



Track: Hospital Medicine		
Body System: Gastrointestinal		
Session Topic: Clostridium Difficile (Pseudomembranous Colitis)		
Educational Format		Faculty Expertise Required
REQUIRED	Interactive Lecture	Expertise in the field of study. Experience teaching in the field of study is desired. Preferred experience with audience response systems (ARS). Utilizing polling questions and engaging the learners in Q&A during the final 15 minutes of the session are required.
OPTIONAL	Problem-Based Learning (PBL)	Expertise teaching highly interactive, small group learning environments. Case-based, with experience developing and teaching case scenarios for simulation labs preferred. Other workshop-oriented designs may be accommodated. A typical PBL room is set for 50-100 participants, with 7-8 each per round table. <u>Please describe your interest and plan for teaching a PBL on your proposal form.</u>
Professional Practice Gap	Learning Objective(s) that will close the gap and meet the need	Outcome Being Measured
<ul style="list-style-type: none"> • Knowledge and practice gaps regarding the development of antibiotic prescribing improvement programs to help decrease the unnecessary prescribing of antibiotics. • Knowledge and practice gaps regarding the serologic and radiologic diagnostic criteria for clostridium difficile infection. • Knowledge and practice gaps regarding the treatment approaches for clostridium difficile based on severity. • Knowledge and practice gaps regarding the usage of supplements and medications associated with the development and prevention of clostridium difficile infections. 	<ol style="list-style-type: none"> 1. Discuss implementation measures for the clostridium difficile prevention. 2. Review the serologic and radiologic diagnostic criteria for clostridium difficile infection. 3. Identify treatment approaches for clostridium difficile based on severity. 4. Review the usage of supplements and medications associated with the development and prevention of clostridium difficile infections. 	Learners will submit written commitment to change statements on the session evaluation, indicating how they plan to implement presented practice recommendations.
ACGME Core Competencies Addressed (select all that apply)		
X	Medical Knowledge	Patient Care



X	Interpersonal and Communication Skills		Practice-Based Learning and Improvement
	Professionalism	X	Systems-Based Practice
Faculty Instructional Goals			
<p>*NOTE TO FACULTY - This topic is part of the Hospital Medicine Track. Associated topics include: Atrial Fibrillation; Anticoagulation; Skin Infections; & Sepsis.</p> <p>Expectation:</p> <ol style="list-style-type: none"> 1. Include an appropriate focus on inpatient care (up to 100%) 2. Collaborate with faculty from associated topics (above) 			
<p>Faculty play a vital role in assisting the AAFP to achieve its mission by providing high-quality, innovative education for physicians, residents and medical students that will encompass the art, science, evidence and socio-economics of family medicine and to support the pursuit of lifelong learning. By achieving the instructional goals provided, faculty will facilitate the application of new knowledge and skills gained by learners to practice, so that they may optimize care provided to their patients.</p> <ul style="list-style-type: none"> • Provide up to 3 evidence-based recommended practice changes that can be immediately implemented, at the conclusion of the session; including SORT taxonomy & reference citations • Facilitate learner engagement during the session • Address related practice barriers to foster optimal patient management • Provide recommended journal resources and tools, during the session, from the American Family Physician (AFP), Family Practice Management (FPM), and Familydoctor.org patient resources; those listed in the <u>References</u> section below are a good place to start <ul style="list-style-type: none"> ○ Visit http://www.aafp.org/journals for additional resources ○ Visit http://familydoctor.org for patient education and resources • Provide recommendations to implement measures for the clostridium difficile prevention. • Provide recommendations regarding the serologic and radiologic diagnostic criteria for clostridium difficile infection. • Provide recommendations for treatment approaches for clostridium difficile based on severity. • Provide recommendations regarding the usage of supplements and medications associated with the development and prevention of clostridium difficile infections. 			

Needs Assessment

According to a recent Centers for Disease Control and Prevention (CDC) study, *Clostridium difficile* (*C. difficile*) caused almost half a million infections among patients in the United States in a single year.¹ Approximately 29,000 patients died within 30 days of the initial diagnosis of *C. difficile*. Of those, about 15,000 deaths were estimated to be directly attributable to *C. difficile* infections, making *C. difficile* a very important cause of infectious disease death in the United States. More than 80 percent of the deaths associated with *C. difficile* occurred among Americans aged 65 years or older. *C. difficile* causes an inflammation of the colon and deadly diarrhea.



Patients who take antibiotics are most at risk for developing *C. difficile* infections. More than half of all hospitalized patients will get an antibiotic at some point during their hospital stay, but studies have shown that 30 percent to 50 percent of antibiotics prescribed in hospitals are unnecessary or incorrect. When a person takes broad-spectrum antibiotics, beneficial bacteria that are normally present in the human gut and protect against infection can be suppressed for several weeks to months. During this time, patients can get sick from *C. difficile* picked up from contaminated surfaces or spread person to person. Unnecessary antibiotic use and poor infection control may increase the spread of *C. difficile* within a facility and from facility to facility when infected patients transfer, such as from a hospital to a nursing home.

Older Americans are especially vulnerable to this deadly diarrheal infection. The CDC study released today found that 1 out of every 3 *C. difficile* infections occurs in patients 65 years or older and 2 out of every 3 healthcare-associated *C. difficile* infections occur in patients 65 years or older. More than 100,000 *C. difficile* infections develop among residents of U.S. nursing homes each year. Women and Caucasian people are at increased risk of *C. difficile* infection.

Approximately two-thirds of the *C. difficile* infections were found to be associated with an inpatient stay in a health care facility, but only 24 percent of the total cases occurred among patients while they were hospitalized. Almost as many cases occurred in nursing homes as in hospitals, and the remainder of the healthcare-associated cases occurred among patients who were recently discharged from a health care facility.

Practice Gaps

Recent studies indicate that 41% of cases of *C. difficile* infection were community acquired.² A study from Consumer Reports indicates that nearly one third of more than 3,100 hospitals received low ratings for *C. diff* infection control.³ Reducing transmission of *Clostridium difficile* and multidrug-resistant organisms in the hospital setting begins with hand hygiene and contact precautions.⁴ Additionally, hospitals should develop antibiotic prescribing improvement programs to help decrease the unnecessary prescribing of antibiotics.^{1,5}

Physicians may improve their care of patients with *clostridium difficile* infection by engaging in continuing medical education that provides practical integration of current evidence-based guidelines and recommendations into their standards of care, including, but not limited to the following:^{2,6,7}

- Testing for *Clostridium difficile* infection should be performed only once during a single episode of illness because further testing does not improve diagnostic accuracy and may yield false-positive results.
- Vancomycin is the drug of choice for patients with severe *C. difficile* infection.
- Tapering and the pulsed-dose method of oral vancomycin therapy for second recurrences of *C. difficile* infection are effective.
- Antimicrobial stewardship programs may reduce the incidence of *C. difficile* infection.
- Probiotics prevent antibiotic-associated diarrhea, and may reduce *C. difficile*-associated diarrhea in children and adults younger than 65 years.
- Test for *Clostridium difficile* toxin in patients with community-acquired or traveler's diarrhea who have had antibiotics or chemotherapy in recent weeks.



- Test for *C. difficile* toxin in patients with nosocomial diarrhea beginning three or more days after admission to the hospital.
- If necessary, rapid diagnosis of *C. difficile*-associated diarrhea can be made by flexible sigmoidoscopy or abdominal computed tomography.
- In patients with confirmed *C. difficile* infection, the offending antibiotic should be withdrawn.
- The recommended antibiotic is metronidazole (Flagyl) in a dosage of 250 mg orally four times per day or 500 mg orally three times per day for 10 to 14 days.
- In patients with acute diarrhea, stool cultures should be reserved for grossly bloody stool, severe dehydration, signs of inflammatory disease, symptoms lasting more than three to seven days, immunosuppression, and suspected nosocomial infections.
- Testing for *Clostridium difficile* toxins A and B should be performed in patients who develop unexplained diarrhea after three days of hospitalization.
- Routine testing for ova and parasites in acute diarrhea is not necessary in developed countries, unless the patient is in a high-risk group (i.e., diarrhea lasting more than seven days, especially if associated with infants in day care or travel to mountainous regions; diarrhea in patients with AIDS or men who have sex with men; community waterborne outbreaks; or bloody diarrhea with few fecal leukocytes).
- The first step to treating acute diarrhea is rehydration, preferably oral rehydration.
- Combination loperamide/simethicone may provide faster and more complete relief of acute nonspecific diarrhea and gas-related discomfort than either medication alone.
- Antibiotics (usually a quinolone) reduce the duration and severity of traveler's diarrhea.

Physicians should also be kept up to date on new treatment therapies, changes to therapies, or warnings associated with existing therapies. Provide recommendations regarding new FDA approved medications for the treatment of *clostridium difficile* infection; including safety, efficacy, tolerance, and cost considerations relative to currently available options. Examples include:⁸

- Zinplava (bezlotoxumab); Merck; For the treatment of recurrent *Clostridium difficile* infection in patients receiving antibacterial treatment, Approved October 2016
- Dificid (fidaxomicin); Optimer Pharmaceuticals; For the treatment of *Clostridium difficile*-associated diarrhea, Approved May 2011

These recommendations are provided only as assistance for physicians making clinical decisions regarding the care of their patients. As such, they cannot substitute for the individual judgment brought to each clinical situation by the patient's family physician. As with all clinical reference resources, they reflect the best understanding of the science of medicine at the time of publication, but they should be used with the clear understanding that continued research may result in new knowledge and recommendations. These recommendations are only one element in the complex process of improving the health of America. To be effective, the recommendations must be implemented. As such, physicians require continuing medical education to assist them with making decisions about specific clinical considerations.

Resources: Evidence-Based Practice Recommendations/Guidelines/Performance Measures

- Common questions about *Clostridium difficile* infection²



- Acute diarrhea⁶
- Clostridium difficile–Associated Diarrhea⁷
- Adding health education specialists to your practice⁹
- Envisioning new roles for medical assistants: strategies from patient-centered medical homes¹⁰
- The benefits of using care coordinators in primary care: a case study¹¹
- Engaging Patients in Collaborative Care Plans¹²
- The Use of Symptom Diaries in Outpatient Care¹³
- Health Coaching: Teaching Patients to Fish¹⁴
- Encouraging patients to change unhealthy behaviors with motivational interviewing¹⁵
- Familydoctor.org. Clostridium difficile | Overview (patient education)¹⁶

References

1. Centers for Disease Control and Prevention. Nearly half a million Americans suffered from Clostridium difficile infections in a single year. *CDC Newsroom* 2017;
2. Winslow BT, Onysko M, Thompson KA, Caldwell K, Ehlers GH. Common questions about Clostridium difficile infection. *American family physician*. 2014;89(6):437-442.
3. Interlandi J. Consumer Reports Names Hospitals With High C. Diff Infection Rates. *Consumer Reports*. 2016.
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5. Davey P, Marwick CA, Scott CL, et al. Interventions to improve antibiotic prescribing practices for hospital inpatients. *Cochrane Database Syst Rev*. 2017;2:CD003543.
6. Barr W, Smith A. Acute diarrhea. *American family physician*. 2014;89(3):180-189.
7. Schroeder MS. Clostridium difficile--associated diarrhea. *American family physician*. 2005;71(5):921-928.
8. CenterWatch. FDA Approved Drugs by Medical Condition. 2017;
9. Chambliss ML, Lineberry S, Evans WM, Bibeau DL. Adding health education specialists to your practice. *Family practice management*. 2014;21(2):10-15.
10. Naughton D, Adelman AM, Bricker P, Miller-Day M, Gabbay R. Envisioning new roles for medical assistants: strategies from patient-centered medical homes. *Family practice management*. 2013;20(2):7-12.
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12. Mauksch L, Safford B. Engaging Patients in Collaborative Care Plans. *Family practice management*. 2013;20(3):35-39.
13. Hodge B. The Use of Symptom Diaries in Outpatient Care. *Family practice management*. 2013;20(3):24-28.
14. Ghorob A. Health Coaching: Teaching Patients to Fish. *Family practice management*. 2013;20(3):40-42.



2018 AAFP FMX Needs Assessment

15. Stewart EE, Fox CH. Encouraging patients to change unhealthy behaviors with motivational interviewing. *Family practice management*. 2011;18(3):21-25.
16. Familydoctor.org. Clostridium difficile | Overview. 2017;