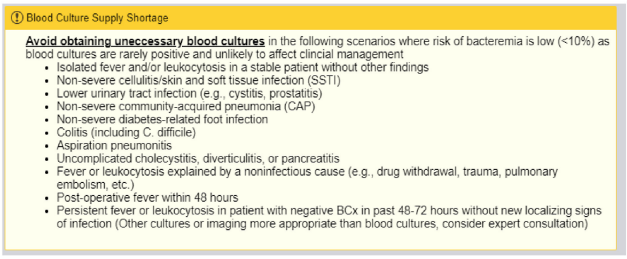
Figure 1



Presentation Type:
Poster Presentation
Subject Category: C. difficile
Discordance between symptom presentation and testing for Clostridioides difficile among hospitalized VA patients
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Background: Presence and documentation of clinical symptoms of Clostridioides difficile infection (CDI) prior to diagnostic testing is not well-described. The Infectious Diseases Society of America (IDSA) guidelines recommend that patients have ≥3 episodes of unexplained loose stool in the previous 24 hours before testing. In populations predisposed to chronic non-infectious diarrhea, such as those undergoing chemotherapy or with chronic gastrointestinal (GI) illness, more explicit signs of infection may be needed. Our objective was to evaluate CDI symptoms that proceeded testing in a cohort of inpatient Veterans with chronic GI illness or undergoing chemotherapy. **Methods:** This retrospective cohort study included Veterans hospitalized at 8 VA facilities from January 1st, 2019-December 31st, 2022, who were tested for CDI, and were receiving chemotherapy or had chronic GI illness. Charts reviewed identified the following symptoms in the 24 hours prior to testing: greater than 3 loose stools in 24 hours, bloody stool, nausea, vomiting, abdominal pain, fever (temperature ≥100.4°F), and white blood cell count >10,000/mm3. The presence of 3 loose stools in 24 hours alone was deemed the minimal indication for CDI testing, while the presence of any additional symptoms was considered high indication for testing. CDI treatment was defined as at least one dose of metronidazole, oral vancomycin, or fidaxomicin ±7 days from testing. Chi-square tests assessed the association between indication for CDI testing and test positivity. **Results:** A total of 676 tests for 577 unique patients were reviewed (69.1% White, 94.5% male, mean age=68.3 years). Most had a chronic GI illness (90%); colitis, and presence of a gastrostomy were the most frequently reported. Only 14% of CDI tests were positive. The minimal indication for CDI testing was present for 243 tests (36%). 190 tests (28%) were ordered for patients with symptoms highly indicative of CDI. Of the negative tests, 55% were associated with at least one dose of CDI treatment. There was no association between test indication and test positivity (p-value=0.82). **Conclusion:** In a population predisposed to chronic non-infectious diarrhea, nearly two thirds (64%) of those tested did not meet the minimum requirement (3 documented loose stools in 24 hours). This may partly explain the low-test positivity rate of 14%. Over half of negative tests were associated with CDI treatment. Future work should focus on diagnostic stewardship to improve documentation of loose stool and other CDI symptoms prior to testing to reduce unnecessary testing and overtreatment.

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Characteristics of Patients with Hospital Onset Clostridioides difficile Infections in a Safety Net Hospital
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Background: Clostridioides difficile infections (CDI) are a leading cause of health-care associated morbidity and costs. University Health Truman Medical Center is a longstanding 238-bed safety net hospital in Kansas City, MO, where there was an increase in hospital-onset (HO) CDIs in 2024. To improve our infection prevention and control measures, we sought to study these HO CDI cases. **Methods:** Using a retrospective cohort study design and electronic health records, we retrieved data for inpatients who were identified as having HO CDI by our department of infection prevention and control in 2024. HO CDI was defined as a positive test for toxigenic Clostridioides difficile (C. difficile) polymerase chain reaction (PCR) performed on unformed stool collected on hospital day > 3 (with preagreed intuitional criteria in place). Data included demographic and epidemiological variables, comorbidities, onset of diarrhea and timing of stool collection, length of stay (LOS) and exposures (within prior 6 months) to hospitalization, surgery, and/or medications including laxatives, proton-pump inhibitors, immunosuppressants and antimicrobials. **Results:** In 2024 there were 20 HO CDI cases (versus 9 in 2023) with consequent increase in the CDI rate per 10,000 patient days and the standardized infection ratio. The characteristics of the CDI cases (percentage; mean ± standard deviation) were as follows. Most cases were females 60%. The mean age was 61 ± 18 years and BMI 28 ± 11 kg/m2. Recent hospitalization was common; 50% of cases had been hospitalized within 28 days and 70% within 6 months of their positive C difficile test. All cases had one or more comorbid conditions while one patient (5%) had past history of CDI. The median LOS was 18 days with frequent room changes and 35% of cases had an intensive care unit exposure. All had received systemic antibiotics either singly or in combination and the most commonly used agents included cephalosporins (90%) and penicillins with beta-lactamase inhibitor (35%). Laxative use was common (65%) as were history of surgery (55%) and intravenous contrast exposure (50%). Most cases (70%) were treated with oral vancomycin with three cases receiving a taper/prophylaxis, while five cases received fidaxomicin; there was one case of recurrence. **Conclusions:** Recent hospitalization and laxative use were high among HO CDI cases in a safety net hospital, raising concern for potential over-diagnosis. Switching to a two-step C difficile stool testing algorithm (PCR+ toxin enzyme immunoassay), though more costly, would be a useful mitigation strategy.

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Optimizing Diagnostic Stewardship: Reducing CAUTI Rates Through Urine Culture Decision-Making in the ICU
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Background: Approximately half of all fevers in intensive care units (ICUs) are attributed to noninfectious causes. Despite this, most providers routinely culture urine from patients with indwelling urinary catheters who develop a new fever, which can lead to overdiagnosis and unnecessary antibiotic use. This study evaluated the impact of transitioning from a urinalysis (UA) with reflex to culture order to a stand-alone UA with microscopy in the Surgical and Neurosciences Intensive Care Unit (SNICU) on the frequency of urine cultures ordered and Catheter-Associated Urinary

Figure 1a: number of urine cultures per patient days

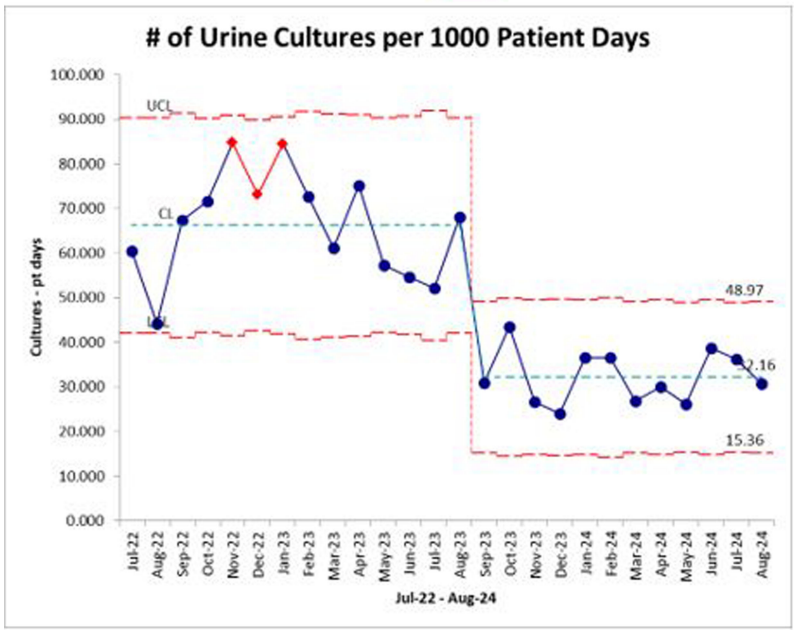
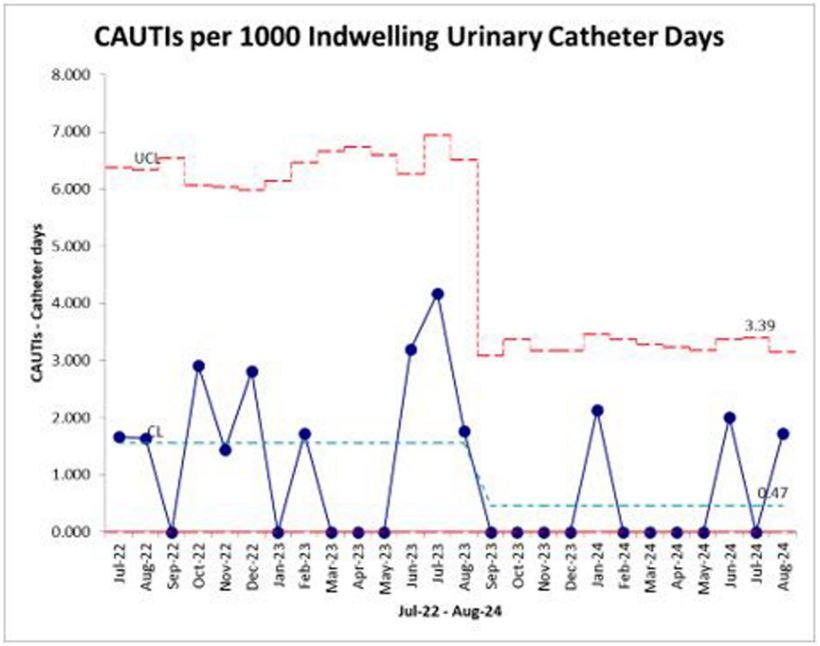


Figure1b: number of CAUTIs per urinary catheter days



Tract Infections (CAUTIs). **Methods:** This quasi-experimental before-and-after study was conducted at the University of Iowa between July 2022 and August 2024 and included all SNICU patients. In August 2023, SNICU staff were educated to send a UA with microscopy, review results with the care team, and then decide whether a reflex to culture was warranted. This initiative was collaboratively developed by SNICU leadership and the hospital epidemiology team. Data on the frequency of urine cultures and CAUTI rates per 1,000 catheter days were compared before and after implementation using a P chart in QI Macros. **Results:** During the pre-intervention period, SNICU ordered approximately 66 urine cultures per 1,000 patient days, with a CAUTI rate of 1.55 per 1,000 catheter days (Figure 1a and 1b). While all data points remained within control limits, red data points between November 2022 and January 2023 indicated possible special cause variation; after further investigation, the specific cause was not identified and data points returned to normal cause variation. Following implementation, the frequency of urine cultures decreased to approximately 32 per 1,000 patient days, and the CAUTI rate dropped to 0.47 per 1,000 catheter days. The intervention also resulted in greater process stability, as evidenced by a narrower range between the upper control limit (48.97) and lower control limit (15.36). These improvements demonstrated the effectiveness of transitioning to a deliberate, decision-making process based on UA with microscopy. **Conclusion:** Transitioning from reflex urine culture orders to a stand-alone UA with microscopy, combined with provider decision-making and leadership engagement, significantly reduced the frequency of urine cultures and CAUTI rates in the SNICU. By requiring a deliberate review

of UA results before ordering cultures, this intervention successfully optimized diagnostic stewardship. The pilot program will be integrated into the electronic medical record and expanded to other units.

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Descriptive Epidemiology of Catheter-Associated Urinary Tract Infections at University of Iowa Health Care Medical Center

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Background: Catheter-associated urinary tract infections (CAUTIs) are among the most common healthcare-associated infections (HAIs), often resulting in prolonged hospital stays, increased healthcare costs, and additional clinical interventions. The COVID-19 pandemic introduced new challenges to infection prevention, with global reports indicating increased rates of certain HAIs, such as ventilator-associated pneumonia and bloodstream infections, due to healthcare strain and the intensified use of invasive devices. However, trends in CAUTI rates during the pandemic varied across healthcare settings. **Methods:** This retrospective study was conducted at the University of Iowa Health Care Medical Center, an 866-bed academic hospital, from 2018 to 2023. Manual chart reviews of CAUTI cases reported to the National Healthcare Safety Network (NHSN) were performed to collect data on patient demographics, medical histories, catheter usage, and infection prevention practices. CAUTI incidence was analyzed over time and compared with monthly COVID-19 admission rates. **Results:** A total of 226 CAUTI cases were identified during the study period. The average CAUTI rate per 1,000 catheter line-days declined from 1.23 in 2019 to 0.85 in 2020, but increased to 1.28 in 2021, coinciding with COVID-19 surges (Figure 1). The median patient age was 61 years, with females accounting for 56% of cases. Foley catheters were already in place upon admission in 24% of cases. Non-intensive care unit (ICU) inpatient settings accounted for 24% of catheter placements, while ICUs accounted for 18%. Additionally, 16% of cases originated from the operating room, and 7% from the emergency department. Neurologic disease was the most common admission diagnosis (27%), followed by cardiovascular disease (13%) and Hematologic/Oncologic disease (13%). Twenty six percent of cases were incontinent of urine and 24% of stool. Comorbidities included immunocompromised status (20%) and diabetes (36%). The primary indication for Foley catheter use was monitoring intake and output (42%). Of the 226 cases, 61% of patients were clinically considered to have a UTI. In-hospital mortality was 22%. **Conclusion:** The findings from this study provide insights into factors contributing to CAUTI at our institution. Fluctuations in CAUTI incidence, particularly during the COVID-19 pandemic, underscore the need for robust infection prevention strategies. The finding that only 61% of cases required treatment suggests urine cultures were often obtained inappropriately or positive results were not used in selected situations. This highlights an opportunity for diagnostic stewardship to improve urine culture practices. Addressing identified risk factors and enhancing catheter management are critical to reducing CAUTI incidence and improving patient outcomes.

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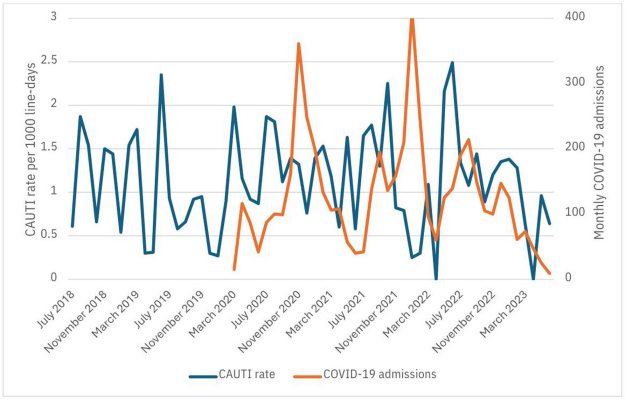
Figure 1: CAUTI incidence rate per 1000 line-days in adult units and monthly COVID-19 admissions, University of Iowa Health Care Medical Center, 2018-2023



Presentation Type:
Poster Presentation
Subject Category: CLABSI

Infection on the Sidelines: Evaluating Bacteremia Rates in Device-Dependent Cardiology Patients

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Introduction: Patients with mechanical circulatory support (MCS) devices, such as ventricular assist devices (VAD) and extracorporeal membrane oxygenation (ECMO), are excluded from the National Healthcare Safety Network (NHSN) central line-associated bloodstream infection (CLABSI) criteria, whereas patients with intra-aortic balloon pumps (IABP) and Impella devices remain included. Since both MCS and Impella/IABP devices are associated with bloodstream infection risks, this study compares bacteremia rates among patients with VAD/ECMO, IABP/Impella, and central venous catheters (CVCs) to inform more accurate infection reporting. **Methods:** Using a surveillance database, we retrospectively reviewed bloodstream infections among patients with a CVC, ECMO/VAD, or IABP/Impella admitted to Duke University Hospital Cardiology units from January 2019 to July 2024. Bacteremia episodes were calculated per 1000 device days, with de-identified data pooled for final analysis. **Results:** A total of 849 bacteremia episodes were observed in patients with only a CVC (0.14 episodes/1000 device days), 98 in patients with ECMO/VAD (0.19/1000 device days), and 64 in patients with IABP/Impella (0.16/1000 device days). (Figure 1) Bacteremia incidence rate ratio (IRR) in patients with ECMO/VAD compared to patients with only a CVC was 1.30 (95% CI 1.05, 1.60, p-value 0.01). Bacteremia IRR in patients with Impella/IABP compared to patients with only a CVC was 1.12 (95% CI 0.87, 1.45, p-value 0.37). However, when we combined both ECMO/VAD and IABP/Impella bacteremia episodes and compared the bacteremia rate to patients with only a CVC, the incidence rate ratio was 1.22 (95% CI 1.03, 1.44, p-value 0.02). **Discussion:** The significantly different combined bacteremia rates among ECMO/VAD and IABP/Impella suggest that both device categories have significantly higher rates of bacteremia compared to CVC-only patients. Thus, NHSN should reconsider NHSN exclusion criteria for Impella/IABP patients similar to that for ECMO/VAD patients. Further collaboration with institutions, could strengthen findings and refine infection control protocols in high-risk, device-dependent patients.

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