

753. Impact of COVID-19 on Healthcare Facility-Onset *Clostridioides difficile* Infection

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Session: P-36. HAI: C. difficile

Background. It is estimated that the majority of hospitalized COVID-19 patients around the world received antibiotics despite the fact that bacterial co-infections are rare. This can lead to increased antimicrobial resistance and *Clostridioides difficile* infections (CDI). Gastrointestinal symptoms of COVID-19 may also contribute to increased testing. The objective of this study was to assess the impact of the COVID-19 pandemic on our healthcare facility-onset (HO) CDI rates.

Methods. This was a retrospective cross-sectional study comparing CDI rate per 1,000 patient days, *C. diff* order rate per 1,000 patient days, Standardized Antimicrobial Administration Ratio (SAAR), and Standardized Infection Ratio (SIR) in the pre-COVID-19 period from January 1, 2019 to December 31, 2019 to the COVID-19 period from April 1, 2020 to March 31, 2021 at a 877-bed tertiary care hospital in Detroit, Michigan. CDI and order rates were extracted from the electronic medical record (Epic™ Buggy). SAAR and SIR data were extracted from National Healthcare Safety Network (NHSN).

Results. The average CDI rate per 1,000 patient days was 4.29 pre-COVID-19 compared to 1.98 during COVID-19 with a 54% reduction, and the *C. diff* order rate per 1,000 patient days also decreased from 130.89 to 93.03, resulting in a 29% reduction (Figure 1). The SIR was 0.383 compared to 0.308 during COVID-19 (P-value 0.404). SAAR decreased from 1.095 to 0.945 (P-value < 0.001). However, our institution experienced three COVID-19 waves, with peaks in April 2020, November 2020 and March 2021, that correlated with high risk CDI antibiotic utilization in intensive care unit (ICU) (Figure 2). The average hand hygiene rate increased from 82% to 92%.

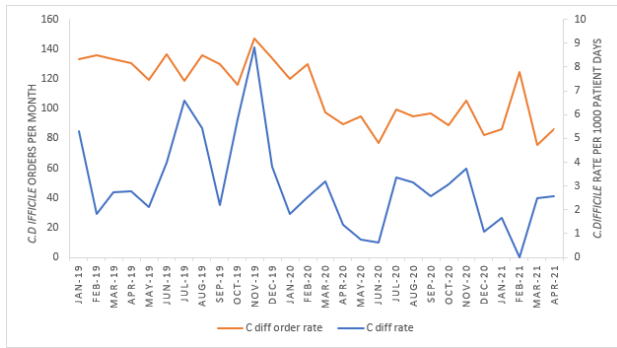


Figure 1. *Clostridioides difficile* order and infection rates pre-and during COVID-19 pandemic.

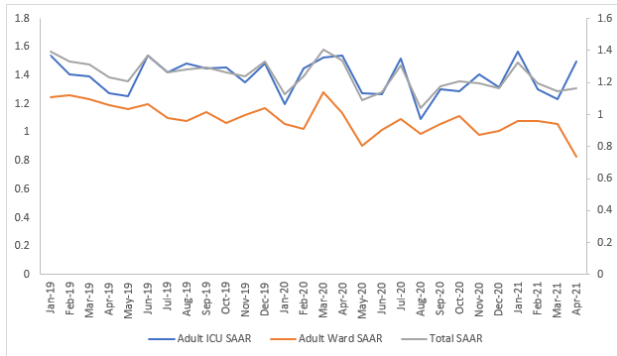


Figure 2. Standardized Antimicrobial Administration Ratio (SAAR) pre-and during COVID-19 pandemic.

Conclusion. Despite the COVID-19 pandemic, the HO-CDI and *C. diff* order rates and overall SAAR decreased; however, antibiotic utilization increased in the ICU during the COVID-19 waves. The overall decrease may be multifactorial and related to increased hand hygiene compliance, isolation and personal protective equipment use and overall decreased antibiotic use and *C. diff* orders.

Disclosures. Rachel Kenney, PharmD, Medtronic, Inc. (Other Financial or Material Support, spouse is an employee and shareholder)

754. A Two-step Testing Algorithm for Hospital-onset *Clostridioides difficile* Infection (CDI) Reduces Prescribing of *C. difficile* (CD) Therapy but Its Ability to Guide Treatment Decisions Remains Unclear

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Background. Determining true CDI versus CD colonization through CD testing is a continuing challenge. A previously introduced decision support tool at UVA Health significantly reduced inappropriate testing without adverse outcomes. More recently, our methodology changed from nucleic acid amplification test (NAAT) alone to an initial NAAT followed by ELISA for toxin to improve specificity. The purpose of this analysis was to assess provider interpretation of test results, using targeted CD therapy as a surrogate.

Methods. This single-center, retrospective study evaluated all patients with a positive NAAT (Cepheid Xpert® *C. difficile*) on day 4 or later of hospitalization following 2-step algorithm implementation from Feb 2020 through Feb 2021. Toxin negative (TOX-) test results (*C. DIFF* QUIK CHEK COMPLETE®) were accompanied by a comment that discordance may represent colonization or CDI and to consider ID consult. The proportion of toxin positive (TOX+) versus TOX- patients receiving ≥ 1 dose of CD therapy served as the primary outcome with partial courses considered < 10 days. Clinical outcomes were also compared.

Results. Ninety patients with NAAT+ results were included, of whom 58 (64%) were TOX-. Thirty-two (100%) TOX+ (median days of therapy [IQR] = 14 [11-17]) versus 51 (88%) TOX- patients (median days of therapy [IQR] = 11 [7-14]) received CD therapy (p=0.04). Treatment decisions were guided by ID physicians for 32 (63%) TOX- patients; ID recommendations to discontinue CD therapy were followed in 2 out of 9 (22%) cases. TOX- patients received partial therapy due to patient death (n=5), presumptive colonization (n=3), and provider error (n=1). Of TOX- patients receiving partial or no treatment, there were no CDI-related adverse outcomes during the admission. CDI-related colectomy occurred in 2 (6%) and 1 (2%) TOX+ and TOX- patients, respectively. Five in-hospital deaths with CDI as a contributing factor occurred in the TOX+ group.

Conclusion. Adoption of a 2-step NAAT plus toxin testing algorithm for hospital-onset CDI reduced the frequency with which TOX- patients received CD therapy but the vast majority were still treated. Most providers considered a positive NAAT indicative of CDI, regardless of TOX status.

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755. *Clostridioides difficile* Testing and the Use of Laxatives in Immunocompromised Adults

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Background. *Clostridioides difficile* infection (CDI) rates have plateaued at historical highs in the United States since 2010 and remains a major health problem. While optimal CDI testing remains unclear, current literature recommends testing patients whose symptoms are not clinically attributable to underlying conditions, e.g., laxatives. At Moffitt Cancer Center, a soft-stop alert was implemented to alert the provider if the patient received a laxative within the previous 48 hours of CDI testing. We aim to evaluate the incidence of CDI rates with prior laxative use in immunocompromised patients, as well as, the impact of the soft-stop alert in reducing CDI testing.

Methods. Retrospective, single-center, review of adult patients who were tested for CDI after the implementation of the soft-stop alert from October 1, 2020 to December 21, 2020. These patients were compared to a historical cohort of patients who were tested for CDI prior to the alert implementation from October 1, 2019 to December 31, 2019. The primary outcome was the percent of patients that received a laxative within 48 hours of CDI testing pre-alert compared to post-alert. Secondary outcomes included the percent of colonization versus active infection in this immunocompromised population, number and type of laxatives administered prior to testing, and the frequency of alert and reduction of CDI tests ordered. A cost-benefit analysis was also performed.

Results. In the historical cohort (n=480), 14.8% received a laxative within 48 hours of CDI testing (Figure 1). Within patients who received a laxative in this group, 4.2% had a definitive active infection. After the alert was implemented, a total of 630 CDI tests were ordered from October 1, 2020 to December 31, 2020, and the alert was fired for 123 (19.5%) tests ordered (Figure 2). Of the tests where the alert was fired, the CDI test was removed for 42.3% and continued for 57.7% of orders resulting in savings of \$3,263. In this cohort, 5.6% of patients had a definitive active CDI infection who received a laxative and testing was continued (Figure 3).

Pre-Alert Laxatives Administered Within 48 Hours of CDI Testing

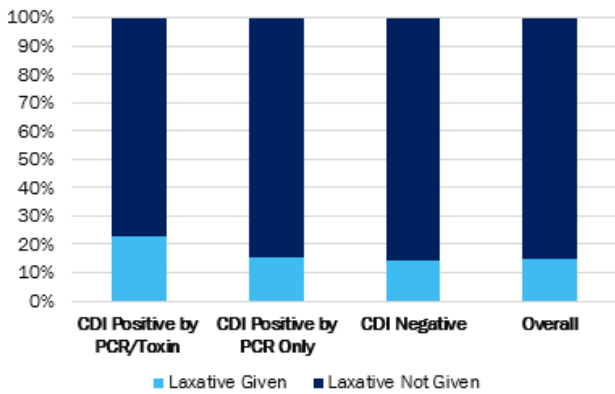


Figure 2: CDI Test and Laxative Administration Alert

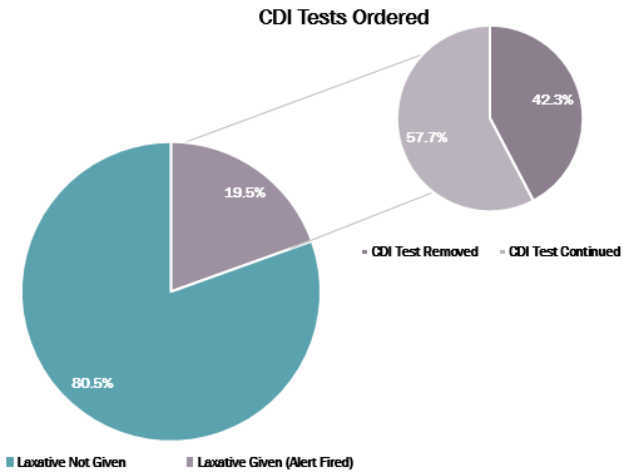
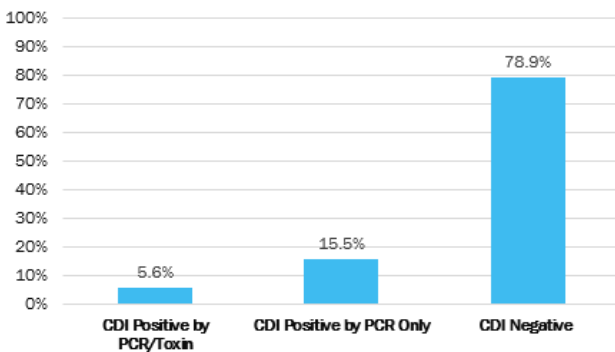


Figure 3: Post-Alert Laxatives Administered and CDI Test Result

Post-Alert Laxative Given Within 48 Hours and CDI Test Continued



Conclusion. The soft-stop alert implemented reduced CDI testing in patients who received a laxative in the last 48 hours correlating with a financial benefit, improvement in guideline adherence, and reduction in laboratory labor.

Disclosures. All Authors: No reported disclosures

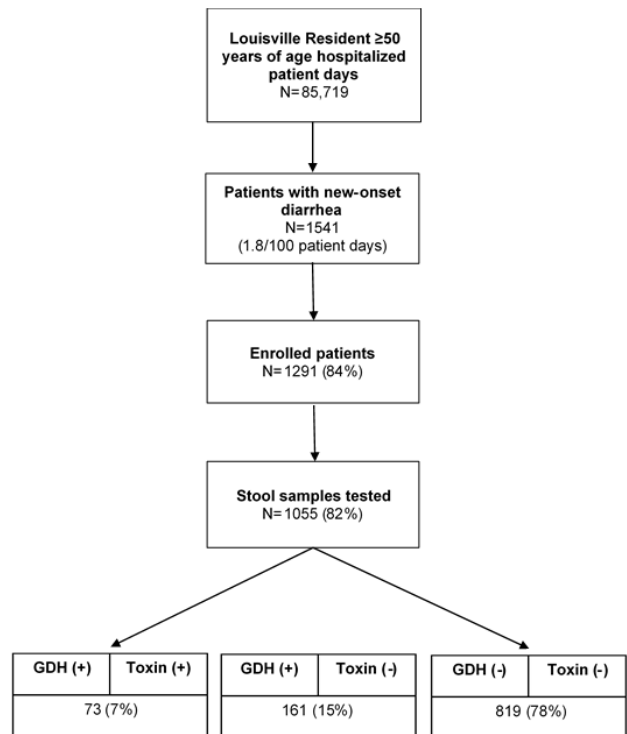
756. *Clostridioides difficile* Burden of Disease: A Prospective Population-Based Surveillance Study of Hospitalized Adults in Louisville, Kentucky
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Background. *Clostridioides difficile* (*C. difficile*) is an important cause of morbidity and mortality. *C. difficile* infection (CDI) may be frequently under-diagnosed because laboratory confirmation requires collection of a stool specimen from a patient with diarrhea and appropriate laboratory testing.

Methods. A prospective population-based CDI surveillance study was launched in 8 adult hospitals in Louisville, Kentucky on September 16, 2019. Surveillance officers in each hospital identified all cases of new-onset diarrhea (≥ 3 loose stools in the past but not preceding 24 hours) in Louisville residents ≥ 50 years of age. After informed consent, stool samples were collected and tested at the University of Louisville reference laboratory for 1) glutamate dehydrogenase (GDH) and 2) *Clostridioides difficile* toxins A and B using C. DIFF QUIK CHEK COMPLETE[®], Techlab. We defined CDI as GDH positive and toxin positive. The study was paused on April 3, 2020, due to COVID-19 restrictions.

Results. There were 85,719 eligible patient-days during the study period. A total of 1541 patients had new-onset diarrhea corresponding to 1.8 cases of new-onset diarrhea per 100 eligible patient-days. We enrolled 84% (1291/1541) of patients with new-onset diarrhea and tested stool samples for *C. difficile* from 82% (1055/1291) for a testing density of 123 per 10,000 patient-days. Of the 1055 tested stool specimens, 73 (7%) were GDH positive and toxin positive (Figure 1) yielding a hospital-based CDI incidence of 8.5 CDI cases per 10,000 patient-days.

Figure 1. Patient Ascertainment Flow Chart



GDH= Glutamate Dehydrogenase

Conclusion. New-onset diarrhea was common among hospitalized adults ≥ 50 years of age. CDI was frequently identified through stool specimens collected from eligible inpatients with new-onset diarrhea. Further analysis of these data and additional laboratory testing will contribute to a better understanding of the frequency of CDI underdiagnosis and the burden of CDI in the United States.

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