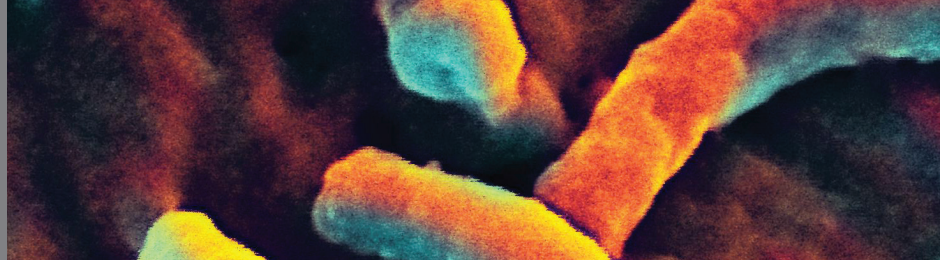
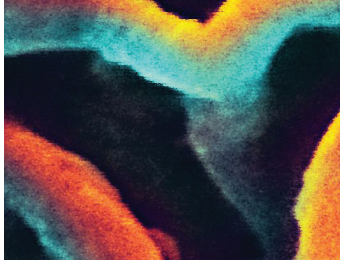




PATHOGEN SAFETY DATA GUIDE TRAINING MODULE CASE STUDY 4

# CLOSTRIDIUM DIFFICILE IN A HEALTHCARE WORKER

**TARGET AUDIENCE: Healthcare workers**

## How to use this case study

This case study is designed to be used as supplementary or as an alternative to Activities 3 and 4 in the NIEHS WTP's Pathogen Safety Data Guide Training Module.

Participants should work in small groups (4 – 8 people). Each group should select a recorder and reporter who will report back to entire class. Each small group should read through the case study. If time allows, the group should answer the questions in Activities 3 and 4 on the PSD Training Module Worksheet for the pathogen Clostridium difficile (C. diff). Then the group should work on the questions following the case study. If time is short, the questions may be divided among the group members or one or both activities may be omitted.

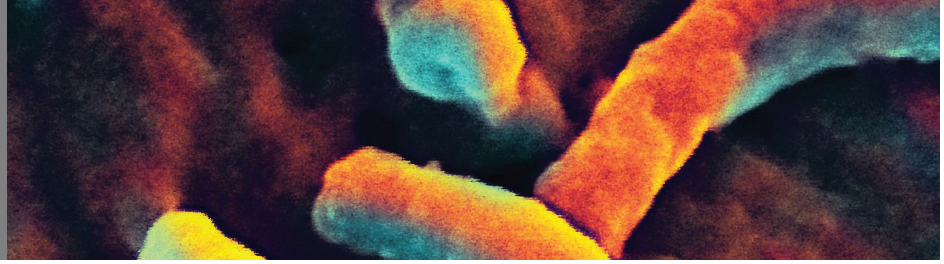
## Case Study

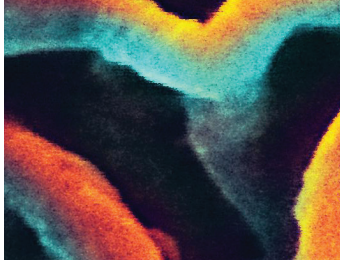
A 24-year-old nurse was put on antibiotics during dental care and subsequently developed severe diarrhea that did not respond to initial treatment. This caused her to be out of work for two weeks. She experienced "Occupational Clostridium difficile". "With C. diff at epidemic levels, workers may acquire the bug from patients if they take antibiotics that wipe out the commensal bacteria in the gut and open a path for the pathogen."[1]

"I think it would be a good idea for employee health to inform personnel about this risk if they are prescribed antibiotics," says Curtis Donskey, MD, an infectious disease physician at Louis Stokes Cleveland VA Medical Center. "I do that routinely if I prescribe antibiotics to someone working in a healthcare setting."[1]

Because there is no active surveillance system for tracking occupational infections, it is likely that more cases are occurring than have been reported in the medical literature. "When I give presentations and comment on the risk to healthcare personnel taking antibiotics, it is common for a physician or nurse to come up afterwards and say that they or one of their coworkers got a C. diff infection while they were working," he says.[1]

Researchers have reported on a case where a healthcare worker was infected when a patient developed symptomatic C. diff and vancomycin resistant Enterococcus (VRE) colonization after





taking clindamycin for another condition. Four additional reports documented C. diff infection in healthcare workers who were in good health and who were on antibiotic treatment or within two weeks after completing it. These cases demonstrated that workers may be at risk of C. diff infection after receiving antibiotics. Healthcare workers with immune disorders are at even greater risk of infection.

C. diff infections can cause lost work time. In our case study the nurse was initially furloughed for four days after taking clindamycin related to dental care. “Her C. diff infection did not respond to initial treatment with metronidazole, but she fully recovered when switched to vancomycin.”[1]

“C. diff has become one of the most prevalent and deadly healthcare associated infections in the country, attributable for some 15,000 patient deaths annually, according to the Centers for Disease Control and Prevention (CDC). A confluence of events has led to the current C. diff epidemic, including the emergence of the highly virulent and toxigenic NAP1 strain in 2000, the misuse and overuse of antibiotics, and the difficulty of removing C. diff spores from contaminated surfaces and healthcare worker hands.”[1]

Unfortunately, the type of C. diff circulating in the U.S. today produces such a powerful toxin that it can cause a truly deadly diarrhea,” says Michael Bell, MD, a medical epidemiologist in the CDC division of healthcare quality promotion. “[It’s an] intense illness that can include damage to the bowels so painful and severe that part of the colon needs to be surgically removed, a condition called megacolon.”[1]

Proceed to answering the questions in Activities 3 and 4 on the PSD Worksheet if time allows. Then answer the following questions?

***1. What are the two major reservoirs of infection for C. diff in healthcare settings?***

a) _____

b) _____

***2. How long can the spores last in the environment?***

_____

***3. Given a potential for exposure to C. diff by healthcare workers what type of precautions should be implemented? Check all that apply:***

○ Contact ○ Droplet ○ Airborne ○ Aerosol transmissible

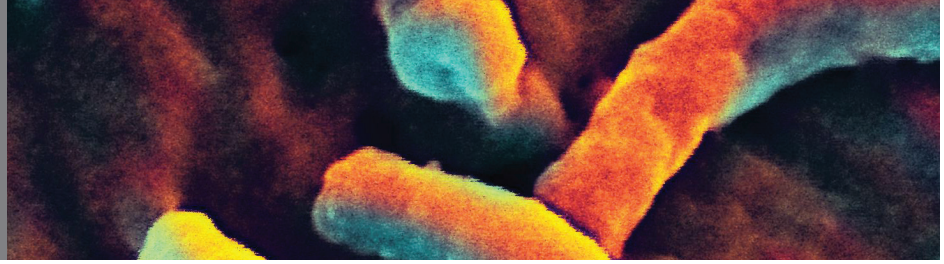
Explain

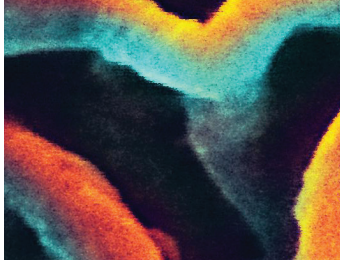
_____

_____

***4. Why are most common hospital disinfectants ineffective for C. diff?***

_____





*5. What disinfectants are effective?*

_____

*6. What are the potential occupational health concerns for exposures to these disinfectants?*

_____

_____

_____

*7. Based on the potential exposure routes identified in 2 above, what type of protective controls measures should be implemented?:*

Engineering controls_____

Administrative controls_____

Personal protective equipment_____

Respiratory protection _____

*8. What steps should be taken to prepare for this type of event? Check all that apply:*

○ Written procedures

○ Selection and purchase of PPE and respiratory equipment

○ Worker training

○ Cleaning and disinfection procedures

○ Signage and information

○ Other? _____

*9. Why are healthcare workers who are on antibiotics or recently completed use of antibiotics at increased risk of infection?*

_____

_____

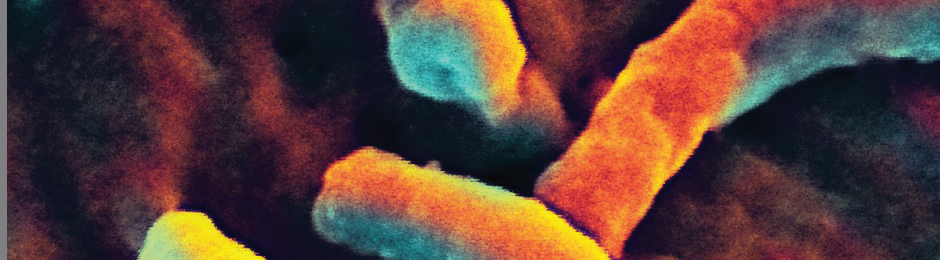
*10. Based on what you learned in this case study, are there potential improvements that should be made at your place of employment? Yes ○ No ○ If yes, please explain and list any potential action steps:*

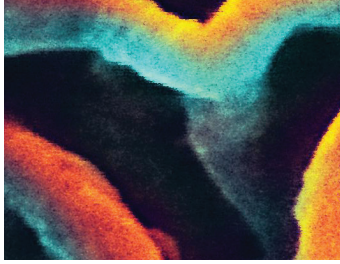
_____

_____

_____

_____





## References:


1) Healthcare workers on antibiotics at risk of Clostridium difficile, Employee health should inform workers of infection risk, AHC Media, 11/9/15

2) Clostridium difficile Infection in a Health Care Worker, Clinical Infectious Diseases 2009; 48:1329, 2009 by the Infectious Diseases Society of America.

3) Laboratory-Acquired Clostridium difficile Polymerase Chain Reaction Ribotype 027: A New Risk for Laboratory Workers? Clinical Infectious Diseases 2008:47 (1 December) by the Infectious Diseases Society of America. • Correspondence


## Supplemental Reading Material:


1) Guide to Preventing Clostridium difficile Infections, APIC Implementation Guide, Copyright © 2013 by the Association for Professionals in Infection Control and Epidemiology, Inc. (APIC)

2) Clostridium difficile Infection among Health Care Workers Receiving Antibiotic Therapy, Clinical Infectious Diseases 2005 by the Infectious Diseases Society of America. 40 (1 May) • Correspondence

3) Siegel JD, Rhinehart E, Jackson M, Chiarello L, and the Healthcare Infection Control Practices Advisory Committee, 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings *http://www.cdc.gov/hicpac/pdf/Isolation/Isolation2007.pdf*

4) Burden of Clostridium difficile Infection in the United States, N Engl J Med 015;372:825-34. Fernanda C. Lessa, M.D., M.P.H., et al.