COMMONWEALTH of VIRGINIA

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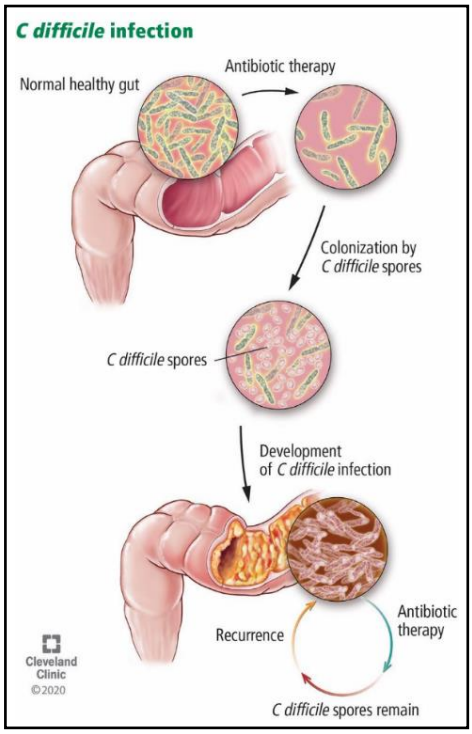
Office of Integrated Health

Clostridioides Difficile Health & Safety Alert

What is Clostridioides Difficile?

Clostridioides difficile [klos–TRID–e–OY-dees dif–uh–SEEL], formerly known as Clostridium difficile or "*C. diff*" is an intestinal bacterial infection in the large intestine (colon).



Clostridioides difficile is a contagious, infectious invisible bacteria, which causes inflammation in the colon (colitis) and produces infectious diarrhea. It is spread via invisible stool residue left on an individual's hands or skin. CDI can be spread directly from person-to-person, and via contaminated surfaces (3).

Around 90% of CDI's occur after a person has been on antibiotic therapy for an infection. Antibiotics kill ***all*** bacteria, including the "good flora" or normally occurring bacteria in the colon, which is needed for digestion (4).

As a result, the person is more susceptible to a CDI. If left untreated, CDI can progressively worsen and can result in sepsis or death of the individual (9) (20). About 1 in 6 individuals who get C. diff will have a recurrence within 2-8 weeks. One in every 11 individuals (over the age of 65), diagnosed with a healthcare-associated CDI will die within one month (3).

Individuals are at an increased risk of acquiring a CDI, if they have experienced a recent hospitalization. However, individuals living in the community, without a history of antibiotic use or recent hospitalization, can also develop a CDI (23).

Several recent research studies have shown CDI cases on the rise, in both the hospital and the community, over the past ten years. It is quickly becoming one of the world's most commonly spread intestinal infections (2) (20). For this reason, education on the cause, risk factors, diagnosis, treatment and prevention of CDI's is an important part of promoting overall good health.

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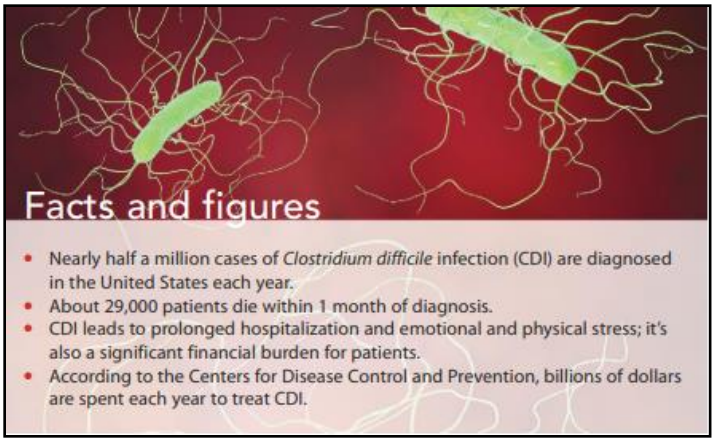
Risk Factors of Developing a Clostridioides Difficile Infection (CDI)

Individuals have a higher risk of developing a CDI, if they:

- Are currently on antibiotic therapy or have previously received antibiotic therapy, which lasted for more than 7 days.
- Have been recently hospitalized or discharged.
- Are over age 65.
- Have experienced a C. difficile infection in the past. One in four individuals diagnosed with C. difficile, will have a recurrence (8).
- Have a weakened immune system, such as individuals with HIV/AIDS, those with cancer, or those who have received an organ transplant and re taking immunosuppressive drugs.
- Are taking medications which reduce acids in the stomach (Proton Pump Inhibitors), such as Prevacid (lansoprazole), Prilosec (omeprazole), and Nexium (esomeprazole). Normal acid in the stomach kills most bacteria and as a result, reduces your risk of acquiring an illness via the stomach. However, Proton Pump Inhibitors reduce acid in the stomach, and therefore result in a higher risk of illnesses acquired via the gut.
- Have recently experienced a gastrointestinal surgery (24) (3).

Signs and Symptoms of Clostridioides Difficile Infection

The primary symptom of a CDI is ongoing loose, foul smelling stools (watery diarrhea), several times per day (3-15 occurrences) which starts two to three days after beginning an antibiotic treatment (24) (3).



CDI can also be accompanied by fever, abdominal pain, nausea and loss of appetite. Due to the frequency and nature of stools, individuals are at a higher risk of becoming dehydrated, and may experience bloody stools and weight loss (18).

There are three progressive degrees of CDI's: 1) mild to moderate, 2) severe, and 3) severe/life-threatening, which requires emergency treatment and possible hospitalization (19).

Mild to Moderate Infection

If an individual is displaying signs and symptoms of a mild to moderate CDI, contact their primary care physician immediately and describe their symptoms. Be sure to share your thoughts on why you think the individual might have a C. difficile infection. The individual should be evaluated by their PCP as soon as possible. Common symptoms of a mild to moderate CDI are:

- Non-bloody watery diarrhea 3-6 times a day for two or more days.
- Mild abdominal cramping and abdominal tenderness.
- No fever (18).

Severe Infection

In severe cases, individuals become dehydrated and may need hospitalization. C. difficile causes the colon to become inflamed (colitis) and may cause the forming of raw patches of tissue, which can bleed or produce pus (pseudomembranous colitis). If an individual is displaying signs and symptoms of a severe infection: **SEEK HELP IMMEDIATELY AT YOUR NEAREST HOSPITAL EMERGENCY ROOM or CALL 911 IMMEDIATELY**.

Signs and symptoms of a severe CDI include:

- Watery or bloody diarrhea 10 to 15 times a day.
- Abdominal pain or cramping, which may be severe.
- Fever.
- Blood or pus in the stool.
- Signs of dehydration, such as lack of urination, lethargy, listlessness, confusion, fainting, sunken eyes, rapid heart rate.
- Loss of appetite.
- Nausea.
- Weight loss.
- Swollen abdomen.
- Unhealthy pale appearance (18).

Severe Life-Threatening Infections

In severe life-threatening cases the infection develops into sepsis resulting in organ failure. **SEEK HELP IMMEDIATELY AT YOUR NEAREST HOSPITAL EMERGENCY ROOM or CALL 911 IMMEDIATELY.**

Signs and symptoms of a severe CDI include all of the above and:

- A rapid heart rate (tachycardia) (100 beats per minute & up).
- A drop-in blood pressure (hypotension). Systolic (top number) below 100.

Complications of Clostridioides Difficile Infection (CDI)

- Severe diarrhea can lead to a significant loss of fluids and electrolytes in the body. This makes it difficult for the body to function properly and can cause dangerously low blood pressure levels.
- Kidney failure, brought on by severe dehydration. This can occur very quickly once kidney function starts to decline.
- Toxic megacolon is a rare condition, which occurs when the colon is unable to expel gas and stool, causing it to become extremely enlarged. Left untreated, the colon may rupture. Bacteria from the colon can then enter the abdominal cavity or bloodstream. Toxic megacolon may be fatal and requires emergency surgery.
- Bowel perforation is a hole, which forms in the large intestine. This rare condition results from extensive damage to the lining of the colon or is a result of toxic megacolon. Bacteria spilling from the colon into the abdominal cavity can lead to sepsis (a life-threatening infection).
- Death from sepsis, rarely occurs in mild to moderate cases of CDI, but are common in serious CDI's. Sepsis can quickly progress to death, if the individual is not treated promptly (18). Attaining skills to recognize the early symptoms of sepsis are highly recommended. Contact your regional RNCC for information about the OIH Sepsis Training and the Fatal 7 Training.

Diagnosis of Clostridioides Difficile Infection

Since a CDI *can* be a result of antibiotic therapy, healthcare professionals will usually ask questions to determine if a person has recently been on a course of antibiotics when CDI is suspected. There are several tests a healthcare professional may use to confirm a diagnosis of CDI. Tests require collection of a stool sample for analysis.

Once the specimen is collected, it must be taken to the lab as soon as possible because the C. difficile toxin is unstable and degrades quickly (19). Instructions for stool sample collection may vary from one laboratory to another. Ask for step-by-step printed instructions to ensure proper collection. Using the stool sample, the laboratory will perform tests to confirm the presence of C. difficile. A physician may also perform a colon exam such as a colonoscopy or sigmoidoscopy to diagnose a CDI (8) (18).

Treatment of Clostridioides Difficile Infection (CDI)

The treatment for a CDI is another antibiotic. Mild to moderate CDI's are typically treated with metronidazole (Flagyl), which has been shown to be effective. Side effects of metronidazole may include nausea (11) (18). The antibiotics, vancomycin (Vancocin) and fidaxomicin (Dificid), have been found to be the most effective treatments in severe infections (18). Individuals with recurrent CDI episodes should be treated with fidaxomicin (Dificid) rather than a standard course of vancomycin, based on the newest clinical practice guidelines released in June 2021 (11). Side effects of both vancomycin and fidaxomicin include abdominal pain and nausea.

Pain

Pain related to CDI's among individuals. However, for individuals with severe pain (due to organ failure, toxic megacolon or inflammation of the lining of the abdominal wall), surgery that removes the diseased portion of the colon may be the only option.

Prevention

CDI is transmitted from person to person via the fecal to oral route, or through contact with contaminated objects, surfaces or skin. It can spread very easily in living situations where multiple people reside (congregate settings) such as group homes, nursing homes, etc. Due to its contagious nature, good hand hygiene and environmental cleanliness are essential to stopping the spread of CDI's (24).

Clostridioides Difficile Infection (CDI) and Individuals with Intellectual and Developmental Disabilities

Caregivers should suspect a CDI if an individual has 3 or more unformed stools in a 24-hour period, with no other cause (15). If a CDI is suspected, it is essential for caregivers to seek treatment from a licensed healthcare professional for the individual immediately. It is best for the individual to be kept separate from others in the home until the infection has been either

confirmed or ruled out (24). Many individuals with intellectual and developmental disabilities are at higher risk for contracting a CDI or having a recurrent CDI, due to the following:

- Poor hand washing skills.
- Inability to understand abstract concepts, such as “contagious” or “infectious”.
- Inability to understand or comply with instructions discouraging sharing of items.
- Congregate living and transportation situations.
- Congregate laundering of clothing.
- Higher prevalence of chronic conditions, which often require antibiotics and/or hospitalizations (17).
- Higher prevalence of incontinence.
- Caregiver’s lack of knowledge.

Many individuals with intellectual and developmental disabilities may require additional support to perform proper hand hygiene after toileting and before meals. Teaching individuals with IDD the proper way to wash their hands is an effective method to reduce the spread of germs (16). If an individual has a previous history of CDI, please be sure to inform their PCP, because the individual will be at higher risk for a reoccurrence (3).

Caregiver Considerations

Clostridioides difficile bacteria and spores have been found to survive from 6 hours to several months on surfaces, and can be resistant to extreme temperature, and chemicals used for cleaning (24).

Using contact precautions, proper hand hygiene, and cleaning and disinfecting protocols, can decrease the risk of CDI infection spreading to others. Continued monitoring of the individual during and after treatment, and **education of all persons who will come in contact with the individual including all caregivers, staff, therapists, family, friends, and housemates,** will help to reduce the spread of C. difficile (24). All caregivers should have access to soap and water for handwashing, and cleaning products for environmental sanitation, in order to provide effective care (18).

Single-use, dedicated, or disposable equipment (e.g. blood pressure cuffs, stethoscopes, thermometers) should be used. If single-use, dedicated, or disposable equipment is not available, shared equipment must be cleaned and disinfected immediately after use and between individuals.

Infection Control

Basic infection control measures should include handwashing before and after glove use, the use of a gowns or clothing covers when assisting an individual with toileting, and a face covering to cover the mouth. C. diff can live on the skin, so caregivers who touch an infected person's skin can pick up the germs on their hands. All caregiver should wear gloves, if an individual has an active infection, to reduce the risk of spread (24).

The most effective form of hand hygiene to prevent the spread of C. difficile is handwashing with soap and warm water. To reduce the transmission of C. difficile, the World Health Organization (2021) recommends washing hands for 60 seconds.

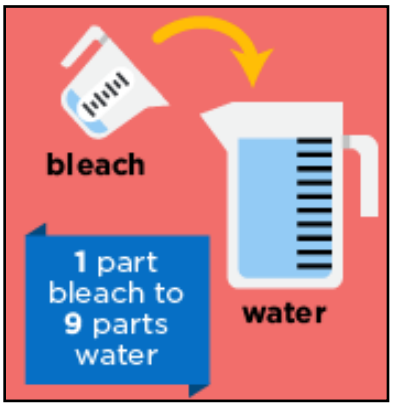
The 60-second time frame should be broken down to 10-20-15-15:

1. 10 seconds to wet hands.
2. 20 seconds scrubbing with water and soap.
3. 15 seconds to rinse.
4. 15 seconds to dry, respectively.

For more information on the WHO handwashing procedure see the 'resources' section of this alert. **The use of alcohol-based hand sanitizers is ineffective in the fight against C. difficile** (10) (24).

Environmental Cleanliness

Medical equipment and shared common household items should be wiped down regularly with a disinfectant. If an individual is diagnosed with a C. difficile infection, it is best practice to clean and disinfect their room daily. All caregivers should be made aware of their cleaning responsibilities, and the schedule for cleaning. Cleaning should be documented to ensure compliance (24). Hospitals use special cleaning products to kill C. difficile, but a cleanser made with bleach is just as effective. The CDC recommends 1 cup of bleach mixed with 9 cups of water. **Do not ever use straight bleach to clean surfaces because it can lead to serious injuries** (3).



Bathrooms

Individuals with a CDI should use a private bath or shower if one is available (4). If a private bathroom is not available the bathroom must be cleaned and disinfected immediately after each use. Remember to disinfect the toilet, toilet seat and flush handle. If a private bathing area is not available, individuals with a CDI should be showered or bathed after those who do not have a CDI. All showers and tubs must be cleaned and disinfected immediately after each use. Additionally, all common household items such as door knobs, remote controls, light switches, keyboards, etc. should be cleaned daily with a disinfectant (25).

Laundry Considerations

If an individual is diagnosed with CDI, or if CDI is suspected:

- All laundry should be considered “contaminated”.
- Soiled laundry should be placed directly in bags that prevent leakage of fluids into the environment and prevent contamination of staff.
- Gloves and gowns should be worn when changing their bed.
- Their laundry must be disinfected with a detergent and a disinfectant product, and washed and dried using a high temperature cycle.

Policy Development, Pre-CDI

Even if your agency has never had a diagnosed case of CDI, it is best practice to develop a policy beforehand. When developing a CDI policy, it is important to consider the following:

- The use of immediate contact precautions for suspected cases of CDI.
- Hand hygiene protocols.
- Personal protective equipment, which is available for use (gloves, gowns, etc.).
- The use of private rooms for confirmed CDI cases.
- The use of a dedicated bathroom for confirmed CDI cases.
- How team members will be notified.
- The placement of contact precaution signs on the individual’s door.

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CLOSTRIDIOIDES DIFFICILE *(formerly known as Clostridium difficile)*

Clostridioides difficile (also known as *C. diff*) is a bacterium that causes diarrhea and colitis (an inflammation of the colon). *C. diff* infection can be life-threatening.

IMPACT

C. diff infection is estimated to cause almost half a million illnesses in the United States each year, and an estimated 29,300 deaths.[1]

About **1 in 6 patients** who get *C. diff* infection will get it again in the subsequent 2–8 weeks.[1]

One in 11 people over 65 diagnosed with a healthcare-associated *C. diff* infection die within a month.[2]

RISK

People are 7 to 10 times more likely to get *C. diff* infection while taking an antibiotic and during the month after.[3]

Extended stays in healthcare settings, such as hospitals and nursing homes, also increase their risk.

More than 80% of *C. diff* deaths occur in people 65 and older.

SPREAD

C. diff spreads when people touch surfaces that are contaminated with poop from an infected person.

Or when people don't wash their hands with soap and water.

It can also happen when one healthcare facility fails to notify another when it transfers a patient with *C. diff.*

Healthcare professionals can help PREVENT *C. diff by:*

BE ANTIBIOTICS AWARE
SMART USE, BEST CARE

Optimizing the way they prescribe antibiotics.

Using the tests that give the most accurate results.

Rapidly identifying and isolating patients with *C. diff*.

Wearing gloves and gowns when treating patients with *C. diff*—and remembering that hand sanitizer doesn't kill *C. diff*.

Cleaning surfaces in rooms where *C. diff* patients are treated with EPA-approved, spore-killing disinfectant (see list K).

cdc.gov/cdiff

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Accessible version: https://www.cdc.gov/cdiff/what-is.html

THE PROGRESSION OF A *C. DIFF* INFECTION

C. diff is a bacterium (germ) that causes severe diarrhea and colitis (an inflammation of the colon). *C. diff* infections can be life-threatening.

C. diff can infect anyone. Most cases of _C. diff_ infection occur while you're taking antibiotics or not long after you've finished taking antibiotics. Other risk factors include:

- Previous infection with *C. diff* or known exposure to the germs
- Being 65 or older
- Recent stay at a hospital or nursing home
- A weakened immune system, such as people with HIV/AIDS, cancer, or organ transplant patients taking immunosuppressive drugs

C. diff develops within a few days or up to several weeks after you take antibiotics and symptoms can include:

- Severe Diarrhea
- Fever
- Stomach tenderness or pain
- Loss of appetite
- Nausea

If you have signs or symptoms, see a doctor.

- The doctor will review your signs and symptoms and order a lab test.
- If it's positive, you'll take an antibiotic for 10 days.

You might be admitted to the hospital.

- Your healthcare providers will use precautions such as wearing gloves and gowns to prevent the spread of *C. diff*.

After you've recovered, you could still be colonized.

- The germs will be in your body, but you won't feel sick. So you won't need treatment.
- But you can still spread it to others, so always practice good hand hygiene.
- Tell all of your healthcare providers that you've had *C. diff*.

About 1 in 6 people who get _C. diff_ infection will get it again in the subsequent 2-8 weeks.

- If you have symptoms again, see your doctor.

Some people get _C. diff_ over and over again.

- For those with repeat infections, fecal microbiota transplants have shown promising results.

C. diff is contagious, but you can keep others from getting it.

- Wash your hands with soap and water every time you use the bathroom and always before you eat.
- Try to use a separate bathroom if you have diarrhea.
- Take showers and use soap.

cdc.gov/cdiff

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CDC

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Resources

General C. diff information (Centers for Disease Control and Prevention, 2019): https://www.cdc.gov/cdiff/index.html

Standard precautions and when to wear gloves (Centers for Disease Control and Prevention, 2018): https://www.cdc.gov/oralhealth/infectioncontrol/summary-infection-prevention-practices/standard-precautions.html

CDC cleaning and prevention tips (Centers for Disease Control, 2019): https://www.cdc.gov/cdiff/prevent.html

World Health Organization's brochure on hand hygiene (World Health Organization, 2009): https://www.who.int/gpsc/5may/Hand_Hygiene_Why_How_and_When_Brochure.pdf

World Health Organization's brochure on glove use (World Health Organization, 2009): https://www.who.int/gpsc/5may/Glove_Use_Information_Leaflet.pdf

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