

## C. difficile Infections Talled

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been reported, said Dr. Jarvis, formerly of the Centers for Disease Control and Prevention. He is president and cofounder of a private consulting firm in health care epidemiology in Port Orford, Ore.

Survey respondents reported on a total of 1,443 patients with CDI who were seen at 648 hospitals in 47 states, representing 12.5% of all medical facilities in the country. These cases alone would cost an average \$6.5 million extra in health care costs and increase the length of hospital stays by an average of 8,081 days (based on published rates of increased hospital stays caused by CDI). The cases also would be associated with an average of 61 deaths.

“Given this most comprehensive snapshot of *C. difficile*-associated disease ever conducted in U.S. hospitals, we’re hoping this will be a call for action to not just infection preventionists, but to hospital administrators as well, to provide sufficient resources” for infection prevention, environmental cleaning efforts, and antibiotic stewardship programs, Dr. Jarvis said. Control measures for CDI include using a risk assessment to identify high-risk patients, identifying patients with diarrhea on admission to the hospital and after hospitalization and, once identified, “promptly and preemptively placing them in contact isolation.”

To curb CDIs, health care facilities should use bleach to kill *C. difficile* spores and maintain an antibiotic stewardship

program to ensure that antibiotics are being used properly. Fewer than half of the hospitals in the survey had such programs, which were more common at hospitals affiliated with medical schools.

About 56% of the patients were female, nearly 70% were over age 60 years, and 68% had comorbid conditions, particularly renal failure, diabetes, or heart failure. Nearly 27% had to be admitted to the ICU, 18% went into shock, and nearly 78% required treatment with vasopressors.

Other findings included the following:  
 ▶ A total of 82% of survey respondents said the rate of *C. difficile* infections at their hospitals had either increased (41%) or remained stable (41%) over the last 3 years. CDC guidelines state that if the rate of infections with multidrug-resistant organisms is not dropping, infection control prevention efforts need to be enhanced, Dr. Jarvis said.

▶ Slightly more than half (54%) of the patients with CDI were identified within 48 hours of admission. In almost 73% of patients, the infections were thought to be health care-associated infections.

▶ A total of 85% of those with infections were on the medical service, “suggesting that is not just a surgical disease,” Dr. Jarvis said.

▶ Infections in most patients (90%) were detected with enzyme-linked immunoassay. Unlike a culture, the immunoassay does not detect the North American pulse-field type I (NAP1) strain, a more

virulent strain of *C. difficile*, and cannot be used to test for antibiotic susceptibility. In addition, ELISA tests have a sensitivity of 73%-75%, so they will miss *C. difficile* in about 25% of positive cases, Dr. Jarvis pointed out.

▶ Nearly 80% had been exposed to antimicrobials before the onset of the infection, including 17% who received antibiotics prophylactically before surgery.

▶ In addition, 85% of the patients with CDI had received antibiotics a median of 2-30 days before the onset of CDI, for a median duration of 8 days.

▶ Nearly 47% of patients with *C. difficile* had resolution of diarrhea within 6 days, the CDC definition of cure.

▶ In almost 11% of the cases, patients had severe to complicated disease.

The low rate of antibiotic stewardship programs reflected in the survey indicate that “we have a long way to go in the [United States] with regards to optimizing antimicrobial use within the health care setting,” Dr. Erik R. Dubberke of the division of infectious diseases, Washington University, St. Louis, said in an interview. Ideally, every hospital should have some type of antimicrobial control program, and hospitalists can play an important role in helping set up such programs, he added.

He pointed out that the rate of resolution of diarrhea in the survey was low, compared with reports in the literature of 80%-90%—an indication that *C. difficile* in the real world may not be as responsive to treatment as in clinical trials of treatments such as oral metronidazole and oral vancomycin.

In addition, the finding that the infection was detected in slightly more than half the patients within 48 hours of admission indicates that current methods of surveillance for *C. difficile*—which typically include hospital-onset cases only—are missing a lot of patients, Dr. Dubberke added. Clinicians in hospitals should suspect *C. difficile* in patients who have diarrhea when admitted to the hospital, so that contact precautions can be instituted.

The rate of severe to complicated disease—nearly 11%—was another significant finding, because this is much higher than the rates that have been reported in the literature, said Dr. Dubberke, who also is medical director of infection control at Missouri Baptist Medical Center in St. Louis.

Dr. Dubberke, who was not involved in the APIC study, was the lead author of the section on CDI in the SHEA/IDSA Compendium of Strategies to Prevent Healthcare-Associated Infections in Acute Care Hospitals, published in October 2008, in a supplement to Infection Control and Hospital Epidemiology.

APIC has released a guide with recommendations on elimination of *C. difficile* in health care settings, which is available at its Web site for purchase by nonmembers. ■

The study, “The APIC National Prevalence Study of *Clostridium difficile* in U.S. Healthcare Facilities,” will be published in the *American Journal of Infection Control* in early spring. More information is available on the APIC Web site at [www.apic.org](http://www.apic.org).

## Narcotic Use Associated With Delayed *C. difficile* Diagnosis

BY MIRIAM E. TUCKER  
Senior Writer

WASHINGTON — The use of scheduled narcotic analgesics delayed the time to diagnosis of *Clostridium difficile* infection and also was associated with a greater risk of both severe and refractory infection in a study that involved more than 21,000 hospitalized patients.

Narcotic analgesics have antimotility effects similar to those of antiperistaltics, which have been shown to increase the risk of complications associated with *C. difficile* infection (CDI).

Although this 2-year retrospective cohort study did not show an increase in the overall risk of developing CDI among hospitalized patients who were given narcotics, the findings of delayed diagnosis and increased severity suggest that if possible, these agents should be withheld from patients with suspected or proven CDI and those who may be at high risk, Andrea L. Mora, Pharm.D., said at the jointly held annual Interscience Conference on Antimicrobial Agents and Chemotherapy and the annual meeting of the Infectious Diseases Society of America.

The study population included 21,358 adult patients admitted to St. Luke’s Episcopal Hospital, Houston, between August 2005 and April 2007 who had received previous broad-spectrum systemic antibiotics. Of those, 241 developed CDI while in the hospital, and of this group, 123 had been in the hospital for more than 48 hours at onset of diarrhea (considered hospital-acquired). Compared with the 21,117 who did not develop CDI, the 123 who developed hospital-acquired CDI were significantly older (67.7 vs. 62.5 years), had longer lengths of stay (24 vs. 9.2 days), and had longer stays in intensive care (10.8 vs. 3.1 days).

The use of multiple broad-spectrum antibiotics was

greater among those who developed CDI than among those who did not, including cefepime (55.3% vs. 20.5%), ceftriaxone (30.1% vs. 18%), meropenem (17.9% vs. 4.5%), and piperacillin/tazobactam (32.5% vs. 15%). The treatment of CDI included metronidazole in 90.2% of the 123 patients who were hospitalized 48 hours or longer and in 92.1% of all 241 CDI patients; vancomycin was used in 18.9% and 24.5%, respectively, said Dr. Mora, who is now with the South Texas Veterans Health Care System, San Antonio. Dr. Mora completed this study during her residency training at St. Luke’s Episcopal Hospital.

Narcotics were used in 51.2% of the 123 CDI patients hospitalized 48 hours or longer at onset, compared with 49.3% of the 21,117 hospitalized patients without CDI, a nonsignificant difference. However, the diagnosis of CDI was significantly delayed among those who received narcotics—17.0 days from admission to the first positive *C. difficile* test, compared with 7.9 days among those who did not receive narcotics—even after researchers controlled for age, antibiotic use, and sex.

The reason for this isn’t entirely clear, but it is believed that the constipation induced by the narcotics may mask the diarrhea that

is the most characteristic symptom of CDI infection. Thus, patients may be infected but don’t get tested as early as those who experience diarrhea, Dr. Mora said in an interview.

Severe CDI was also significantly more likely among those receiving narcotics (61.5% vs. 40.4%), as was refractory CDI (20% vs. 10.4%). These differences were not associated with age, sex, ethnicity, antibiotic use, or ICU status.

“We believe these results are significant because minimizing these risk factors is an important part of managing CDI,” Dr. Mora said.

Dr. Mora stated that she had no disclosures. ■

