

Reply to Goldenberg

To the Editor—We reviewed with interest that Goldenberg¹ reports a similar outcome in his recent study that validates our institution's findings. This strengthens the evidence that polymerase chain reaction (PCR) testing for *Clostridium difficile* may increase the prevalence of positive tests, in addition to the rate of *C. difficile* infection (CDI).² Dr. Goldenberg's UK study also reinforces the fact that testing with PCR and observing increased CDI rates is a global phenomenon, not a local laboratory finding.

However, with the notice in increased sensitivity, it is difficult to separate patients who are truly infected from those who are colonized. For example, if a hospitalized patient who has been on antibiotic therapy has a loose bowel movement and *C. difficile* PCR is positive, would this represent colonization or a CDI? This comes into play when states, such as Ohio, mandate reporting positive *C. difficile* test results without contextual interpretations.

In the current age of mandatory public reporting, wherein public display of CDI rates implicitly compares a hospital's quality of care,³ the method for CDI case ascertainment should be identified. This also pertains to the United Kingdom, where hospitals may be fined for their elevated rates of CDI. Now with data from 2 different institutions reporting increased CDI rates, this adds another reason for the need to incorporate case mix adjustment into consideration—the complexity of the patient population, the severity of illness, and the testing methodology should be taken into account.⁴ Publicly reported rates in the absence of context can oversimplify the complex nature of infections and have the unintended consequence of a disincentive to perform thorough surveillance.

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REFERENCES

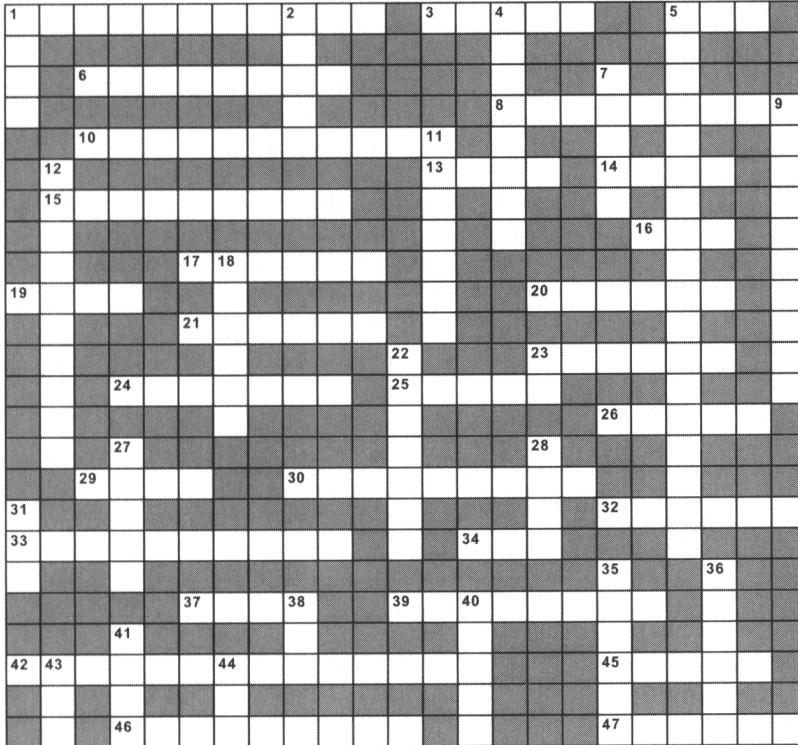
1. Goldenberg SD. Public reporting of *Clostridium difficile* and improvements in diagnostic tests. *Infect Control Hosp Epidemiol* 2011;32(12):1231–1233 (in this issue).
2. Fong KS, Fatica C, Hall G, et al. Impact of PCR testing for *Clostridium difficile* on incident rates and potential on public reporting: is the playing field level? *Infect Control Hosp Epidemiol* 2011;32(9):932–933.
3. Alston WK. Pitfalls of public reporting. *Infect Control Hosp Epidemiol* 2010;31(9):985–986.
4. Harris AD, McGregor JC. The importance of case-mix adjustment for infection rates and the need for more research. *Infect Control Hosp Epidemiol* 2008;29(8):693–694.

Decreasing the Prevalence of *Clostridium difficile* in a Long-Term Care Facility

To the Editor—*Clostridium difficile* is an inimitable bug that normally lives in the gut. When an antibiotic is taken to treat an infection or an H2 antagonist is used to decrease the production of acid in the stomach, helpful or normal bacteria are destroyed, causing an overgrowth of the *C. difficile* bacteria. *Clostridium difficile* localizes to the large bowel, where it manifests as diarrhea and colitis (*C. difficile* infection, or CDI). The symptoms of CDI can be mild (a low-grade fever, mild diarrhea [5–10 watery stools a day], mild abdominal cramps and tenderness, and nausea) or life threatening (severe diarrhea [10–15 stools per day], severe abdominal cramps, a temperature of 102°–104°F, blood or pus in the stools, weight loss, dehydration, and peritonitis).¹

In recent years, CDI has become endemic in many hospitals, resulting in substantial excess healthcare costs and excess hospital-days. Data on the actual associated costs of CDI are not freely available because there is no mandatory reporting mechanism by the Centers for Disease Control and Prevention for *C. difficile*. According to the study “National point prevalence of *Clostridium difficile* in US health care facility inpatients, 2008,” published in the *American Journal of Infection Control*, 13 out of every 1,000 patients, or approximately 7,178 inpatients, are infected or colonized with *C. difficile* every day.² It is estimated that an average-sized hospital can expect 100 cases of CDIs each year, with an extra annual cost of \$632,000 and 2,100 lost bed-days. These infections kill between 165 and 438 patients every day and cost between \$17.6 and \$51.5 million.³

The risk for disease increases in patients with antibiotic exposure, gastrointestinal surgery, extended length of stay in healthcare settings, a serious underlying illness, immunosuppressant conditions, and advanced age. As a nurse caring for patients with many of these characteristics, I am especially interested in CDI prevention, as are the managers of the small



Across

- 1. Bacteria can be _____ on the hands of healthcare workers
- 3. An elevated body temperature
- 5. Organization concerned with public health and safety (abbreviation)
- 6. A widespread occurrence of an infectious disease in a community
- 8. Process of being kept alone
- 10. A term meaning hand washing using soap and water, and cleaning hands with waterless or alcohol-based sanitizer
- 13. Please knock on this before entering a room
- 14. A stool specimen should be collected _____ in a 24 hour period
- 15. Description of a procedure with alternatives that lead to a result (ACLS and CDI for example, have one)
- 16. Abbreviated name for gowns, gloves, mask, etc.
- 17. Safety covering for the hands
- 19. PPE used to protect clothing
- 20. A feeling of sickness in the stomach characterized by an urge to vomit
- 21. A person or thing considered to be the same as another in status or quality
- 23. Object used for the toileting of a patient in a bed
- 24. Inflammation of the large intestines
- 25. Cares for patients at bedside, must be licensed to give meds
- 26. This along with 41 down is required before and after treating a patient with C-Diff

- 29. This word spelled backwards means extreme caution
- 30. The art of identifying a disease from its signs and symptoms
- 32. C-Diff spores can live _____ or more days
- 33. Can cause and but also treat C-Diff
- 34. See 42 across
- 37. Pertaining to the mouth
- 39. Primary symptom of C-Diff
- 42. Comes with 200%, so it is Ok to ____ (34 across) your coworker "Have you washed your hands?"
- 45. A point, period, or step in a process or development

- 46. A medical term to describe the likely outcome of an illness
- 47. These can cause injury and spread infection, so clean up immediately

Down

- 1. PPE used is based on the ____ assigned
- 2. An inanimate object
- 4. _____, staff, and other patients are at risk for C-Diff
- 5. Guidelines recommended by the Centers for Disease Control and Prevention for reducing the risk of transmission of infection
- 7. _____ and body fluids are potentially infectious and should be handled with caution
- 9. Taking place or originating in a hospital
- 11. To teach someone
- 12. This antibiotic used to treat C-diff can cause renal failure; when given IV blood levels are monitored
- 18. Having a consistency like that of water (C-Diff stools are usually like this)
- 22. A substance that when introduced into the body stimulates the production of an antibody (Glutamate Dehydrogenase in C-Diff)
- 23. To exist
- 27. A poisonous substance, especially a protein that is produced by living cells and is capable of causing disease in the body
- 28. A situation involving exposure to danger (C-Diff poses this for all)
- 31. Another name for 9 down (abbreviation)
- 35. The presence of bacteria (bacteremia) or other infectious organisms in the blood
- 36. Major drug used in the treatment of C-Diff (trade name)
- 38. Place where specimens are sent for analysis
- 40. A deep crack or crevice, a place where information seem to get lost
- 41. A cleansing and emulsifying agent
- 43. Equals 8 ounces or 250 mL
- 44. In the fight against C-Diff, staff should form this type of team

Puzzle by Barbara Latten BSN, RN, CRRN

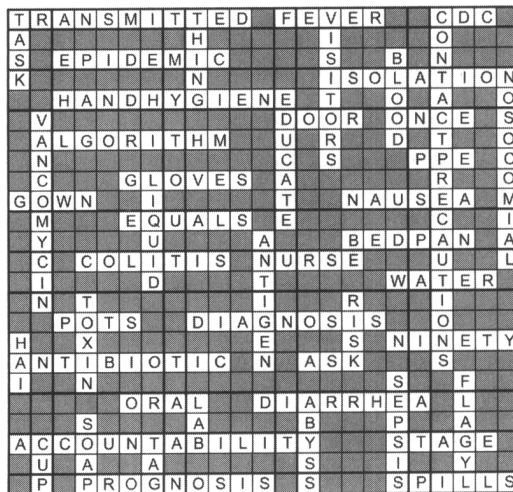


FIGURE 1. Clostridium difficile puzzle.

long-term acute care facility where I work, located in the southeastern United States.

The increased incidence of CDI on 1 unit in our facility during the month of December 2010 caused a concern, resulting in an opportunity for research and review of current practices. A CDI team including staff from all departments was developed. Collaboration between all departments was necessary to decrease the transmission of the infection while providing a safe environment for patients. It is known that the *C. difficile* bacterium is resistant to traditional cleaning methods and forms spores that are practically immortal. To eradicate this extraordinary bug requires extraordinary measures. The following interventions were discussed and implemented following the recommended guidelines from the Association for Professionals in Infection Control and Epidemiology: early recognition of CDI through utilization of the CDI algorithm and a computerized order set for early intervention and consistency; education, revision, and placement of contact precaution signs to reduce nosocomial infections; establishment and monitoring of adherence with environmental controls such as Bioquell (terminal room cleaning protocol piloted for use); hand hygiene measures enforced, including removal of hand gels from CDI rooms; patient and family education (publishing of a patient education brochure); review of evidence-based methods for patient treatment and management of disease; education of all staff (creation of *C. difficile* puzzle included in this article); and strong administrative support and participation.⁴

After completing as much research as I could on CDI, it was evident that those at risk for CDI include not only the patient, family, and staff but also my own family. Some antibiotic-resistant strains of *C. difficile* are emerging and show resistance to macrolides and fluoroquinolones. This further broadens the number of people at risk for acquiring disease. So, I asked the question, "What is my role or responsibility in the prevention and control of CDI?" My answer: "Take the lead and become a warrior instead of a carrier." I took a lead role in the education and prevention of CDI in our facility. The following puzzle (Figure 1) was created as a unique means of educating patients and staff on a unique bug. Collaboration between all departments and education of staff, patient, and families are the key to success. The CDI stops here.

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REFERENCES

1. Mayo Clinic staff. *C. difficile*: definition. <http://www.mayoclinic.com/health/c-difficile/DS00736>. Accessed October 14, 2011.
2. Jarvis W, Schlosser J, Jarvis A, Chinn R. National point prevalence of *Clostridium difficile* in US health care facility inpatients, 2008. *Am J Infect Control* 2009;37(4):263–270.
3. Kyne L, Hamel MB, Polavaram R, Kelly CP. Health care costs and mortality associated with nosocomial diarrhea due to *Clostridium difficile*. *Clin Infect Dis* 2002;34:346–353.
4. Association for Professionals in Infection Control and Epidemiology. Guide to the elimination of *Clostridium difficile* in healthcare settings, 2008. http://www.apic.org/Content/NavigationMenu/PracticeGuidance/APICEliminationGuides/C_diff_Elimination_guide_logo.pdf. Accessed October 14, 2011.

The Influenza A/H1N1 Pandemic in Southern Brazil

To the Editor—Since the circulation of influenza subtype H1N1 (A/H1N1 pandemic) was confirmed in Mexico, the United States, and Canada in April 2009,¹ with sustained transmission in Brazil in July 2009,² strategies to minimize complications, such as vaccination, antiviral agents, and hand hygiene, have been encouraged.³ In Brazil, in epidemiological week (EW) 47, 27,850 cases of severe acute respiratory infection due to pandemic A/H1N1 (SARI/A/H1N1) were reported, resulting in an incidence rate of 14.5 per 100,000 inhabitants. Most confirmed cases of SARI/A/H1N1 (15,874) were in women, of whom 12.1% were pregnant. In 18,269 (65.6%) cases, those affected were children younger than 19 years; of these, 7,603 (40.0%) were in children younger than 2 years.

The peak of the first wave of the pandemic occurred between EW 31 and EW 32 (August 2–15, 2009), with the highest concentration of cases in the southern states: Paraná, Santa Catarina, and Rio Grande do Sul (RS). This temperate region had the highest number of SARI/A/H1N1 cases (18,349), with an incidence of 66.2 per 100,000 inhabitants.

The mortality due to the A/H1N1 pandemic was 0.13 per 100,000 inhabitants (8,768) worldwide, 0.7 per 100,000 inhabitants (5,878) in the Americas, and 0.8 per 100,000 inhabitants (1,632) in Brazil. The incidence of deaths in the southern region of Brazil was 2.3 per 100,000 inhabitants (642), with 2.7 per 100,000 inhabitants (297) in RS.

It is evident that this pandemic has had a major impact