



RI Department of Health 2007

Guidelines for the Management of *Clostridium difficile* in Rhode Island Long-Term-Care Facilities (LTCF's)

EPIDEMIOLOGY

Clostridium difficile is an anaerobic spore forming bacillus that can cause diarrhea and pseudomembranous colitis. Complications include intestinal perforation and toxic megacolon. The major risk factor is antibiotic exposure in a hospital or nursing home environment. *C. difficile* is not usually part of normal bowel flora and infection is acquired from fomites and environmental contamination with spores from a case. It can also be transmitted between patients by the hands of health care workers. Onset of illness can be days or weeks after ingesting spores, therefore a clear cut incubation period or period of infectiousness cannot be defined for any particular case. Asymptomatic carriage and shedding also can occur.

Two toxins (A and B) are produced by the organism. Diagnosis of *C. difficile*- associated disease (CDAD) is based on the presence of toxin and diarrhea. The toxin may remain in stool after diarrhea has ceased and the resident has returned to normal bowel pattern.

In long-term-care facilities (LTCF's), *C. difficile* is the most common cause of acute diarrheal illness. Colonization (toxin positive, no diarrhea) ranges from 4% to 20%. Known risk factors for *C. difficile* are common among residents of long-term-care and include:

- antibiotic exposure (90% cases)
- GI surgery/manipulation
- long length of stay in healthcare setting
- severe underlying illness
- stomach acid suppressing medications (under study)
- age more than 65 years

A new strain of *C. difficile* (PFGE type NAP1) has emerged and caused hospital outbreaks in several states. This new epidemic strain appears to be more virulent,

producing greater quantities of toxins A and B. In recent years, several states have reported increased rates of disease, noting greater severity (with complications such as perforation, shock, and increased rates of colectomy) and an associated increase in mortality. Cases are also being reported without traditional risk factors, in younger age groups, acquired peripartum as well as community acquired.

PFGE type NAP1 has been confirmed by the Centers for Disease Control and Prevention (CDC) on a culture specimen from a RI resident tested in 2007.

Clinicians should maintain a high index of suspicion for early recognition of possible cases, seek infectious disease specialty consultation as needed (experience in hospital infection control is helpful), and enforce strict adherence to infection control measures to prevent further transmission between patients.

These guidelines may be adapted as necessary based on a facility's design, resources and specific resident assessments. The goal is to prevent person to person spread of fecal-oral organisms especially on the hands of health care workers and from contaminated equipment and surfaces.

INFECTION CONTROL GUIDELINES

I. Educational program:

It is important to discuss *C. difficile* in employee education programs, which target all employees, including administrators, physicians, nurses, nurse's aides, and others who either have direct patient contact or who are responsible for making decisions regarding patient placement and care. Knowledge about this organism, its epidemiology and infection control measures are key to motivating the behaviors and attitudes desirable in nursing facility staff to effectively diminish horizontal transmission and spread of infection. An informed facility staff will be able to discuss the *C. difficile* problem with residents and their families. Education of residents and their families is important to allay resident and family concerns and obtain their cooperation in controlling the spread of *C. difficile*.

II. Isolation and Contact Precautions:

Use Contact Precautions for patients with known or suspected *C. difficile*-associated disease:

- Place these patients in private rooms. If private rooms are not available, these patients can be placed in rooms (cohorted) with other patients with *C. difficile*-associated disease.
- If private room or cohort is not possible and a non-infected resident must reside (or share toilet facilities) with someone with CDAD, facility staff must strive to minimize risk to the non-infected resident.

Suggestions

- The best practice is for resident with CDAD to use the toilet and non-infected resident to use a commode, or another toilet.
 - If this is not possible, and resident with CDAD must use a commode, one should be assigned to the resident for duration of infection. Commode, toilet (and surrounding area to include frequently touched surfaces) should be disinfected each time commode is emptied.
 - If toilet facilities are not inside the room, commode must be transported as carefully as possible to the toilet designated for emptying. Clean gloves should be worn when leaving the resident's room with the commode. After commode is emptied and disinfected (as well as toilet and surrounding area), hand hygiene and application of clean gloves should occur before commode is returned to resident's room.
- Hand Hygiene
 - Soap (triclosan containing) and water should be used as there is some evidence that alcohol-based hand rubs may not be as effective against spore-forming bacteria. Additionally, soap and water is best if fecal contamination of hands should occur. (*C. difficile* in stool is probably in the vegetative form, forming a spore after it has been in the environment.)
 - Hand hygiene before leaving the resident's room is essential for limiting the spread of the bacteria/spores around the facility.
 - If sinks are not available in the resident's room or toilet facilities where commode is emptied, alcohol-based hand gel may be used before leaving room and proceeding directly to a sink.
 - Glove and Gown Use
 - Gloves are worn when entering the room and for all contact with the resident and the environment (including equipment).
 - As much as possible, avoid touching the environment (especially surfaces) when gloves are potentially soiled from patient care, especially if fecal material is on gloves. Change gloves as necessary.
 - Gloves should be removed, discarded and hands cleaned before leaving the resident's room or providing care to another resident in the same room. (When rooms must be shared, best practice would be to provide care for a non-infected resident first.)
 - Avoid hand contact with resident or environment after gloves are removed.
 - Strict interpretation of Contact Precautions (commonly used in hospitals) includes gowning WHEN ENTERING the room due to the likelihood of contact with the resident and contaminated environment. Given the concern about the new strain of *C. difficile*, modifications to gown use

- (common in LTCF's) should be considered only after an assessment which includes resident behavior and degree of room contamination.
- Gowns should be removed and discarded before leaving the resident's room. After gown removal, ensure that clothing does not contact environmental surfaces.
 - Use gloves when entering patients' rooms and during patient care.
 - Use gowns if soiling of clothes is likely.
 - Dedicated Equipment
 - Dedicate resident care equipment (thermometers, blood pressure cuffs, stethoscopes, commodes etc.) to the infected resident.
 - Articles used for patient care that must be shared should either be thoroughly cleaned and disinfected with a hospital grade germicide between patients or a replaceable barrier must be used. Some examples include:
 - ✓ Hoyer lift - supply individual sling or place an impervious barrier e.g. rubber sheet or Chux between patient and surface of lift
 - ✓ Shower seat – clean and disinfect after use
 - ✓ BP cuff, stethoscope – leave in the room for single use and disinfect when the patient is out of isolation
 - ✓ Commode – single patient use – disinfect after patient is out of isolation
 - ✓ Slide board – use a barrier or clean and disinfect after use
 - ✓ Electronic thermometer - DO NOT USE
 - ✓ Glass thermometer – leave in room for single patient use and disinfect when patient is out of isolation
 - ✓ Laundry – laundry must be handled in accordance with standard precautions for infectious materials. The Occupational Safety and Health Administration (OSHA) regulations for contaminated laundry are attached as an addendum. These should be reviewed for use with all facility laundry. As a minimum, workers handling laundry should wear gloves and aprons. The hottest available temperature should be used to wash bed linen. The recommended temperatures are between 140 Fahrenheit (60 C) and 160 Fahrenheit (71 C). Note that in facilities where these higher temperatures may not be reached in existing laundry equipment that particular attention must be paid to correct use of germicidal soaps and bleaches.

- Discontinuing Contact Precautions
 - Follow up testing should not be done; patients may remain colonized with toxin-producing strains after recovery.
 - Criteria for discontinuing precautions should include the absence of diarrhea and a return to usual bowel pattern.
 - Continue all precautions diligently until diarrhea ceases.

III. Environmental Cleaning:

Implement and monitor compliance with active environmental cleaning and disinfection strategy.

- Surfaces should be kept clean, and body substance spills should be managed promptly.
- Ensure adequate cleaning and disinfection of environmental surfaces and reusable devices, especially items likely to be contaminated with feces and surfaces that are touched frequently.
- Use an Environmental Protection Agency (EPA)-registered hypochlorite-based disinfectant for environmental surface disinfection after cleaning in accordance with label instructions; generic sources of hypochlorite (e.g., household chlorine bleach) also may be appropriately diluted and used. (Note: alcohol-based disinfectants are not effective against *C. difficile* and should not be used to disinfect environmental surfaces.)
- Follow the manufacturer's instructions for disinfection of endoscopes and other devices
- Infection control practices in long term care and home health settings are similar to those practices taken in traditional health-care settings.
- A regular cleaning schedule will minimize the number of spores.
- Special attention should be given to frequently touched surfaces and bathrooms.
- Suggestions
 - Rooms with residents infected with *C. diff* should be cleaned daily, as the last room of the day. This is of particular importance for the rooms of incontinent patients. Pay particular attention to bed rails, bedside commodes, faucet handles, doorknobs, hand rails in the bathroom, the outsides of soap dispensers, and bed stands
 - Housekeeping staff should be gloved and gowned.
 - If not disposable, all items used for cleaning and disinfection should be disinfected after use.
 - A thorough cleaning and disinfection may be appropriate following resident recovery.

Note: EPA-registered hospital disinfectants are recommended for general use whenever possible in patient-care areas. At present there are no EPA-registered products with

specific claims for inactivating *C. difficile* spores, but there are a number of registered products that contain hypochlorite. If an EPA-registered proprietary hypochlorite product is used, consult the label instructions for proper and safe use conditions.

Table 1
SUMMARY (*C. difficile*)

	PROCEDURE	HAND WASHING	GLOVES	GOWN
1	Examining patient, taking vital signs, cleaning room/equipment, physical therapy, changing linen. Patient continent, recovered from diarrhea Patient incontinent or has diarrhea	YES YES	YES YES	May omit YES
2	Close contact procedures on any patient with diarrhea: Bathing patient, turning, wound dressing, catheter handling, any spray/splash situation	YES	YES	YES
3	Interviewing resident or delivering food	YES	NO	NO

TREATMENT

Treatment of severe or recurrent *C. difficile*-associated diarrhea is an evolving science. Some important treatment considerations:

- Anti-motility agents should not be used in patients who have *C. difficile* diarrhea.
- Binding agents, such as cholestyramine, also bind oral vancomycin.
- "Tapering" and "pulsed" regimens of vancomycin may be effective for recurrent *C. difficile*-associated diarrhea.
- Adjunctive therapy (lactobacillus, Saccharomyces) for recurrent disease has limited data to support its use. Oral vancomycin kills lactobacillus.

The usual treatment for *C. difficile*-associated disease includes, if possible, stopping antibiotics being given for other purposes and/or treatment with metronidazole or oral vancomycin for GI-associated illness. In order to reduce selective pressure for vancomycin resistance in enterococci, current guidelines recommend the first-line use of metronidazole over vancomycin. While recent reports suggest that the new strain may not respond as well to treatment with metronidazole, metronidazole remains the appropriate first-line therapy for most cases. However, oral vancomycin should be used for patients:

- admitted to the ICU due to their *C. difficile* infection,
- with leukocytosis >15-20,000 cells/cubic mm,
- with new renal insufficiency with creatinine >2mg/dL,
- with elevated lactate levels,
- of advanced age ≥ 75 years.

There is no treatment for eradication of organism from asymptomatic carriers.

Seek infectious disease speciality consultation (experience in hospital infection control helpful) sooner rather than later on LTCF patients.

Report institutional outbreaks with clearly sustained transmission within a facility to the Office of Communicable Disease at 222-2577.

TRANSFER OF *C. difficile* INFECTED PATIENTS

Nursing homes must develop site specific protocols on how the plan to deal with *C. difficile* infected patients transferring in and out of their facility. Medical records should be flagged and the staff at the receiving institution (whether a hospital or another nursing facility) should be notified prior to the transfer of an infected patient, so that appropriate infection control protocols can be put in action.

Transfer of infected patients from one institution to another should be allowed to occur freely. These patients **DO NOT** need to have negative stool tests prior to transfer out of a hospital, and can be safely cared for in the community based receiving institution.

References

1. Guidelines for environmental infection control in healthcare facilities: recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). June 2003.
http://www.cdc.gov/ncidod/dhqp/gl_environmentinfection.html
2. Rhode Island Department of Health Advisory. Virulent *Clostridium difficile* (NAPI or ribotype 027): An emerging pathogen. Feb 2007.
<http://www.health.ri.gov/disease/communicable/clostridium-difficile.php>
3. Sunenshine RH, McDonald LC. *Clostridium difficile*-associated disease: New challenges from an established pathogen. *Cleveland Clinic J Med*. Feb 2006; 73:187-197.
http://www.cdc.gov/ncidod/dhqp/id_Cdiff.html

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