

# Cultivating Innovation in the Fight Against Antibiotic-Resistant Gonorrhea

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Over time, gonorrhea has developed resistance to nearly all of the antibiotics prescribed to treat it. There is currently only one recommended treatment option remaining to treat this very common infection — and there's no way to know how much longer it will remain effective.

With the ability to successfully treat gonorrhea called into question, it is critical to encourage research and the development of new treatment options.

CDC has been at the forefront of this issue for over 30 years, working to monitor antibiotic resistance trends and develop effective treatment guidelines for clinicians across the country. Here is one story of CDC's efforts to ensure safe and effective treatment for gonorrhea is available for those who need it.

**30%** of new gonorrhea infections are resistant to at least 1 drug

Gonorrhea is the **2nd** most commonly reported communicable disease in the U.S., with an estimated **820,000** new infections each year

In 2006, CDC recommended 5 treatment options for gonorrhea— we now have **only 1**



# CDC and Antibiotic-Resistant Gonorrhea

In the late 2000s, there was growing awareness in the public health community that the number of treatment options for gonorrhea was shrinking. “We were losing drugs because of antibiotic resistance, and fewer new drugs were coming to market,” says Bob Kirkcaldy, Medical Epidemiologist in CDC’s Division of STD Prevention. “So we started looking at existing drugs and trying to repurpose them for treatment options as new combinations.”

This led to a drug clinical trial spearheaded by CDC with support from the National Institutes of Health and the U.S. Food and Drug Administration to evaluate two untested combinations of antibiotics.

“STD control is social justice,” Kirkcaldy says. “At CDC our job is to improve people’s health — and responding to the serious threat of antibiotic-resistant bacteria is part of that.”

Kirkcaldy served as the Principal Investigator of the study, which took place in five STD clinics around the country. Participants enrolled in the study were randomly assigned to one of the antibiotic combinations, and returned to the clinic a week later to check if the treatment had worked. The study team also collected specimens from the participants and checked for antibiotic resistance, generating important data on drug susceptibility.

The results were clear: both antibiotic combinations were effective at treating gonorrhea and provided useful alternatives for patients who can’t be given the recommended treatment (either because of allergy or antibiotic resistance).

The new treatment options were integrated into CDC’s STD Treatment Guidelines as a backup option, and Kirkcaldy knows first-hand that they’ve been impactful. “Right now there’s only one treatment option comprised of two different drugs. I get calls from providers saying, ‘I have a patient sitting in front of me who is allergic to the main drug. How do I treat them?’ And now I can tell them that we have these options we know will be effective.”

When Kirkcaldy presented the study’s findings, it caught people’s attention. “It brought a level of preparedness that we hadn’t had in recent years,” explains Kirkcaldy. “Now we had efficacy and safety data on additional treatment options if a resistant strain appears.” And with many experts fearing it’s a matter of when — not if — a resistant gonorrhea strain will appear, the importance of studies like this one has only increased since its results were published in 2014.

Kirkcaldy is cautiously optimistic about the future of gonorrhea treatment. “Since the study, there’s been a lot more interest in gonorrhea from drug companies,” he says. “There are several new drug trials going on now that hold a lot of promise.” And he’s proud that the study he led has played a role in the story of the fight against antibiotic-resistant gonorrhea.

“I think our study made a statement: it’s important that the public health community invest resources and time in this fight — that we do everything we can to find new treatments. And following our lead, drug companies are now starting to take action.”

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