Drug-resistant gonorrhoeae spread in the USA

Fluoroquinolone-resistant gonorrhoeae have become so prevalent in the USA that drugs of this class will no longer be recommended for treatment. The spread of such strains highlights the need for new antibiotics and improved surveillance, experts say. Michael McCarthy reports.

The US Centers for Disease Control and Prevention (CDC) will no longer recommend fluoroquinolones, such as ciprofloxacin, ofloxacin, and levofloxacin, for the treatment of Neisseria gonorrhoeae in the USA.

Fluoroquinolones were first recommended as the first-line treatment for gonorrhoea in the USA in 1993 in response to the rise of isolates resistant to penicillins, tetracyclines, and other antibiotics. For several years, the convenient one-dose, oral regimen proved highly effective against the gram-negative diplococci. However, fluoroquinolone-resistant *N gonorrhoeae* isolates, thought to have come from south east Asia, soon began appearing in Hawaii and then California. The latest CDC figures show that fluoroquinolone-resistant gonorrhoeae is now widespread in the USA among heterosexuals and men who have sex with men.

The rise of fluoroquinolone-resistant *N gonorrhoeae* is not a surprise, says Jonathan Zenilman, head of the Infectious Diseases Division at Johns Hopkins Bayview Medical Center in Baltimore, MD. Zenilman helped set up the CDC’s Gonococcal Isolate Surveillance System that has tracked *N gonorrhoeae* resistance since the late 1980s. “Gonorrhoea is an incredible bug because it adapts incredibly quickly”, Zenilman said.

“When we started the programme, we said let’s see how long it’s going to take [for resistance to emerge] and what mechanism the bug is going to use to become resistant” not whether resistance would emerge, he said.

From 1990 to 2001, prevalence of fluoroquinolone-resistant strains remained low in the USA, accounting for less than 1% of isolates. But prevalence began to rise to 2.2% in 2002, 4.1% in 2003, and to 6.8% in 2004. Data from the first half of 2006 indicate that 13.3% of isolates are fluoroquinolone-resistant.

Drug-resistant *N gonorrhoeae* is a worldwide problem. In the UK, prevalence of fluoroquinolone-resistant isolates rose from 14% in 2004 to 21.7% in 2005. UK health officials stopped recommending fluoroquinolones in 2002. The International Union against Sexually Transmitted Infections will make the same recommendation for Europe in new guidelines now being drafted.

For uncomplicated urogenital or anorectal gonorrhoea, the CDC now recommends ceftriaxone or cefixime. For patients allergic to penicillins or cephalosporins, the CDC recommends azithromycin, but cautions against routine use of this drug because of concerns that resistant strains will emerge quickly.

Cephalosporins now remain the last class of antibiotic for which clinically important resistance has not been detected, said John Douglas director of CDC’s Division of Sexually Transmitted Diseases Prevention. But, he warns, resistance has emerged in other gram-negative bacteria “where very highly resistant strains—even to these third generation cephalosporin antibiotics—have occurred”.

“Clearly, there’s an urgent need for new effective means to treat gonorrhoea as we’re running out of options to treat this serious disease”, he said.

Emergence of strains resistant to cephalosporins is only a matter of time, says Gail Bolan, head of the Sexually Transmitted Disease Control Branch at the California Department of Health Services, but they could be contained if an adequate surveillance system were put in place so that new cases could be quickly detected and transmission interrupted.

But private physicians, who see some 80% of cases, often treat empirically and many public clinics no longer culture *N gonorrhoeae* routinely, which is needed to detect antimicrobial resistance, said Bolan. As a result, public-health systems must rely on CDC laboratories that take 6 months to report their results. “That means we’re trying to find a patient we saw 6 months ago and to find their partners; that’s obviously not a timely response”, she said. “Now that we’re down to one class of antibiotic, it’s paramount that we have more surveillance and more timely surveillance to attack emerging cephalosporin resistance.”

The emergence of fluoroquinolone resistance also points out the need for new antimicrobials, said Robert Guidos, director at the Public Policy and Government Relations for the Infectious Disease Society of America. The Society is pressing Congress to provide more research funding and to create financial incentives for industry to invest in antimicrobial research. “There’s almost no activity in the drug pipeline”, he said.

Michael McCarthy

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