

# Postoperative *Clostridium difficile* infection in the Veterans Health Administration

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The overall postoperative rate of *Clostridium difficile* infection (CDI), a bacterium that can cause severe diarrhea and life-threatening intestinal conditions, was 0.4 percent per year among more than 468,386 surgical procedures at the Veterans Health Administration, according to a study published online by *JAMA Surgery*.

CDI can be a significant complication for surgical patients. Risk factors for CDI include older age, severe coexisting illnesses, hospitalization and antibiotic use.

The Veterans Health Administration (VHA) performs about 400,000 surgical procedures annually; and, in 2007, the Veterans Affairs Surgical Quality Improvement Program (VASQIP) started collecting 30-day postoperative CDI data in eligible noncardiac surgical procedures.

Xinli Li, Ph.D., of the National Surgery Office of the VHA, Washington, D.C., and coauthors documented CDI incidence in the VHA over a four-year period (October 2009 through September 2013) across different surgical procedures, identified risk factors associated with CDI and determined the impact of CDI on postoperative death, illness and hospital length of stay.

Among 468,386 surgical procedures, 1,833 cases of 30-day postoperative CDI were diagnosed. Of these, 1,239 cases (67.6 percent) were diagnosed as having CDI during the initial hospitalization, while others were diagnosed as having a CDI on readmission or as outpatients.

The authors report:

- 30-day CDI rates were higher in emergency procedures and procedures including those with greater complexity and those with a contaminated/infected wound classification.
- Patients with postoperative CDI were older, more frequently hospitalized after surgery, had longer preoperative hospital stays and had received three or more classes of antibiotics.
- CDI rates differed among surgery specialties with transplant surgery having the highest CDI rate at 2.37 percent, while there was no CDI incidence among oral surgery procedures during the four-year period.
- Patients with CDI, compared to those without, had higher rates of postoperative illness (86 percent vs. 7.1 percent), dying within 30 days (5.3 percent vs. 1 percent) and longer postoperative hospital stays (17.9 days vs. 3.6 days).

"Surgical administrators and clinical teams may consider the results of this study to target interventions for specific patients undergoing high-risk procedures. Such interventions include selective antibiotic administration, early testing of at-risk patients, hand hygiene with nonalcohol agents, early contact precautions and specific environmental cleaning protocols. The results of this study can help inform best practice and provide actionable data to VHA leadership for the prevention of future increases in CDI rates," the authors write.

"What is to be highlighted is the 12-fold increase in morbidity and 5-fold increase in mortality associated with CDI [*Clostridium difficile* infection] compared with [postoperative](#) patients without CDI. While CDI can directly lead to clinical deterioration resulting in increased morbidity and mortality, this may also suggest that patients who develop CDI have an impaired immune response and are a vulnerable population for other hospital-acquired infections and poor outcomes. Taken

together, this article adds to our understanding of CDI and underscores the importance of infection control and prevention strategies, including antibiotic stewardship. These findings also support the importance of the development of prophylactic strategies, expeditious recognition of CDI, adequate supportive care and improved therapies," write Paul K. Waltz, M.D., and Brian S. Zuckerbraun, M.D., of the VA Pittsburgh Healthcare System, in an accompanying commentary.

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