

Clostridium Difficile (*C. Diff*) Infection: Treatment Options

What Is *C. Diff*?

Clostridium difficile (pronounced klo-strid-ee-um dif-uh-seel)—commonly referred to as “*C. diff*”—is a type of bacteria (germ) that can infect the gastrointestinal tract. The gastrointestinal tract includes the stomach, small intestine, and the colon. When *C. diff* grows out of control in the colon, it can lead to *C. diff* infection (CDI). For more information about *C. diff* and CDI, see the Peggy Lillis Foundation’s (PLF’s) *Clostridium Difficile (C. Diff)* Infection factsheet at www.peggyfoundation.org.

C. diff is found throughout the environment in soil, air, water, human and animal feces, and in contaminated food products such as processed foods. *C. diff* bacteria can survive in harsh conditions for long periods of time by producing spores (rugged, seed-like structures). These spores can tolerate the acidic condition in the stomach.

The colon has several “good” bacteria that prevent the growth of *C. diff*. However, in people taking antibiotics to treat other infections (for example, a respiratory tract infection caused by a different kind of bacteria), some of the “good” bacteria in the colon are killed. When this happens, it allows *C. diff* to multiply quickly and replace the “good” bacteria, leading to a CDI. CDI causes diarrhea and stomach pain due to inflammation (swelling) of the intestines. It is a serious infection that should be treated as soon as possible.

What Treatment Options Are Available for CDI?

Antibiotics

Because CDI is frequently seen in individuals taking antibiotic medications to treat other infections, it is important to stop taking all antibiotics other than those prescribed by the doctor to treat CDI (the doctor will explain which antibiotics to take and which to stop). This is because taking other antibiotics at the same time as those used to treat CDI can reduce the effectiveness of the antibiotics used for CDI.

The following antibiotics are typically used for the treatment of an initial CDI:

- For a patient with mild to moderate CDI, the antibiotic Flagyl® (metronidazole) is given at a dose of 500 milligrams 3 times daily by mouth for 10 to 14 days
- For a patient with severe CDI, the antibiotic Vancocin® (vancomycin) is given at a dose of 125 milligrams 4 times daily by mouth for 10 to 14 days
- If a patient has severe CDI and additional symptoms such as shock and other digestive issues are also present, the dose of vancomycin is increased to 500 milligrams 4 times daily given by mouth or by a tube inserted into the stomach through the nose. In addition, metronidazole is given as an injection at a dose of 500 milligrams every 8 hours. If the patient has an intestinal blockage, it may be necessary to give vancomycin through the rectum

The following antibiotics are typically given for patients with a recurrent CDI:

- If CDI occurs a second time, the same antibiotics used for the first infection are usually given
- If CDI occurs a third time, vancomycin is recommended at an initial higher dose and is gradually decreased over several days. Another option is vancomycin given at the same dose over several days, but with gaps in between (also known as a “pulsed” treatment)

In 2011, the antibiotic Dificid® (fidaxomicin) was approved for use in the United States. This antibiotic works by killing the *C. diff* bacteria rather than just slowing down its growth, and it specifically kills *C. diff* bacteria to a greater extent than the other “good” bacteria. Fidaxomicin stays in the gastrointestinal tract and very little is absorbed into the blood, so it is less likely to cause side effects. Treatment of CDI with fidaxomicin has been shown to result in lower rates of repeat infection.

Fidaxomicin is more expensive than metronidazole and vancomycin. Because of this, the insurance provider may only cover the cost of this antibiotic in certain circumstances (for example, if someone has recurrent CDI even after treatment with metronidazole or vancomycin). If a patient has recurrent CDI, they should speak with their doctor to see if fidaxomicin may be right for them.



KNOW THE FACTS

Fecal Transplants

Fecal-derived microbiota transplant, or (FMT), is a process in which gut bacteria derived from fecal matter (stool sample), from a healthy donor are purified and placed in the gastrointestinal tract of a patient with CDI. This is usually performed by a process called colonoscopy, in which a flexible tube is passed through the anus and rectum. FMT may also be accomplished through a nasal gastric tube and by the preparation of capsules for oral administration. Several studies have shown that FMT is effective in treating patients with recurrent CDI.

Other Treatments

The following non-antibiotic options are available for the treatment of CDI:

- Intravenous immunoglobulin (also called IVIG), a substance that contains antitoxins (substances that act against *C. diff*), has been used to treat some cases of CDI. However, this treatment has many side effects and may not be beneficial in adults, although there is some evidence that it may be effective in children.
- Another option is probiotics, which are live bacteria that do not cause disease but are capable of replacing the “good” bacteria that have been killed by antibiotics. Recent data suggests that the use of probiotics in adults is not effective in reducing the risk of CDI. Before starting a course of probiotics, one should consult with a doctor because probiotics, although available over the counter, may not be suitable for everyone.
- In patients with severe cases, surgery to remove the infected part of the colon might be required. The Centers for Disease Control and Prevention report that surgery is needed in only 1 or 2 of every 100 persons with a CDI.

What Treatment Options Are Expected in the Future?

Continued efforts are being made to develop new treatment options for CDI, including:

- Antibiotics such as surotomycin and cadazolid, which are being studied to see how well they can treat CDI.

- Vaccines (such as PF-06425090, VLA84, and ACAM-CDIFF™) in development by multiple companies are being tested for their ability to prevent (rather than treat) CDI.
- Microbiome restoration treatments (such as SER-109), which are oral capsules that can potentially return the microbiome in patients affected by CDI to a healthy state. The microbiome is the unique mix of microorganisms seen in the gastrointestinal tract of healthy individuals.
- Substances called antibodies, which prevent *C. diff* from causing any symptoms by binding to the toxins that cause these symptoms, are also being studied. Two antibodies named MK-6072 and MK-3415A are currently being tested.
- A modified type of *C. diff* bacteria called VP20621, which does not cause any symptoms because it does not produce toxins, is being tested for its ability to prevent repeated CDIs. The expectation is that this modified *C. diff* bacteria will be given by mouth as a liquid. Once ingested, it can establish itself in the patient’s gut and prevent the disease-causing *C. diff* bacteria from infecting the patient.

Some of these new treatment options that are being tested will hopefully get approval from the US Food and Drug Administration (FDA) and will assist doctors in successfully preventing and treating CDI, which can be quite devastating for both patients and their families.

What Can Be Done to Prevent the Spread of CDI?

CDI can be spread by touching something contaminated with *C. diff* spores and through direct contact with infected individuals. To learn more about how to prevent CDI, see the PLF’s *Clostridium Difficile (C. Diff) Infection: Prevention and Risk Factors* factsheet at www.peggyfoundation.org.

It is important to remember that patients with CDI may still have *C. diff* bacteria present in their stools even after their symptoms have gone away. Therefore, it is important to continue practicing proper hand hygiene and using the necessary precautions until patients are discharged from the hospital and even after they return home. For additional information on how to care for yourself and others with a CDI, see the PLF’s *Clostridium Difficile (C. Diff) Infection: Caring for Yourself and Others* factsheet at www.peggyfoundation.org.

The Peggy Lillis Foundation

266 12th Street, #6
Brooklyn, NY 11215
Phone: 917.364.4658
www.peggyfoundation.org

Follow us:

