Does using same hospital bed as prior patient who received antibiotics increase risk of Clostridium?
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The study at four affiliated hospitals in the New York City metropolitan area used patients admitted from 2010 to 2015 if they had spent 48 hours in their first hospital bed after being admitted. The study required the prior patient to have spent at least 24 hours in the bed and to have left the bed less than one week before the next patient's admission.

Because the study focused on incident cases of C. difficile infection, subsequent patients with a known history of CDI were excluded and they also were excluded if they tested positive for C. difficile infection within the first 48 hours after admission. The receipt of antibiotics by prior patients was assessed using data from a computerized clinician order entry system.

The study reports that among 100,615 pairs of patients who sequentially occupied a given hospital bed, there were 576 pairs where the subsequent patients developed C. difficile infection within two to 14 days after arriving at their bed. The median time from bed admission to C. difficile infection in the subsequent patients was 6.4 days. Subsequent patients who developed incident were more likely to have traditional C. difficile infection risk factors, including old age, increased creatinine, decreased albumin and the receipt of antibiotics.

The cumulative risk of C. difficile infection in subsequent patients was 0.72 percent when the prior occupant of the hospital bed received antibiotics compared with 0.43 percent when the prior occupant of the bed did not receive antibiotics, according to the results.

While the association was modest it remained significant after adjusting for other potential mitigating factors. Aside from antibiotics, no other factors related to the prior bed occupants were
associated with increased risk for C. difficile infection in subsequent patients, according to the study. The association between receipt of antibiotics and risk for C. difficile infection in subsequent patients remained when the analysis excluded 1,497 patient pairs in which the prior patient had recent C. difficile.

In patients colonized by C. difficile, antibiotics may promote the proliferation of C. difficile and the number of C. difficile spores shed into the local environment. Antibiotics also may affect the gastrointestinal microbiome to decrease bacterial species protective against C. difficile. The authors suggest future research on the mechanisms underlying the herd effects of antibiotics, according to the study.

Limitations of the study include its observational nature and that it was conducted in a single health care system, which may affect its generalizability.

"Our results show that antibiotics can potentially cause harm to patients who do not themselves receive the antibiotics and thus emphasize the value of antibiotic stewardship. ... The increase in risk was small but is of potential importance given the frequency of use of antibiotics in the hospital," the study concludes.

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