

Antibiotics may not be only cause of community-acquired clostridium difficile infection

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Antibiotics may not be the only risk factor associated with community-acquired *Clostridium difficile* infection, indicating that other undefined causes of the potentially life-threatening infection may exist and could also predict whether or not a patient will require hospitalization, according to the results of the study, "Predictors of Hospitalization in Community-Acquired *Clostridium difficile* Infection," unveiled today at the American College of Gastroenterology's (ACG) 76th Annual Scientific meeting in Washington, DC.

A separate study released today by researchers from Winthrop University Hospital, in Mineola, New York, "An 'On-Admission' [Prediction Model](#) of [Disease Severity](#) in *Clostridium difficile* [Infection](#)," found that nursing home patients should receive special attention at the time they are diagnosed with *C. difficile* infection (CDI), as this variable appears to outperform other "on admission" variables including the Charleson comorbidity index in predicting outcomes in CDI.

Community-acquired *Clostridium difficile* infection (CA-CDI) is an increasingly recognized cause of diarrhea, including for those who were previously thought to be at low risk or lacked traditional [risk factors](#). Outcomes of CA-CDI have not been routinely examined prompting researchers from the Mayo Clinic College of Medicine in Rochester, MN, to assess predictors of hospitalization in a population-based cohort of CA-CDI.

Of the 157 CA-CDI patient cases, forty-percent of these patients were hospitalized for management of CDI, all of whom were older (median age 64 vs. 44 years) and were more likely to have severe CDI (33.3 percent vs. 11.7 percent). However, those hospitalized were less likely to have received prior antibiotics (68.2 percent vs. 85.2 percent), according to Sahil Khanna, MD, who presented the findings.

"While there were no differences in sex, recent gastrointestinal endoscopy procedures, initial CDI treatment, [treatment failure](#) or risk of recurrence in those hospitalized compared to those managed as an outpatient, increasing age, higher Charlson Comorbidity index, disease severity, and lack of antibiotic exposure, predicted the need for hospitalization in patients with CA-CDI," said co-investigator Darrell Pardi, MD, MS, FACG.

"Interestingly, those hospitalized were less likely to have received prior antibiotics, suggesting that other undefined risk factors associated with CA-CDI were operative, and could be predictors of hospitalization. Future studies are needed to better characterize determinants of infection risk and need for hospitalization in CA-CDI."

Nursing Home Residence May Be Useful as "On-Admission" Prediction Model of Disease Severity

The incidence and case-fatality ratio of *C. difficile* infection (CDI) have increased, creating a need to identify those at risk of complicated CDI such as colectomy or death, according to the researchers who noted that a CDI prediction model would be "cheap, simple and useful on admission" to identify high risk patients and provide appropriate levels of care. The purpose of this study was to devise an "on admission" prediction model of disease severity in [Clostridium difficile infection](#), according to Rani Modayil, MD, who presented the findings.

Of the 254 patients with a positive *C. difficile* toxin assay, 194 (76 percent) patients had experienced first episode of CDI and 60 (24 percent) patients had recurrent CDI. There appeared to be a CDI outbreak at the institution during the study period given a greater than five-fold increase in the number of CDI diagnoses from the two years prior to the study, according to the study findings. Researchers noted that 65 deaths: 24 CDI-related (and 41 non-CDI-related) were identified after a rigorous independent review to determine if mortality was due primarily to *C. difficile* associated diarrhea.

"This is an important strength in the study since most prior studies define adverse outcomes as 30-day inpatient mortality or 'complicated CDAD' (colectomy and/or death from CDAD). The former includes patients with CDAD dying as a result of other causes, thereby reducing its specificity," said Dr. Modayil. He added that the results indicate a higher statistically significant difference in CCI score in patients admitted from a nursing home as compared to admissions from the community.

"Nursing home residents are particularly susceptible to infection and adverse health outcomes because they are physiologically old and often have comorbid underlying diseases," explained Dr. Modayil. "However, after controlling for the risk attributable to comorbidity, nursing home residence still remains a strong predictor of mortality. In fact, the study showed the risk for CDI related death could almost triple for an admission from an institution compared to one from the community."

Researchers attributed this increased risk to a number of factors, including exposure of nursing home residents to more antibiotics than the general population, since infections are common. This may place them at risk for more virulent strains of *C. difficile*, which is associated with a poorer prognosis.

"The nursing home setting can directly or indirectly facilitate

transmission of infection through poor adherence to universal precautions as well as confined living arrangements and group daily activities allowing for environmental shedding of *C. difficile*," said Dr. Modayil. "Fecal incontinence, which is common in these nursing home residents, can result in continuous inoculation. This may serve to foster asymptomatic carriage as well as increasing risk for relapsing episodes of CDI, which in turn is associated with higher mortality rates."

Provided by American College of Gastroenterology

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