EPI-NEWS
NATIONAL SURVEILLANCE OF COMMUNICABLE DISEASES

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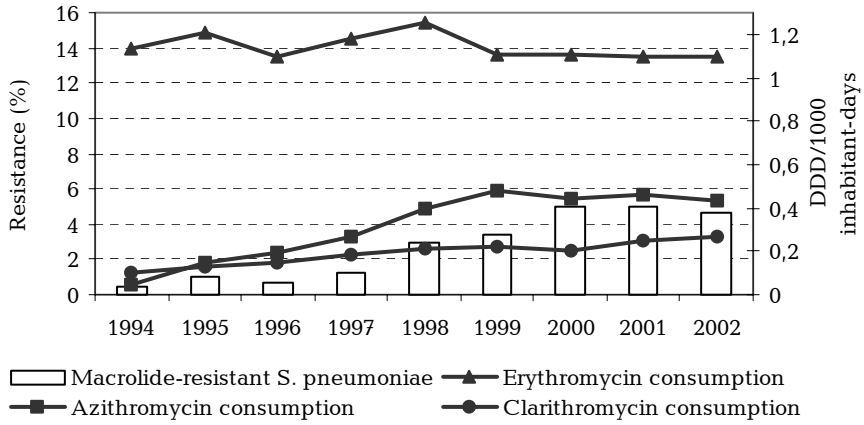
The Danish Integrated Antimicrobial Resistance Monitoring and Research Programme, DANMAP publishes an annual report describing the consumption of antibiotics and the development of resistance in bacteria collected from production animals, foodstuffs and humans in Denmark. This article presents results from the DANMAP 2002 report.

Antibiotic consumption in animals
There was only a slight increase by 866 kg active compound in the total consumption in animals, from 96,202 kg in 2001 to 97,068 kg in 2002. This could almost undoubtedly be related to an increased use in aquaculture for the management of disease outbreaks. Although there was no change in total consumption, changes in the classes of antimicrobials used were reported. Consumption of fluoroquinolones in animals declined following a change in law, which had the objective of restricting use of precisely this class of antimicrobials.

Antibiotic consumption in humans
Total consumption in primary health care reached 13.3 Defined Daily Doses (DDD) per 1,000 inhabitants and per day – a 3.2% increase as compared to 2001. Beta-lactamase sensitive penicillins and beta-lactamase resistant penicillins were responsible for more than 50% of this increase. The reason for this remains unexplained.
Antimicrobial consumption in hospitals has been rising steadily since 1997 and reached 516 DDD per 1,000 bed-days in 2002 (preliminary estimate) – a 5.3% increase as compared to 2001. Moreover, there has been an increase in the prescription of specific classes, e.g. cephalosporins, fluoroquinolones and combinations of penicillins with beta-lactamase inhibitors. Use of these three classes represented almost 35% of the increase in total antimicrobial use between 1997 and 2002. This slow but steady shift towards use of broad-spectrum antimicrobials in Danish hospitals is of concern. Further investigations are therefore required to explain this change.

Resistance in zoonotic bacteria
Spread of a nalidixic acid resistant clone of Salmonella Enteritidis in egg production was observed in 2002, however, there was no concurrent rise in nalidixic acid resistance in S. Enteritidis isolates from human infections acquired domestically.

Fig. 1. Macrolide resistance among invasive Streptococcus pneumoniae isolates and consumption of selected macrolides, 1994-2002. (Source: Dept. of Bacteriology, Mycology and Parasitology and Danish Medicines Agency)



This can probably be attributed to the Danish control programme for Salmonella in laying hens that ensures heat treatment of fresh eggs and meat from flocks in which Salmonella has been detected. In contrast, the percentage of nalidixic acid resistant S. Enteritidis isolates from humans who acquired the infection abroad significantly increased from 8% in 2001 to 28% in 2002. The prevalence of resistance to quinolones was significantly higher in Campylobacter jejuni (79%), S. Enteritidis (28%) and S. Typhimurium (9%) from infections acquired abroad than from domestically acquired infections. Most gastrointestinal infections do not require antibiotic treatment, however, when antibiotics are required, doctors should inquire about patients' travel history and be aware of the high probability of resistance to quinolones, e.g. ciprofloxacin, in isolates from infections acquired abroad.

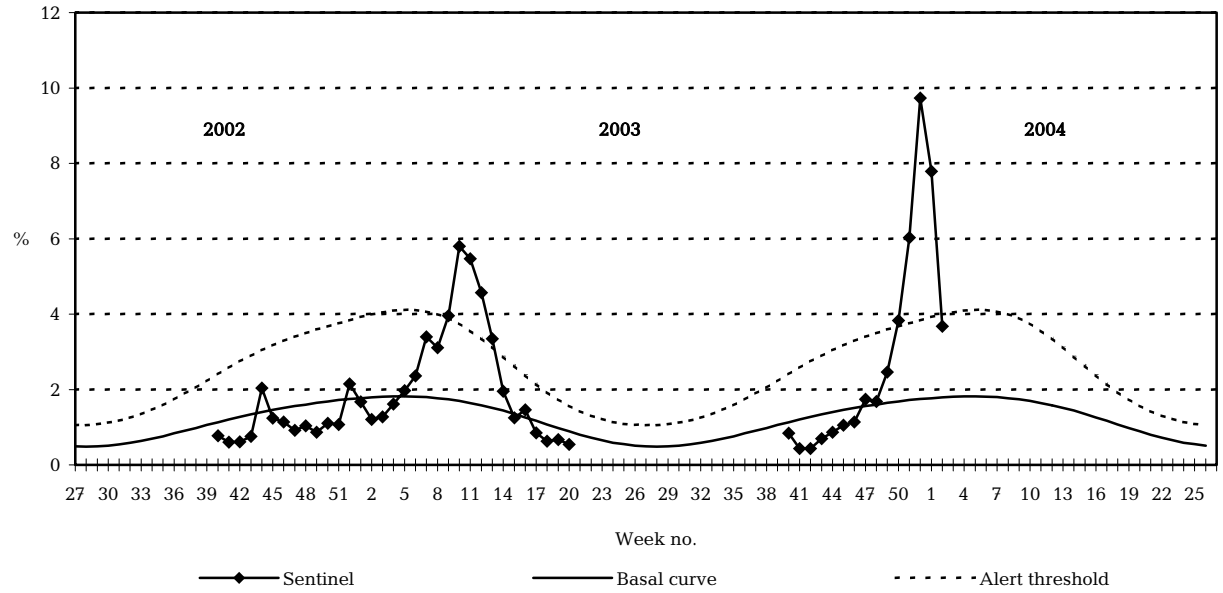
Resistance in other bacteria
A study on resistance of Escherichia coli from cases of urinary tract infection showed that ampicillin and sulfamethizole resistance in E. coli was only about 20% in uncomplicated community-acquired cases. However, this reached 35-40% in complicated cases and 47% in hospital-acquired infections. Resistance to macrolides in Streptococcus pneumoniae isolates from blood and spinal fluid was 4.7% in 2002, which is similar to the percentages observed in the previous two years, fig. 1. This trend continues to parallel the now stable consumption of new macrolides, especially azithromycin, which in the late 1990s might have contributed to the increased percentage of macrolide resistant S. pneumoniae, fig. 1.
For the past 20 years, methicillin resistant Staphylococcus aureus (MRSA) have represented less than 1% of S. aureus blood isolates and more than half of these MRSA strains have been acquired outside Denmark. This pattern has recently changed. Imported cases of infection or colonisation only represented 21% of reported MRSA in 2002, as compared to 45% in 1999. During the same period, MRSA infections acquired in Denmark have increased. Preliminary results from typing of the isolates show that an epidemic clone (EDK97-1), which was responsible for two-thirds of MRSA infections in primary health care in 2001 (see DANMAP 2001), is still present in Denmark. Typing analysis should also help understand the increase in hospital acquired MRSA cases in 2002.

Comments
The judicious use of antibiotics is important to prevent emergence of bacterial resistance. The use of broad-spectrum antibiotics should be limited to those patients for whom they are essential. The surveillance of antibiotic consumption and resistance has proven an indispensable tool in identifying new resistance problems and monitoring the effect of interventions. The DANMAP report is accessible on: www.dfvf.dk/Files/Filer/Zoonosecentret/Publikationer/Danmap/Danmap_2002.pdf
(M. Muscat, B. Müller-Pebody, D. L. Monnet, N. Frimodt-Møller, National Center for Antimicrobials and Infection Control)

14 January 2004

Sentinel surveillance of the influenza activity

Weekly percentage of consultations, 2002/2003/2004



Sentinel: Influenza consultations as percentage of total consultations

Basal curve: Expected frequency of influenza consultations under non-epidemic conditions

Alert threshold: Possible incipient epidemic

(Dept. of Epidemiology)

Secretion specimens received from the sentinel surveillance system

	2003									2004																			
Week no.	44	45	46	47	48	49	50	51	52	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
No. received	0	5	6	12	9	10	23	28	15	10	18	1																	
Influenza A								10	4	3	3																		
A/H3				3	1	6	7	1																					
A/H1																													
Influenza B																													

(Depts. of Epidemiology & Virology)