

INCREASE IN CIPROFLOXACIN USE AND RESISTANCE

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An increase in fluoroquinolone consumption (primarily ciprofloxacin) has been observed in Denmark since summer 2004. This is most likely related to a marked reduction in price following the opening of the market to generic ciprofloxacin towards the end of 2001, [figure 1](#).

Increased resistance

As a consequence of the increasing consumption, resistance to ciprofloxacin is rising correspondingly in *Escherichia coli* (*E. coli*), which is the main pathogen responsible for urinary tract infections among patients in the primary health care sector. Bacteria resistant to ciprofloxacin are also resistant to other fluoroquinolones such as norfloxacin and ofloxacin. In the DANMAP 2003 report, [www.dvfv.dk](#), a significant increase in resistance to ciprofloxacin from 1.3% in 2002 to 2% in 2003 was reported from seven counties. Resistance data from DANMAP for the period 2000-2003 in four of the counties (Copenhagen County, West Zealand, Viborg and North Jutland), representing about 30% of the Danish population, were compared with the number of prescriptions issued for ciprofloxacin in the primary health care sector. [Figure 2](#) shows a decrease in ciprofloxacin prescriptions in 1999-2000, followed by a decrease in ciprofloxacin resistance in *E. coli* in 2000-2001. However, since 2002, this trend has reverted, and there is now an increase in both ciprofloxacin prescriptions and resistance.

Recommendations for use

Ciprofloxacin, as well as other fluoroquinolones, are potent antibiotics which should be reserved for treatment of serious infections, primarily in hospitals. It is thus essential that fluoroquinolones do not replace the more narrow-spectrum antibiotics in the treatment of uncomplicated infections. The main indications for ciprofloxacin prescribing are complicated urinary tract infections, including recurrent infections, infections caused by bacteria resistant to other antibiotics, pyelonephritis, and certain gastrointestinal infections. In the case of serious infections caused by *Pseudomonas* or mycobacteria, fluoroquinolones should be used in combination with another antibiotic to prevent emergence of resistance. In general, the advice of a clinical microbiologist is recommended before using fluoroquinolones for the treatment of complicated infections.

Figure 1. Monthly consumption of ciprofloxacin and average price per dose (bold line) in primary health care, Denmark. (Source: Danish Medicines Agency)

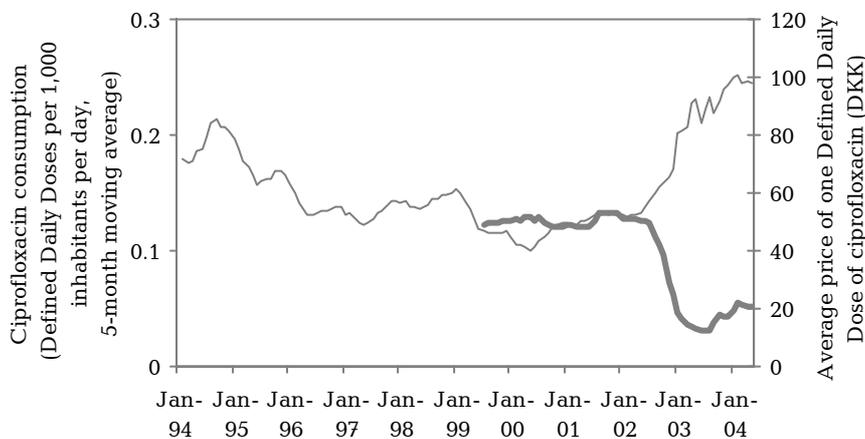
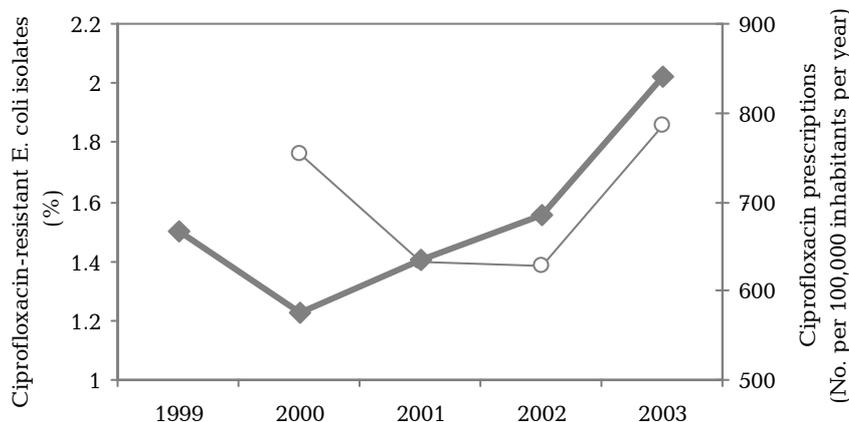


Figure 2. Ciprofloxacin-resistant *E. coli* isolates from urinary tract infections, and ciprofloxacin prescription rate (bold line) in primary health care in four Danish counties (Source: Danish Medicines Agency)



Comments

The level of resistance to fluoroquinolones in *E. coli* is still low in Denmark, but the recent increase is significant and alarming. Price is an important issue when prescribing drugs, however, the choice of antibiotic treatment should be based on recommendations rather than on price. Rational prescribing of ciprofloxacin and other fluoroquinolones is required to avoid unnecessary use and development of resistance, thus preserving the unique role of fluoroquinolones in the treatment of complicated infections. (M. Muscat, C. Brandt, N. Frimodt-Møller, D. L. Monnet, National Centre for Antimicrobials and Infection Control, DANMAP 2003 participants)

AVIAN INFLUENZA IN ASIA

Since October 2003, there have been reports on avian influenza H5N1 among poultry in Asia, with trans-

mission to humans. The total number of cases amounts to 27 in Vietnam (20 deaths) and 16 in Thailand (11 deaths). The Thai health authorities have reported on two deaths with probable human-to-human transmission; from an 11-year-old girl to her mother by close contact during a prolonged hospital admission. No wider transmission in the community has occurred among the hospital staff or in the villages, where the deceased persons lived. There were also reports on sick and dying chickens in the villages. The public health risk in connection with avian influenza in Asia is considered unchanged, and there are no restrictions on travel to the affected area. It is however recommended to avoid contact with living poultry, e.g. on markets. Fully cooked poultry presents no risk.

(S. Glismann, Dept. of Epidemiology)
 6 October 2004

Individually notifiable diseases

Number of notifications received in the Department of Epidemiology, Statens Serum Institut.

Figures for 2004 are preliminary.

| Table 1 | Week 40 2004 | Cum. 2004 ¹⁾ | Cum. 2003 ¹⁾ |
|--------------------------------|--------------|-------------------------|-------------------------|
| AIDS | 1 | 33 | 25 |
| Anthrax | 0 | 0 | 0 |
| Botulism | 0 | 0 | 1 |
| Cholera | 0 | 1 | 0 |
| Creutzfeldt-Jakob | 0 | 0 | 0 |
| Diphtheria | 0 | 0 | 0 |
| Food-borne diseases | 17 | 473 | 425 |
| of these, infected abroad | 0 | 69 | 88 |
| Gonorrhoea | 6 | 261 | 112 |
| Haemorrhagic fever | 0 | 0 | 0 |
| Hepatitis A | 7 | 172 | 61 |
| of these, infected abroad | 0 | 49 | 30 |
| Hepatitis B (acute) | 0 | 30 | 36 |
| Hepatitis B (chronic) | 3 | 116 | 141 |
| Hepatitis C (acute) | 0 | 0 | 6 |
| Hepatitis C (chronic) | 2 | 203 | 203 |
| HIV | 0 | 227 | 186 |
| Legionella pneumonia | 3 | 74 | 60 |
| of these, infected abroad | 1 | 19 | 16 |
| Leprosy | 0 | 0 | 0 |
| Leptospirosis | 0 | 2 | 2 |
| Measles | 0 | 0 | 0 |
| Meningococcal disease | 0 | 64 | 84 |
| of these, group B | 0 | 39 | 47 |
| of these, group C | 0 | 9 | 18 |
| of these, unspec. + other | 0 | 16 | 19 |
| Mumps | 0 | 2 | 2 |
| Neuroborreliosis | 6 | 69 | 41 |
| Ornithosis | 0 | 5 | 9 |
| Pertussis (children < 2 years) | 6 | 162 | 91 |
| Plague | 0 | 0 | 0 |
| Polio | 0 | 0 | 0 |
| Purulent meningitis | | | |
| Haemophilus influenzae | 0 | 3 | 2 |
| Listeria monocytogenes | 0 | 1 | 1 |
| Streptococcus pneumoniae | 0 | 74 | 83 |
| Other aethiology | 0 | 5 | 3 |
| Unknown aethiology | 0 | 11 | 12 |
| Under registration | 0 | 16 | - |
| Rabies | 0 | 0 | 0 |
| Rubella (congenital) | 0 | 0 | 0 |
| Rubella (during pregnancy) | 0 | 0 | 0 |
| Shigellosis | 1 | 60 | 81 |
| of these, infected abroad | 0 | 45 | 67 |
| Syphilis | 1 | 106 | 40 |
| Tetanus | 0 | 0 | 0 |
| Tuberculosis | 11 | 351 | 321 |
| Typhoid/paratyphoid fever | 2 | 20 | 25 |
| of these, infected abroad | 0 | 10 | 18 |
| Typhus | 0 | 0 | 0 |
| VTEC/HUS | 5 | 114 | 93 |
| of these, infected abroad | 0 | 19 | 24 |

¹⁾ Cumulative number of cases notified in 2004 and in the corresponding period of 2003

Selected laboratory-diagnosed infections

Number of specimens, isolates, and/or notifications received at Statens Serum Institut.

| Table 2 | Week 40 2004 | Cum. 2004 ²⁾ | Cum. 2003 ²⁾ |
|--|--------------|-------------------------|-------------------------|
| Bordetella pertussis (all ages) | 31 | 745 | 393 |
| Gonococci | 7 | 292 | 194 |
| of these, females | 1 | 37 | 25 |
| of these, males | 6 | 255 | 169 |
| Listeria monocytogenes | 0 | 29 | 21 |
| Mycoplasma pneumoniae | | | |
| Resp. specimens ³⁾ | 10 | 154 | 144 |
| Serum specimens ⁴⁾ | 11 | 387 | 388 |
| Pathogenic int. bacteria ⁵⁾ | | | |
| Campylobacter | 85 | 2910 | 2750 |
| S. Enteritidis | 10 | 405 | 583 |
| S. Typhimurium | 6 | 385 | 358 |
| Other zoon. salmonella | 14 | 412 | 405 |
| Yersinia enterocolitica | 6 | 174 | 185 |
| Streptococci ⁶⁾ | | | |
| Group A streptococci | 3 | 100 | 120 |
| Group C streptococci | 1 | 18 | 17 |
| Group G streptococci | 2 | 84 | 99 |
| S. pneumoniae | 11 | 935 | 906 |

²⁾ Cumulative number in 2004 and in the corresponding period of 2003

³⁾ Resp. specimens with positive PCR

⁴⁾ Serum specimens with pos. complement fixation test, MPT

⁵⁾ See also www.germ.dk

⁶⁾ Isolated in blood or spinal fluid