# Oral antibiotics work, shorten hospital stays for IV drug users with infections

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People who inject illicit drugs can develop potentially deadly infections of the heart, blood, joints and soft tissues. Typically, such infections require weeks of hospitalization to treat effectively. But a new study by

researchers at Washington University School of Medicine in St. Louis shows that drug users who, while in the hospital, started IV antibiotics for serious infections and then finished their courses of treatment at home with antibiotic pills fared just as well as those who stayed in the hospital.

The findings, which are available online in Clinical Infectious Diseases, have led Washington University physicians at Barnes-Jewish Hospital to change the treatment recommendations for such patients, who traditionally have been required to stay in the hospital for two to six weeks of IV antibiotic treatment. Now, doctors offer patients who wish to finish treatment at home a prescription for oral antibiotics.

"Most people don't want to stay in the hospital for weeks at a time to get IV antibiotics when they could be treated at home," said lead author Laura Marks, MD, Ph.D., a clinical fellow in infectious diseases. "But until recently, infectious disease doctors had limited evidence on effective treatment options for patients who could not complete long courses of IV antibiotics. No one wants to offer an ineffective treatment for what could be a life-threatening infection, and so we required everyone to stay. Now we recognize that when someone does not want to stay in the hospital, we can work with the patient to find another way to provide antibiotics."

While the COVID-19 pandemic dominates the news these days, the opioid epidemic continues unabated. An estimated 3 million people in the U.S. have opioid-use disorder. Since the drugs often are injected under unhygienic conditions, the opioid epidemic has brought with it an epidemic of invasive infections. Over the past decade, increasing numbers of people have shown up in emergency rooms with serious bacterial infections related to their IV drug use.

Such potentially lethal infections require long courses of powerful

antibiotics. But extended hospital stays can be burdensome, and some people leave the hospital against medical advice before they've received all of the medication prescribed for them. In the past few years, studies have shown that people who have invasive infections for reasons unrelated to use of injectable drugs can be treated successfully with a few days of IV antibiotics in the hospital, followed by oral antibiotics at home. But some doctors have been reluctant to apply the same protocol to people who inject illicit drugs.

"There was this idea that people who inject drugs do not care about their health and would not adhere to an oral antibiotic regimen on discharge. So letting patients leave the hospital partway through an IV antibiotic course was akin to abandoning all treatments," said senior author Michael Durkin, MD, an assistant professor of medicine and a co-director of antimicrobial stewardship at Barnes-Jewish Hospital. "We didn't believe that was true."

Marks, Durkin and colleagues analyzed the medical records of 293 people who had injected illegal drugs and were treated for invasive infections at Barnes-Jewish Hospital at some point from January 2016 through July 2019. The patients were divided into three groups: those who had completed full courses of IV antibiotics in the hospital; those who had begun IV antibiotics in the hospital and then were discharged with prescriptions for oral antibiotics; and those who had started IV antibiotics in the hospital and left without prescriptions. The researchers looked at how many patients were readmitted to the hospital for any reason within 90 days of discharge.

Those who left the hospital without antibiotic prescriptions were more than twice as likely to be readmitted within three months than those who left early with prescriptions, or those who completed treatment in the hospital. The authors calculated that for every three people treated with oral antibiotics, one less person needed to be readmitted to the hospital.

Moreover, there was no significant difference between those who stayed in the hospital for full courses of IV antibiotics and those who completed partial courses of IV antibiotics followed by oral antibiotics.

While IV antibiotics are still considered the standard of care for invasive infections, the study's findings suggest that people who do not want to stay in the hospital for weeks should be given the option of taking oral antibiotics at home, even if they most likely became infected by injecting drugs.

"It doesn't matter why patients have an infection," Marks said. "We want to make sure that we provide antibiotics to patients in a setting they prefer. If they are not comfortable staying in the hospital throughout their treatment, we will work to get them back home as soon as it is safe, and they can finish their treatment on an oral alternative."

Marks and Durkin are part of an effort at Barnes-Jewish Hospital and other BJC hospitals to improve care for people with infections linked to injection drug use by providing treatment for substance use disorder alongside antibiotics. The effort is funded by the Centers for Disease Control and Prevention. As part of this study, the researchers compared readmission rates between people who met with the addiction medicine team in addition to an infectious disease specialist, and those who were only treated for their infection. Those who received support for their substance use disorder were 40% less likely to be readmitted within three months.

"If someone comes in with an injection-related infection, they are seen by our infectious disease doctors as well as an addiction medicine physician, a dedicated case manager, and health coaches," Marks said. "We help them make an appointment for substance use disorder treatment location after discharge, and our wraparound team ensures that they get there. They get a follow-up appointment in an infectious disease

clinic, too. We try to look at patients as whole people, and provide the best care possible for them."

**More information:** Laura R Marks et al. Evaluation of partial oral antibiotic treatment for persons who inject drugs and are hospitalized with invasive infections, *Clinical Infectious Diseases* (2020). DOI: 10.1093/cid/ciaa365

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