Conclusion. CD testing approval is a successful strategy to optimize testing and lower HO-CDI rates, without resulting in worst outcomes even when CD test was not approved.

Disclosures. All Authors: No reported disclosures

760. Incidence, Predictors and 30-Day Outcomes of *Clostridioides difficile* Infection in Patients Undergoing Cystectomy: A Nationwide Analysis Using the ACS-NSQIP Database

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Session: P-36. HAI: C. difficile

Background. *Clostridioides difficile* infection is the second most common health-care acquired infection (HAI) and the most common gastrointestinal HAI, with an estimated 365,200 cases reported by the CDC in 2017. *CDI* continues to remain a major cause of inpatient admission and utilization of healthcare resources. The exact incidence of peri-procedural *CDI* with cystectomy is unknown, and reported incidence of *CDI* in literature vary widely.

Methods: We conducted an analysis of patients undergoing cystectomy between 2015 and 2017 using the ACS National Surgical Quality Improvement Program (NSQIP) to study the incidence, risk factors and 30-day post-surgical outcomes associated with *CDI* following cystectomy. Developed by the American College of Surgery, this is a nationally validated, risk-adjusted, outcomes-based program designed to determine and improve the quality of surgical and post-surgical care.

Results. The incidence of *CDI* following cystectomy was 3.6% in our patient cohort. 18.8% of patients developed *CDI* following hospital discharge. Non-elective surgeries, and complete cystectomy procedures had higher rate of *CDI*. 48.4% of patients with *CDI* had a preceding post-operative infection. Post-operative organ space infections (OR 1.95), post-operative renal failure (OR 2.38), post-operative sepsis (OR 2.49) and septic shock (OR 2.33) were independently associated with development of *CDI*.

Conclusion. This is the first nationwide study looking at inpatient and 30-day post-operative *CDI* after cystectomy in the US. A sizable number of patients experience *CDIs* after cystectomy procedures, and *CDI* development is associated with an increase in length of stay and unplanned readmissions. This study lends further evidence to the need for continued interventions and initiatives to reduce this burden of post-operative *CDI*.

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761. Host Intestinal Defenses Against *Clostridioides difficile* Infection in Chemotherapy Patients

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Session: P-36. HAI: C. difficile

Background. *Clostridioides difficile* infection (CDI) is a common complication in patients undergoing cancer treatment with cytotoxic chemotherapy. Exposure to antibiotics or chemotherapy disrupts the microbiome by killing protective intestinal flora which consequently promotes *C. difficile* spore germination and disease. The host defense against CDI includes colonization resistance conferred by the healthy microbiome and innate defenses provided by intestinal epithelial cells. One protective factor secreted by Paneth cells of the intestinal epithelium is lysozyme, an enzyme that degrades the cell walls of Gram-positive bacteria such as *C. difficile*. We hypothesized that chemotheraphy-induced mucosal barrier injury and the resultant death of Paneth cells leads to decreased production of lysozyme. We thus sought to examine changes in lysozyme concentration in stools of chemotherapy patients.

Methods. We collected stool samples from six patients undergoing cancer treatment at four different time points. The first stool sample corresponded to the day prior to the start of chemotherapy (day zero). We then performed ELISA assays to determine the lysozyme concentration for each stool sample.

Results. On day zero, the lysozyme levels (n=6) averaged 268.1 ± 131.7 ng/mL. Over the course of the chemotherapy, the lysozyme levels decreased 78.70 ± 24.19% from the starting value. The lowest values were observed around days 5 through 11 for most patients, coinciding with when they were most neutropenic around day 11. Of the six patients developed *CDI* on day 5 and experienced more fluctuating lysozyme levels thereafter. On the day that the patient developed *CDI*, lysozyme was measured as 6.63 ng/mL. Throughout treatment, 3/6 patients showed recovery of lysozyme production with white blood cell recovery.

Conclusion. Our data indicate that chemotherapy causes decreased concentrations of lysozyme in stool. Low lysozyme levels could in part account for the increased susceptibility to *CDI* during chemotherapy. Future experiments will include bioinformatics analyses to determine how the microbiome changes in response to chemotherapy. Together, these experiments will inform our approach to determining patient susceptibility to chemotherapy-associated *CDI*.

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762. Real-World Utilization of *C. difficile* Drug Treatments and Associated Clinical Outcomes in a US Hospital System

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Session: P-36. HAI: C. difficile

Background. IDSA recommends use of fidaxomicin or oral vancomycin for treatment of initial episode or first recurrence of *Clostridioides difficile* infection (CDI). This study aimed to evaluate impact of a clinical decision support order set driving appropriate use of fidaxomicin on utilization of CDI drug treatments and associated clinical outcomes.

Methods. This was a retrospective, quasi-experimental study evaluating CDI therapies pre (8/2016-11/2017) and post (5/2018-1/2020) CDI order set implementation at a level-one trauma center located in Virginia. Admitted adult patients were included if CDI testing was positive for a 1st or 2nd episode and received active CDI treatment. Exclusions included fulminant CDI and CDI diagnosis by PCR with < 3 bowel movements or laxative use within 24 hours. The primary outcome was CDI recurrence within 30 days of completing therapy in patients who achieved clinical cure. Secondary outcomes were evaluated at 30 and 90 days and included sustained response and CDI-related readmissions.

Results. After screening, 186 patients in the pre-group and 187 in the post-group were included. Median age was 68 (59-77), most patients had an initial CDI episode (88.2%) and were diagnosed with severe CDI (50.7%). Baseline characteristics were similar between each group on Charlson comorbidity index, ICU admission, CDI risk factors, and concomitant antibiotic use. Primary treatment options in the pre-group were most commonly metronidazole 47.9% and oral vancomycin 50.5%, and in the post-group were fidaxomicin 56.7% and oral vancomycin 41.7% (Figure 1). CDI recurrence rates at 30 days post-index medication (17.2% vs. 6.3%, p=0.004) were lower in the post-group (Table 1). Clinical cure (84.4% vs. 94.1%, p=0.002) and sustained response at 90 days (55.8% vs. 73.3%, p=0.001) were higher in the post-group. CDI recurrence rates at 90 days and CDI-related readmissions at 30 and 90 days were also lower in the post group.

Conclusion. Implementation of the CDI order set increased fidaxomicin use and was associated with a decrease in CDI recurrences and CDI-related readmissions and was consistent with clinical cure and sustained response. Findings suggest increased first-line use of fidaxomicin results in better clinical outcomes.