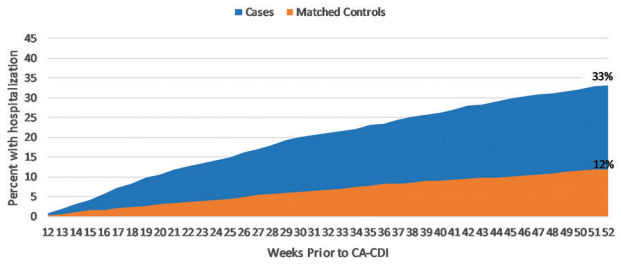
***Methods.*** We defined an EIP CA-CDI case as a positive *C. difficile* test collected in 2014–2015 from an outpatient or inpatient within 3 days of hospital admission, provided there was no positive test in the prior 8 weeks and no admission to a healthcare facility in the prior 12 weeks. We linked EIP CA-CDI cases aged ≥65 years to a Medicare beneficiary using unique combinations of birthdate, sex, and zip code. Cases were included if they maintained continuous fee-for-service coverage for 1 year prior to the event date. To calculate exposure odds ratios for previous hospitalizations, each case was matched to 5 control beneficiaries on age, sex, and county of residence. We used logistic regression to calculate adjusted matched odds ratios (amOR) that controlled for chronic conditions.

***Results.*** We successfully linked 2,287/3,367 (68%) EIP CA-CDI cases. Of these, 1,236 cases met inclusion criteria; the median age was 77 years and 63% were female. We identified 69 (5.6%) cases with misclassification of prior healthcare exposures, most of whom (48, 70%) were hospitalized in the 12 weeks prior to their event. Among the 1,167 true CA-CDI cases, 33% were hospitalized in the prior 12 weeks to 1 year. The median number of weeks from prior hospitalization to CDI was 27 (IQR 18–38, Figure 1). Cases had a higher risk of hospitalization than matched controls in the prior 3–6 months (amOR: 2.33, 95% CI: 1.87, 2.90) and 6–12 months (amOR: 1.43 95% CI: 1.18, 1.74).

***Conclusion.*** Remote hospitalization in the previous year was a significant risk factor for CA-CDI, especially in the 3–6 months prior to CA-CDI. Long-lasting prevention strategies implemented at hospital discharge and enhanced inpatient antibiotic stewardship may prevent CA-CDI among older adults.

**Figure 1.** Cumulative percent of community-associated *Clostridioides difficile* infection (CA-CDI) cases and matched controls with a hospitalization by week




***Disclosures.*** **All Authors:** No reported Disclosures.

### 838. Oral Vancomycin Prophylaxis Works!

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**Session:** 81. *Clostridium difficile*
*Thursday, October 3, 2019: 2:00 PM*

***Background.*** *Clostridium difficile* infections (CDI) cause approximately 500,000 cases a year with an estimated cost that exceeds $4.8 billion. Despite interventions that addressed environmental disinfection, antibiotic stewardship, and infection control, many institutions continue to have a significant burden of disease. Public reporting and "pay for performance" have increased the impetus for better control of CDI. We describe the use of an unpublished scoring system to assess the risk of CDI with subsequent use of OVP to prevent exsporulation and infection in high-risk groups.

***Methods.*** A large urban hospital in the Chicago area of approximately 400 beds, after following recommended guidelines for prevention of *C. difficile,* instituted an assessment tool to predict the risk of developing *C. difficile* infection.This is an observational, cohort study reviewing the pre- and post-implementation of OVP (oral Vancomycin prophylaxis) in hospitalized patients. From January 2017 to December 2017, eligible patients were assessed for risk of *C. difficile.* The intervention period, from January 2018 to December 2018, we prospectively gave eligible patients oral vancomycin (OVP) 125 mg twice daily if the risk score was 13 or above. No changes in environmental cleaning, antimicrobial stewardship, or restriction of testing were instituted during the periods of enrollment. The analysis was approved by the institutional review board.

***Results.*** In 2017, 82 patients had a score of 13 or over. Of the 82 patients, 72 (87.8%) developed CDI. In 2018, 62 eligible patients had a score of 13 or over and were given OVP. Of the 62 patients, 5 (8%) developed CDI. The relative risk comparing *C. difficile* in ≥13 vs. <13 patients (RR = 19.2652; 95% CI = 7.3656, 50.3899). The tool is associated with a specificity of 88.54% and sensitivity of 94.67%, along with a negative predictive value of 95.51% and positive predictive value of 86.59%. Fisher's exact test was performed between OVP and no OVP in relation to the development of CDI in high-risk patients ($P < 0.01$). VRE rates reported on the antibiogram remained consistent throughout the study period. No significant differences in baseline characteristics were noted.

***Conclusion.*** In institutions where appropriate infection control measures and antibiotic stewardship have been implemented, the use of a prediction tool to guide OVP is effective in preventing C. *difficile.*

**Protocol for OVP in high risk patients**

| | |
|---|---|
| History of CDI within 1 year | 13 pts |
| History of CDI greater than 1 year | 8 pts |
| High-risk antibiotics use | 5 pts |
| Hospital length of stay > 7 days | 3 pts |
| Immunosuppressed | 3 pts |
| Age >65 years of age | 2 pts |
| Long-term care facility resident | 1 pt |
| Hypoalbuminemia (<3 g/L) | 1 pt |
| Age ≥80 years of age | 1 pt |
| PPI/H2RA use in hospital | 1 pt |
| Recently hospitalized (within 90days) | 1 pt |

****High risk antibiotics: 3rd cephalosporin (ceftriaxone (IV), cefotaxime (IV), ceftazidime(IV), cefdinir (PO), cefpodoxime (PO)), 4th cephalosporin (cefepime(IV)), Zosyn (IV), meropenem (IV), ertapenem (IV), imipenem (IV), levofloxacin (PO or IV), ciprofloxacin (PO or IV), moxifloxacin (PO or IV), clindamycin (PO or IV)**
*****Immunosuppressed defined as:**

- **Disease states including :**
  - **Active malignancy receiving some form of immunosuppression**
  - **Lupus**
  - **Rheumatoid arthritis**
  - **Multiple sclerosis**
  - **Allogeneic transplant**
  - **Solid organ transplant**
- **Immunosuppressive drugs including:**
  - **tacrolimus, sirolimus, mycophenolate, cyclosporine**
  - **steroids (at least Prednisone 20mg or equivalent for 20 days)**
  - **biologics**
  - **monoclonal antibodies**

***Disclosures.*** **All Authors:** No reported Disclosures.

### 839. Effect of Clostridioides difficile (C. difficile) Toxin Test Reporting on Clinical Treatment and Outcomes of Toxin-Negative PCR-Positive Patients at Five California Hospitals

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**Session:** 81. *Clostridium difficile*
*Thursday, October 3, 2019: 2:15 PM*

***Background.*** Guidelines support the use of toxin tests after *C. difficile* antigen detection or nucleic acid amplification tests (e.g., PCR) to help clinicians distinguish colonization from infection and reduce overdiagnosis but the safety of toxin-based diagnostic approaches remains controversial.

***Methods.*** Five California hospitals monitored hospitalized adults with *C. difficile* testing before and after operational changes to reduce test-related overdiagnosis (2016–2018). Four added a toxin test to an existing GDH antigen/PCR-based approach and/or changed reporting to encourage the use of toxin results for clinical decision-making (i.e.,"toxin-dominant reporting"). One used the same test (toxin only) and reporting strategy throughout. All used a standardized tool to document clinical outcomes and treatment four days after testing (i.e., Day 5).

***Results.*** In total, 1,034 patients had a Day 5 assessment with PCR-dominant reporting (pre-operational changes); 2,511 patients had a Day 5 assessment with toxin-dominant reporting (post-operational changes and single facility with no test change). Fewer Toxin-negative/PCR-positive (Toxin−/PCR+) patients received treatment with toxin-dominant reporting (median change: −52.1% [interquartile range (IQR): −35.1%, −69.1%]; aggregate $P < 0.001$). Day 5 outcomes were similar or better with toxin-dominant reporting despite less treatment. Patient discharge rates and in hospital diarrheal recovery was greater in the subset of Toxin−/PCR+ patients during the toxin-dominant reporting period: median discharge rate change = 8.8% [IQR:

1.5%, 11.9%] (aggregate $P = 0.04$); median diarrheal recovery rate change = 11.8% [IQR: 8.8%, 18.2%] (aggregate $P = 0.018$).

***Conclusion.*** In a 5-center study, toxin-dominant test result reporting decreased anti-*C. difficile* treatment and improved discharge rates and diarrheal recovery in Toxin−/PCR+ patients. More work is needed to determine the rate of *C. difficile*-related adverse events in Toxin−/PCR+ patients.

***Disclosures.*** **All Authors:** No reported Disclosures.

### 840. Clinical Failure Rates Associated with Hemin-induced Metronidazole Resistance in Clostridioides difficile

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**Session:** 81. *Clostridium difficile*
*Thursday, October 3, 2019: 2:30 PM*

***Background.*** Current guidelines suggest limiting metronidazole (MTZ) use due to increased treatment failures in patients with *Clostridioides difficile* infections (CDI). We hypothesized that an increase in the minimum inhibitory concentration (MIC) of MTZ to *C. difficile* may contribute to these poor response rates. The objective of this study was to examine clinical response rates in patients with CDI based on MTZ MIC and stratified by receipt of MTZ treatment.

***Methods.*** *Clostridioides difficile*-positive stool samples collected from 2017 to 2018 as part of routine care at two hospital systems in Houston, Texas were collected for MIC determination at 24 h to MTZ by broth microdilution following incorporation of 5 mg/L of hemin. The primary outcome was initial clinical success by Day 7 of treatment in those with MICs ≥1 vs. <1. Results were stratified based on receipt of MTZ within 48 hours of diagnosis. Study objectives were tested using $\chi^2$ and multivariable logistic regression analyses.

***Results.*** A total of 235 *C. difficile* samples were included, of which 73 (31%) had an MTZ MIC ≥1. Overall, 72% received MTZ within the first 48 hours. Clinical success rates differed based on disease severity (77% in nonsevere, 64% in severe/fulminant; $P = 0.03$) and infecting ribotype (52% in RT 027, 75% in non-RT 027; $P = 0.014$). In patients with MTZ receipt, clinical success rates were higher in patients infected with strains with an MTZ MIC < 1 (76%) compared with those with an MIC ≥1 (60%; $P = 0.031$). The difference in initial clinical success was not different in those that did not receive MTZ (78% for MIC <1 vs. 65% for MIC ≥1, $P = 0.28$). After controlling for disease severity, treatment failure was higher in patients infected with strains with an MTZ MIC ≥1 and treated with MTZ (OR 2.1; 95% CI, 1.01–4.35; $P = 0.048$) but not for those with an MIC ≥1 treated with other therapies (OR 1.9; 95% CI, 0.62–5.6; $P = 0.27$).

***Conclusion.*** This study provides the first preliminary evidence of an association between reduced metronidazole susceptibility and decreased clinical success rates. Larger studies are warranted to validate these findings.

***Disclosures.*** **All Authors:** No reported Disclosures.

### 841. Implications of C. difficile Treatment on Environmental Contamination: A Randomized Controlled Trial with Microbiologic, Environmental, and Molecular Outcomes

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**Session:** 81. *Clostridium difficile*
*Thursday, October 3, 2019: 2:45 PM*

***Background.*** *Clostridioides difficile* is a leading cause of healthcare-associated infection. Despite multimodal prevention efforts, in-hospital transmission continues to occur. In this study, we tested whether the choice of treatment can reduce *C. difficile* shedding and contamination of the inpatient environment.

***Methods.*** We conducted a prospective, unblinded, randomized controlled trial of adult inpatients with *C. difficile* at Duke University Hospital. Thirty subjects were randomized 1:1:1 to receive metronidazole, vancomycin, or fidaxomicin. Stool specimens and environmental samples from five high-touch surfaces were serially collected throughout each subject's hospital stay. Each specimen was assessed by quantitative culture and PCR ribotyping. Primary outcomes included the change over time in *C. difficile* stool burden and environmental contamination relative to treatment choice. As a secondary outcome, we examined the correlation between infecting strains and contaminating strains present in the care environment.

***Results.*** Relative to metronidazole (Figure 1), *C. difficile* stool shedding decreased more rapidly for patients receiving vancomycin ($P = 0.05$) and most rapidly with fidaxomicin ($P = 0.002$). Treatment choice had no significant effect on total *C. difficile* colony counts across sites sampled over time (Figure 2). However, both vancomycin ($P = 0.001$) and fidaxomicin ($P = 0.01$) were associated with lower proportions of positive environmental cultures than metronidazole (Figure 3). Ribotyping of subjects' stool isolates matched surrounding environmental isolates >90% of the time (Figure 4).

***Conclusion.*** Fidaxomicin and vancomycin reduced *C. difficile* stool burden more rapidly than metronidazole. Environmental results were mixed: fidaxomicin and vancomycin were associated with fewer positive surface cultures, but no difference in total colony counts. High concordance between stool and environmental ribotypes confirms that most room contamination originated from study subjects, without a significant contribution from any additional sources. Treatment choice may have a role in reducing *C. difficile* contamination of the hospital environment. Further study is needed to assess for effect on disease incidence.

Figure 1: Change in C. difficile Stool Shedding Relative to Treatment Choice.

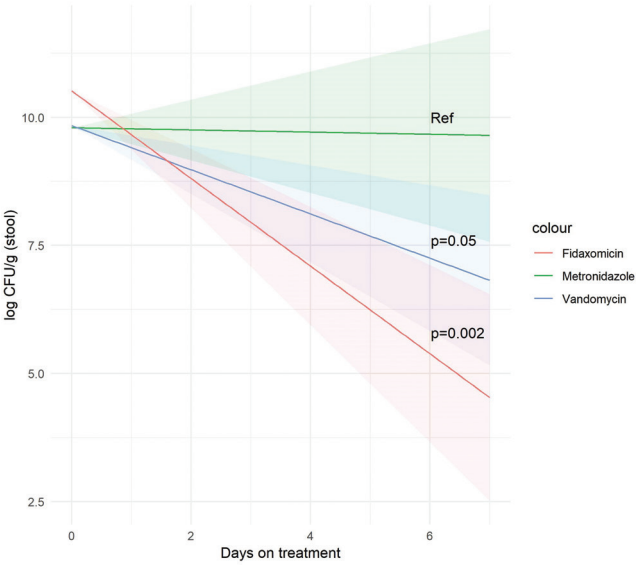
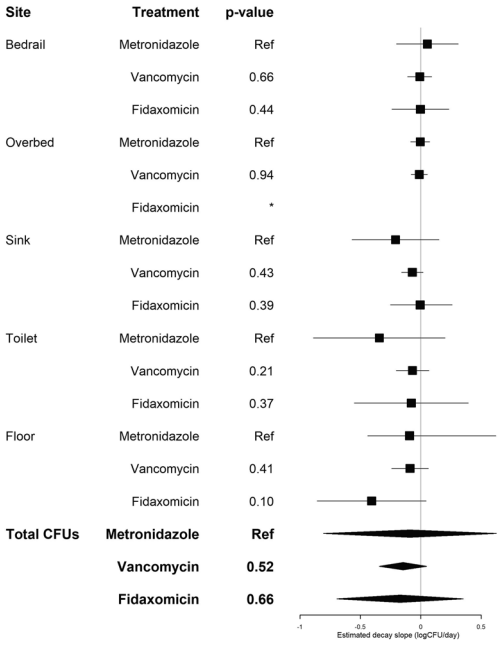



Figure 2: Rates of Change in Environmental C. difficile CFUs Relative to Site and Treatment Choice




*All p-values relative to metronidazole as reference. Insufficient growth from overbed sampling precluded assessment of fidaxomicin at this site.