



PREVENTION OPPORTUNITIES UNDER THE BIG SKY

Consensus Statement on the Testing for *Clostridium Difficile* in Montana

In this issue of *Montana Public Health*, we present a consensus statement on the testing for *Clostridium difficile* infection in Montana. *Montana Public Health* will occasionally publish consensus statements that support the mission of the Montana Department of Public Health and Human Services. This statement was created and endorsed by the Montana Infectious Disease Network and endorsed by the Montana Healthcare Acquired Infection Prevention Initiative (MHAIP) Roundtable.

Introduction

The diagnosis of *Clostridium difficile* infection (CDI) continues to trend upward in the context of increased antibiotic utilization and diagnostic test sensitivity. Because the vast majority of CDI diagnoses and surveillance rely heavily on laboratory identification, testing methodologies that are professionally endorsed and standardized can improve both the clinical interpretation of test results and the accuracy of local epidemiology related to CDI.

The Montana Infectious Disease Network, a collaborative group of infectious disease physicians from across the state, has endorsed the following guideline with the intention of helping healthcare providers as they consider testing patients for CDI.

Who/When to test:

Patients who have clinical diarrhea (>3 unformed stools in a 24 hour period that take the shape of the container) for at least 1 to 2 days.

These are known risk factors for *Clostridium difficile* infection (CDI): In the absence of these risk factors, consider alternative diagnosis before testing for CDI.

- Aged over 65 years
- Exposure to antibiotics within the last 60 days
- Admission to a hospital within 60 days
- Use of gastric acid suppressors
- Current chemotherapy treatment
- Immunosuppression

Who not to test:

- Patients with formed stool
- Patients without clinical diarrhea (>3 unformed stools in a 24 hour period that take the shape of the container) unless toxic mega colon is suspected
- Patients who have tested positive for CDI in the past 30 days
- Do not retest to determine that treatment was effective (test of cure)

How to test:

- For laboratory-based diagnosis of CDI, nucleic acid amplification test (NAAT) types should be utilized for

optimal positive predictive value. NAAT includes polymerase chain reaction (PCR) and loop-mediated isothermal amplification (LAMP) technologies.

- At a minimum for laboratory-based diagnosis of CDI, rural facilities (where cost and staffing issues are paramount) should employ enzyme immunoassay (EIA) rapid testing using the combination *C. difficile* common antigen and toxin A/B methodologies. *C. difficile* antigen negative, toxin A/B negative results provides a reliable, cost-effective, and easy to perform *C. difficile* screen with a 90% or better, negative predictive value.

Other issues to consider:

- Relapse CDI is very common, occurring 25% of the time, and is most likely to occur within 2 weeks of initial treatment. Relapse is a clinical diagnosis and does not require retesting. Consult an infectious disease physician when multiple relapses (>2) occur.
- According to the American Academy of Pediatrics (AAP), testing for CDI in children should only be performed in children with clinical diarrhea and the following age-related conditions:
 - Aged less than 12 months — test only those with Hirschsprung's disease or other severe motility disorders. Alternative etiologies should be sought even with a positive result.
 - Aged 13–36 months — seek alternative etiologies first as *C. difficile* results are difficult to interpret. A positive test indicates possible CDI.
 - Aged greater than 36 months — increase the pre-test likelihood by testing children with the following risk factors: recent antimicrobial therapy, use of proton pump inhibitors, underlying bowel disease, renal insufficiency, or impaired humoral immunity. A positive test indicates probable CDI.

Endorsed by:

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Recommendations to healthcare providers when testing patients for *Clostridium difficile* infections.

1. When testing for *Clostridium difficile* infection, **test only those patients** who have clinical diarrhea for at least 3 days and risk factors for infection.
2. **Do not test** for *C. difficile* infection if the patient has formed stool, a positive test for *C. difficile* infection in the past 30 days, or to determine if treatment was effective (*i.e.*, test of cure).

References:

1. American Society for Microbiology. A practical guidance document for the laboratory detection of toxigenic *Clostridium difficile*. <http://www.asm.org/images/pdf/Clinical/clostridiumdifficile9-21.pdf> [accessed August 12, 2013].
2. Association for Professionals in Infection Control and Epidemiology (APIC). Guide to the elimination of *Clostridium difficile* in healthcare settings. http://www.apic.org/Resource_/EliminationGuideForm/5de5d1c1-316a-4b5e-b9b4-c3f3beac1b53e/File/APIC-Cdiff-Elimination-Guide.pdf [accessed August 12, 2013].
3. APIC. Guide to preventing *Clostridium difficile* infections. http://www.apic.org/Resource_/EliminationGuideForm/59397fc6-3f90-43d1-9325-e8be75d86888/File/2013CDiffFinal.pdf [accessed August 12, 2013].
4. Cohen SH, Gerding DN, Johnson S, et al. Clinical practice guidelines for *Clostridium difficile* infection in adults: 2010 update by the society for healthcare epidemiology of America (SHEA) and the infectious diseases society of America (IDSA). *Infect Control Hosp Epidemiol* 2010;31(5):431–55.
5. Dubberke ER, Yan Y, Reske KA, et al. Development and validation of a *Clostridium difficile* infection risk prediction model. *Infect Control Hosp Epidemiol*. 2011;32:360–6.
6. Dubberke ER, Gerding DN, Classen D, et al. Strategies to prevent *Clostridium difficile* infections in acute care hospitals. *Infect Control Hosp Epidemiol*. 2008;29 Suppl 1:S81–92.
7. Eastwood K, Else P, Charlett A, Wilcox M. Comparison of nine commercially available *Clostridium difficile* toxin detection assays, a real-time PCR assay for *C. difficile* tcdB, and a glutamate dehydrogenase detection assay to cytotoxin testing and cytotoxigenic culture methods. *J Clin Microbiol*. 2009;47:3211–7.
8. Jarvis WR, Schlosser J, Jarvis AA, Chinn RY. National point prevalence of *Clostridium difficile* in US health care facility inpatients, 2008. *Am J Infect Control*. 2009;37:263–70.
9. McDonald L, Owings M, Jernigan DB. *Clostridium difficile* infection in patients discharged from US short-stay hospitals, 1996–2003. *Emerg Infect Dis*. 2006;12:409–15.
10. Peterson LR, Manson RU, Paule SM, et al. Detection of toxigenic *Clostridium difficile* in stool samples by real-time polymerase chain reaction for the diagnosis of *C. difficile*-associated diarrhea. *Clin Infect Dis*. 2007;45:1152–60.
11. Peterson LR, Robicsek A. Does my patient have *Clostridium difficile* infection? *Ann Intern Med*. 2009;151:176–9.
12. Schutze GE, Willoughby RE, Committee on Infectious Diseases, American Academy of Pediatrics. *Clostridium difficile* infection in infants and children. *Pediatrics*. 2013;131:190–200.

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