As the Threat of Emerging Drug-Resistant Gonorrhea Rises, What's Next?

Noting past mistakes in testing protocol, researchers hope for new antibiotics and genetic screening that can guide treatment.

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The public health community is increasingly concerned that strains of gonorrhea that evade the last standing treatment for the sexually transmitted infection (STI) will eventually begin to circulate.

MedPage Today reports on researchers' reflections on past mistakes in testing protocol that led to this point as well as their hopes for staying one step ahead of the ever-evolving bacterial infection with the development of new antibiotics and the use of genetic screening to guide treatment.

In September 2016, the Centers for Disease Control and Prevention (CDC) sounded an alarm about a cluster of gonorrhea infections identified in Hawaii that showed decreased susceptibility to ceftriaxone and a very high level of resistance to azithromycin. (All individuals in the cluster were ultimately treated successfully, however.) This announcement was considerably more urgent than one the CDC had made only two months before when it warned of signs of emerging drug resistance in gonorrhea in the United States.

The combination of ceftriaxone and azithromycin is now the only recommended treatment for gonorrhea. After penicillin was first used to treat the STI during the 1940s, gonorrhea eventually developed resistance to that and subsequent antibiotics.

The CDC stops recommending an antibiotic when 5 percent of cases are no longer responsive to it.

Alan Katz, MD, MPH, the head of a research team at the Hawaii State Department of Health's Diamond Head STD Clinic, told MedPage Today that gonorrhea would likely cross that 5 percent resistance threshold "in years, but not a lot of years."

William M. Shafer, PhD, a microbiologist and immunologist at Emory University, told MedPage Today that the CDC made a critical mistake in the 1990s when it abandoned a form of testing for gonorrhea called minimum inhibitor concentration. MIC testing, as it is known, indicates whether

bacteria is developing antibiotic resistance. Instead, the CDC favored a simpler, faster test that could identify gonorrhea but provide no information about emerging drug resistance.

According to Katz, just 5 percent of gonorrhea cases in the United States receive MIC testing. In Hawaii, this figure is 25 percent because public health officials want to detect drug-resisting bacterial infections as they migrate eastward from Asia, touching down in that state first. All seven of the cases in the new Hawaii cluster were identified with this technique.

Budget cuts to public health clinics across the country are also to blame for emerging drug resistance in gonorrhea, Jeffrey Klaussner, MD, MPH, an epidemiologist at the University of California, Los Angeles, told MedPage Today. This hobbled, for example, the ability of public health workers to monitor patients with gonorrhea to ensure that they finished their antibiotics and were fully cured.

The economics of the pharmaceutical industry, in which companies tend to seek big profits by developing treatments taken over long periods, have stymied the development of antibiotics taken only for a very short time. Consequently, future research will likely have to be driven by governmental investment. Should politicians sour on spending money on diseases associated with stigmatized behaviors, such funding could take a hit.

The antibiotic ETX0914, which has completed Phase II trials (a Phase III trial result is required for approval), has thus far proved effective against gonorrhea, even against strains showing resistance to the current recommended antibiotic regimen.

Researchers are also hoping that in the future, tests of gonorrhea could identify the antibiotics that are likely to be effective against that particular strain. In some cases, this could allow for the use of older antibiotics that are no longer recommended to treat the STI.

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