Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: *C. difficile*
***Clostridioides difficile* infection (CDI) treatment outcomes and recurrence factor at a pediatric hospital**
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Background: CDI is the single most common cause of nosocomial diarrhea in both adults and children. Available data regarding treatment outcomes in hospitalized children remain limited. CDI recurrence in children has been reported in 20%–30% of cases. Consensus regarding the best testing method for CDI is lacking. The 2018 IDSA guideline recommends a multistep algorithm with detection of glutamate dehydrogenase antigen plus toxin, followed by detection of toxigenic *C. difficile* with nucleic acid amplification test (NAAT) if results are discordant. **Methods:** We included patients aged 1–26 years admitted from July 2020 through June 2021 with CDI symptoms and positive toxin or NAAT. Healthcare facility-onset CDI (HO-CDI) was defined as positive specimen collected >3 days after admission. Community-onset CDI (CO-CDI) was defined as positive specimen collected ≤3 days after admission. Community-onset healthcare facility-associated CDI (CO-HCFA-CDI) was defined as positive specimen from a patient who was discharged from the facility ≤4 weeks prior. Recurrence was defined as an episode of CDI occurring within 60 days after onset of a previous infection. **Results:** Mean age of the 63 patients meeting inclusion criteria was 11.2 years (range, 1–21 years). Most patients (n = 37; 58.7%) were male, tested negative for *C. difficile* toxins (n = 39; 61.9%), and had mild-to-moderate disease (n = 61; 96.8%). Patients with immunocompromising conditions were common, including malignancy (n = 38; 60.3%), inflammatory bowel disorder (n = 8; 12.7%), and history of solid organ transplant (n = 5; 7.9%). Previously healthy without chronic medical conditions were uncommon (n = 4; 6.3%). CO-CDI was most common (n = 26; 41.3%) followed by HO-CDI (n = 23; 36.5%). Also, 34 patients (53.9%) were exposed to antibiotics within the previous 30 days, 16 (47.0%) of whom received 2 or more antibiotics. Sulfamethoxazole–trimethoprim was the most prescribed agent (13; 38%), most (12; 92.3%) as prophylaxis for *Pneumocystis jirovecii* pneumonia. Furthermore, 42 patients (66.7%) were receiving gastric acid suppressant agents. Laxatives were given to 14 patients (22.2%) within 72 hours of testing, despite electronic reminders. Most were treated with oral vancomycin (n = 46; 73.0%). In addition, 5 patients (7.9%) did not receive CDI treatment at the discretion of the treating physician; all were toxin negative. CDI was cured in 58 patients (92.1%) with only 5 (7.9%) experiencing recurrence infection. Patients testing positive for *C. difficile* toxin were more likely to experience infection recurrence compared to those with a negative toxin screen: 4 of 24 (16.7%) versus 1 of 39 (2.6%) (P = .044). **Conclusions:** Most patients with CDI were treated with oral vancomycin at our institution. We observed significantly lower rate of recurrence than previously reported. Toxin-positive patients experienced higher recurrence rate. Prospective studies are needed to confirm our findings.
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Role of diagnostic stewardship in reducing healthcare facility-onset *Clostridioides difficile* infections
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Background: *Clostridioides difficile* infection (CDI) is the most common healthcare-associated infection (HAI) in the United States. Healthcare facility-onset (HO) CDI reporting is a laboratory-identified (LabID) event and does not rely on symptoms. Inappropriate testing can lead to overdiagnosis in patients who are colonized, especially in those receiving promotility agents. Approximately 45% of HO-CDI cases at our institution occurred in the setting of laxative use in 2019. We assessed the effectiveness of an electronic medical record (EMR) "hard stop" in reducing inappropriate CDI testing and its impact on HO-CDI rates. **Methods:** We conducted a pre–post quasi-experimental retrospective study comparing test order rates per 1,000 patient days, CDI rate per 1,000 patient days, and standardized infection ratio (SIR) in the preintervention period (January 2018–December 2019) to the intervention period (April 2020–September 2021), at a 5-hospital healthcare system in southeastern Michigan. In February 2020, we implemented a hard stop in Epic that was triggered >3 days after admission for the following criteria: patients <1 year of age; repeated testing within 7 days, and receipt of promotility agents within 48 hours. After discontinuing the promotility agents for at least 48 hours, providers were allowed to place an order if diarrhea persisted. The medical director of infection prevention and control or designee had the ability to override the hard stop when deemed necessary after reviewing the case upon provider request. All orders expired after 24 hours if a specimen was not collected. We retrospectively reviewed the number of overrides after the intervention to determine the positivity rate. **Results:** Our CDI rates per 1,000 patient days were 3.21 in the preintervention period and 1.48 in the postintervention period, a 54% reduction (Fig. 1). The test order rates were 119.4 in the preintervention period and 87.7 in the postintervention period, a 26.5% reduction (Fig. 2). The SIR decreased from 0.542 in the preintervention period to 0.361 in the postintervention period, a 33% reduction (95% CI, 0.54–0.82;

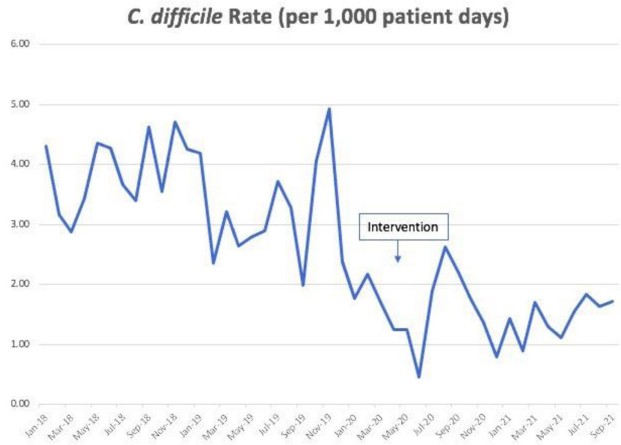

Fig. 1.

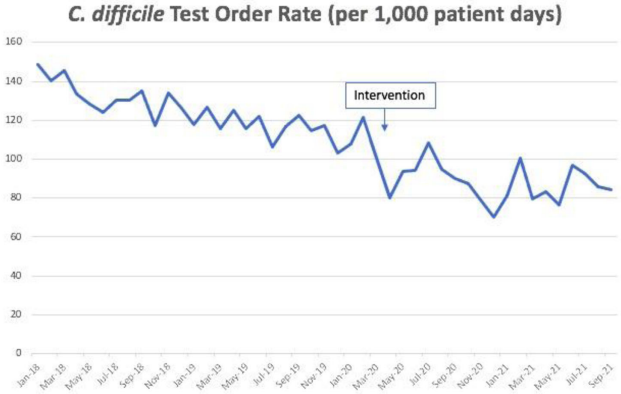

Fig. 2.

P = .0001). After the intervention, 299 patients had an override. Of these, samples from 218 patients (72.9%) were negative, 50 orders (16.7%) were cancelled, and 28 samples (9%) were positive. **Conclusions:** Diagnostic stewardship, utilizing an electronic hard stop, was effective in reducing inappropriate *C. difficile* testing in the setting of promotility agents without delaying diagnosis of HO-CDI. This strategy combined with standard best practices can significantly reduce HO-CDI rates.

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Prospective audit and feedback of *Clostridioides difficile* PCR at the time of ordering increases appropriateness of testing

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Background: Over-testing for *Clostridioides difficile* infection outside acute diarrheal illness without a clear alternative cause can lead to inappropriate diagnosis and treatment with antibiotic therapy. Preanalytical interventions such as education, order restriction, and electronic order assistance are common but are limited in effectiveness. As an alternative approach, our antibiotic stewardship program (ASP) implemented prospective audit and feedback (PAF) on *C. difficile* PCR orders to reduce inappropriate testing.

Methods: The study was conducted at a 399-bed, tertiary-care, Veterans' Affairs Medical Center and included adult inpatients and outpatients for whom *C. difficile* PCR testing was ordered. In the preintervention period from June through September 2019, the ASP was alerted to *C. difficile* PCR tests and collected data but did not intervene. From October 2019 to January 2020, the ASP performed real-time PAF at the time of ordering. Appropriateness of testing was determined based on whether there was a negative result in the prior 7 days and a 3-step review of clinical factors (Fig. 1). When possible, a direct conversation took place with the ordering provider. If not possible, a general note delineating appropriate clinical criteria for testing was generated. No PAF was done outside standard hours. The ASP recommended cancelling tests deemed inappropriate. Monthly test rates during the pre- and postintervention periods were compared using the Student t test with $\alpha = .05$, and test appropriateness was compared using the χ^2 test. All analyses were conducted using Microsoft Excel software. **Results:** During the preintervention period, a total of 418 tests were ordered (104.5 per month). This number decreased to 276 (69 per month) during the intervention period. (p **Conclusions:** Direct PAF at the time of *C. difficile* PCR ordering may increase test appropriateness and is associated with a reduction in overall testing, primarily by reducing the number of tests that are considered not appropriate on clinical grounds. PAF is effective but requires significant time investment by ASP staff and may not be a sustainable intervention over time.

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Evaluation of the genomic epidemiology and transmission of *Clostridioides difficile* infection across a community

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Background: *Clostridioides difficile* infection (CDI) is a major cause of morbidity and healthcare costs in the United States. The epidemiology of CDI has recently shifted, with healthcare-associated (HCA) CDI trending downward and community-associated (CA)-CDI becoming more prominent. The cause of this shift is not well understood but may be related to changing genomic epidemiology. We assessed *C. difficile* strains across a CDC Emerging Infections Program (EIP) site in Western New York, including strains from both HCA-CDI and CA-CDI cases to characterize predominating strains and putative transmission across epidemiological classifications and between index and recurrent cases. **Methods:** In total, 535 isolates of *C. difficile* were collected over a 6-month period in 2018 from the Monroe Country, New York, EIP site and were analyzed using whole-genome sequencing (WGS). Standard epidemiological definitions were used to classify cases as hospital onset (HO-CDI); community associated (CA-CDI); community onset, healthcare associated (CO-HCFA-CDI); or long-term care onset (LTCO-CDI). Recurrent cases were defined as those diagnosed within 8 weeks of an initial positive test. Multilocus sequence types (MLSTs) were assigned according to PUBMLST and single-nucleotide polymorphisms (SNPs) were determined using a modified CFSAN analytical pipeline. Cases resulting from putative transmission were defined as those separated by 0–1 core SNPs. **Results:** Of 535 isolates, 454 were from index and 81 were from recurrent cases. The index cases were comprised of CA-CDI (47.4%), CO-HCFA-CDI (24%), LTCO-CDI (8.1%), and HO-CDI (19.3%). Cases with recurrent disease mirrored the epidemiological distribution of the larger set. Common MLSTs included ST2 (12.3%), ST8 (10.5%), ST42 (7.9%), ST58 (4.9%), ST43 (4.5%), and ST11 (4.3%). The previously widespread epidemic strain,

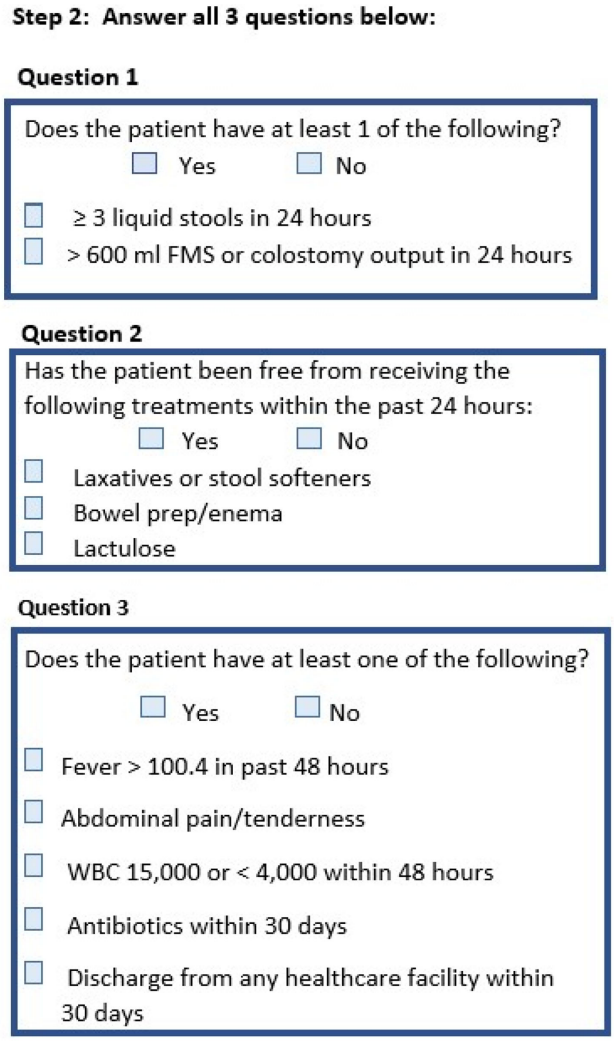

Fig. 1.