

***Clostridium difficile* and *Clostridium-difficile* associated disease (CDAD) Infection Control Guidelines for Long-Term Care Facilities**

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Clostridium difficile is an anaerobic, spore-forming, gram-positive rod-shaped bacterium which produces toxins, including those referred to as toxin A and toxin B. It is a common cause of antibiotic-associated diarrhea (AAD) and the most common infectious cause of acute diarrheal illness in long-term-care facilities. *C. difficile* can be associated with asymptomatic colonization and a spectrum of disease ranging from diarrhea to more severe manifestations, such as pseudomembranous colitis and signs of sepsis. *C. difficile* in long-term care facilities, with the number of elderly people receiving antibiotics in these settings, can lead to frequent outbreaks. Even in the absence of an outbreak, the prevalence of *C. difficile* colonization in long-term-care facilities ranges from 4-20%.

Colonization versus disease: When antibiotics are administered to patients, the normal bowel flora may be affected, which creates a favorable environment for *C. difficile* to reproduce and release toxins leading to CDAD. There are some important distinctions between *C. difficile* colonization and CDAD.

An individual who tests positive for *C. difficile* or *C. difficile* toxins in stool, but exhibits no clinical symptoms is considered colonized. An individual who tests positive for *C. difficile* and exhibits clinical symptoms is described as having CDAD. Patients with CDAD are believed to be more infectious than asymptomatic, colonized individuals.

NOTE: Infection or colonization with C. difficile is not valid grounds for denial of admission to a long-term care facility.

Risk factors for acquiring CDAD

- Antibiotic exposure
- Gastrointestinal surgery/manipulation
- Exposure to a healthcare setting
- A serious underlying illness
- Immunocompromising conditions
- Advanced age
- Anti-ulcer medication

Reservoir: The two major reservoirs of *C. difficile* are colonized or infected persons and contaminated environments. *C. difficile* spores can survive for weeks to months on environmental surfaces. Any surface, device or material (e.g. commodes, bathing tubs, and electronic rectal thermometers) that becomes contaminated with infectious feces may serve as a reservoir for the *C. difficile* spores.

Mode of transmission: *C. difficile* is shed in the feces and is spread through the fecal-oral route. Transmission occurs when the organism or its spores are ingested. *C. difficile* is transmitted between patients indirectly either on the hands of healthcare workers or via contact with contaminated environmental surfaces.

Incubation period: Unknown

Diagnosis and testing: CDAD should be suspected in any adult with AAD. The laboratory specimen for diagnosis is a single, watery, unformed stool specimen (not rectal swab). Stool is tested for the presence of *C. difficile* toxins. Routine surveillance testing or testing of asymptomatic patients is **not** recommended.

Treatment: Issues relating to the treatment of CDAD or *C.difficile* carriage, including the use of antibiotics or the discontinuation of antibiotics, should be addressed by the patient's clinician. CDAD may resolve with discontinuation of antibiotics, or may require specific treatment, usually with metronidazole or vancomycin by mouth.

PREVENTION AND CONTROL

Implementation of and adherence to infection control practices are keys to preventing the transmission of infectious diseases in all healthcare facilities. Standard precautions should be used at all times and consistently by all staff in long-term care facilities. General infection control measures for healthcare providers can be found at:

<http://www.cdc.gov/hicpac/pdf/isolation/Isolation2007.pdf>

Preventing transmission of *C. difficile* relies on the use of contact precautions for patients with diarrhea, accurate identification of patients with CDAD, environmental measures and consistent hand hygiene.

Only residents with watery or loose stools should be tested for *C. difficile*. It is believed that individuals with *C. difficile* who have active diarrhea are much more infectious than those who are asymptomatic. Therefore, it is recommended that in addition to standard precautions, patients with CDAD remain on **contact precautions** until they are asymptomatic (free of diarrhea). Repeat testing of treated, asymptomatic patients (test of cure) is not recommended. Once patients are asymptomatic, contact precautions can be discontinued and the affected rooms should undergo a terminal cleaning with surfaces treated with a sporicidal disinfectant (bleach).

Infection control measures

Using contact precautions, the following are specific infection control measures to reduce the transmission of *C. difficile*:

Gloves: All persons entering the room should wear gloves. In addition, gloves should be worn when coming into contact with items that may be contaminated with *C. difficile*, such as clothing, bedding, or environmental surfaces. Remove the gloves after caring for the patient, and wash hands with an antibacterial soap. Gloves alone do not guarantee prevention of transmission.

Gowns: Gowns should be worn if direct care (bathing or lifting) is provided or when there is contact with secretions/excretions (changing linens). In addition, gowns should be worn when coming into contact with environmental surfaces that are likely to be contaminated. Gowns should be removed and discarded prior to leaving the patient room.

Hand hygiene: Strict adherence to hand hygiene protocols must be maintained. Staff should wash their hands with an antibacterial soap after glove removal and after patient care. Hands should be dried with a dry, disposable paper towel, and faucets should be turned off using a paper towel. If patients cannot wash their own hands after bathroom use, their hands should be washed for them. **Alcohol is not as effective in killing *C. difficile* spores. It is therefore recommended that staff caring for known CDAD patients wash their hands with antibacterial soap and water. Soap and water washing can then be followed with use of an alcohol-based sanitizer.**

Patient care items and equipment: For patients with CDAD, patient care items and equipment such as stethoscopes and blood pressure cuffs should not be shared with other patients or residents. If they must be shared, they should be carefully cleaned and disinfected between patients. Only disposable, single-use thermometers should be used with CDAD patients.

Environmental cleaning: Environmental contamination with *C. difficile* organisms has been documented. Careful environmental cleaning with an appropriate sporocidal disinfectant (bleach) should be done routinely or when visibly soiled, and for terminal cleaning. Attention should be given to bedside tables, handrails, call buttons, window sills, light switches, and bedpans/toilets. Cleaning with a hypochlorite-based solution (**Bleach**) has lowered CDAD rates. Use an EPA-registered hypochlorite-based disinfectant (5000ppm) or a 1:10 dilution of 5.25% sodium hypochlorite (household bleach) and water. Keep in mind, however, that bleach solutions can cause irritation of the skin, eyes, and respiratory system, and must be handled with care for the protection of staff and patients. Avoid direct contact with skin and eyes and prepare bleach solutions in a well-ventilated area. Bleach solutions need to be prepared daily.

While no disinfectants are registered with the EPA claim for *C. difficile* spore deactivation, listings of EPA's registered antimicrobial products and products used for medical waste treatments can be found at <http://www.epa.gov/oppad001/chemregindex.htm>.

Note: alcohol-based disinfectants are not effective against *C. difficile* and should not be used to disinfect environmental surfaces.

Room Placement: Results of several studies to determine the benefit of a single-patient room to prevent transmission of *C. difficile* are inconclusive and some studies have shown that being in the same room with a colonized or infected patient is not necessarily a risk factor for transmission. However, during a suspected or proven outbreak the facility should consider the use of private rooms or cohorting of patients with CDAD, especially those with fecal incontinence. In any outbreak caused by a pathogen whose reservoir is the gastrointestinal tract, such as *C. difficile*, use of single patient rooms with private bathrooms should limit opportunities for transmission. This is especially true when the infected patients have poor personal hygiene habits or fecal incontinence. If multi-patient rooms are used, ≥ 3 feet spatial separation is advised to reduce the opportunities for inadvertent sharing of items between the infected/colonized patient and other patients.

Group Activities: A long-term care facility is generally considered a patient's home. A patient colonized with *C. difficile* should be allowed to ambulate, socialize as usual, and participate in therapeutic and group activities as long as contaminated body substances are contained. When residents leave their room, they should have their hands cleaned. In addition, they should have clean, dry dressings and wear clean clothes. Where appropriate, enhanced barrier protection to contain a contaminated body substance is preferred over restriction of the resident.

OUTBREAK CONTROL

An outbreak may be defined as the occurrence of a disease or condition in excess of what is normally expected. One definition which can be considered with respect to CDAD in a long-term care environment is three or more cases of facility-acquired CDAD occurring in the same general area of the facility within a period of seven days or less. Each case of CDAD in a patient should be closely monitored as previously described. However, the following should also be done in **outbreak** situations:

1. Notify the MCDPH, Division of Epidemiology through the DRL (disease reporting line) at: (602) 747-7111.
2. Reinforce infection control procedures throughout the facility through frequent educational inservices. Remind staff that alcohol is not effective in killing *C. difficile* spores. Ensure that bleach solutions are being used for environmental cleaning and that soap and water are being used for handwashing.
3. Increase surveillance for diarrhea among residents and staff.
4. Test all residents who have loose stools or diarrhea. Staff with diarrhea should be excluded working until they are asymptomatic or a non-infectious cause of their symptoms has been established.
5. Consider single rooms with private bathrooms for patients with CDAD or establish a cohort of CDAD patients. Staff should be restricted to caring for **only one cohort** of residents. **Restrict floating of staff.**
6. Institute appropriate isolation precautions for the CDAD cohort immediately.
7. Depending on the extent of the outbreak, restricting admissions to the facility may be considered while the outbreak is on-going.

REFERENCES

Sunenshine RH, McDonald LC. *Clostridium difficile*-associated disease: New challenges from an established pathogen. *Cleveland Clinic Journal of Medicine* 2006;73(2);187-197.

Rao AS, Bradley SF. *Clostridium difficile* in Older Adults and Residents of Long-Term-Care Facilities. *Annals of Long-Term Care* 2003;11(5);42-47.

CDC. Guidelines for environmental infection control in health-care facilities. MMWR 2002;51 (RR16);1-45. Also available on line at http://www.cdc.gov/ncidod/dhqp/gl_environmentinfection.html

CDC and the Healthcare Infection Control Practices Advisory Committee. Guidelines for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings 2007. http://www.cdc.gov/ncidod/dhqp/gl_isolation.html

Owens CR. *Clostridium difficile*-Associated Disease; An Emerging Threat to Patient Safety, *Pharmacotherapy* 2006;26(3):299-311.

Cherifi S. et al. Management of an Outbreak of *Clostridium difficile*-Associated Disease Among Geriatric Patients. *Infection Control and Hospital Epidemiology* 2006;27(11):1200-1205.

CDC. Frequently Asked Questions “*Clostridium difficile* Information for Healthcare Providers”, http://www.cdc.gov/ncidod/dhqp/id_CdiffFAQ_HCP.html, Updated 7/22/2005, Accessed 3/30/2007.

Simor AE et al. *Costridium difficile* in Long-Term-Care Facilities for the Elderly. *Infection Control and Hospital Epidemiology* 2002;23(11):696-703

Adopted from Massachusetts Department of Public Health
Division of Epidemiology and Immunization