

patients were more likely than non-CDI patients to be older (mean age, 78.3 vs. 76.1 years,  $P < 0.0001$ ), be women (64.5% vs. 58.1%,  $P < 0.0001$ ), or have comorbidities (mean Charlson comorbidity index score, 4.5 vs. 1.8,  $P < 0.0001$ ).

**Conclusion.** CDI incidence rates in the Medicare Advantage population were similar to those reported previously in the Medicare fee-for-service population and nationally among adults aged  $\geq 65$  years. Data are consistent with a high CDI burden among older US adults.

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**2377. Social Determinants Impact Readmission Following *Clostridioides difficile*-Related Index Hospital Stay in Medicare Patients**

Elizabeth Scaria, BS<sup>1</sup>; Ryan Powell, PhD, MA<sup>2</sup>; Jen Birstler, MS<sup>2</sup>; Oguzhan Alagoz, PhD<sup>3</sup>; Daniel Shirley, MD, MS<sup>2</sup>; Nasia Safdar, MD, PhD<sup>2</sup>; <sup>1</sup>University of Wisconsin-Madison College of Engineering, Madison, Wisconsin; <sup>2</sup>University of Wisconsin-Madison School of Medicine and Public Health, Madison, Wisconsin; <sup>3</sup>University of Wisconsin - Madison College of Engineering, Madison, Wisconsin

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**Background.** *Clostridioides difficile* infection (CDI) is the leading cause of healthcare-associated diarrhea and recurs in up to 30% of patients, often requiring readmission. Socioeconomic factors, such as living in a disadvantaged neighborhood may impact readmission but have not been studied.

**Methods.** We examined the relationship between neighborhood disadvantage, as measured by the Singh validated area deprivation index (ADI), and 30-day all-cause readmission risk in patients with an index hospital stay with CDI. We analyzed a random 20% sample of national Medicare claims for patients' initial index hospitalization with a CDI diagnosis in 2014 ( $n = 19,528$ ) that included each patient's neighborhood ADI national percentile. The most disadvantaged neighborhoods were categorized as those in the upper 35 percentile, while the least disadvantaged was defined as those in the bottom 65% of national ADI rankings. We evaluated the relationship between ADI percentile and 30-day readmission risk using multivariate logistic regression, controlling for key patient demographics, comorbidities, and hospital/stay characteristics.

**Results.** A total of 19,528 patients had an index stay with CDI, 4,899 were readmitted within 30 days. Patients from the most disadvantaged neighborhoods had a higher average rate of readmission compared with those living in the least disadvantaged neighborhoods (28% vs. 24% rate; unadjusted risk ratio = 1.16 [1.10, 1.21]). This relationship held after controlling for confounders. After adjustment, being a resident in the most disadvantaged neighborhoods was associated with a 10% increased risk of readmission (adjusted risk ratio = 1.10 [1.05, 1.16]), which was similar to the effect sizes associated with dual Medicaid-Medicare enrollment status (adjusted risk ratio = 1.09 [1.03, 1.15]) and renal failure (adjusted risk ratio = 1.14 [1.08, 1.21]).

**Conclusion.** Living in a disadvantaged neighborhood is associated with an increased 30-day readmission risk similar in magnitude to Medicaid status and renal failure in patients with index hospitalizations of CDI. Future studies should examine whether interventions such as post discharge support and care coordination for patients in disadvantaged neighborhoods may reduce readmissions in this patient population.

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**2378. Corticosteroid Use Prevents Primary *Clostridioides difficile* Infection in the Setting of Broad-Spectrum Antibiotic Use Among Hospitalized Patients**

Travis J. Carlson, PharmD<sup>1</sup>; Melissa F. Wilcox<sup>1</sup>; Sarah G. Theriault<sup>1</sup>; Faris S. Alnezhary, PharmD<sup>1</sup>; Anne J. Gonzales-Luna, PharmD<sup>1</sup>; Evan J. Zasowski, PharmD, MPH<sup>2</sup>; Kevin W. Garey, PharmD, MS, FASHP<sup>1</sup>; <sup>1</sup>University of Houston College of Pharmacy, Houston, Texas; <sup>2</sup>Tuoro University California, Vallejo, California.

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**Background.** *Clostridioides difficile* is the most common pathogen causing healthcare-associated infections in the United States and a Centers for Disease Control and Prevention urgent threat-level pathogen. The pathophysiology of *C. difficile* infection (CDI) involves neutrophil invasion of the colon associated with an inflammatory response. Previous case-control studies investigating an anti-inflammatory corticosteroid (CS) effect on CDI risk demonstrated conflicting results but were unable to control for antibiotic use. We hypothesized that CS use would decrease the risk of CDI in a well-matched, high-risk population.

**Methods.** This nested case-control study included hospitalized patients admitted to a single quaternary care hospital in the Texas Medical Center. The case population included adults who were diagnosed with CDI and received at least one dose of an antibiotic of interest (piperacillin-tazobactam, cefepime, or meropenem) in the 90 days prior to CDI diagnosis. The control population included hospitalized adults who received one of the same antibiotics during their hospital stay but did not develop CDI in the 90 days following their first dose. Patients were excluded if they had a documented history of CDI. CS use was defined as  $\geq 20$  mg prednisone or equivalent administered in the 48 hours prior to CDI diagnosis (cases) or antibiotic start (controls). The primary study outcome was the development of CDI. A logistic regression model was developed modeling CDI diagnosis as a function of available patient covariates.

**Results.** A total of 321 patients met the inclusion criteria; 56 patients had a history of CDI, leaving a final study cohort of 265 patients (104 cases and 161 controls). Antibiotic days of therapy were significantly higher in the control group (8 vs. 6 days;  $P = 0.02$ ). The odds of CDI diagnosis were lower among patients administered CS (OR, 0.17; 95% CI, 0.08-0.38;  $P < 0.001$ ), which remained protective in the multivariable model after adjusting for age, gender, and invasive GI surgery within 6 months.

**Conclusion.** We observed an association between CS use and decreased risk of developing primary CDI in hospitalized patients receiving broad-spectrum antibiotics. Future studies are needed to delineate the dose and duration of CS needed to realize this effect.

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**2379. It's Getting Complicated: Outcomes of *Clostridioides difficile* PCR Positive/Toxin-Negative Patients**

Jose A. Morillas, MD; Ryan Miller, DO; Kyle D. Brizendine, MD; Thomas G. Fraser, MD; Cleveland Clinic Foundation, Cleveland, Ohio

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**Background.** The addition of toxin enzyme immunoassay to molecular tests creates challenges in the diagnosis and management of *Clostridioides difficile* infection (CDI). In limited samples of PCR+/toxin- patients, CDI-attributable complications are thought to be rare, even nonexistent. We aimed to characterize outcomes of a large PCR+/toxin- cohort within 60 days of initial testing date.

**Methods.** We conducted a retrospective cohort study on all PCR+/toxin- adult inpatients from June-December 2018. Patients were placed into 3 groups to analyze outcomes: (1) complete treatment (guideline concordant); (2) incomplete treatment; and (3) no treatment. The primary outcome in group (1) was CDI-related complication, defined as megacolon, colectomy, or ICU care. For groups (2) and (3), clinical failure was defined as a composite of: need for repeat CDI testing or subsequent treatment.

**Results.** We identified 240 individuals (Figure 1). Mean age was 60 years, and 122 (51%) were female. 173 (72%) received complete treatment (85% vancomycin monotherapy), 41 (17%) incomplete treatment, and 26 (11%) none. Baseline conditions included high severity comorbidities (Figure 2). In the complete treatment group, 10/173 (5.8%) patients met criteria for fulminant colitis. 21/173 (12%) experienced CDI-attributable complications (2 megacolon, 1 colectomy, 18 ICU care). A significantly higher proportion of these patients had leukocytosis  $>15,000$  (57 vs. 23%;  $P = 0.001$ ), creatinine  $>1.5$  (57 vs. 27%;  $P = 0.005$ ), and were receiving concomitant proton pump inhibitors (65 vs. 43%;  $P = 0.05$ ) and antibiotics (65 vs 44%;  $P = 0.05$ ) compared with those without CDI-related complications. In patients who received incomplete treatment, there were 10 clinical failures (7 had repeat testing; 3 were administered complete treatment) compared with 4 in the no treatment group (Figure 3). Interestingly, 4/9 (44%) patients who had incomplete or no treatment and underwent repeat testing were found to be PCR+/toxin+. There were 4 (1.7%) deaths related to CDI in the cohort. All occurred in the complete treatment group.

**Conclusion.** CDI-attributable complications and clinical failure occur in PCR+/toxin- patients. The challenge of distinguishing colonization from disease remains. Additional studies are needed to identify predictors of disease in PCR+/toxin- patients.

Figure 1. Flowchart depicting results of *C. difficile* testing and treatment, June-December 2018

