

ICNC Position Paper

Clostridium Difficile Associated Disease in Extended Care Facilities

In fulfilling the mission statement of the Infection Control Nurses of Connecticut (ICNC), the organization has developed the following position paper on the care of residents in extended care facilities (ECFs) experiencing clostridium difficile (*C. difficile*) disease. Included are suggestions for the overall infection control practices to maintain the health and welfare of residents as well as staff and visitors. The position paper is presented as a guideline only.

Clostridium Difficile

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

In the past decade, an epidemiological change has occurred with the discovery of a hypervirulent clone of *C. difficile*, the NAP1/027 strain¹. Discussion is now occurring regarding placement of residents

with the various strains. At this time a decision has not been made, but it seems prudent, whenever possible, to separate the residents so as to prevent cross contamination.

Reservoir

The two major reservoirs for *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 residents indirectly either on the hands of healthcare workers or via contact with contaminated surfaces².

Incubation Period

Unknown

Risk Factors for Acquiring C. Difficile Associated Diarrhea (CDAD)

- Antibiotic exposure
 - The major contributing factor is systematic antibiotic use, especially exposure to Clindamycin, extended-spectrum cephalosporins, or

fluoroquinolones. *C. difficile* infection may follow even a single dose of antibiotics or surgical antimicrobial prophylaxis¹.

- Gastrointestinal surgery/manipulation
- Exposure to a healthcare setting
- Immunocompromising conditions
- Advanced age
- Anti-ulcer medication

Diagnosis and Testing

C. difficile disease should be suspected in any adult with antibiotic associated diarrhea (AAD). The laboratory specimen used 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 asymptomatic residents is **not** recommended³.

Clinical Definition of C. difficile Associated Diarrhea

Diarrhea is defined as watery or unformed stools, occurring more than three times per day for at least two days, usually associated with abdominal cramping, fever, dehydration, white blood cells in stool and peripheral leukocytosis¹.

Treatment

- In 15% of residents with symptomatic CDAD, simply stopping the offending antibiotic(s) will result in resolution of the diarrhea without any additional treatment.
- Metronidazole (Flagyl) is the preferred treatment for initial episodes of CDAD. Oral Vancomycin should be reserved for

residents who do not respond to Flagyl or who have severe life threatening illnesses.

Colonization versus Disease

When antibiotics are administered to residents, 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 differences 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. Residents with CDAD are believed to be more infectious than asymptomatic, colonized individuals.

Decolonization

Treatment with Flagyl or Vancomycin of asymptomatic residents who are colonized with *C. difficile* in an attempt to rid the resident of the organism generally does not work and should not be attempted.

NOTE: Infection or colonization with *C. difficile* is not valid grounds for denial of admission to an extended care facility.

Prevention and Control

Implementation of and adherence to infection control practices are keys to preventing the transmission of infectious diseases in all healthcare facilities. All staff in ECFs should use standard precautions at all times and consistently.

Preventing transmission of *C. difficile* relies on the use of contact precautions for residents with diarrhea, accurate identification of residents with CDAD,

environmental measure 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, residents with CDAD remain on contact precautions until they are asymptomatic (free of diarrhea) for at least 48 hours³. Repeat testing of treated, asymptomatic residents (test of cure) is not recommended. Once residents are asymptomatic for at least 48 hours, these contact precautions can be discontinued and the affected rooms should undergo a thorough cleaning with surfaces treated with a sporicidal disinfectant.

Infection Control Measures

It is recommended that all facilities have a “*C. difficile* identification” policy in place to identify *C. difficile* disease as quickly as possible. Staff should be aware of antibiotic associated diarrhea and monitor stool production and quality closely.

“Precautionary Contact Precautions³” can be put into place pending results from stool specimens sent to your lab. The occurrence of diarrhea (>3 liquid stools in 24 hours¹) in a resident receiving antibiotic therapy should prompt the institution of “Precautionary Contact Precautions” pending the results of the stool specimen.

Using Contact Precautions/Measures to Reduce the Transmission of C. Difficile^{2,3}

Room Placement: Results of several studies to determine the benefit of a private 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 resident is not necessarily a risk factor for transmission. However, during a suspected or proven outbreak the facility should consider the use of private room or cohorting of residents 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 private resident rooms with private bathrooms should limit opportunities for transmission. This is especially true when the infected residents have poor personal hygiene habits or fecal incontinence. If multi-resident rooms are used, at or above three feet spatial separation is advised to reduce the opportunities for inadvertent sharing of items between the infected/colonized resident and other residents.

Signage: Notification of precautions can be placed on the door of the resident’s room. Signs used for contact precautions should be standardized using recommendations made by the Centers for Disease Control and Prevention.

Gloves: All persons entering the resident’s 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 resident 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 the secretions and while 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 resident room.

Masks: The possibility of *C. difficile* being airborne is currently being studied. At this time, each facility needs to make a decision regarding the use of masks while in the precaution room.

Hand Hygiene: Strict adherence to hand hygiene protocols must be maintained. Staff should wash their hands with antibacterial soap after glove removal and after resident care. Hands should be dried with a dry paper towel and faucets should be turned off using a paper towel. If residents cannot wash their hands after bathroom use, their hands should be washed for them.

NOTE: Alcohol is not effective in killing *C. difficile* spores. It is therefore recommended that staff caring for known CDAD residents wash their hands with antibacterial soap and water. Soap and water washing can then be followed with the use of an alcohol based sanitizer.

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

In a multi-resident room or a room where residents share a bathroom additional attention must be paid to the use of the commode.

- It is recommended that the infected resident use the bathroom commode instead of a portable commode. The emptying of the portable commode into the sanitary commode is a source of aerosolization of the *C. difficile* spores.
- If a portable commode must be used, a disposable commode or bedpan liner should be used to solidify the diarrhea in the disposable bag and the bag disposed of properly.
- In an effort to contain the spores, drawing the privacy curtain part way between the beds is also suggested.

Environmental cleaning: Environmental contamination with *C. difficile* organisms has been documented. Careful environmental cleaning with an appropriate sporocidal disinfectant should be done routinely or when visibly soiled and for terminal cleaning, switches, and bedpans/toilets. Cleaning with hypochlorite solution 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, nose and respiratory system, and must be handled with care for the protection of staff and residents. Avoid direct contact with skin and eyes and prepare bleach solutions in a well-ventilated area. Bleach solutions need to be prepared daily.

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

Identification of Residents Post *C. difficile* Diarrhea: Each facility needs to develop a system to identify residents who have experienced diarrhea caused by *C. difficile*. The purpose is to alert medical and nursing personnel when and if future antibiotic use is required. Current literature suggests not using the fluoroquinolones to treat any infection, as the recurrence of *C. difficile* diarrhea is high in these situations. Also, probiotics should be considered.

Additionally, permanent identification in the resident's medical record allows for appropriate room placement if cohorting of residents is required. And finally, the infection control nurse should maintain a current list of both residents with active infections and those with a history of the disease.

Group Activities: An extended care facility is generally considered a resident's home. A resident 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.

Transfer of a Resident: A notice that the resident has or has had CDAD must accompany a resident during transfer of the resident with *C. difficile* colonization or disease to another health care facility.

Surveillance and Outbreak Control

Surveillance is defined as the ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event used to reduce morbidity and mortality and the improve health.

At a minimum, all extended care facilities should have the ability to identify clusters of infections, know how to conduct a systematic epidemiological investigation to determine commonalities in persons, places and times and develop, implement and evaluate prevention measures.

Case Definitions for Clinical C. Difficile Infection (CDI) Surveillance³

A case of CDI is defined as an individual resident with the symptom of diarrhea (unformed stool that conforms to the shape of a specimen container) or toxic megacolon (abnormal dilation of the large intestine documented radiologically) without other known etiology in which:

1. The resident has a diarrheal stool sample positive for *C. difficile* toxin A and/or B, or a toxin-producing *C. difficile*
OR
2. Pseudomembranous colitis is found during surgery or endoscopically
OR
3. Pseudomembranous colitis is seen during histopathological examination

Surveillance Definitions for C. difficile Infection

1. A symptomatic resident with an additional positive toxin assay within two weeks or less after the last specimen tested positive is a continuation of the same CDI case and not a new case.

2. A symptomatic resident with an additional positive toxin assay within two to eight weeks after the last specimen tested positive is a recurrent CDI and not a new case.
3. A symptomatic resident with an additional positive toxin assay more than 8 weeks after the last specimen tested positive is a new CDI case.

* A resident classified as having a healthcare-facility onset, healthcare associated CDI is defined as a resident who develops diarrhea or CDI symptoms more than 48 hours after admission to a healthcare facility and fulfills criterion 1, 2, or 3 as defined above.

Outbreak

An outbreak may be defined as the occurrence of a disease or condition in excess of what is normally expected. One definition that can be considered with respect to CDAD in an extended care facility, is three or more cases of facility acquired CDAD in the same general area of the facility within a period of seven days or less. Each case of CDAD in a resident should be closely monitored as previously described. However, the following should also be done in an outbreak situation:

1. Notify the state department of health and the local department of health, as well as the department of epidemiology.
2. Reinforce infection control procedures throughout the facility through frequent educational in-services. 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 hand washing.

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 from working until they are asymptomatic or a non-infectious cause of their symptoms has been established.
5. Consider single rooms with private bathrooms for residents with CDAD or establish a cohort of CDAD residents. Staff should be restricted to caring for only one cohort of residents. Restrict floating of the 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 ongoing.

Probiotic Use

The literature is confusing when it comes to the use of probiotics either as a prophylactic or as an adjunctive therapy with antibiotic use. Multiple products are available in pill and powder forms as well as in various yogurts. Anecdotal information is positive while scientific information is at present lacking. Each facility should have a policy in place based on a discussion with local infectious disease physicians as well as the medical director and medical board¹.

Resident and Family Education

In closing, residents, families and visitors should be involved in preventing CDI. Education should include the following aspects.

- Explanation of the infection caused by *C. difficile*

- Explanation of the possibility of re-occurrences
 - Discussion of how the organism is spread
 - Discussion of what the resident and family can do to help reduce the spread of the disease
 - Education about who may be at risk of acquiring CDI during visits
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