

Cystic Fibrosis Research News

Title:

Prevalence, Risk Factors, and Sequelae of Asymptomatic *Clostridioides difficile* Colonization in Children with Cystic Fibrosis

Lay Title:

The Presence of *Clostridioides difficile* in Stool Samples of Children with Cystic Fibrosis

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What was your research question?

We sought to determine how often children with cystic fibrosis (CF) have *Clostridioides difficile* (*C. difficile*) in their stool without having diarrhea.

Why is this important?

C. difficile is a bacterium that can cause significant diarrhea. Patients with CF have many of the risk factors for infection with *C. difficile*, including antibiotic use and hospitalizations. However, they frequently tested positive for *C. difficile*, called colonization, but rarely develop *C. difficile*-associated diarrhea. There is concern that colonization can be associated with later

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risk of developing *C. difficile* infection, other inflammatory conditions, or be related to the spread of *C. difficile* to other patients.

What did you do?

We enrolled 108 children with CF and tested their stool samples for the presence of *C. difficile*. We compared clinical characteristics and medical exposures between those patients who tested positive for *C. difficile* (colonized) and those who tested negative for *C. difficile*.

What did you find?

We found that 32% of patient stool samples tested positive for *C. difficile* (colonized) despite not having diarrhea. None of the patients developed a *C. difficile* infection with diarrhea in the follow-up period. Patients that had a higher body mass index (BMI) and exposure to certain antibiotics (cephalosporins, fluoroquinolones, and vancomycin) were significantly more likely to test positive for *C. difficile*.

What does this mean and reasons for caution?

This study shows that *C. difficile* colonization is common in children with CF, with nearly one-third of patients stool samples testing positive for *C. difficile*. Despite this, no patients had diarrhea from *C. difficile* infection during the follow-up period. Our results highlight that the patients BMI and exposure to antibiotics are related to their risk of *C. difficile* colonization. While we do not suggest changes to clinical care from this study, our results show the importance of considering *C. difficile* as a frequent and possibly transmissible bacterium present in the colon of children with CF.

What's next?

We look forward to continuing to study the gastrointestinal microbiome in children with CF with focus on the role of *C. difficile*. Specifically, with the use of newer medications like CFTR modulators, we will track whether these medications will decrease how often children with CF are colonized with *C. difficile* or increase how often they develop *C. difficile*-associated diarrhea.

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