Disclosures: **Adilene Olvera, MPH MLS (ASCP)**, **MERK** (Grant/Research Support, Scientific Research Study Investigator) **Kevin W. Garey, PharmD, MS, FASHP**, **Merck & Co.** (Grant/Research Support, Scientific Research Study Investigator) **Ryan J. Dillon, MSc**, **Merck & Co., Inc.,** (Employee) **Engels N. Obi, PhD**, **Merck & Co.** (Employee)

799. Mini Root Cause Analysis Reveals Opportunities for Reducing *Clostridioides difficile* Infection Rates

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Session: P-32. HAI: C. difficile

Background: *C. difficile* remains the single most common pathogen among healthcare-associated infections. We conducted a multi-center, prospective study using on-site, near real-time root cause analyses to identify opportunities for reducing hospital-onset *C. difficile* infection rates (HO-CID).

Methods: This prospective cohort study enrolled inpatients with HO-CDI admitted to one of 20 participating hospitals in the southeastern United States from July 2019 to June 2020. For each HO-CDI case, mini root cause analyses were conducted by on-site physicians, infection preventionists, or stewardship pharmacists to assess appropriateness of *C. difficile* testing and inpatient antibiotic use from the 30 days preceding HO-CDI diagnosis.

Results: The cohort captured 554 total HO-CDI cases and 956 antibiotic use events. 147 (26.5%) of HO-CDI cases were adjudicated as likely inappropriate and a further 51 (9.2%) as potentially inappropriate. Among inappropriately tested cases, 103 (52.0%) had received either laxatives or tube feeds in the preceding 48 hours. 132 (13.8%) of antibiotic use events were identified as potentially inappropriate. Among potentially inappropriate antibiotic use events, 40 (30.3%) received unnecessarily broad-spectrum antibiotics, 20 (15.2%) lacked a confirmed infectious diagnosis, and 4 (3.0%) received a longer than guideline-recommended duration. Risk of inappropriate antibiotic use varied by infection type, with treatment of urinary tract infection being associated with the highest risk of inappropriate antibiotic use (table 1).

Table 1: Relative Risk of Inappropriate Antibiotic Use by Indication

Infection Type	RR for inappropriate antibiotic use (95% CI)
Bacteremia	0.22 (0.08-0.58)
Intra-abdominal	0.42 (0.19-0.92)
Skin/soft tissue	0.65 (0.17-2.47)
Pneumonia	1.11 (0.72-1.71)
Urinary tract	1.52 (1.02-2.26)

Conclusion: Mini root cause analyses may be a helpful tool for identifying -specific opportunities to reduce HO-CDI rates. We found a high rate of inappropriate testing, usually related to alternative causes for diarrhea such as laxative receipt or tube feeds. While rates of inappropriate antibiotic use were lower than has been reported elsewhere, the majority of opportunities for improvement related to overly broad-spectrum coverage. Urinary tract infections were most strongly associated with inappropriate antibiotic use preceding HO-CDI.

Disclosures: **All Authors**: No reported disclosures

800. Oral Vancomycin Prophylaxis Against Clostridioides difficile in Patients Admitted to a Tertiary Academic Medical Center

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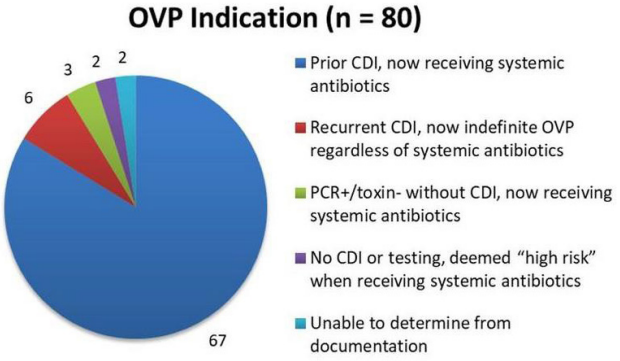
Session: P-32. HAI: C. difficile

Background: In an effort to more accurately diagnose *Clostridioides difficile* infection (CDI), many hospitals have switched to two-step testing algorithms that rely on nucleic acid amplification testing with reflex enzyme immunoassay for toxin. Additionally, oral vancomycin prophylaxis (OVP) against CDI is increasingly being used; initial studies focused on preventing recurrence in patients with a prior history of CDI, but OVP is also being studied in primary prevention. We hypothesized that following the implementation of two-step testing, clinicians may use OVP for prevention of a patient's first episode of CDI based on knowledge of prior PCR+/Toxin- testing.

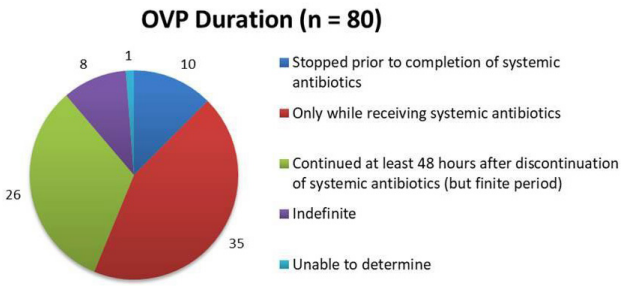
Methods: We performed a single-center, retrospective cohort study of patients admitted to Beth Israel Deaconess Medical Center. We identified patients who received oral vancomycin once daily or BID for the prevention of CDI following implementation of two-step testing. Patients who received oral vancomycin as part of a taper following acute infection were excluded. We categorized rationale for prophylaxis based on clinical documentation and collected details of patients' CDI history, antibiotic exposure, and subsequent CDI testing during hospitalization.

Results: In the 12 months following implementation of two-step testing, there were 80 patients who received OVP during hospitalization (2 daily and 78 BID). The vast majority (73, 91.3%) had a history of CDI and received OVP for secondary prevention while receiving systemic antibiotics. There were only 3 patients (3.8%) without known clinical history of CDI whose clinicians documented prophylaxis based on previous PCR+/Toxin- testing. Patients on OVP received a mean of 4.1 systemic antibiotics during hospitalization. When continuing OVP for a finite period after discontinuation of systemic antibiotics, this was most commonly done for 2-7 days (16 of 26, 61.5%). 22 patients underwent stool testing for CDI while receiving OVP in the hospital and all resulted PCR-negative.

OVP Indication



OVP Duration



Conclusion: Following implementation of two-step testing for CDI, use of OVP for primary prevention based solely on knowledge of PCR+/Toxin- testing in patients without a history of CDI was rare. Acute CDI appears unlikely in patients actively receiving OVP.

Disclosures: **All Authors**: No reported disclosures

801. Patients with *Clostridioides difficile* Infection Following Dental Antibiotic Prescription

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Session: P-32. HAI: C. difficile

Background: Dentists prescribe few broad-spectrum antibiotics but are the primary prescriber of clindamycin in the U.S. Data is scarce on the association of dental antibiotic prescribing and *Clostridioides difficile* infection (CDI). Here we present results from a longitudinal cohort of patients with a CDI positive diagnostic test 30 days after receiving an antibiotic prescribed by a dentist.

Methods: A cohort of patients with antibiotic prescriptions within 7 days of a dental visit were identified from 2015-2018. From this cohort, patients with positive *C. difficile* test 30 days after a dental antibiotic were included. Chart reviews obtained information about the dental visit, antibiotic prescribed, and CDI diagnosis. Descriptive statistics were used to describe characteristics of those with CDI following a dental antibiotic.

Results: 212,763 Veterans received an antibiotic from a dentist between 2015-2018. Of them, 87 patients had a positive CDI test within 30 days of receiving their dental antibiotic. Over half (57.4%) of these patients had surgical dental visits and 45.9% had an oral infection coded. Dentists documented reasons for prescription was treatment of a local infection (40%) and post procedure prophylaxis (24%). Amoxicillin (54.0%) and clindamycin (40.2%) were the most commonly prescribed antibiotics. 65.7% of the patients that received clindamycin from the dentist had a documented penicillin allergy. 58.6% of patients had a preexisting gastrointestinal condition and 44.8% were taking gastric acid reducer medication. Only 19.5% of the antibiotic prescriptions met ADA guidelines for appropriate antibiotics (presence of gingival manipulation and a cardiac condition). CDI cases were treated with metronidazole (55.2%), or vancomycin (37.9%); 5.7% had no apparent treatment through the VA. The average number of days between the dental visit and CDI diagnosis was 18.9.

Conclusion: The occurrence of CDI was infrequent after a dental antibiotic. However, clindamycin was prescribed more frequently in this cohort than published literature on dentist prescribing. Approximately half had a gastrointestinal risk factor for CDI. More research is needed to determine the type of patient most at risk for CDI following a dental antibiotic.

Disclosures: **All Authors**: No reported disclosures

802. Proton Pump Inhibitors Increase *Clostridioides difficile* Disease Severity Controlling for Infecting Strains

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Session: P-32. HAI: C. difficile

Background: Proton pump inhibitors (PPI) display pleotropic properties that increase the risk of poor outcomes in patients with *C. difficile* infection (CDI). However, clinical data on PPI and CDI outcomes is controversial perhaps due to lack of knowledge of infecting strain. The purpose of this study was to assess CDI outcomes in hospitalized patients infected with known *C. difficile* ribotypes based on use of PPI.

Methods: This was a multicenter study (20 hospitals) of hospitalized patients infected with one of three *C. difficile* ribotypes (RT027, RT106, and RT014-020). Electronic medical records were reviewed by investigators blinded to RT that collected data on PPI use along with other clinical data. A composite endpoint of disease severity, mortality and 90-day CDI recurrence was assessed based on receipt of PPI and ribotype using multivariate logistic regression.

Results: A total of 380 patients with CDI aged 66±17 years (Female: 59.5%; White: 70.5%) infected with RT 106 (115/380; 30.3%), RT027 (116/380; 30.5%), and RT014-020 (149/380; 39.2%) were included. One hundred and ninety-nine patients (52.4%) were given a PPI at the time of CDI diagnosis and 129 patients (66.1%) experienced either severe disease or CDI recurrence. Disease severity differed significantly between ribotypes ($p< 0.05$) and increased in patients given PPI ($p=0.08$). CDI recurrence also differed significantly among ribotypes ($p< 0.05$) and increased in patients given PPI. Using the composite endpoint, receipt of PPIs significantly increased the likelihood of poor outcomes (OR:1.78; 95% CI: 1.17-2.73; $p=0.007$) after controlling for infecting ribotype.

Conclusion: In this multicenter study, receipt of PPIs increased the likelihood of poor outcomes in CDI patients after controlling for infecting ribotype.

Disclosures: **Kevin W. Garey, PharmD, MS, FASHP**, **Merck & Co.** (Grant/Research Support, Scientific Research Study Investigator)