

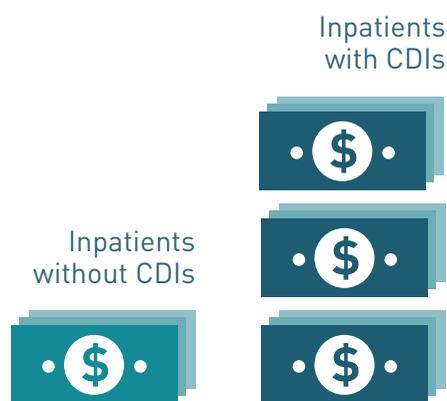
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Clostridium difficile: The infection that draws its name from “difficult”

July 2015

Clostridium difficile-associated diseases (CDIs) are among the most challenging healthcare-associated infections (HAIs). Research and development work is ongoing to find ways to reduce the occurrence. Meanwhile, managing and reducing CDIs requires a multi-pronged effort that involves professional collaboration for infection identification and control, environmental efforts, adherence monitoring, data analysis, and antibiotic stewardship.

TRENDS



On every measure, the hospital stays of patients with CDIs cost **nearly three times more** than the average.²

Growing Financial and Health Impact of High CDI Rates.

Clostridium difficile [*C. diff*] is a species of gram-positive bacteria that causes diarrhea and other related conditions, including pseudomembranous colitis and toxic megacolon. CDIs can lead to sepsis and even death.¹ On every measure, patients with CDIs are sicker than average inpatients, and their cases more complex, leading to hospital stays that cost nearly three times more than the costs the average patient incurs.² In addition to rising costs for the patient, each year there are at least \$1 billion in extra health care costs due to CDIs.³ As of July 2013, a new government reporting requirement went into effect for CDIs¹ and subsequently, the Centers for Disease Control (CDC) categorized *C. diff* as a high consequence threat of urgent concern.⁴

CDI Rates Remain High.

An October 2012 report by the Federal Steering Committee for the Prevention of Healthcare-Associated Infections suggests that although there have been notable improvements in five of the six HAIs targeted for reduction in 2009, infection rates for *C. diff* have not dropped.⁵ In fact, hospital stays resulting from CDIs have tripled in the past 10 years.³ Furthermore, there are at least 250,000 infections and 14,000 reported deaths relating to CDI.⁴ While CDIs can impact anyone, death rates are highest in patients aged 65 or older. However, CDIs strike across the demographic spectrum. Nearly half of CDIs occur in patients under age 65.³



The CDC estimates that **up to 50 percent** of antibiotic use is inappropriate.⁶

Increasing Risk of CDI Due to Antibiotic Exposure.

CDIs are almost always linked to medical care and antibiotic exposure is the single most important risk factor.⁶ The CDC estimates that up to 50 percent of antibiotic use is inappropriate.⁶ Antibiotic misuse increases a patient's chance of becoming colonized or infected with a resistant organism. Misuse of antibiotics also increases the prevalence of antibiotic-resistant organisms in hospitals, which leads to increased mortality.⁶ As a result, prudent antibiotic use is now joining traditional infection prevention measures and environmental cleaning standards as an essential tactic in the fight against CDIs.

INSIGHTS

The resilience of *C. diff* bacteria is hard to overestimate.

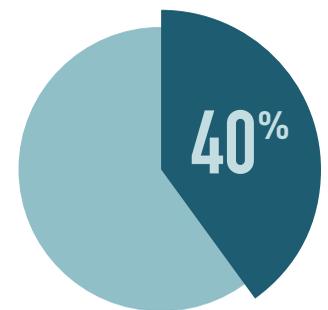
C. diff bacterial spores are passed in feces. Infected patients, and those who care for them, can transmit the spores directly from person-to-person and indirectly via the surfaces, objects and foods they touch. Because *C. diff* spores can live for up to five months on a dry, inanimate surface, environmental transmission risks can exist long after an infected individual has left the environment.⁷ This is one of the factors that make CDI monitoring, data analysis, interpretation and strategy formulation so challenging.

Improved hand hygiene compliance can play a key role in reducing CDIs.

According to the **Healthcare Infection Control Practices Advisory Committee (HICPAC) Guideline for Disinfection and Sterilization in Healthcare Facilities** the primary means of transmission of CDIs between patients is person-to-person.⁸ Unfortunately, studies show staff adherence to HAI prevention recommendations is suboptimal. For example, the Guideline for Hand Hygiene in Health Care Settings cites extensive evidence suggesting adherence rates to recommended hand hygiene procedures among healthcare workers is fair, averaging 40 percent.⁹



C. diff spores can live for **up to five months** on a dry, inanimate surface.⁷



Healthcare workers' average rate of adherence to recommended hand hygiene procedures is **40%**.⁹

IMPLICATIONS

CDI identification and isolation are necessary precautions.

CDIs are extremely prevalent. In fact, anyone with diarrhea, and who is on antibiotics, or anyone who has taken antibiotics within the past several months and has been in a health care setting, may have a CDI.³ How can healthcare professionals or patients be sure? Laboratory testing of a stool sample can detect the presence of the bacteria. Patients with, or suspected of having, *C. diff* should be isolated immediately and placed on contact precautions to prevent transmission to others as recommended in the CDC's 2007 Guideline for Isolation Precautions.¹⁰

Staff compliance with hygiene protocols must be monitored and maintained.

Reliance on the right hygiene supplies and protocols is critical to ensuring patient safety in any CDI prevention strategy. Good hand hygiene strategies to prevent CDIs involve washing hands with soap and water before and after treating each patient. Alcohol-based hand sanitizers do not work against *C. diff*. In addition, healthcare workers should always wear disposable gloves and gowns when treating patients with *C. diff*. Further, the surfaces in any space where a *C. diff* patient has been treated should be carefully cleaned using an EPA-approved spore-killing disinfectant in accordance with protocols.³

Antibiotic stewardship can help quantify the impact of best practices.

An antibiotic stewardship program can provide a systematic multidisciplinary approach to developing coordinated interventions. Elements of such a program can include: collecting and interpreting data; promoting appropriate use and selection of antibiotics; instituting control precautions; ensuring compliance; educating staff, patients and visitors; improving patient outcomes in cost-efficient ways; reducing antibiotic resistance; and decreasing the spread of infections.



Good hand hygiene strategies to prevent CDIs involve washing hands with soap and water before and after treating each patient.



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Resources

- **The CDC's Get Smart: Know When Antibiotics Work Website:** Offers information for health care practitioners and consumers about antibiotic use, resistance, and symptom relief when antibiotics are not needed.
<http://www.cdc.gov/getsmart/>
- **The CDC's GetSmart for Healthcare Website:** Includes information for healthcare organizations on the benefits of antibiotic stewardship, implementation tools, hospital programs, CE Training resources and more.
<http://www.cdc.gov/getsmart/healthcare/>
- **The CDC's Antibiotic/Antimicrobial Resistance Website:** Presents information for healthcare professionals about antimicrobial resistance, diseases, pathogens, surveillance systems, laboratory testing and training resources, references, and other resources.
<http://www.cdc.gov/drugresistance/index.html>
- **AHRQ and CDC Toolkit for Reduction of Clostridium difficile Through Antimicrobial Stewardship:** Offers information for healthcare professionals wishing to establish an antimicrobial stewardship program.
<http://www.ahrq.gov/professionals/quality-patient-safety/patient-safety-resources/cdifftoolkit/cdifftoolkit.pdf>

Footnotes:

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3. Centers for Disease Control and Prevention. Making Health Care Safer: stopping *C. difficile* infections. *Vital signs*. March 2012. Accessed August 20, 2013
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5. U.S. Department of Health and Human Services. The Federal Steering Committee for the Prevention of Health Care-Associated Infections. National Targets and Metrics: Monitoring Progress Toward Action Plan Goals: A Mid-term Assessment. Web page. Accessed September 7, 2013.
6. Centers for Disease Control and Prevention. National Center for Emerging and Zoonotic Infectious Diseases, Division of Healthcare Quality Promotion. Get Smart For Healthcare: Know When Antibiotics Work Slides: 5. Accessed September 6, 2013.
7. Kramer A, Shewbke I, Kampf G. How long do nosocomial pathogens persist on inanimate surfaces? A systematic review. *BMC Infectious Diseases* 2006;6:130-137. Accessed August 16, 2013.
8. Rutala WA, Weber DJ, and the Healthcare Infection Control Practices Advisory Committee (HICPAC). Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008: 22. Accessed August 16, 2013.
9. Boyce JM, Pittet D. Guideline for Hand Hygiene in Health Care Settings. Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. Society for Healthcare Epidemiology of America/Association for Professionals in Infection Control/Infectious Diseases Society of America. *MMWR Recomm Rep* 2002;51(RR-16):1-45. Accessed August 28, 2013.
10. Centers for Disease Control and Prevention. Siegel JD, Rhinehart E, Jackson M, Chiarello L; Health Care Infection Control Practices Advisory Committee. 2007 Guidelines for isolation precautions: preventing transmission of infectious agents in health care settings. Accessed August 16, 2013.