

The balance shifts

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The risk of contracting a *Clostridium difficile* infection following operations for which a "prophylactic" antibiotic is given to prevent infection is 21 times greater now than it was just a decade ago, according to researchers from the University of Sherbrooke in Canada. They report their findings in the June 15 issue of *Clinical Infectious Diseases*, currently available online.

Surgical operations that have been associated with severe infections, such as open heart surgeries and prosthetic implants, are often accompanied by the simultaneous administration of antibiotics, a strategy which has successfully reduced the number of infections. A consequence of this antimicrobial therapy is a modification in normal flora of the human intestine. In this altered environment, a bacterium named *Clostridium difficile* can thrive. An infection with *C. difficile* can cause severe diarrhea, occasionally leading to death.

Historically, the benefits of preventing surgical site infections have outweighed the relatively minor risk of *C. difficile* infections. However, in 2000 a hypervirulent strain of *C. difficile* emerged, leading to a dramatic increase in the number of infections and in the severity of those infections.

Researchers from the University of Sherbrooke recently completed a study that calculated the risk of contracting a *C. difficile* infection when the sole antibiotic given was prophylaxis accompanying surgery and compared the current risk with the risk from a period before the emergence of the hypervirulent strain. They found a 21-fold increase in

the risk, from 0.07 percent of patients to 1.5 percent. Of the 40 patients who developed a *C. difficile* infection after peri-operative antibiotic prophylaxis, 5 either died or developed septic shock. Cefoxitin was most likely to be associated with the contraction of a *C. difficile* infection.

Because the outcomes of *C. difficile* infections can be severe, the authors suggested that cases be individually evaluated and if the purpose of the antibiotic therapy is only to prevent infrequent or relatively benign infections, then the risks may outweigh benefits. This may be particularly important with elderly patients, who fare worse with *C. difficile* infections than do younger people.

In addition, the study's lead author, Louis Valiquette, MD, MSc, suggested that surgical antibiotic prophylaxis should be used for the shortest duration possible to minimize the risk of *C. difficile* infection. This would also produce collateral benefits of decreasing cost, reducing microbial-related side effects, and slowing the development of bacterial resistance.

Source: Infectious Diseases Society of America

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