reflex if specific criteria are identified in the electronic medical record in the prior 24 hours: less than 3 loose stools documented, receipt of laxative, opioid antagonist, oral contrast, or tube feed initiation. If any criteria are identified, an embedded alert triggers and the provider must choose "yes, high clinical suspicion" or "no (exit and cancel order)" in addition to providing an order indication. All inpatient C. difficile tests were reviewed from July 1 to Sept 30, 2022 (pre-update) and July 1 to Sept 30, 2023 (post-update). An order rate was calculated per 10,000 patient days as well as HA-CDI rate. Cost analysis was completed using direct lab costs and published costs of $35,000 per HA-CDI. Results of the order questions were reviewed post-update. Incident rate comparison was completed using medcalc. **Results:** Pre-update, 1147 tests were conducted, with an order rate of 104.3. Post-update, 919 tests were performed, with an order rate of 86.6. The positivity rate was 16.1% pre-update and 14.7% post-update. The incidence rate difference was 0.00177 (P 15 (145, 16%). 166 (18%) patients who received laxatives (18 positive, positivity rate 11%) were still tested. **Conclusion:** Implementation of a dynamic order led to a significant reduction in the total number of C. difficile PCR tests performed with associated reduction in HA-CDI and cost savings. Despite this, patients receiving laxatives were still being tested for C. difficile, highlighting the need for ongoing education and feedback. These results support the use of dynamic ordering for diagnostic stewardship, which can benefit both patients and hospitals.

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Subject Category: C. difficile
Underlying Conditions in Community-associated Clostridioides difficile Infections in Davidson County, Tennessee
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Background: Clostridioides difficile infections (CDI) are a crucial public health threat becoming a worldwide problem. In 2017, there were 223,900 incident cases and 12,800 deaths in the United States. Underlying conditions, such as diabetes mellitus (DM), put individuals at a greater risk for developing an infection. Whereas CDI was once believed to be mostly healthcare-associated, increasing evidence points to transmission in community settings (CA). We investigated characteristics of CA CDI and associations between pre-existing conditions and CA incident CDI cases using data from Tennessee's CDI surveillance program, an active population- and laboratory-based surveillance system conducted through CDC's Emerging Infections Program. CA incident CDI case data were downloaded from the Incident Case Management System from 2017 to 2021. Count and percentages were determined for each underlying condition, number of underlying conditions, and biological sex. Chi-square analyses determined associations between underlying conditions and sex. Statistical analyses were conducted using SAS v9.4. 2,326 CA incident CDI cases were identified from the catchment area. The case rates per 100,000 population between 2017 and 2021 were 79.7, 81.9, 73.7, 50.7, and 49.6. A total of 39% of the cases were 65 years or older. Most cases were women (64.8%). The overall prevalence for any underlying condition among CA CDI cases was 67.4%. A total of 29.4% of incident cases had one condition, 18.5% had two conditions, and 19.4% had three or more conditions. The most frequently reported pre-existing conditions was DM (22.9%) and gastrointestinal disease (21.7%). We looked at the prevalence of underlying conditions separated in men and women. Men with CA CDI were more likely to have chronic kidney disease (CKD) (19.1% vs 12.7%), DM (26.0% vs 21.2%), immunocompromised conditions (6.4% vs 3.6%), liver diseases (6.5% vs 2.8%), and plegias (1.0% vs 0.2%) than women with CA CDI. Women with CA CDI were more likely to have chronic lung diseases (17.4% vs 12.6%) and connective tissue diseases (4.9% vs 2.2%) than men with CA CDI. Although the incident CA CDI case rate in Davidson County decreased from 2018 to 2021, it remains a significant threat. In this analysis, underlying conditions in persons with CA CDI were highly prevalent. Men were more likely to have underlying conditions in general, and specifically CKD and DM, than women. Improving understanding of the prevalence of these conditions with CA CDI cases, along with their antibiotic use and community exposures, can help drive prevention strategies to mitigate CA CDI transmission.

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Resetting the environmental reservoir; evaluating the impact of a new hospital building on Clostridioides difficile infection
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Background: Prior research has implicated contaminated surfaces in the transmission of Clostridioides difficile within the hospital. To reduce the risk of transmission, enhanced environmental hygiene is performed in rooms of patients with known C.difficile infection (CDI). We wished to evaluate the residual impact of environmental surfaces on hospital-onset CDI (HO-CDI) by comparing HO-CDI rates before and after the opening of a new 504-bed hospital building, HUP Pavilion (PAV). We hypothesized that we would observe a reduction in HO-CDI after opening of PAV due to a reduced burden of C.difficile spores in the environment. **Methods:** We included NHSN reported HO-CDI rates for 28 months prior and 24 months after opening of PAV. Upon opening, patients were divided between the old building (HUP) and PAV. We included all patient units before and after opening. We created hierarchical models of HO-CDI rates using Stan Hamiltonian Monte Carlo (HMC) version 2.30.1, via the "cmdstanr" and "brms" packages with a GAM smooth function by month and intervention period with default, weakly-informative priors. **Results:** At baseline, there was an average of approximately 20,100 patient days per month, subsequently divided between HUP and PAV (mean 10,100 and 12,100 patient days per month). After opening of PAV, we observed a reduced HO-CDI rate (mean 0.21 vs 0.31 per 1000 patient days, P=0.01). When comparing the two specific buildings after opening of PAV, there was a greater reduction noticed in the old building (HUP) as compared to the new building (PAV) (0.12 vs 0.29 per 1000 patient days)

Figure 1. Hospital-Onset Clostridioides difficile Infection Rate per 1000 Patient Days Before a

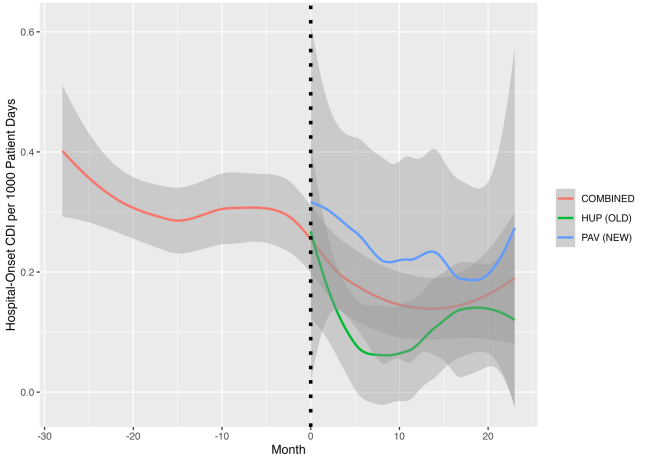
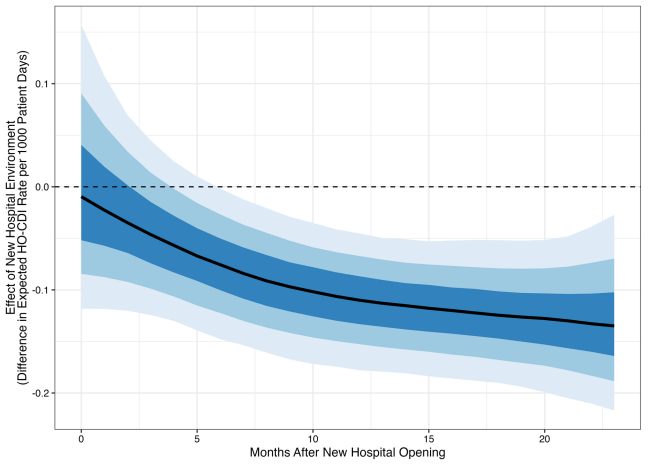


Figure 2. Predicted Impact of Opening a New Hospital Building on Hospital-Onset Clostridioides di



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

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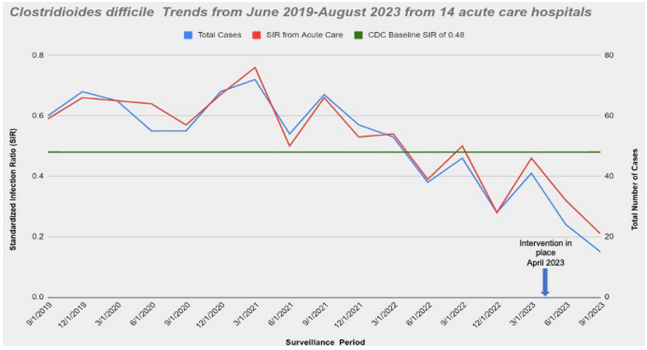
Background: Nucleic acid amplification tests (NAAT) do not distinguish between colonization and Clostridioides difficile (C.diff) associated diarrhea. On April 5th 2023 our laboratory introduced a new C. diff testing methodology. Previously, if a C. diff screen result was negative for toxin and positive 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