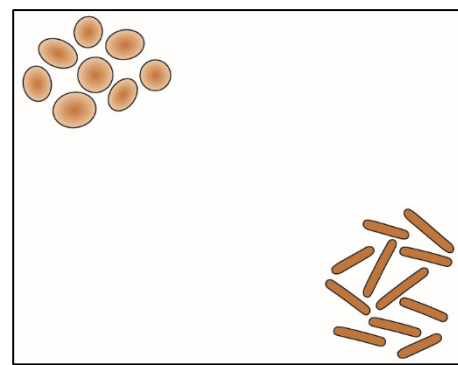


## CLOSTRIDIUM DIFFICILE (C. DIFF)

# What Is *Clostridium Difficile* (*C. Diff*)?

- ▶ *Clostridium difficile*, or *C. diff* for short, is an infection from a bacterium, or bug, that can grow in your intestines and cause bad GI symptoms.
- ▶ The main risk of getting *C. diff* infection is antibiotic use.
- ▶ *C. diff* is very contagious.
- ▶ *C. diff* can usually be treated with antibiotics, but sometimes more intense treatments are needed to get rid of the infection.
- ▶ Unlike other intestinal bugs, it can take a long time to get rid of *C. diff* and start feeling better.
- ▶ Each year, *C. diff* infects roughly 500,000 people in the U.S. and often calls for hospitalization.
- ▶ In very bad cases, *C. diff* infection can be deadly, with estimates of *C. diff*-linked death ranging from 14,000 to 30,000 each year.



Clostridium Difficile, also known as C. Diff, is an infection from bacteria.



## How Is It Passed?

- ▶ Perhaps as much as 10 percent of people carry the bacteria without feeling sick or having symptoms. These people still shed the bacteria through their stool.
- ▶ When people who carry *C. diff* do not wash their hands after going to the bathroom, they can taint the food they handle and they can leave the bacteria on things they touch.
- ▶ The bacteria can survive for months unless the area is fully cleaned with products specifically designed to kill them, like bleach.
- ▶ If someone touches a surface contaminated with *C. diff*, they may accidentally ingest the bacteria. This doesn't mean they will get sick, but they will still carry the bacteria and be able to spread it.



**10 percent** of people carry the bacteria without feeling sick or having symptoms. These people still shed the bacteria through their stool.



## CLOSTRIDIUM DIFFICILE (C. DIFF)

# Symptoms

The symptoms of *Clostridium difficile* (*C. diff*) infection often start with:

- Watery diarrhea (very liquid stool) three or more times a day for more than two days.
- Belly pain and cramps.
- Mild to moderate nausea.
- Loss of appetite (not feeling hungry).

In more serious cases, symptoms may be:

- Watery diarrhea as often as 15 times per day.
- Severe belly pain and cramping.
- Dehydration.
- Fever.
- Weight loss.

If you get diarrhea (very liquid stool) within a few days of being admitted to or released from a hospital, or within two months of taking an antibiotic, and you have had three or more bouts of diarrhea in 24 hours, *C. diff* may be the reason. **Talk to your doctor right away.**



## CLOSTRIDIUM DIFFICILE (C. DIFF)

# Risk Factors

*C. diff* is most common in hospitals and long-term-care clinics, like nursing homes, but it also occurs in nonhospitalized patients who have not taken antibiotics. While being on antibiotics can pave the way for *Clostridium difficile* (*C. diff*), other things can put you at risk as well, including:

- Being at least 65 years old.
- Having abdominal surgery.
- Existing problems or disease in your intestines, such as inflammatory bowel disease (IBD) or colon cancer.
- Having a weakened immune system because of chemotherapy or other drugs that suppress the immune system, or AIDS.
- Past infection with *C. diff*, especially a recent infection.
- Treatment with acid-reducing medications.

If you are healthy, you will most likely not get an infection with *C. diff*. Other organisms often found in your GI tract keep it in check by occupying the sites where *C. diff* could attach and multiply. Think of these sites as parking spaces — if another organism is already there, *C. diff* has nowhere to park. *C. diff* is occurring more often in nonhospitalized community patients, who represent about 40 percent of cases.



## CLOSTRIDIUM DIFFICILE (C. DIFF)

# Getting Tested

There are many tests used to investigate causes of diarrhea. Which test your doctor chooses will depend on your symptoms and medical history and whether you are currently in a hospital.

### Stool Tests

- The easiest and most specific test is a stool test for *Clostridium difficile* (*C. diff*).
- You will give a stool sample in a sterile holder supplied by your doctor's office or lab.
- The lab will run tests on your stool to look for toxins from the *C. diff* bacteria.
- Stool tests can take 24–48 hours to give results.

### Blood Tests

- Blood tests can show a high white blood cell count, which is a sign of infection in the body.

### Colonoscopy

- In a very few cases, your gastroenterologist may feel a test is needed to get a better look at your colon. This test is called a colonoscopy.
- A colonoscopy involves looking at the colon from the inside with a long, thin (about the width of your little finger), flexible tube with a tiny camera on the end, through which the doctor can look for signs of *C. diff* infection, pseudomembranous colitis (inflammation in the colon caused by *C. diff*).
- You will be given a medicine to block pain and make you feel sleepy, so you won't feel much during this test.
- It will also let the doctor to take tissue samples to look at under a microscope (biopsy) if needed.



## CT Scan

- A CT scan looks for thickening of the wall of your intestines.
- During this test, you may get an IV injection of a special dye that will let the CT machine take better pictures of your intestines.
- If you have an allergy to iodine or shellfish, tell your doctor, because people with these allergies may have a reaction to the dye.

### ***Clostridium difficile (C. diff)* – What to Know:**

- ▶ *Clostridium difficile (C. diff)* is an infection from a bacterium that can grow in your gut, causing watery stool and belly pain.
- ▶ *C. diff* is very contagious. Some people can have *C. diff* without any symptoms, but they can still pass the bacteria to others.
- ▶ Some people have a higher risk of getting it, like those in hospitals or nursing homes.
- ▶ *C. diff* is harder to treat than other infections, though there are treatment options.



## CLOSTRIDIUM DIFFICILE (C. DIFF)

# Treatment

There are a few options to treat *Clostridium difficile* (*C. diff*), but **your doctor will choose one based on your case, how bad the infection is and your medical history.**

If you get diarrhea (loose stool) while taking an antibiotic, your doctor may tell you to stop taking it or switch to some other type. Based on how long you've been dealing with diarrhea or how sick you are, your doctor may want you to get a stool test for *C. diff* and give you IV fluids and electrolytes so that you do not get dehydrated. Unfortunately, *C. diff* can be stubborn, so **treatment often calls for many steps.**

### Antibiotics

- Stopping the antibiotics will often resolve diarrhea. However, if you continue to have diarrhea or do not improve, a stool test for *C. diff* should be performed.
- If *C. diff* is found in the stool, new antibiotic treatment will be required to clear this infection.
- Your doctor will order a different type of antibiotic to specifically treat the *C. diff* infection, usually oral metronidazole or vancomycin.
- Many people who take antibiotics to treat *C. diff* infection start to feel better within three days, but it is vital to keep taking the medication until you finish it (usually 10–14 days). If not, it may not kill all of the *C. diff* organisms, and the infection could come back.
- Approximately 25 percent of people with *C. diff* will need a second round of antibiotics.
- Good hand washing and special care by all sharing bathrooms is important to prevent the spread of *C. diff* to others in the household.





## Probiotics

- Probiotics are living microscopic (very small) organisms that research has shown can help your health.
- Most often, they are bacteria, but they may also be other organisms, such as yeasts. In some cases, they are like, or the same as, the helpful organisms in your GI tract.
- There is some evidence that taking certain probiotics may help treat or prevent *C. diff* infection.
- Probiotics are found over-the-counter in drugstores and health-food stores.
- There are many types of probiotics, and not all of them have been studied for treating *C. diff* infection or have been shown to be helpful. It is very important for you to ask your doctor about probiotics (such as if they could be helpful for your case, which ones to take and how much) before you take them.

## Surgery

- Rarely, in very severe, life-threatening cases, it may be necessary to remove the infected part of the intestine.

## Fecal Microbiota Transplantation (FMT)

- With FMT, stool from a healthy donor is made into a liquid mixture and transferred into the colon of the infected person to reintroduce or boost helpful organisms.
- Please refer to the FMT details sections for more information.





## CLOSTRIDIUM DIFFICILE (C. DIFF)

# Fecal Microbiota Transplantation (FMT)

Fecal microbiota transplantation (FMT) is when stool from a healthy donor is made into a liquid mixture and transferred into the colon of a different person to try to reintroduce or boost helpful organisms. FMT is only approved to treat *Clostridium difficile* (*C. diff*) infection that has occurred three times despite adequate antibiotic treatment, though there is ongoing research to find out if FMT may work for other health issues.

## Who Is a Candidate for FMT?

FMT may be an option for people who have had:

- At least three episodes of mild to moderate *C. diff* infection that have not responded to six to eight weeks of treatment with antibiotics.
- At least two episodes of severe *C. diff* infection that called for them to be admitted to the hospital.
- Severe *C. diff* infection or severe colitis caused by *C. diff* that did not respond to antibiotics within two days.

Not everyone is a good candidate for FMT. The procedure is risky for people who are taking drugs that suppress the immune system, have had a recent bone marrow transplant, or have cirrhosis of the liver or advanced HIV or AIDS. If you fall into one of these groups, your doctor may urge against it, based on how bad your *C. diff* infection is and whether you have other problems.



## Stool Donors

There are strict standards to become a stool donor.

- Donors must be screened carefully to avoid transmitting dangerous viruses or bacteria to the person with *C. diff*
- Doctors first screen potential donors by asking them the same questions they would ask of potential blood donors.
- Donors will also be tested for diseases that can be spread through the blood, such as hepatitis, HIV and syphilis.
- People who have taken antibiotics within the last three months or who have diseases or conditions of the GI tract, such as irritable bowel syndrome (IBS) or chronic constipation, should not be donors.

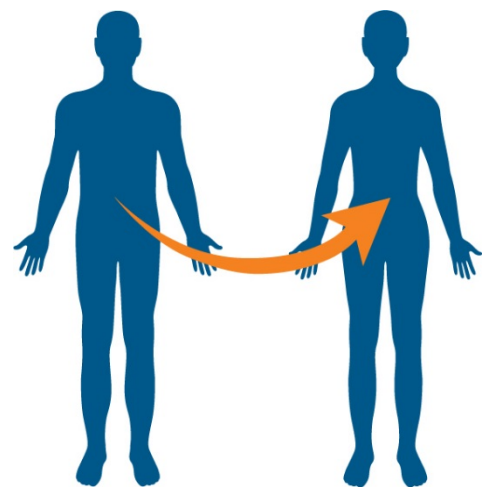
Testing of the stool may not be covered by health insurance and can cost more than \$500. Donors should check with their insurance companies and plan.

It is likely that a registry of patients who have had FMT may be set up so that they can be followed over time. If and when such a registry is built, patients are strongly encouraged to be a part of it.

## Getting Ready for the Transplant

Though the procedures for FMT will depend on the health of the recipient and the preferences of the doctor doing the transplant, there are many things recipients and donors will have to do to get ready.

Because the long-term results of FMT are not known, the FDA needs an informed-consent form signed by the recipient.



- Doctors use different techniques to do FMT, such as colonoscopy, enema, or infusion through an upper endoscope or nasogastric tube (NG tube; a tube that runs from your nose down into your stomach). Each of these methods has some risk. Oral capsules are available, as well.
- For colonoscopy and enema, there is a very low risk of bowel perforation (a tear or hole in the bowel).
- For transfer by an NG tube, there is a small chance that some of the fluid holding the stool could end up in the lungs and cause an infection there.

## Recipients

- Ideally, people who are going to get FMT should have an empty GI tract.
- Often, this means drinking only clear fluids and not eating anything for 24 hours before the procedure.
- People with mild or moderate *C. diff* may also be asked to drink a liquid that will make them move their bowels until their whole digestive system is empty.
  - However, those with severe infection, colitis, pseudomembranous colitis (infection in the colon; overgrowth of *C. diff* bacteria) or toxic megacolon (widening of the colon; complication of IBD or infection of the colon) should not drink these preparations.
- Recipients who will get the transplant by enema or colonoscopy may be given loperamide (Imodium®) the day of the procedure.
  - This drug slows down the muscle squeezing in the intestines and colon so that the donor stool stays in the body longer and the helpful organisms in the stool have a chance to take hold.
- If the transplant is to be delivered by a NG tube, the recipient will be given a drug to stop the stomach from secreting acid that can potentially kill the helpful organisms in the donor stool.



## Donors

- Donors should avoid any foods that the recipient is allergic to for five days before the transplant. This will give the donor's body time to clear the food from the GI tract.
- Donors who have any sign of infection, such as fever, diarrhea (loose stool) or throwing up, between the time they are screened and the time of their donation should call the doctor who will be doing the transplant right away.
- Your doctor may tell you to take a certain type of laxative that increases the amount of water in the bowel the night before the procedure. (Some of these laxatives need a prescription.) It will make passing a stool easier in the morning.

FMT is considered a success if the person with *C. diff* has no relapses for eight weeks.

**Research shows that FMT has a high success rate, though some people with stubborn *C. diff* may have to have more than one transplant.**

### Fecal Microbiota Transplantation (FMT) – What to Know:

- ▶ Fecal microbiota transplant (FMT) is one way to try to treat *Clostridium difficile* (*C. diff*) infection.
- ▶ Stool from a healthy donor is processed and transplanted into the sick patient.
- ▶ FMT has had very positive results, but is only FDA approved to treat recurrent *C. diff* for now.
- ▶ FMT must be overseen by a gastroenterologist.



## CLOSTRIDIUM DIFFICILE (C. DIFF)

# Things to be Aware of with Severe *Clostridium Difficile* (*C. Diff*)



Severe *Clostridium difficile* (*C. diff*) can be dangerous as it can cause rapid dehydration (fluid loss). If you get dehydrated really fast, it can:

- Impact your organs and cause your blood pressure to be dangerously low.
- Damage your kidneys and lead to kidney failure.

In the worst cases of *C. diff*:

- You could get holes in the lining of the large intestine.
- Your intestines could also become quite stretched and swollen and may burst.
  - When bacteria or stool from your intestines get into other parts of the body, either through a hole in the bowel or a ruptured colon, it is a medical emergency that needs urgent surgery, because it can be deadly.



The information provided by the AGA Institute is not medical advice and should not be considered a replacement for seeing a medical professional.

April 2016

© AGA 2016