

# *Clostridium difficile* Fact Sheet

*Clostridium difficile* (*C. difficile* or *C. diff*) is a spore forming bacteria that is a leading cause of healthcare associated diarrhea. Although *C. diff* has been known to cause healthcare associated diarrhea for nearly 30 years, the emergence of more virulent strains which cause seemingly greater morbidity and mortality have increased the notoriety of *C. diff* in recent years.

## General Information

### **Bacteriology**

*C. difficile* is a Gram positive, spore-forming, anaerobic bacillus. It is widely distributed in the environment and colonizes up to 3-5% of adults without causing symptoms. Certain strains can produce two toxins: toxin A and toxin B, which are responsible for causing diarrhea.

A new, hypervirulent epidemic strain of *C. difficile*, typed the NAP1/BI/027 strain has been associated with outbreaks in Europe, the United States and Canada. Characteristics of this strain include the presence of a binary toxin; increased resistance to clindamycin and the fluoroquinolone class of antibiotics; and the increased potential for severe adverse events.

When in its spore form, *C. difficile* is highly resistant to destruction by many environmental interventions, including a number of chemicals.

### **Epidemiology of transmission**

Because *C. difficile* is part of the normal flora of the gastrointestinal tract, most infections with these microorganisms have been attributed to the patient's own flora. Antibiotic exposure plays an important role in the development of *C. difficile* infection (CDI). People who have been previously treated with fluoroquinolones are typically at the highest risk for developing CDI.

*C. diff* can also be spread from person-to-person by direct patient-to-patient contact, or indirectly on health care workers' hands, or on contaminated environmental surfaces and patient-care equipment.

### **Clinical manifestations**

The general surveillance definition for CDI is: new onset of diarrhea (ie. > 3 loose/watery bowel movements in a 24h period) that is unusual or different for the patient; and there is no other etiology for diarrhea such as laxative use or inflammatory bowel disease.

Risk factors associated with CDI include: a history of antibiotic usage - particularly fluoroquinolones, immunosuppressive therapy post-transplant, proton pump inhibitors, bowel disease and bowel surgery, chemotherapy and prolonged hospitalization.

Additional risk factors that predispose some people to develop more severe disease include: history of CDI, increased age, immunosuppressive therapy, recent surgery and CDI with the NAP1 strain of *C. difficile*.

### **Basic Prevention**

Sustained control of CDI may be achieved with infection prevention and control measures directed at interrupting the horizontal spread of *C. difficile* (hand hygiene and environmental cleaning). Discontinuing antibiotics (except metronidazole or vancomycin initiated as treatment for CDI) as soon as the patient's condition permits is also an important aspect of CDI control.

The importance of hand hygiene in the elimination of *C. diff* transmission cannot be overstated. Hands should always be washed thoroughly after using the bathroom and before preparing food as well as after contact with persons who have CDI. Alcohol-based hand sanitizers (≥62% ethanol) may be helpful as an adjunct method of hand hygiene.



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## Infection Prevention and Control Measures

### Healthcare Prevention Measures

In addition to Routine / Standard Precautions, Contact Precautions should be implemented with patients who are suspected or confirmed to have *Clostridium difficile*.

- Patients with suspected or confirmed CDI may be placed in private rooms or cohort with other patients with the same infection.
- Follow hand-hygiene guidelines by either carefully washing hands with soap and water or using Alcohol-Based Hand Sanitizers (ABHS) after contact with patients with CDI.
- Use gowns and gloves when in contact with, or caring for patients who are symptomatic with CDI for all interactions that may involve contact with the patient or potentially contaminated areas in the patient's environment
- Patient/resident temperature should not be taken rectally; rectal thermometers have been linked with the spread of CDI

### Environmental control measures

Environmental contamination has been documented as a contributing factor in ongoing transmission during outbreaks. *C. difficile* spores have been shown to survive well in the environment – some studies suggesting up to 5 months or more.

Products used for disinfection of *C. diff* must have an appropriate sporicidal claim. As a spore, *C. diff* is exceptionally more difficult to eradicate from the environment. All horizontal and frequently touched surfaces should be cleaned twice daily and when soiled. All patient care equipment (e.g., thermometers, blood pressure cuff, pulse oximeter, etc.) should be dedicated to the use of one patient. All patient care equipment should be cleaned and disinfected as per Routine / Standard Practices before reuse with another patient or a single use device should be used and discarded in a waste receptacle after use. Toys, electronic games or personal effects should not be shared by patients.

## References:

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