

The background is a solid red color with a pattern of faint, stylized leaf silhouettes in a slightly darker shade of red, scattered across the surface.

# *Clostridium difficile*: A growing problem

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# Introduction

- The word “difficile” is Latin for the word difficult.
- *Clostridium difficile*, affectionately known as “C. diff”, is an anaerobic bacteria which can inhabit the intestines of humans.
- A *C. difficile* infection refers to an overabundance or infectious amount of bacteria which causes an infection.
- *C. difficile* infections are commonly caused by antibiotic use.
- *C. difficile* infections cause pseudomembranous colitis, profuse diarrhea, and dehydration.
- Preventing the spread of infection is the most important way to protect patients from developing *C. difficile* infections.

# Risk Factors

- *C. difficile* infections most commonly occur in patients who have the following risk factors:
  - Antibiotic and chemotherapy use
  - Advanced age
  - Hospitalization/nursing home/assisted living
  - Healthcare workers
- High risk antibiotic groups:
  - Fluoroquinolones: ciprofloxacin, levofloxacin, moxifloxacin
  - Clindamycin
  - Cephalosporins: ceftriaxone, cefepime, ceftazidime, etc.
  - Carbapenems: ertapenem, imipenem/cilastatin, meropenem

# QUESTION

Your patient, Min E. Mouse, is admitted to Med/Surg for a *C. difficile* infection. You alcohol your hands before entering her room, and walk inside. Min asks you to pull up her blankets because she is cold. You hear the alarm for the lady next door and are in a hurry so you grab alcohol to clean your hands to go to the next room. What is wrong with this scenario?

# ANSWER

*C. difficile* is not killed by alcohol, therefore you must wash your hands using soap and water after helping a patient to kill the *C. difficile* spores and bacteria.

## *C. difficile* Infection Control

- Handwashing MUST be done with soap and water.
- Patients and all things that come in contact with them must be considered to be infectious.
- Contact Precautions: Gown and gloves
- Isolation
- Sanitizing of medical equipment
- Judicious use of antibiotics

# QUESTION

What is the difference between *C. difficile* colonization and infection?

# ANSWER

Colonization is the non-infectious growth or presence of bacteria in the flora of a patient. In this case, the colonization of *C. difficile* will be in the colon. Infection is the infectious growth of bacteria in the body causing illness. Therefore, a person may be colonized with *C. difficile* but will not have an active infection. Usually something triggers an active infection in a patient colonized with *C. difficile*.

# Treatment Recommendations

- First things first: Discontinue offending antibiotic agents if possible.
- Mild-to-Moderate infections:
  - Metronidazole 500 mg po every 8 hours (First line)
    - Caveat: May only use for the first 2 occurrences of *C. difficile* infections due to increased risk for neurotoxicity
    - Disulfuram-like reaction
  - Vancomycin 125 mg po every 6 hours (Second line)
  - Treatment duration: 10-14 days

# Treatment Recommendations

- Severe Infections:
  - Vancomycin 500 mg po every 6 hours (First-line)
  - +/- Metronidazole 500 mg IV every 8 hours
  - +/- Vancomycin retention enema 500 mg/ 100 mL Normal saline every 6 hours
  - Initial or first recurrence treatment duration: 10-14 days
  - Second or more recurrence treatment duration: Vancomycin taper or pulsed regimen
    - Vancomycin taper/ pulse regimen: 125 mg po 4x daily x 10-14 days, then 2x daily x 7 days, then daily x 7 days, then every other day x 2-8 weeks.
  - Many hospitals are cutting down costs by using vancomycin oral solution, as the capsules are very expensive.
- NOTE: *C. difficile* infections are the ONLY indication for oral Vancomycin

# Other Therapies

- Rifaximin 400 mg po bid x 14 days
  - Efficacious but may increase recurrence
- Fidaxomicin 200 mg po bid x 10 days
  - Expensive new drug
  - May be more effective in patients on concurrent antibiotics
- Nitazoxanide 500 mg po bid x 10 days
  - Not commonly used
- Cholestyramine or Colestipol
  - How on earth does this work?
  - Interaction with vancomycin

# Other Therapies

- Colectomy
  - Used as a last-line treatment
  - Usually only necessary if colon is severely damaged
- IV immunoglobulin
  - Antibodies to fight infection
- Fecal Bacteriotherapy
  - Stool Transplant
  - Very promising results
  - Not routine, but evidence is growing to support use
- Unlike other antibiotic-associated diarrhea, probiotics are not recommended to prevent *C. difficile* diarrhea.

# References

- Cohen SH, Gerding DN, Johnson S, Kelly CP, 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). *Infection Control and Hospital Epidemiology*. 31:5;431-455.  
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Questions???