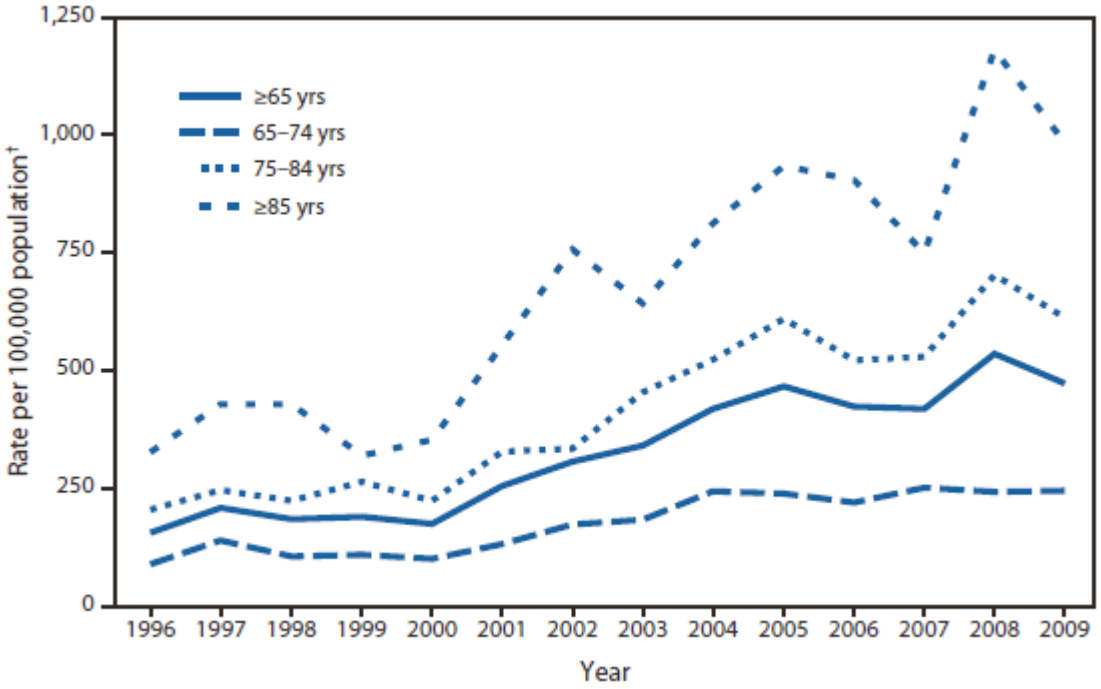
October 24, 2013

GUIDELINE FOR THE PREVENTION OF *CLOSTRIDIUM DIFFICILE* INFECTION IN VHA COMMUNITY LIVING CENTERS

PURPOSE: To establish guidelines for the management of residents in a Community Living Center (CLC) who have *Clostridium difficile* infection (CDI) consistent with the "Guideline for Prevention of *Clostridium difficile* Infection in VHA Acute-Care Facilities" and the Community Living Center Culture Transformation Initiative (VHA Handbook 1142.01 August 13, 2008). The goal is to prevent and control the spread of *C. difficile* from infected residents to other residents in the CLCs.

BACKGROUND

Data from a National Hospital Discharge Survey show that *Clostridium difficile* infection (CDI) rates among older hospitalized patients are increasing in the United States (Figure)[1].



CDI rates in nursing homes have been reported to range from 1.7 to 2.9 cases/10,000 resident-days in Ohio and New York[2,3] which was about one-fourth that observed in acute care facilities. The overall rate of gastrointestinal infection associated with CDI in Pennsylvania in 2010 was 0.9/10,000 resident-days with rates ranging from 0.3/10,000 in dementia units to 3.0/10,000 in units with ventilator-dependent residents[4]. No recent data in VA CLCs are available.

Because CDI is an important cause of morbidity and mortality among Veterans in Community Living Centers (CLCs), the Multi-Drug Resistant Organism (MDRO) Prevention Initiative of the VHA National Infectious Diseases Service will implement an Initiative to decrease the incidence and prevalence of this disease among our residents.

Differences between acute care facilities and CLCs and considerations germane to practicing good Infection Prevention and Control while maintaining a "homelike environment" in the CLCs are addressed in detail in the "Revised Guideline for Implementation of the VHA MRSA Prevention Initiative in Community Living Centers" available at http://vaww.mrsa.va.gov/ . These considerations are relevant to the prevention of CDI in CLCs.

RECOMMENDATIONS FOR THE CONTROL OF CDI

The CDI Bundle

To decrease the incidence of *C. difficile* infection in the CLC, VHA will employ a bundle of infection control strategies comprised of 1) environmental management, 2) hand hygiene, 3) Contact Precautions for those with symptomatic CDI, and 4) a cultural transformation where infection prevention and control becomes everyone's responsibility. This compares to the MRSA bundle as follows:

Table 1. Comparison of CDI and MRSA Bundles

CDI Bundle	MRSA Bundle
Environmental Management	Active Surveillance
Hand Hygiene	Hand Hygiene
Contact Precautions	Contact Precautions
Cultural Transformation	Cultural Transformation

Note that principles of the CDI Bundle follow those of the successful MRSA bundle except that there will be a formal emphasis on Environmental Management and active surveillance will not be done.

Environmental management

A. *C. difficile* bedroom cleaning and disinfection. Cleaning and disinfection is a two-step process. Step 1: Use a detergent to clean. The detergent removes soil and organic material and allows the disinfectant to have a maximum effect. Step 2: Use a disinfectant to inactivate microorganisms. In general, detergents for cleaning do not disinfect and disinfectants do not clean.

1) Terminal/discharge bedroom cleaning and disinfection

a) Step 1: Use an Environmental Protection Agency (EPA)-registered hospital **detergent** to clean surfaces in bedrooms, paying particular attention to high-touch surfaces (e.g., bed rails, bed surfaces/controls, overbed tables/handles, nurse call bells/buttons, telephones, TV remote controls, bedside table/drawer handles, supply cart, light switches, faucet handles, sinks, toilet handles/seat, bath grab bar, intravenous pump, etc.[5]).

b) Step 2: After dirt and organic material have been removed from surfaces with the detergent, use an EPA-registered hospital **disinfectant** that has been approved for elimination of *C. difficile* spores.

1) Follow the manufacturer's directions and approved VA Environmental Programs Service guidelines when preparing chemicals and during the cleaning process.

2) The product should be applied to the surface and remain wet based on the manufacturer's instructions for use as a disinfectant.

Note: *A combination product (detergent/sporicide) can be used for items a) and b) above, but a combination product still requires 2 steps. Always clean the surface prior to disinfecting.*

c) Appropriate times for terminal cleaning and disinfection include 1) upon transfer within the facility, 2) upon discharge from the facility, or 3) after the resident is released from Contact Precautions for CDI (see *Infection Prevention and Control* section below).

d) Items sent from CDI isolation bedrooms to Sterile Processing Services (SPS) or other areas for cleaning and disinfection should be wiped down with an EPA-registered hospital detergent/disinfectant in accordance with manufacturer's guidelines (for both the cleaning product and item being used), or be bagged or covered with fluid-impermeable material before removal from the bedroom.

e) Use an EPA-registered hospital detergent/disinfectant to clean/disinfect any reusable medical equipment (RME) present (e.g., vital sign monitors, pulse oximeters, blood pressure cuffs, etc.) in accordance with manufacturer's guidelines.

2) Daily bedroom cleaning and disinfection

a) High touch surfaces[5] should be cleaned daily with an EPA-registered detergent/disinfectant.

b) A product approved by EPA for eliminating *C. difficile* spores is preferred, but not required, for daily use.

3) Monitoring and feedback to Environmental Management Service (EMS) staff

a) EMS Quality Assurance programs should include monitoring of the thoroughness of cleaning by EMS staff and should be documented. Feedback to EMS staff on performance should be given routinely.

b) Bacterial cultures should not be used for monitoring except in a research setting. Recommended methods for monitoring include:

1) Observation of performance,

2) Fluorescent marker, or

3) Adenosine triphosphate (ATP) bioluminescence assay.

B. Education

1) There should be a yearly update for EMS employees to cover:

a) The epidemiology of *C. difficile* and MDROs,

b) The important role of EMS in controlling *C. difficile* and MDROs,

c) Current status of VA programs to control *C. difficile* and MDROs.

2) A collaborative process between clinical/interdisciplinary team and EMS staff to share suggestions for improving cleaning and/or disinfecting methods and provide feedback concerning the status of the CLC CDI Prevention Program should be established.

Infection Prevention and Control

CLC residents with confirmed CDI, as well as those with suspected CDI awaiting test results, should be managed using Contact Precautions (Attachment A).

Provide education to residents and their families about CDI and VHA efforts to prevent and control this infection in the CLC. This should be documented in the resident's record. Educational materials are available from the MDRO Program Office and on the MDRO Prevention Initiative website at http://vaww.mrsa.va.gov/Education.asp

Contact Precautions

Use a private bedroom whenever possible. Rooming of residents with CDI with uninfected residents should only be done under exceptional circumstances and with the advice of local Infection Prevention and Control Professionals.

A Contact Precautions sign should be displayed at the resident's bedroom/space entry. Signage should be creative, conducive to the home-like environment, and showing respect for the resident's dignity.

Hand Hygiene should be performed by healthcare workers as detailed in VHA Directive 2011-007, "Required Hand Hygiene Practices," (see References below).

Don gloves and gown upon entry into the resident's bedroom. Gloves/gowns should be removed before leaving the resident's bedroom and hand hygiene performed with soap and water.

Use disposable equipment if available or resident-dedicated equipment. Use of electronic rectal thermometers should be avoided because the handles may become contaminated with *C. difficile* spores[6]. Limiting devices such as stethoscopes, blood pressure cuffs, pulse oximeters, glucometers and other Reusable Medical Equipment (RME) that are normally used for multiple residents should be considered as is feasible while still meeting the patient's clinical needs.

If sharing of RME must occur, the equipment should be adequately cleaned and disinfected between residents according to manufacturer instructions. A sporocidal agent should be used if approved by the manufacturer (e.g. EPA-registered hospital disinfectant that has been approved for elimination of *C. difficile* spores).

Limit transport and movement of residents outside of the bedroom to medically-necessary purposes. If transport or movement is necessary, residents should have on clean clothing and be instructed to wash their hands with soap and water when leaving their room.

When a resident goes to other parts of the facility for clinical care or evaluation, the receiving function should be notified regarding the resident's CDI status to assure appropriate continuity of Precautions.

Visitors and sitters should be instructed and encouraged to perform hand hygiene upon entry and exit from a resident's bedroom. Soap and water should be used when exiting the room. When visiting a resident in the bedroom, visitors and sitters are generally not required to gown or glove when with the resident unless they assist in care requiring physical contact like bathing, or if they anticipate visiting other residents in their bedrooms. If a visitor or sitter is assisting in care requiring physical contact with the resident in their bedroom or intends to visit other residents in the facility, they should be instructed on gowning and gloving while visiting the resident. Specific recommendations may vary by facility or household and should be determined by the level of interaction.

The resident should be managed with Contact Precautions for the duration of diarrhea plus at least 48 additional hours after diarrhea resolves. They may, however, go home or be transferred to another facility in the interim if ready for discharge.

If rates of residents with symptomatic CDI remain unacceptably high despite implementation of Contact Precautions, it may be necessary to consider keeping residents in Contact Precautions for an extended period, since residents may shed *C. difficile* spores after resolution of diarrhea[7,8]. This decision should be made by local Infection Prevention and Control personnel. If the availability of isolation beds becomes an issue, priority could be given to residents who are incontinent and cannot, or do not, follow basic personal hygiene practices.

There should be no tests done to determine "cure" of CDI before transferring the resident to another facility. If the resident with CDI is transferred to another facility, his/her CDI status should be reported and documented as part of the transfer communication process.

Readmission:

Patients with a history of CDI should be placed in Contact Precautions (as appropriate) *if they have diarrhea* at the time of readmission until an appropriate evaluation is completed.

Screening and decolonization:

Asymptomatic residents should not be screened for *C. difficile*[9].

Neither metronidazole nor vancomycin should be used for decolonization or prophylaxis of CDI[10].

Antimicrobial stewardship: Since prior antimicrobial use constitutes the most important risk factor for CDI, antimicrobial stewardship programs provide an important tool for reducing the incidence of healthcare-associated CDI. Recommendations for Antimicrobial Stewardship are available at https://vaww.cmopnational.va.gov/cmop/PBM/pre/default/AntimicrobialMainPage/default.aspx.

Cultural Transformation

It is the intent of this Initiative to interrupt the transmission of *C. difficile* and decrease the number of residents at risk for *C. difficile* infection or colonization. Facilities are given the responsibility to define and implement appropriate precautions, and the freedom to be flexible to meet the needs of residents yet maintain the goal of preventing disease transmission. The goal should be to nurture an institutional culture change or transformation where Infection Prevention and Control becomes everyone's responsibility and a natural component of care during each resident encounter. This will require strong interdisciplinary teams and targeted educational programs for residents and visitors. In keeping with the tenets of culture change, all healthcare providers should be actively engaged in, and work with facility leadership, MDRO Prevention Coordinators, Infection Prevention and Control Professionals, and other staff to implement changes that prevent the transmission of *C. difficile*.

Laboratory testing/diagnosis

Clinicians should be encouraged to assess new admissions for the presence of diarrhea, and to submit specimens for testing for CDI only if the resident has had ≥3 liquid stools within 24 hours.

Only diarrheal stools (defined as stools that take the shape of their container) should be tested for *C. difficile* or its toxins. Other specimens sent for *C. difficile* testing should be rejected by the laboratory.

Tests available for diagnosis of CDI have variable sensitivity and specificity (Table 2). A molecular method is preferred and should be used for VA clinical specimens because of its high sensitivity and specificity and fast turn-around time.

The toxin A/B EIA or GDH assays, used alone, are not preferred because of their relatively low sensitivity. When the GDH assay is used alone as a screening test for toxigenic strains, it has a false positivity rate close to 20% since it detects both toxigenic and non-toxigenic strains of the organism[11]. When the GDH assay and toxin A/B EIA are combined as a two-step method, the assay may have suboptimal sensitivity because of variability in the sensitivity of the screening GDH test when used against different *C. difficile* strain types (O27 vs. non-O27)[12], and the low sensitivity of the confirmatory component (toxin A/B EIA)[13-17]. Society for Healthcare Epidemiology of America-Infectious Diseases Society of America (SHEA-IDSA) Guidelines recommend a two-step method using GDH with positives confirmed by the cell culture cytotoxin assay or toxigenic culture[9], but this approach is not preferred for the purposes of this Initiative because of the laboratory expertise and turnaround time required.

Table 2. Performance of tests for *C. difficile*[12-16,18]

Test	Sensitivity (%)	Specificity (%)	Turn-Around Time
Toxin A/B enzyme immunoassay (EIA)	40-80	90	hours
Glutamate dehydrogenase (GDH)	70-80	<90	hours
Combined GDH & toxin A/B EIA	56-90	>90	hours
DNA amplification (molecular)	>90	>97	hours
Cell culture cytotoxin assay	70-80	>97	2 to >3d
Toxigenic culture	>90	95-97	2 to >3d

Negative tests for *C. difficile* should not be repeated within a 7-day period[19]. Repeated testing may increase the perceived CDI rate if it enriches false positives due to imperfect specificity[18,20].

Only one stool per resident should be tested per week unless approved by the Clinical Laboratory Service.

Testing should never be done as a test of cure or to assess the cause of continuing diarrhea since *C. difficile* may persist in the gastrointestinal tract for a prolonged time without causing disease. If diarrhea continues, consider consultation with Gastroenterology for colonoscopy.

It may be useful to track the time between requests for stool to be sent to the lab and the time that the stool is actually sent if timely collection of stool samples is an issue.

Initiative Evaluation and Case Reporting

A clinically confirmed CDI case will be defined as a resident with 1) diarrhea, and 2) a stool test result positive for the presence of toxigenic *C. difficile* or its toxins or colonoscopic or histopathologic findings of pseudomembranous colitis[9].

For the purposes of this Initiative, CDI laboratory testing will be done, and cases identified, only when the test is ordered by a physician during the evaluation of a compatible illness. Testing for *C. difficile* or its toxins will not be done for asymptomatic residents.

Data will be collected only on a facility level. Data elements will be similar to those used by the Center for Disease Control and Prevention's National Healthcare Safety Network (NHSN) with modifications specific to VA.

Data will be entered monthly by each facility into the VA Inpatient Evaluation Center (IPEC) database. A CLC CDI Data Reporting User Manual will be made available with complete instructions on data entry.

Goal

The aspirational goal of this CDI Prevention Initiative is to reduce the national healthcare facility onset (those occurring >48 hours after admission) CDI case rates to zero or by 30% below baseline within two years of full implementation of the program.

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