This study will address this gap in the current literature and aim to identify risk factors for CDI. Previously established risk factors for CDI include increasing age, severity of illness, antibiotic use, previous CDI, cancer treatment, and indwelling medical devices. This study also sought to address the impact of fever and days of hospitalization on the risk of CDI.

The Epidemiology of *Clostridium difficile* Infections in Oncology Patients

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**Background**

*Clostridium difficile* is a Gram-positive, anaerobic bacterium that is the leading cause of hospital-acquired diarrhea. CDI is a severe gastrointestinal infection that can lead to fulminant colitis, colectomy, and death. Risk factors for CDI are well known, including prior antibiotic use, immunosuppression, and cancer treatment. However, the exact mechanisms by which *C. difficile* infection occurs are not fully understood.

**Methods**

We conducted a retrospective medical records review and case-control study in the Yale-New Haven Hospital, New Haven, CT. Patients with *C. difficile* infection were identified from January 1, 2013, to June 30, 2014. Cases were defined as patients with stool culture-confirmed *C. difficile* infection. Controls were randomly selected from the hospital's electronic medical records. The study included patients with cancer who had diarrhea and were treated with antibiotics. We compared the demographics, clinical parameters, and antibiotic use between cases and controls.

**Results**

We identified 161 cases and 322 controls. Cases were more likely to have advanced age, fever, days of hospitalization, and a history of stem cell therapy compared to controls. Antibiotic exposure was significantly associated with CDI, particularly among cancer patients with diarrhea, patients who had received transfusions, and patients who had received chemotherapy or radiation therapy.

**Discussion and Conclusions**

- **Risk factors for CDI**: The risk factors for CDI were variable between cases and the negative test control group, but not between the matched control group and the negative test control group. However, prior history of *C. difficile* infection (CDI) was a common risk factor in cases compared to both control groups.
- **Beta-lactams/BLI**: Beta-lactams and cephalosporins were also the only antibiotics that were significantly associated with CDI in the multivariable model comparing cases to the matched control group, and in the model comparing cases to the negative test control group, no antibiotics were found to be significantly associated with CDI after adjusting for all other variables.
- **Value of stem cell therapy**: The value of stem cell therapy was negatively associated with CDI in the negative test control group, while recent receipt of blood transfusion was significantly associated with CDI in the matched control group.
- **Clinical parameters**: Several clinical parameters, such as fever, days of hospitalization prior to testing, and history of CDI were associated with CDI in both tested patients and those not tested. These factors may be used to increase the yield of CDI testing and empiric CDI treatment.

**References**