



# Fecal Microbiota Transplantation in Patients With Cancer Undergoing Treatment

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Fecal microbiota transplantation (FMT) is a technique used to restore the normal body flora to the gut in cases of *Clostridium difficile* infection (CDI). It involves instillation of the stool of a healthy donor through a nasogastric tube or colonoscopy into the gastrointestinal tract of the patient. More research is needed to determine the parameters of FMT use in patients with cancer.

## At a Glance

- CDI is common in patients with cancer because of the frequent use of broad-spectrum antibiotics that can alter the normal microbiota in the gastrointestinal tract.
- CDI reoccurs frequently and can be difficult to treat.
- CDI can delay continued treatment, prolong hospitalizations, and greatly affect a patient's quality of life.

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Patients with cancer who are undergoing treatment may experience diarrhea for many reasons related to disease (e.g., graft-versus-host disease, intestinal bacteria or virus, obstruction of the bowel) or to therapy (e.g., chemotherapy, medications, nutritional therapy, radiation therapy to the abdomen, surgical resection of the bowel). *Clostridium difficile*, or *C. diff*, is a gram-positive, spore-forming anaerobic bacillus linked to a pathogenic toxin in the stool of patients with pseudomembranous colitis. Complications from diarrhea caused by *C. diff* infection (CDI) can range from dehydration to death. In severe cases of CDI, colectomy may be the only treatment option (Zipursky, Sidorsky, Freedman, Sidorsky, & Kirkland, 2012).

CDI is the leading cause of nosocomial antibiotic-associated diarrhea, and the rates are continuously increasing (Cohen et al., 2010). Recurrence is a common problem that affects more than 20% of patients after their initial course of therapy. In addition, mortality related to CDI has been reported in as many as 6.9% of cases (King & Lager, 2011; Loo et al., 2005).

Because of the increasing frequency of initial CDI, its recurrence, and associated mortality, alternative treatment approaches have been explored. Fecal microbiota transplantation (FMT), also known as stool transplantation, is a therapy designed to restore normal gut microflora, which may in turn protect against toxic CDI. Previously, the use of FMT in

immunocompromised patients had been limited because of safety concerns. However, retrospective studies have concluded that FMT is an effective treatment for CDI in this population (Kelly et al., 2014).

## Case Study

B.J., a 39-year-old man with T-cell acute lymphocytic leukemia who was treated with adolescent and young adult protocol, was diagnosed with CDI soon after starting induction therapy. He was initially treated with oral vancomycin and IV metronidazole, which resolved his infection.

Several months later, B.J. was admitted to the hospital with neutropenic fever, nausea, vomiting, and diarrhea. B.J. was given IV cefepime and IV vancomycin. A stool culture tested positive for *C. diff* toxin, and B.J. was then administered high-dose oral vancomycin and IV metronidazole. Diarrhea and other symptoms persisted, so B.J. was given oral fidaxomicin. Symptoms continued despite aggressive treatment. Because of recurrence of the CDI, the failed standardized multidrug treatment for CDI, and continued diarrhea symptoms, the physicians and patient agreed to treat the infection with an FMT.

After receiving standard bowel preparation the evening prior, FMT was completed by colonoscopy. Immediately following the procedure, B.J. began to experience relief of symptoms. He reported decreased distension and decreased pain. That evening, he began drinking liquids and advanced his diet quickly with no nausea. B.J. had no bowel movements on the day following FMT, but had one soft bowel movement two days after the procedure. His condition improved so significantly that he was able to be discharged from the