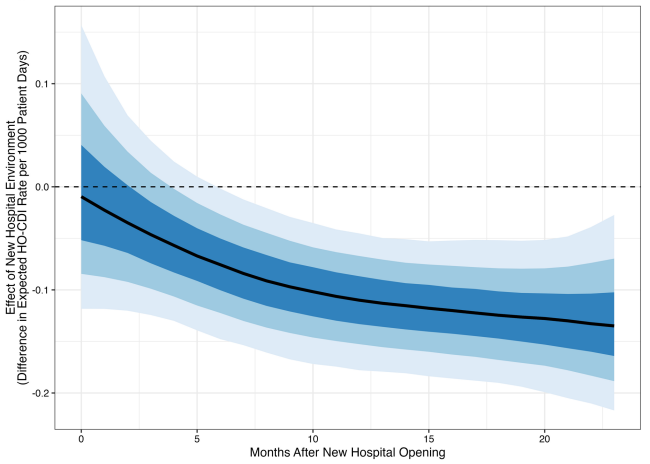
Figure 2. Predicted Impact of Opening a New Hospital Building on Hospital-Onset Clostridioides di



(Figure 1). The predicted contrast in HO-CDI rate (Figure 2), shows no immediate change in HO-CDI after opening, however a sustained reduction estimated at 0.1 HO-CDI events per 1000 patient days for the duration of follow-up. **Conclusions:** We observed a reduction in HO-CDI rates after the opening of a new hospital building. The difference in HO-CDI rates between hospital buildings after the move is likely due to the concentration of high-risk patient cohorts within this building. Our findings suggests that there remains an opportunity to reduce HO-CDI through environmental hygiene. However, it is possible that other factors beyond surface environment contributed to an observed reduction in HO-CDI, including other concurrent infection control interventions that focused on smaller populations within the hospital. In future work we will investigate the durability of this observed effect with additional analyses including patient-level risk for HO-CDI.

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Poster Presentation - Poster Presentation
Subject Category: C. difficile

Breaking the Reflex: Impact in Hospital-Acquired Infection Incidence for Clostridioides difficile Infection

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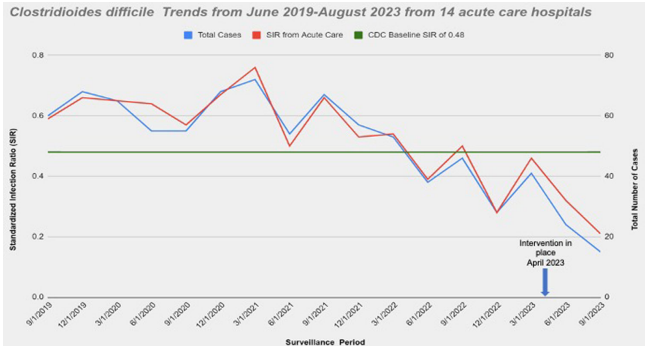
Background: Nucleic acid amplification tests (NAAT) do not distinguish between colonization and Clostridioides difficile (C.diff) associated diarrhea. On April 5th 2023 our laboratory introduced a new C. diff testing methodology. Previously, if a C. diff screen result was negative for toxin and positive for glutamate dehydrogenase (GDH), a second confirmatory test was conducted with NAAT. This confirmatory test was removed from our testing algorithm. NAAT testing may be ordered ad hoc when clinically relevant diarrhea persists, and alternative etiologies have been excluded. We wanted to evaluate the impact of change with testing methods. **Method:** Retrospective review of all inpatient hospital-acquired C.diff infections reported to NHSN database from Ascension Michigan Market which comprises 14 acute care hospitals from June 2019 to August 2023. Data for C diff was analyzed every quarter. The risk adjustments used to calculate the Standardized Infection Ratios (SIRs) for C. diff infections was set at 0.48 based on CDC mean SIR established for acute care hospitals in 2022. **Results:** A total of 14 acute care hospitals were included from which 866 C.diff cases were reported during this period. Overall, the SIR dropped from 0.59 from June-August 2019 to 0.32 reported from March-May 2023; 45.7 % decrease. The maximum reduction in SIR was seen post intervention at 0.21 from June-August 2023 which was 78.3%



below the benchmark of 0.48. (Figure) **Conclusions:** Strategies to optimize current laboratory tests are critical to differentiate C. diff infection from colonization. The current strategy by changing the testing method led to substantial reduction in C-diff. Diagnostic stewardship studies should ideally include outcome measures targeted to post-intervention patients to determine clinical relevance and patient safety. Optimizing test utilization remains a critical component of quality healthcare delivery. Future NHSN updated surveillance definition will require incorporating clinical decision-making into the metric; that is including a combination of any positive C-diff test plus initiation of antibiotic therapy for C-diff.
Disclosure: Reese Cosimi: Advisory Board - Abbvie

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Longitudinal Follow Up of Patients Colonized with Clostridioides difficile: a Retrospective Cohort Study

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Background: Patients colonized with Clostridioides difficile are at risk of transmitting C. difficile to other patients, and of developing C. difficile infection (CDI). Known risk factors for carriage include previous hospitalization, gastric acid suppression and previous CDI. Data regarding duration of carriage and its predictors are lacking but could be useful to better understand the natural evolution of carriage and better estimate the likelihood of transmission or progression to CDI. **Methods:** We performed a retrospective cohort study of C. difficile colonized patients with > = 1 admission to a tertiary academic institution between November 2013 and January 2017. Colonization status was determined upon hospital admission by detection of TcdB gene by polymerase chain reaction on a rectal screening swab, as part of a systematic screening program. Overall duration of carriage and predictors of prolonged carriage were explored using Kaplan-Meier methods and Cox regression. **Results:** There were 134 patients, who after having a positive initial screening test (and therefore identified as colonized with C. difficile), had subsequent testing. The median age was 77 years (IQR, 66 to 85), and 53.6% of the patients were female. After hospital discharge, 26 (19.4%) colonized patients progressed to CDI. Mean duration of follow up was 269 days, with a median of 179 days. Median duration of carriage was 211 days, (95% confidence interval (CI) [157, 264]). Predictors associated with decreased duration of C. difficile colonization included younger age (HR per unit decrease (year), 1.013; 95% CI, 1.025 to 1.001; p=0.03), and receipt of antibiotics in the 3 months prior to first admission (mean days to clearance of patients with and without recent antibiotic use, 252 days vs 372 days, respectively; HR, 1.55; 95% CI, 1.01 to 2.36; p < 0 .04). By contrast, the presence of comorbidities (e.g. heart failure, diabetes, cancer, and chronic kidney disease), the use of proton-pump inhibitors (PPIs), the receipt of

antibiotics during the first admission, and the duration of first hospitalization were not associated with significant differences in duration of carriage. **Conclusion:** This study is the largest cohort of C. difficile carriers with longitudinal follow up of their colonization status. It highlights the extended duration of carrier status especially in older patients and identifies predictors of prolonged carriage. Further studies are needed to understand the underlying relationship with the predictors identified in this study.

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Clinical Characteristics and Cycle Thresholds Among Discordant and True Positive Test Results for Clostridiodes difficile

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Background: The diagnosis of Clostridioides difficile infection (CDI) is challenging. Despite guideline-directed, multistep testing algorithms and diagnostic stewardship, the treatment of C. difficile colonization persists. The testing algorithm at our system utilizes an initial real-time PCR test (PCR) for Toxin B gene, which if positive, reflexes to an enzyme immunoassay (EIA) for detecting Toxins A and B. Discordant results (PCR +/EIA -) are suggestive of colonization, but the majority of patients with discordant results are treated for CDI. Correlation of C. difficile EIA B polymerase chain reaction (PCR) cycle thresholds (Ct) with the presence of free EIA and disease severity has been observed, but the ability to use Ct in the decision to treat patients with discordant results is unclear. Our study assesses if Ct values and other clinical characteristics favor treatment in select patients with discordant **Methods:** A retrospective chart review was performed of adult patients (≥ 18-year-old) with positive C. difficile PCR results that were admitted to our health system between June 01 and August 31, 2023. C. difficile PCR and Ct results were obtained by Cepheid GeneXpert and Toxin A and B EIA results were obtained by Meridian Bioscience Immunocard. Patients with discordant (PCR+/EIA) and true positive (PCR+/EIA+) results were compared. We assessed demographics, past medical history, clinical characteristics, severity of illness, PCR Ct values, treatment, and clinical outcomes including: 30-day all-cause mortality and re-admission, and 60-day CDI repeat testing and treatment. Results Of the 122 patients identified, 89 patients had discordant results and 43 had true positive **Results:** Severity of illness and other clinical and laboratory characteristics were similar between both groups. Mean Ct values were significantly lower for true positive results compared to discordant results, 24.28 vs 29.27, respectively (p26 (p=.08). Of the patients with discordant results, 73 completed treatment for CDI and no difference in clinical outcomes was observed compared to patients with discordant results that were not treated. Conclusion Ct values were lower among patients with true positive results compared to patients with discordant **Conclusion:** There were no statistically significant different rates of severe or fulminant CDI among patients with discordant results and Ct values < 26, although this finding may be limited by sample size and Ct may be helpful in deciding which discordant patients to treat.

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Table 1. Demographic and clinical characteristics of study population

	PCR+/EIA- (n=89)	PCR+/EIA+ (n=43)	
Age (mean)	65.2	70.5	
Male gender	44 (49.4)	23 (51.0)	
Laxative use within 48 hours of testing	12(13.5)	6 (14.0)	
Antibiotics within 14 days of testing*	51 (57.3)	39 (90.7)	p<.05
PPI use within 14 days of testing*	36 (40.4)	28 (65.1)	p<.05
History of PCR+ test	23 (25.8)	14 (32.6)	
History of colon surgery	3 (3.4)	0 (0)	
Alcohol use disorder	22 (24.7)	5 (11.6)	
End stage renal disease	6 (6.7)	3 (7.0)	
Cirrhosis	11 (12.4)	3 (7.0)	
Inflammatory bowel disease	7 (7.9)	4 (9.3)	
Immunosuppression	12 (13.5)	3 (7.0)	
Cycle threshold (mean)*	29.27	24.28	p<.05

Characteristics	PCR+/EIA- (n=89)	PCR+/EIA+ (n=43)
≥3 Bowel movements (BM) in 24hrs	52 (58.4)	29 (67.4)
<3 BM in 24hrs	21 (23.6)	9 (20.9)
Unable to confirm BM frequency	16 (18.0)	5 (11.6)
Fever	12 (13.5)	10 (23.3)
Hypotension	17 (19.1)	10 (23.3)
CT abdomen obtained	65 (73.0)	25 (58.1)
CT consistent with CDI	21 (23.6)	13 (30.2)
Vasopressor requirement	6 (6.7)	3 (7.0)
Stool panel obtained	42 (47.2)	16 (37.2)
Stool panel positive	8	1
White blood cell count (mean)	11.86	13.98
Albumin (mean)	3.30	2.99
Serum creatinine (mean)	1.37	1.43

Table 2. Severity of illness by Ct values among discordant patients

PCR+/EIA-	Ct ≤ 26 (n=27)	Ct > 26 (n=61)
Non severe CDI	12 (44.4)	39 (63.9)
Severe CDI[a]	8 (29.6)	12 (19.7)
Fulminant CDI[b]	7 (25.9)	10 (16.4)
Severe or fulminant CDI	15 (55.6)	22 (36.1)

a) Severe: WBC >15, AKI >1.5 baseline or >.3 difference (excluding ESRD)
b) Fulminant: Severe as above with hypotension or shock, ileus, or megacolon.

Table 3. Outcomes

Outcomes & treatment	PCR+/EIA- (n=89)	PCR+/EIA+ (n=43)
Completed treatment for CDI	65 (73.0)	41 (95.3)[a]
30-day mortality	9 (10.1)	3 (7.0)
60-day readmission	28 (31.5)	14 (32.6)
Treatment within 60 days	12 (13.5)	6 (14.0)

a) Both patients not initially treated were later treated within 60 days

	Treated PCR+/EIA- (n=65)	Untreated PCR+/EIA- (n=24)
Average Ct	29.13	29.63
30-day mortality	9 (13.8)	0 (0)
60-day readmission	19 (29.2)	7 (29.2)
Tested PCR+/EIA + within 60 days	1 (1.5)	1 (4.2)
Treatment within 60 days	9 (13.8)	3 (12.5)