

Clostridium difficile

More Challenging than Ever

Shelley C. Moore, PhD, MSN, RN

KEYWORDS

• *Clostridium difficile* • *C difficile* infection • Fecal microbiota transplant

KEY POINTS

- Although *Clostridium difficile* infection (CDI) is not new and has been present in the hospital environment for more than 30 years, it has now reached epidemic proportions in the United States.
- CDI is classified according to severity: mild, mild-to-moderate, and severe and complicated, with different clinical manifestations and treatment guidelines associated with each classification.
- Evidence points to lack of provider compliance with pharmacologic guidelines.
- Although it is firmly established that antibiotic use is highly linked to CDI, there are other predictive factors of which nurses and physicians should be aware.
- Interdisciplinary collaboration is essential for comprehensive care of patients affected by CDI.

INTRODUCTION

Clostridium difficile is a gram-positive, anaerobic, cytotoxin-producing, spore-forming bacillus that currently rivals all other health care-associated infections, including methicillin-resistant *Staphylococcus aureus*. Although *C difficile* infection (CDI) is not new and has been present in the hospital environment for more than 30 years, it has now reached epidemic proportions¹ and is described by the Centers for Disease Control and Prevention (CDC) as an “urgent threat infection because of its potential to become highly resistant to antibiotics.”^{2(p1)} CDI is the top cause of health care-associated infectious diarrhea.

PATHOPHYSIOLOGY

Several bacteria live in the gastrointestinal tract (intestinal microbiota). They are important to biologic balance in the gut. These “healthy flora” have a protective role in preventing disease caused by the colonization of pathogens. Administration of

Disclosure: The author has nothing to disclose.

Middle Tennessee State University, School of Nursing, CKNB Box 81, Rm 230, 1301 East Main Street, Murfreesboro, TN 37132, USA

E-mail address: shelley.moore@mtsu.edu

Crit Care Nurs Clin N Am ■ (2017) ■–■
<https://doi.org/10.1016/j.cnc.2017.10.004>

0899-5885/17/© 2017 Elsevier Inc. All rights reserved.

ccnursing.theclinics.com

broad-spectrum antibiotics can eliminate these protective flora, which causes the gut to lose its resistance to the *C difficile* bacteria (*C difficile*). Loss of resistance allows *C difficile* spores, which have entered the body via a fecal-oral pathway, to germinate and multiply to high colonization levels and overtake the intestinal niche. The spores form vegetative cells that attach to the epithelial lining of the intestine. Toxins are released, causing infected diarrhea for the individual. The diarrhea occurs because toxins that enter the intestinal wall create increased cell permeability, secretions, and inflammation. *C difficile* spores are strong and durable and thrive in the anaerobic environment of the gut. They are also very hardy in surviving on many inanimate surfaces outside the body for 3 to 6 months. Patients with CDI excrete a large amount of infectious spores in each gram of feces. Feces can get on health care workers' (and patients') hands and other objects in the environment, such as bedside tables, side rails, door knobs, even computer equipment, and be passed from person to person or object to person. Because the spores can remain in a dormant state so long, everyone in the setting is at risk, including health care workers, and especially vulnerable patients who can serve as an unsuspecting host for these spores.^{1,3} The cycle continues.

DIAGNOSIS

CDI is diagnosed by laboratory and radiographic studies as well as clinical symptoms and history. Different facilities perform different tests on the patient's diarrhea stool; whatever specific methods a laboratory uses typically includes cultures, tests for toxins, and measures polymerase chain reactions (PCR). Formed stool should never be used as a specimen because it can generate false positives.³ Practice guidelines supported with strong evidence and published in the American Journal of Gastroenterology (2013) state that (1) nucleic acid amplification tests (NAAT) for *C difficile* toxin genes such as PCR are superior to toxins A + B E1A testing; and (2) glutamate dehydrogenase screening tests for *C difficile* can be used in 2- or 3-step screening algorithms with subsequent toxin A + B E1A testing, but the sensitivity of this is lower than NAATs. These guidelines concede that the best standard laboratory test has not yet been confirmed, but that *C difficile* culture alone is not adequate because not all strains emit toxins.^{4(pp479,480)}

Abdominal CT scan is a useful diagnostic tool. Changes in the colonic wall can be detected. Advantages of CT are as follows: the relative accuracy, noninvasiveness, quickness, and the ability to monitor serially. Repeat stool testing is not recommended. Laboratory methods continue to be studied, and it is hoped improved upon. Endoscopy is not recommended because of its cost and risks.⁵

CLINICAL MANIFESTATIONS

C difficile causes intestinal inflammation. CDI is defined as "acute onset of diarrhea with documented toxigenic *C difficile* or its toxin and no other documented cause for diarrhea."⁴ The clinical manifestations can range from asymptomatic carrier or mild self-resolving diarrhea to copious diarrhea with resulting pseudomembranous colitis, sepsis, and death.⁶ CDI is classified according to severity: mild, mild-to-moderate, and severe and complicated. Symptoms can manifest shortly after antibiotic therapy or not until months later. Mild CDI exhibits as diarrhea only. Mild-to-moderate CDI exhibits diarrhea plus fever, chills, dehydration, poor skin turgor, dry mucous membranes, nausea, and anorexia. There is foul-smelling and/or bloody diarrhea, abdominal distention, and abdominal pain ranging from minor cramping to pronounced and diffuse pain. With severe and complicated CDI, pseudomembranous colitis (severe acute inflammation of the bowel mucosa with the formation of mucinous exudate patches) may be

Download English Version:

<https://daneshyari.com/en/article/8695189>

Download Persian Version:

<https://daneshyari.com/article/8695189>

[Daneshyari.com](https://daneshyari.com)