

March 3, 2010

To: Hospitals, Long Term Care Facilities, and Local Health Departments

From: NYSDOH Bureau of Healthcare Associated Infections

**HEALTH ADVISORY: GUIDANCE FOR PREVENTION AND CONTROL OF
HEALTHCARE ASSOCIATED CLOSTRIDIUM DIFFICILE INFECTION**

Please distribute to all staff in the Departments of Laboratory Medicine, Critical Care, Emergency Medicine, Family Practice, Internal Medicine, Infectious Disease, Infection Control, Pediatrics, Gastroenterology, Pharmacy, Environmental Services

SUMMARY

The purpose of this advisory is to provide specific guidance to hospitals and long-term care facilities for the prevention and control of *Clostridium difficile* infection (CDI) among patients in health care facilities. The advisory is being issued at this time in response to investigations conducted in hospitals in the Central and Western regions of New York State that have reported increases in CDI rates and cases of severe disease. Recommendations for conducting surveillance, identification and reporting of outbreaks, severe disease, and disease occurring in patients without traditional risk factors are described. This advisory should be shared with all direct patient caregivers and physicians.

BACKGROUND

C. difficile is a spore-forming, gram-positive anaerobic bacillus that produces at least two toxins (toxins A and B). It is a common cause of antibiotic-associated diarrhea. CDI has also been reported among populations without traditional risk factors, including younger, previously healthy people without a history of antibiotic exposure¹ and in peri-partum women.² Clinical symptoms of CDI include diarrhea, fever, loss of appetite, nausea, and abdominal pain. In most patients CDI resolves with treatment and/or removal of the inciting antibiotic, although recurrence of disease occurs in about 20% of patients after resolution of initial symptoms.³

CDI can also be associated with severe outcomes including pseudomembranous colitis, toxic megacolon, perforations of the colon, sepsis and rarely, death. Severe CDI has been associated with a hyper-virulent strain referred to as North American Pulsed-field type 1 (NAP1). The NAP1 strain is characterized as having a deletion of the *tcdC* gene, which encodes a negative regulator of toxins A and B production.³ The NAP1 strain is also associated with production of a

binary toxin of unknown function, and fluoroquinolone resistance. Resistant strains may have a competitive advantage in hospitals or long term care facilities where fluoroquinolone use is widespread.

The first CDI outbreak reported via the Nosocomial Outbreak Reporting Application (NORA) where the NAP1 strain was identified by Wadsworth Center Laboratory occurred in a New York City Hospital in 2006, although anecdotal reports of severe illness have been received since 2004. Recent NORA reports submitted by hospitals in the Central and Western Regions of the state have resulted in the identification of CDI cases where patients with severe clinical outcomes have had confirmation of the NAP1 strain by the Wadsworth Center Laboratory. The cases in these outbreaks were generally elderly patients or patients with underlying co-morbidities who were recently treated with an antibiotic regimen. Some were residents of nursing homes and had CDI that was likely acquired at the long term care facility.

TRANSMISSION

C. difficile can exist in the form of a spore or vegetative bacteria. After ingestion, *C. difficile* spores can germinate into vegetative bacteria, produce toxin and cause disease. Both the spore and vegetative form of *C. difficile* are important in terms of transmission prevention.⁴

- In its vegetative state, *C. difficile* bacteria die rapidly outside the colon, generally within 24 hours.⁴ *C. difficile* spores can persist in the environment including on surfaces in hospitals and long term care facilities for many months. The spores are highly resistant to cleaning and disinfecting measures.
- *C. difficile* can be acquired and/or transmitted by patients and/or health care workers from contact with contaminated surfaces.
- Transmission occurs via the fecal – oral route.

RECOMMENDATIONS

Infection Control

- Implement Standard Precautions for all patients at all times as defined in guidelines published by the Centers for Disease Control and Prevention.⁵
- Implement infection control strategies, including a two tiered approach to CDI prevention and control as described in recent published material.^{4, 6, 7, 8} A two tiered approach requires that routine interventions for prevention and control be employed, with additional measures implemented if the rate of CDI is increasing, if transmission is occurring in your facility or if the epidemiology of disease is changing (i.e., more severe disease, or disease affecting a population without traditional risk factors).
- Place all patients with suspected or confirmed CDI on contact precautions. A single patient room is preferred whenever possible. Patients with severe disease should be prioritized for single patient rooms.
- Encourage hand washing with soap and water over alcohol based hand sanitizers after contact with a patient with CDI or contact with his/her immediate environment.
- Eliminate the use of shared electric rectal thermometers and/or probes throughout the facility.

- Patients with CDI should not share a bathroom with others.
- Use a 1:10 dilution of sodium hypochlorite solution (household bleach) for disinfection of hard/non-porous environmental surfaces in rooms housing patients with CDI.
- Testing for cure, i.e., using lab test results to decide if contact precautions can be discontinued, is not recommended.

Surveillance for *C. difficile*

- Laboratory surveillance for *C. difficile* should be included in the infection control surveillance plan of all health care facilities.
- As of July 1, 2009, all acute care hospitals are required to report positive *C. difficile* laboratory reports to the NYSDOH Healthcare Associated Infections Program according to the National Health Safety Network protocol.
- Surveillance for *C. difficile*, based on symptom onset and using published case definitions and case classifications⁹ as outlined below, should be conducted in a facility where the incidence of CDI is increasing, there is clustering of cases, severe disease, or disease occurs in a population without traditional risk factors.
- CDI case definition:
 - Diarrhea (unformed stool that conforms to the shape of the specimen container) or radiologically documented toxic megacolon without other known etiology that meets one or more of the following criteria:
 - A stool sample tests positive by laboratory assay for toxin A and/or B, or a toxin producing *C. difficile* is identified on culture or other means;
 - Pseudomembranous colitis is seen during endoscopic examination or surgery;
 - Pseudomembranous colitis is seen during histopathological examination.
- Classification of CDI case association with health care facilities is defined according to exposure and is based on the date of symptom onset relative to the date of facility admission. Each case is defined from the perspective of the facility conducting the surveillance:
 - If symptom onset occurs more than 48 hours after admission, the case should be classified as healthcare facility onset, healthcare facility associated (HOHA) CDI.
 - If symptom onset occurs outside the healthcare facility (i.e., in the community) or 48 hours or less after admission, and within four weeks of last discharge from the facility, the case should be classified as community onset, healthcare facility associated (COHA) CDI.
 - If symptom onset occurs outside the facility (i.e., in the community) or 48 hours or less after admission to a facility, and more than 12 weeks after the last discharge from the facility, the case should be classified as, community associated (CA) CDI.
 - If symptom onset occurs between 4-12 weeks after discharge from the health care facility, the case should be classified as indeterminate CDI.
 - If the exposure setting cannot be determined because of lack of available data, the case should be classified as unknown CDI.
 - If CDI re-occurs within eight weeks or less after the onset of a previous episode, providing the symptoms of the initial episode had resolved, the CDI should be classified as recurrent CDI.

- Cases of CDI that meet any of the following criteria within 30 days of symptom onset should be classified as severe disease:
 - Admission to an intensive care unit for complications associated with CDI.
 - Surgery for toxic megacolon, perforation or colitis due to CDI
 - Death caused by CDI.
- Track data trends by calculating rates of healthcare facility associated CDI cases per 10,000 inpatient days.
- Cases of CDI should be characterized according to proximity to each other in time and place so that interventions to prevent transmission can be targeted to the appropriate nursing units or locations in the facility. A template for organizing data in a line list format is available from the NYSDOH Regional Epidemiologist. Facilities are encouraged to maintain electronic line lists.

Treatment

- Ensure that prescribing clinicians are updated on current recommendations for treatment of CDI.

Antibiotic Stewardship

- An interdisciplinary group that includes members of the infection control program, clinical pharmacy, medical and administrative staff should convene to evaluate the role of antibiotic use in the perpetuation of CDI in the facility.^{6,10}
- Auditing of antimicrobial use with direct feedback to the prescriber by a clinical pharmacist or physician with infectious disease training is recommended to reduce inappropriate antibiotic use.¹⁰
- Formulary restrictions and preauthorization requirements can be effective in reducing antimicrobial use. Facilities that require preauthorization should monitor for trends in antimicrobial use, shifts in prescribing to alternate antimicrobials agents, and for possible development of resistance to those agents.¹⁰

Communication between facilities

- Develop networks with Infection Preventionists in your area so that information about CDI onset can be reported back to a transferring facility.

Patient Placement

- Acute Care and Long Term Care Facilities are expected to implement appropriate infection control interventions to prevent *C. difficile* transmission.
- A patient can be admitted or readmitted to a long term care facility when clinically appropriate regardless of CDI history.
- Laboratory testing for resolution of illness (testing for cure) is not recommended with CDI.

Laboratory Testing

- Patients with positive toxin tests from samples of formed stool should not be classified as having CDI according to clinical surveillance case definition. Asymptomatic colonization can occur, especially in infants.

- During outbreaks of CDI or when the epidemiology of CDI is changing, request that the facility laboratory save stool specimens for possible submission to Wadsworth Center Laboratory.
- Stool specimens should be stored either refrigerated or frozen. If directed to do so by the Regional Epidemiologist, specimens should be shipped to Wadsworth Center in the condition (either refrigerated or frozen) at which they are stored.
- **Stool specimens should NOT be shipped to Wadsworth Center without prior approval of the NYSDOH Regional Epidemiologist.**

Reporting

- Clinical staff should be advised to report single cases of severe CDI, as defined above, to the facility infection prevention and control program.
- Facilities should report all facility associated clusters of CDI as defined according to the above case definitions and classifications, to their local health department and to the NYSDOH by entering the outbreak information electronically into the Nosocomial Outbreak Reporting Application (NORA) on the Health Provider Network (HPN), accessible at: <https://commerce.health.state.ny.us/hpn/infecontrol/forms.html>.
- Persons who need to access the NORA system must be assigned the role of “Infection Control Practitioner” in the HPN Communications Directory. HPN Communications Directory role assignments are designated by the HPN Coordinator at each facility.
- If electronic reporting via the NORA system cannot be done promptly, a completed Health Care Facility Infection Control Report form (DOH-4018) should be faxed to (518) 402-5165. This form is available on the NYSDOH Web site at: <http://www.health.state.ny.us/nysdoh/infection/infecreport.pdf>.
- Follow-up will be conducted by the Regional Epidemiologist in your area.

NYSDOH Regional Epidemiology Offices:

- Western Regional Office. (716) 847-4503
- Central New York Regional Office (315) 477-8166
- Capital District Regional Office (518) 408-5396
- Metropolitan Area Regional Office (914) 654-7149

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