

MRSA INFECTIONS

Methicillin-resistant *Staphylococcus aureus* (MRSA) is resistant to all β -lactam antibiotics, including anti-staphylococcal penicillins such as dicloxacillin. Furthermore, MRSA isolates are often resistant to other types of antibiotics, and this restricts treatment options, particularly in general practice.

In most other countries in Western Europe, Japan and the United States, there has been a pronounced increase in the incidence of MRSA over the last 10 years. Furthermore, there is an increasing number of reports of MRSA infections in patients from general practice, known as community-acquired infections (CA-MRSA).

These are usually patients who are otherwise healthy, who have had skin- and/or soft-tissue infections, and who have not had immediate contact with the hospital system. In addition, there have been patients with pneumonia with a rapid and fatal course.

Genetic studies

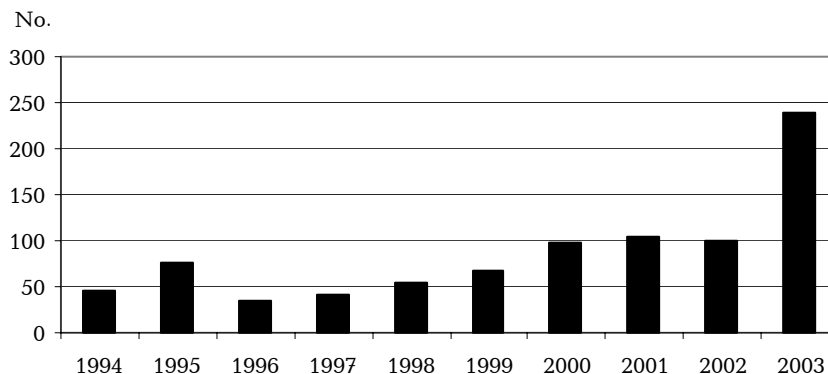
Studies have shown that CA-MRSA strains are genetically distinct from the traditional hospital-associated MRSA isolates (H-MRSA). The gene that codes for methicillin-resistance (the *mecA* gene) is situated in a gene complex. Typing of this complex has shown that CA-MRSA strains usually belong to type IV, in contrast to H-MRSA isolates, which usually belong to type I-III. In addition, CA-MRSA strains often carry the PVL-gene, which codes for a leukocyte-inhibiting toxin, which is associated with skin- and soft-tissue infections. Analyses have shown that *mecA* type IV - PVL-positive isolates can also be found in Denmark.

Incidence in Denmark

In Denmark and in the rest of Scandinavia, the frequency of MRSA isolates to date has been very low. However, in recent years, and especially in 2003, the number of MRSA isolates in Denmark has increased, [Fig. 1](#). A corresponding increase has simultaneously been observed in the other Scandinavian countries.

The *Staphylococcus* laboratory at SSI monitors the incidence of MRSA in collaboration with the clinical microbiology departments, EPI-NEWS 10/02. In addition, since 1999, information has been gathered retrospectively from discharge letters and practice notes on patients from whom MRSA has been isolated.

Fig. 1. Number of MRSA isolates in Denmark 1994-2003. Data for 2003 are provisional.



From this material, it appears that in Denmark, too, a great proportion of MRSA infections are diagnosed in general practice. Many of these patients do not have immediately identifiable risk factors for infection with MRSA.

The increased incidence in Denmark and in the rest of Scandinavia is worrying, and it is of particular concern that a great proportion are apparently CA-MRSA infections. This may suggest that CA-MRSA isolates, in contrast to H-MRSA, are capable of establishing themselves outside the hospital environments, and may thus have a potential for further spread. Moreover, patients who carry or are infected with MRSA and who do not have known risk factors (admission/work at foreign hospitals, prolonged stay in areas with high incidence of or contact with patients with MRSA) are difficult to identify. If the number of MRSA infections increases to a level where they constitute a significant proportion of *S. aureus* infections, it may be necessary to change the empirical treatment to cover these, too. There is a great need to gain further knowledge of which risk factors can lead to MRSA infections.

Case-control study

In collaboration with the clinical microbiological departments, SSI is now conducting an interview study of patients with CA-MRSA infection. The objective is to describe the incidence and to identify risk factors for the acquisition of CA-MRSA infections.

Patients with suspected CA-MRSA infection (cases) or their guardians will receive a letter providing information about the study, and subsequently be contacted by telephone. For each case, three control patients will also be contacted, each of whom

has had non-MRSA staphylococcal infection on the same day. The patient's general practitioner will manage any treatment that may be necessary.

The general practitioner will also be informed by letter and will be asked to answer four questions related to the patient's clinical picture.

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EUROPEAN TRAINING PROGRAMME FOR EPIDEMIOLOGISTS

Once again it is possible to apply for admission to a two-year European training programme for epidemiologists, EPIET (European Programme for Intervention Epidemiology Training). The programme starts in September 2004 and is completed during a two-year placement in another European country.

Participants on the programme will achieve proficiency in performing independent assignments in connection with the surveillance and control of infectious diseases, tracing and management of outbreaks, applied research and communication, etc. Applicants must be citizens of the EU, Switzerland or Norway and have some experience in public health and the epidemiology of infections. Applicants are expected to have an interest in field epidemiology, and good linguistic skills in English and another EU language are required. During the programme, the student will receive a salary from national funds or funds from the EU programme. Further information is available from the EPIET web site: www.epiet.org, or by contacting the Department of Epidemiology, SSI. Application deadline is 15 February 2004.

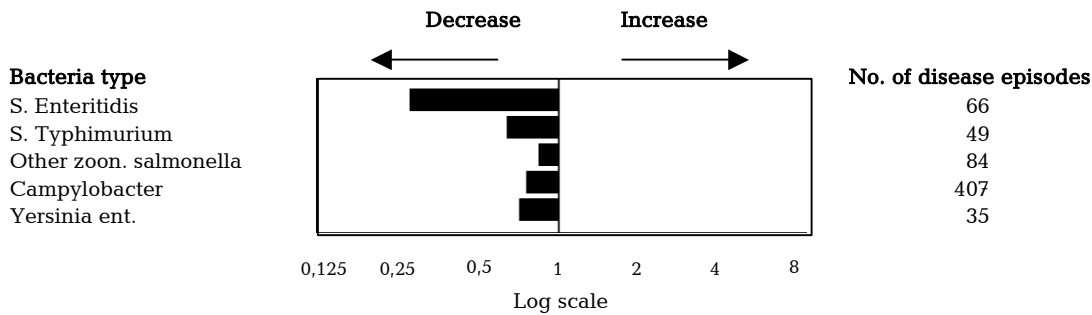
(Department of Epidemiology)

21 January 2004

Patients with positive cultures of pathogenic intestinal bacteria, November-December 2003

County	S. Enteritidis		S. Typhimurium		Other zoon. salmonella		Campylobacter		Yersinia ent.	
	Nov	Dec	Nov	Dec	Nov	Dec	Nov	Dec	Nov	Dec
Copenhagen Munic.	4	3	1	4	8	2	29	28	1	1
Frederiksberg Munic.	-	-	1	-	-	-	2	2	-	-
Copenhagen	1	3	1	3	4	8	38	18	1	3
Frederiksborg	4	1	1	1	2	4	16	12	-	-
Roskilde	-	1	1	4	3	3	13	5	2	-
West Zealand	2	2	2	1	-	4	10	8	1	-
Storstrøm	1	-	1	-	2	4	9	11	2	1
Bornholm	-	-	-	-	-	1	-	2	-	1
Funen	6	4	4	4	3	2	21	8	1	4
South Jutland	3	3	2	1	1	4	10	4	1	-
Ribe	1	1	-	3	-	1	16	4	-	-
Vejle	6	1	4	1	3	7	13	14	-	3
Ringkøbing	4	1	1	1	1	-	8	6	1	3
Aarhus	3	4	1	-	2	5	24	19	3	-
Viborg	2	1	-	-	-	4	9	5	-	-
North Jutland	2	2	2	4	4	2	22	20	4	2
Unknown	-	-	-	-	-	-	1	-	-	-
DK Nov / Dec 2003	39	27	22	27	33	51	241	166	17	18
DK Nov / Dec 2002	80	36	19	15	36	41	267	151	24	11

Barometer for pathogenic intestinal bacteria, November-December 2003

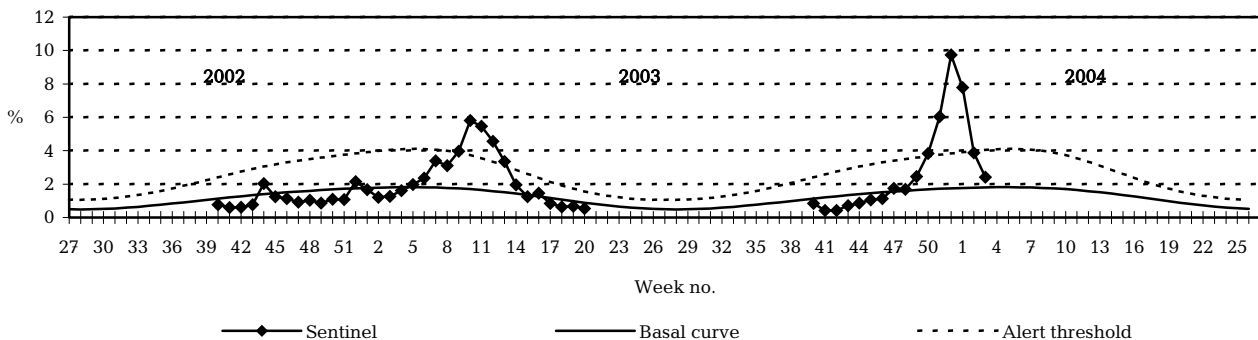


The barometer shows number of disease episodes in the two relevant months compared with the average of 15 two-month periods in the last five years. Further surveillance data may be obtained at www.germ.dk.

(DBMP)

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

Week no.	2003											2004																	
	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	19	9																	
Influenza A								3	4	1	3	1																	
A/H3				3	1	6	7	9		2																			
A/H1																													
Influenza B																													

(Depts. of Epidemiology & Virology)