**Clostridium difficile Infection (CDI): The Strain on Health Resources**

**EDUCATIONAL OBJECTIVES**

Upon completion of this activity, participants should be better able to:

1. Estimate the rates of initial and recurrent *Clostridium difficile* infection (CDI);
2. Stratify patients based on risk factors for initial or recurrent CDI;
3. List proposed criteria for severe CDI;
4. Recommend a treatment regimen for patients with CDI; and
5. Describe at least one stewardship measure to reduce CDI in different practice settings.

**Post-Test/Rationale**

1. What percentage of antibiotic-associated nosocomial diarrhea is caused by *Clostridium difficile* (*C. difficile*):
   
   - A. 15%
   - B. 25%
   - C. 35%***
   - D. 45%

   **Correct Answer: C**

   The prevalence of *Clostridium difficile* infection (CDI) is increasing. CDI is now the most common nosocomial infection linked to health care usage, causing up to one-third of all antibiotic use-related diarrhea.

2. Which one of the following statements is NOT true regarding the risk of acquiring *Clostridium difficile* infection (CDI):

   - A. Community dwellers do not get CDI***
   - B. More than 80% of CDIs are acquired in the hospital
   - C. CDI can damage the colon
   - D. Virulent strains of *C. difficile* are resistant to therapy or treatments cannot completely eradicate the infection
Correct Answer: A
In the United States (U.S.), up to 87% of CDI is acquired in the hospital settings and approximately between one-fifth and one-third of all CDI cases are community acquired.

3. Regarding the risk for CDI, which of the following is most accurate:
   A. Risks are highest prior to antibiotic therapy
   B. Risks are highest during antibiotic therapy
   C. Risks increase up to 10 days after antibiotic therapy
   D. Risks increase during and up to 2 months after antibiotic therapy***

Correct Answer: D
The risk of CDI increases severalfold during antibiotic therapy and into the subsequent months after a course of antibiotic therapy. The increased risk for CDI is 8 to 10 times greater during and up to a month after antibiotic therapy. CDI risk remains elevated, a 3 times greater risk, during the subsequent 2 months following antibiotic therapy.

4. Regardless of therapeutic management, the rate of CDI recurrence is
   A. 5%
   B. 10%
   C. 15%
   D. 25%***

Correct Answer: D
After resolution of the initial episode of CDI, and regardless of the therapeutic agents used, there is a 25% recurrence rate.
5. Clinical and laboratory findings in severe and complicated CDI include all of the following, EXCEPT:

   A. White blood cell (WBC) count greater than 15,000 cells/mm³
   B. Serum creatinine 1 times normal baseline***
   C. Extremely low blood pressure
   D. Septic shock

Correct Answer: B

The laboratory finding not associated with severe and complicated CDI is normal creatinine or a one-time greater than normal baseline creatinine.

6. Which one of the following is a goal of CDI therapy:

   A. Resolve diarrhea
   B. Restore normal colonic flora
   C. Normalize bowel function
   D. All of the above***

Correct Answer: D

The goal of therapy for a patient with CDI is achieving the resolution of symptoms of diarrhea and a normalization of bowel function, with restoration of normal colonic flora.

7. A patient is admitted to the hospital with his third recurrence of CDI within the last 2 months. What treatment course for *Clostridium difficile* is recommended according to the current 2010 Infectious Diseases Society of America (IDSA)/Society for Healthcare Epidemiology of America (SHEA) guidelines and the 2013 American College of Gastroenterology (ACG) guidelines to increase cure rate?
A. Treat with a course of oral vancomycin, 125 mg 4 times/day, and metronidazole, 500 mg intravenous (IV) every 8 hours, for 14 days
B. Treat with vancomycin 500 mg IV every 8 hours for 14 days
C. Treat with oral metronidazole 500 mg 4 times per day for 2 months
D. Pulse and taper with oral vancomycin 125 mg***

Correct Answer: D

2010 Infectious Diseases Society of America (IDSA)/Society for Healthcare Epidemiology of America (SHEA) guidelines and the 2013 American College of Gastroenterology (ACG) guidelines Information, which is located in Table 1 in the manuscript, under Multiple Recurrences, as follows: vancomycin, $4 \times 125$ (to 250) mg orally (10 days) followed by pulse schedule for at least 3 weeks (125 to 500 mg orally every 2 to 3 days).

8. A CDI cure rate that may be achieved after fecal transplant is
   A. 40%
   B. 55%
   C. 79%
   D. 93%***

Correct Answer: D

A high CDI cure rate, as high as 93%, has been reported after fecal transplantation.

9. Proper handwashing techniques should last at least
   A. 60 seconds***
   B. 90 seconds
   C. 120 seconds
   D. 150 seconds
Correct Answer: A

The recommended techniques for hand hygiene are as follows: for handwashing, hands should be wet before the application of soap, then hands are rubbed together for 15 seconds before rinsing and drying with disposable towel. The towel is then used to turn off the faucet. The duration of the entire process should last 60 seconds.

10. Which one of the following is a core strategy for the antibiotic stewardship program:
   A. Prescriber education
   B. Development of care pathways
   C. Conduct prospective audit***
   D. Converting parenteral to oral therapy

Correct Answer: C

The Infectious Diseases Society of American and Society for Healthcare Epidemiology of America (IDSA/SHEA) guidelines provides several evidenced-based strategies. These include the following 2 core strategies: the first of which is to conduct a prospective audit, with intervention and provide feedback; the second core strategy is to implement a formulary restriction and preauthorization program.