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FLASHLIGHT ON LITERATURE

Receipt of Antibiotics in Hospitalized Patients and Risk for *Clostridium difficile* Infection in Subsequent Patients Who Occupy the Same Bed

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The study reveals the receipt of antibiotics by prior bed occupants was associated with increased risk for *Clostridium difficile* infection (CDI) in subsequent patients, even if the prior bed occupants did not show CDI and the subsequent bed occupant did not receive antibiotics.

Antibiotics can directly affect risk for CDI in patients who do not themselves receive antibiotics.

WHAT IS THE BACKGROUND

- The goal of this study was to assess whether receipt of antibiotics by prior hospital bed occupants is associated with increased risk for CDI in subsequent patients who occupy the same bed.

WHAT IS THE STUDY DESIGN

- Retrospective cohort study (i.e. looking at existing patient data rather than following a planned study design) of adult patients hospitalized in any one of four affiliated hospitals between 2010 and 2015.
- Patients were excluded if they had recent CDI, which would have been a separate risk factor to develop CDI again. Also, if they developed CDI within 48 hours of admission, which indicates a community (not hospital) acquired infection. Also subsequent patients were excluded, if they had had inadequate follow-up time, or if their prior bed occupant was in the bed for less than 24 hours.

RESULTS

- Receipt of antibiotics in prior patients was significantly associated with incident CDI in subsequent patients.
- This relationship remained unchanged after adjusting for factors known to influence risk for CDI including receipt of antibiotics by the subsequent patient and also after excluding patient pairs among whom the prior patients developed CDI
- Aside from antibiotics, no other factors related to the prior bed occupants were associated with increased risk for CDI in subsequent patients.

WHAT DOES THIS MEANS FOR YOU

- **Obviously, patients undergoing antibiotic therapy can shed increased numbers of *C. difficile*, even if they do not suffer from CDI themselves.**
- **Not only if a prior patient suffered CDI, but also if he/she “only” underwent antibiotics therapy there is a need for sporicidal surface disinfection to interrupt the *C. diff.* transmission chain.**

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LINK TO THE ARTICLE:

<https://www.ncbi.nlm.nih.gov/pubmed/27723860> (download Dec 09, 2016)

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Receipt of Antibiotics in Hospitalized Patients and Risk for *Clostridium difficile* Infection in Subsequent Patients Who Occupy the Same Bed

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 Supplemental content

OBJECTIVE To assess whether receipt of antibiotics by prior hospital bed occupants is associated with increased risk for CDI in subsequent patients who occupy the same bed.

DESIGN, SETTING, AND PARTICIPANTS This is a retrospective cohort study of adult patients hospitalized in any 1 of 4 facilities between 2010 and 2015. Patients were excluded if they had recent CDI, developed CDI within 48 hours of admission, had inadequate follow-up time, or if their prior bed occupant was in the bed for less than 24 hours.

MAIN OUTCOMES AND MEASURES The primary exposure was receipt of non-CDI antibiotics by the prior bed occupant and the primary outcome was incident CDI in the subsequent patient to occupy the same bed. Incident CDI was defined as a positive result from a stool polymerase chain reaction for the *C difficile* toxin B gene followed by treatment for CDI. Demographics, comorbidities, laboratory data, and medication exposures are reported.

RESULTS Among 100 615 pairs of patients who sequentially occupied a given hospital bed, there were 576 pairs (0.57%) in which subsequent patients developed CDI. Receipt of antibiotics in prior patients was significantly associated with incident CDI in subsequent patients (log-rank $P < .01$). This relationship remained unchanged after adjusting for factors known to influence risk for CDI including receipt of antibiotics by the subsequent patient (adjusted hazard ratio [aHR], 1.22; 95% CI, 1.02-1.45) and also after excluding 1497 patient pairs among whom the prior patients developed CDI (aHR, 1.20; 95% CI, 1.01-1.43). Aside from antibiotics, no other factors related to the prior bed occupants were associated with increased risk for CDI in subsequent patients.

CONCLUSIONS AND RELEVANCE Receipt of antibiotics by prior bed occupants was associated with increased risk for CDI in subsequent patients. Antibiotics can directly affect risk for CDI in patients who do not themselves receive antibiotics.

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ON THE JOURNAL

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