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Ciprofloxacin resistant gonorrhoea in England and Wales - a changing epidemiology?

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The prevalence of resistance to ciprofloxacin in *Neisseria gonorrhoeae* in England and Wales has stabilised after a rapid increase observed in 2002 [1], according to results from the 2003 collection of the Gonococcal Resistance to Antimicrobials Surveillance Programme (GRASP) [2].

Between June and August 2003, gonococcal isolates from patients at 26 genitourinary medicine (GUM) clinics in England and Wales were tested for antimicrobial susceptibility at one of two central reference laboratories. The minimum inhibitory concentrations (MICs) of five antimicrobials were determined, including ciprofloxacin (range tested 0.002-0.125 mg/l, extended to 32 mg/l as necessary). Clinical, demographic, and behavioural data were obtained for each patient included in the collection.

Over 1900 isolates from GUM clinics were tested during this time period in 2003. The overall prevalence of ciprofloxacin resistance (MIC ≥ 1 mg/l) was 9.0% in 2003 compared to 9.8% in 2002, but this decrease was not statistically different ($p=0.57$). A decrease in prevalence was observed in sentinel clinics outside London during this period, from 12.4% to 9.9%. However, London saw a slight increase in ciprofloxacin resistance from the 7.2% to 7.9% in 2003. In 2003 the prevalences of ciprofloxacin resistance remained at $\geq 5\%$ in all regions of England and Wales. A more homogenous distribution in the prevalence of ciprofloxacin resistance across the regions was seen in 2003 compared with previous years, with the exception of the West Midlands region where a high prevalence of 21%, more than double the prevalence seen in any other region, was observed.

The distribution of ciprofloxacin resistance within the population appears to be changing. In 2003 ciprofloxacin resistance was again about twice as high in all males than in females (10.4% versus 5.3%, $p<0.0005$). For the first time, however, similar percentages of ciprofloxacin resistance were observed in both heterosexual males and men who have sex with men (MSM) (10.8% and 10.7% respectively). These findings suggest ciprofloxacin resistance has become widely distributed and endemic within the population. In 2000, ciprofloxacin resistance in England and Wales was almost exclusively found in white and Asian (here defined as South Asian and Chinese) ethnic groups and heterosexual individuals.

Multivariate analysis in 2003 indicates ciprofloxacin resistance continues to be higher in individuals of white ethnicity (compared with black ethnic groups, here defined as African and African-Caribbean). It also continues to be higher in the relatively small groups of patients aged >45 yrs (24% resistant), in those from the Asian ethnic group (23% resistant), and in those who had had sexual contact in the Far East in the previous 3 months (67% resistant).

When the significant increase in the prevalence of ciprofloxacin resistance to 9.8% was observed in England and Wales in 2002, alternative first-line therapies to ciprofloxacin or penicillin were recommended by the GRASP steering group [2]. Subsequently, the Clinical Effectiveness Group (British Association of Sexual Health and HIV) gonococcal treatment guidelines were reviewed in response to these recommendations. These guidelines recommend the use of the third generation cephalosporins ceftriaxone and cefixime in place of fluoroquinolones or penicillin as first line therapies [3]. They also highlight the need for region-specific prescribing strategies depending on the local antimicrobial resistance prevalence and distribution.

Reports of increases in the prevalence of ciprofloxacin resistance in *N. gonorrhoeae* have been observed over recent years in several other European countries. Scotland has seen ciprofloxacin resistance rise to 11% in 2002 [4], and Spain has seen a rapid increase from 2.3% to 9.9% between 2000 and 2001 [5]. Furthermore, a recent report from Sweden highlighted a dramatic increase in the prevalence of ciprofloxacin resistant gonorrhoea reported in Stockholm and other parts of Sweden during 2003. Ciprofloxacin resistant cases in men attending a clinic for homosexual men in Stockholm increased from a low level to over 50% during 2003. An outbreak of ciprofloxacin resistant gonorrhoea was also identified amongst heterosexual men and women in the county of Galveborg [6].

The findings discussed here demonstrate the importance of maintaining ongoing surveillance of gonococcal antimicrobial resistance at a national level to ensure treatment strategies remain responsive to the changing epidemiology.

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