intervention, we increased early appropriate stool testing for patients with documented loose stools during the first 3 days of hospitalization leading to a marked increase in CO-CDI, as well as a notable decrease in HO-CDI lab ID events (Figure 1). Together, the increased recognition of CO-CDI increased our expected cases/SIR denominator and decreased observed cases/SIR numerator and substantially dropped our CDI SIR from a 2 years preintervention median SIR of 1.47 to 0.95 during the five quarters since the intervention has been in effect.

Conclusion. After several years of our CDI SIR remaining stubbornly around 1.5, we developed a system of enhanced recognition of patients who had loose stools early in their admission. This practice aided better recognition of CDI present on admission, substantially increasing our detection of CO-CDI. We also noted decreases in HO-CDI, in part secondary to no longer diagnosing patients who actually had CO-CDI later in their hospitalization and classifying CO-CDI as HO-CDI cases. In turn, we noted a remarkable decrease in our CDI SIR.



Disclosures. **J. P. Parada**, Merck: Speaker's Bureau, Speaker honorarium. **A. Harrington**, Biofire: Grant Investigator and Scientific Advisor, Consulting fee, Research grant and Speaker honorarium. Cepheid: Grant Investigator and Speaker's Bureau, Research grant.

531. Reducing Inappropriate Hospital-Acquired *Clostridium difficile* Diagnoses

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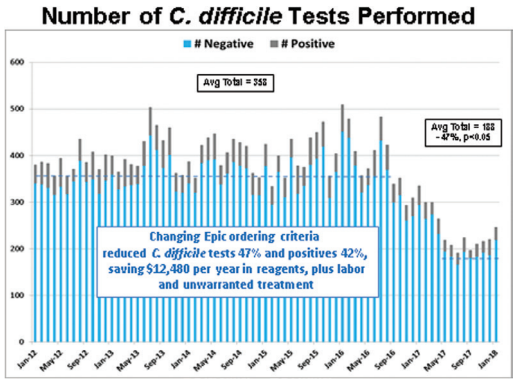
Background. *Clostridium difficile* infection (CDI) rates suddenly increased 30%, coincident with adoption of a new electronic medical record (EMR) and a reduction in our Environmental Services (ES) workforce. A Targeted Assessment for Prevention (TAP) report suggested we had the greatest opportunity for improvement among Massachusetts hospitals. Senior leadership identified CDI as an institutional top priority.

Methods. We prospectively measured CDI rates, using CDC criteria. A multidisciplinary team applied root cause analysis to each case; many represented repetitive testing or did not meet criteria for clinically significant disease. We reviewed, revised, and reinforced already robust efforts regarding hand hygiene, environmental cleaning and disinfection, antimicrobial stewardship, and test ordering behaviors. We revised *C. difficile* testing guidelines in accord with IDSA/SHEA Guidelines and leveraged EMR orders to help providers test more appropriately. Limit testing to patients with ≥3 unformed stools/day. Exclude testing within 24 hours of laxative use. Lab rejects specimens within 7 days after negative result and within 28 days after positive result; orders expire after 48 hours. We compared monthly ES staffing (FTEs/1,000 patient-days) and CDI rates, using linear regression.

Results. *C. difficile* testing decreased 47%, from 358 to 188 tests per month (Figure 1). CDI rates decreased 39% in 1 year (from 141 to 83), reducing the rate of infection below expected (Figure 2). Despite improvement, 40–60% of CDI testing still occurs during laxative use. ES staffing rates were associated with 5.2% of CDI rate changes ($P < 0.05$); adequate staffing reduced CDI rates 44% (Figure 3).

Conclusion. Implementation of a new EMR brought to light over-diagnosis of hospital-acquired CDI, resulting in unnecessary isolation and treatment of patients without significant illness. Inadequate ES staffing correlates with increased CDI rates. These factors also contribute to vulnerability to CMS Hospital-Acquired Condition (HAC) penalties. Revising laboratory testing and laxative EMR orders is laborious but significantly reduces inappropriate testing. It is essential to have senior leadership endorsement to marshal quality improvement and EMR resources.

Figure 1.



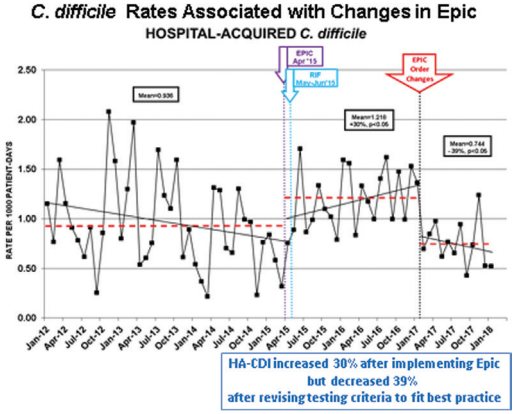


Figure 2.