WATER QUALITY & HEALTH COUNCIL
PERSPECTIVES

Preventing the Spread of *C. diff* Bacteria

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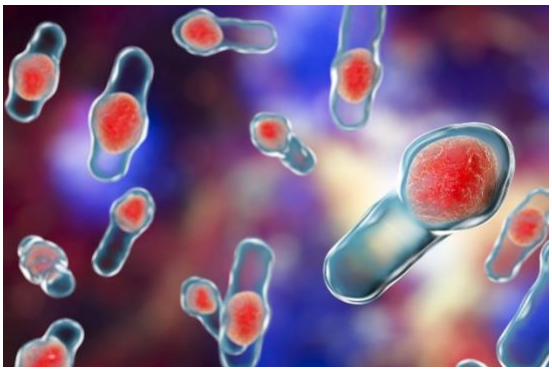
In a nutshell…

"C. diff" bacteria can infect the human gut, causing a life-threatening illness. People with weakened immune systems and those who have recently taken antibiotics are most at risk for infection. Understanding how *C. diff* exists in the environment and spreads can help you avoid serious illness.

"C. diff" is the antimicrobial-resistant bacteria *Clostridioides difficile.*[1] It causes symptoms ranging from diarrhea to life-threatening colon inflammation. According to the Centers for Disease Control and Prevention (CDC), *C. diff* causes about half a million illnesses and nearly 15,000 deaths annually. People of any age may become sick. *C. diff* infections cost Americans about $5.4 billion annually. *C. diff* is passed from person to person by the oral-fecal route. That is why it is important to wash hands thoroughly after using the bathroom and before preparing or eating meals.



C. diff exists as stable spores outside of the human body. Inside the gut, the bacterium acts as an "opportunistic" organism causing infection in patients who are vulnerable as a result of previous illnesses or immune system deficiencies.

Although most healthy adults who contact *C. diff* do not get sick, they may pass the bacteria to others who may. People most vulnerable to *C. diff* have weakened immune systems or have recently taken antibiotics. These conditions provide the "opportunity" for *C. diff* infection, along with being at least 65 years of age; having been hospitalized recently; or having had a previous infection with *C. diff*, or exposure to it.

C. diff is a Very "Difficult" Bacterium

"*Difficile*" is French for *difficult*, an apt label for this pathogen. Outside the human body, *C. diff* exists as stable spores. These can last on surfaces and in soils for *months to years*. Once in the human digestive

[1] *Clostridioides difficile* used to be known as *Clostridium difficile*, a*ccording to the CDC.* It appears that the former name continues to be used in some instances.

system, spores are activated and are resistant to most commonly used antibiotics for intestinal diseases, thus making treatment "difficult." Fidaxomicin and vancomycin are antibiotics prescribed for first-time *C. diff* infections. These antibiotics kill C. *diff* in the gut and reduce toxins from the bacterium. For recurring cases, patients may receive "fecal microbiota transplants." These can help restore healthy gut bacteria.[2]

C. diff may be spread when an infected patient is moved, for example, from a long term care facility to an acute care facility with no advance notice of the patient's infection. Infected hospital patients must be isolated. They should be given their own bathrooms. Caregivers must wear gloves and gowns. To decontaminate surfaces in patient rooms, hospitals apply disinfectants that kill the organisms and spores. The Environmental Protection Agency has a list of approved products. CDC notes a solution of one part chlorine bleach and nine parts water (10% concentration) is effective against *C. diff* on frequently touched surfaces. Clothing and linens contaminated with *C. diff* should be washed with chlorine bleach, if possible.

A Word about Hand Sanitizers

C. diff spores are resistant to alcohol, which is the active ingredient in many hand sanitizers. For that reason, hand washing with soap and water is the preferred method of removing *C. diff*. According to an article in *Harvard Health Publishing*, while soap doesn't kill the spores, vigorous scrubbing with soap and water and thorough rinsing can physically

Raising Awareness of C. diff

The *C. diff* Foundation has designated November "*Clostridium difficile* Awareness Month." The foundation's website is promoting *C. diff* education, noting that "Most patients and their families, until being told they have a *C. difficile* infection, have little to no knowledge of this infectious disease."

Meanwhile, ongoing measures to control infection are critical. And that brings us to some good news. In a 2018 report, CDC noted a 12% decrease in *C. diff* infections between 2017 and 2018 in US acute care hospitals. That's a trend in the right direction in anybody's book.

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www.waterandhealth.org

[2] Heimann, Cruz Aquilar, Mellinghof, Vehreschild (2018). Economic burden and cost-effective management of *Clostridium difficile* infections. Med Mal Infect, 48 (1) 23-29. Abstract available online: https://www.ncbi.nlm.nih.gov/pubmed/29336929