

Antibiotic resistance increases relapse in urinary tract infections

30 October 2018

Patients with a certain drug-resistant urinary tract infection were more likely to have a relapse of their infection within a week than those with non-resistant infections and were more likely to be prescribed an incorrect antibiotic according to a study published today in *Infection Control & Hospital Epidemiology*, the journal of the Society for Healthcare Epidemiology of America.

"This study adds to the evidence that drug-resistant bacteria are an increasing issue, even in the community and even in patients who have something seemingly uncomplicated, like a urinary tract infection," said Judith Anesi, MD, a clinical epidemiologist and an Infectious Disease fellow at Penn Medicine, and lead author of the study. "These drug-resistant infections are difficult to treat, and our study shows that relapses are common. This is an alarming finding, and interventions to curb antibiotic resistance are urgently needed."

Focusing on patients whose infections began outside a healthcare setting, researchers reviewed the records of 151 adult patients at Penn Medicine who were seen in emergency rooms, private practice, or within three days of hospitalization and whose urine cultures were positive for antibiotic-resistant Enterobacteriaceae, a large family of bacteria associated with urinary tract and other common infections. Specifically, the bacteria were resistant to extended-spectrum cephalosporins, a class of antibiotics commonly used to treat bacterial infections. Those patients were compared with 151 similar patients whose lab tests showed non-resistant forms of the bacteria.

Researchers found that those with the resistant form of the bacteria were more likely to experience worse clinical outcomes than the control group. Additionally, more than half of all 302 patients in the study failed to receive an appropriate antibiotic within 48 hours of the urine culture, while those with a resistant form of the bacteria were most

likely to get the incorrect antibiotic at the outset. Patients whose urine culture was obtained in the emergency department were most likely to get the appropriate treatment from the start.

Even when patients initially received an antibiotic that would be effective for the bacteria identified in the lab, patients with resistant bacteria continued to have symptoms or had to be treated again for the same infection within a week. The authors said other explanations for the poor outcomes observed in those with a resistant bacteria included the possibilities of increased virulence of the resistant organisms, unmeasured factors that predisposed these patients to worse outcomes, or more severe baseline infections.

"UTIs are one of the most common bacterial infections we see in the outpatient setting, which makes the increasing prevalence of antibiotic resistance a significant problem," said Anesi.

The study authors concluded that when resistant organisms are identified in urine tests, patients should be followed closely for a longer duration, and patients at risk for resistant bacteria should have urine collected and tested.

More information: Judith A. Anesi et al, Poor clinical outcomes associated with community-onset urinary tract infections due to extended-spectrum cephalosporin-resistant Enterobacteriaceae, *Infection Control & Hospital Epidemiology* (2018). DOI: [10.1017/ice.2018.254](https://doi.org/10.1017/ice.2018.254)

Provided by Society for Healthcare Epidemiology of America

APA citation: Antibiotic resistance increases relapse in urinary tract infections (2018, October 30)
retrieved 22 January 2022 from <https://medicalxpress.com/news/2018-10-antibiotic-resistance-relapse-urinary-tract.html>

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