



DEATHS CAUSED BY MENINGOCOCCAL DISEASE

From 14 March to 4 April 2007, four persons died from meningococcal disease (MD) in Denmark. The four patients lived in separate parts of the Copenhagen area and there was no known relation between them. This was supported by laboratory analyses showing that the cases were caused by at least three different bacteria. Three culture-confirmed cases were caused by *Neisseria meningitidis* phenotype B:15:P1.5, C:2a:P1.2,5 and C:2b:P1.16. In the fourth case, spinal fluid culturing did not lead to growth, but *N. meningitidis* serogroup C was demonstrated by PCR.

The first quarter of the year saw a total of 24 diagnosed cases of MD in Denmark: 16 *N. meningitidis* serogroup B, seven serogroup C and in one case the serogroup was not determined. Compared with 26 MD cases of the equivalent period of 2006, this did not suggest an increased MD occurrence.

A total of 61 deaths caused by MD were recorded in Denmark in the period from 1 January 2000 to 15 April 2007, [Table 1](#).

Four deaths within a period of slightly more than three months are within the expected random statistical variation.

Table 1. Deaths from meningococcal disease in Denmark, by serogroup, 1 January 2000 - 15 April 2007

| Year | B | C | Y | W135 | Un-known | Total |
|-------|----|----|---|------|----------|-------|
| 2000 | 8 | 3 | 0 | 0 | 3 | 14 |
| 2001 | 5 | 4 | 1 | 0 | 2 | 12 |
| 2002 | 5 | 1 | 0 | 0 | 1 | 7 |
| 2003 | 6 | 2 | 0 | 0 | 1 | 9 |
| 2004 | 4 | 0 | 1 | 0 | 1 | 6 |
| 2005 | 1 | 1 | 0 | 1 | 0 | 3 |
| 2006 | 2 | 3 | 1 | 0 | 0 | 6 |
| 2007 | 1 | 3 | 0 | 0 | 0 | 4 |
| Total | 32 | 17 | 3 | 1 | 8 | 61 |

PCR diagnosis for meningitis

Where culture has or is expected to be false-negative, e.g., due to previous antibiotic treatment, real-time PCR may be used to test for *N. meningitidis* and *Streptococcus pneumoniae* in spinal fluids and blood, EPI-NEWS 13/07. Where *N. meningitidis* DNA is detected, further tests for serogroups A, B, C, W135 or Y may be made. Such tests

are performed by the PCR Centre, Department of Bacteriology, Mycology and Parasitology (DBMP) at the SSI.

Suspicion of MD is notifiable. Notification should be made by phone to the Medical Officer of Health and subsequently in writing on form 1515.

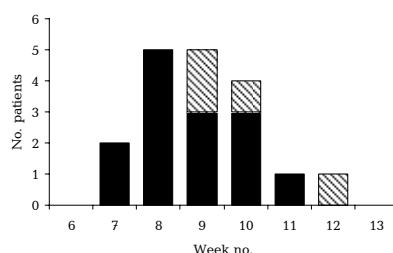
(M. Howitz, S. Glismann, Dept. of Epidemiology, L.M. Lambertsen, S.S. Nielsen, J.J. Christensen, DBMP, A-M. Plesner, MOH, Copenhagen Region)

VTEC OUTBREAK CAUSED BY BEEF SAUSAGE

On 9 March, the SSI recognized a general outbreak of verocytotoxin-producing *Escherichia coli* (VTEC) serotype O26:H11. The outbreak was detected via the ongoing DNA typing of bacterial isolates performed as part of the laboratory surveillance system, and included 18 laboratory-confirmed cases which were diagnosed during a six-week period, [Figure 1](#).

The majority of cases were children 1-3 years of age who generally had mild symptoms without bloody diarrhoea. No cases of haemolytic uraemic syndrome (HUS) were found.

Figure 1. Laboratory-confirmed cases forming part of the VTEC O26 outbreak by date of admission, weeks 6-13, 2007. Hatched sections represent presumed secondary transmission.



Investigation of the outbreak

The affected families were contacted to identify common exposures that might be the source of the infection. This led to the hypothesis that the source of infection was a food product, probably a ready-to-eat meat product with a long shelf-life. Subsequently, a detailed review of the families' food purchases prior to disease onset was initiated. This was based on data extracted from the computer systems at the

supermarkets where the families did their shopping. Finally, a case-control study was performed. These investigations identified a particular brand of smoked and fermented organic beef sausage as a highly probable candidate for the source of infection. Subsequently, the Danish Veterinary and Food Administration prompted the recall of the sausage. The recall concerned a batch of 19,000 items of which the majority had been delivered to a major supermarket chain in early February. At the time of recall, the product was sold out from shops, but the outbreak-strain with matching DNA typing profile was isolated from a remaining part of the imported, frozen beef from which the sausage had been made. Consequently, epidemiological as well as microbiological evidence showed that this particular sausage had caused the outbreak.

Commentary

VTEC outbreaks are considered very serious due to the risk that patients may develop HUS. Foodborne VTEC outbreaks are rare in Denmark. A previously described outbreak caused by VTEC O157 was epidemiologically linked to milk from a particular dairy, EPI-NEWS 23/04. The natural VTEC reservoir is in ruminants. It is well-established that fermented beef sausages, which are frequently only exposed to limited heat treatment, may entail a risk of VTEC infection. A VTEC O103 outbreak in Norway last year, which was caused by sausage made from mutton, led to ten HUS cases, one of which was fatal, EPI-NEWS 14/06. There is, however, considerable variation between the ability of different VTEC strains to cause serious disease. The current outbreak was caused by a strain with the virulence genes for *eae* and *vtx1*, but not *vtx2*, i.e., a pathotype recognized as a VTEC of low virulence. If the outbreak-strain had been more virulent, the current outbreak could have assumed far more serious proportions. (S. Ethelberg, B. Smith, M. Torpdahl DBMP, K. Mølbak, Department of Epidemiology, M. Lisby, Food Inspectorate, Region East, T. Jensen, the Danish Veterinary and Food Administration, J. Boel, the Danish Food Institute, DTU).

Individually notifiable diseases

Number of notifications received in the Department of Epidemiology, SSI (2007 figures are preliminary)

| Table 1 | Week 15 2007 | Cum. 2007 ¹⁾ | Cum. 2006 ¹⁾ |
|--------------------------------|-----------------|----------------------------|----------------------------|
| AIDS | 0 | 10 | 13 |
| Anthrax | 0 | 0 | 0 |
| Botulism | 0 | 0 | 0 |
| Cholera | 0 | 0 | 0 |
| Creutzfeldt-Jakob | 0 | 3 | 4 |
| Diphtheria | 0 | 0 | 0 |
| Food-borne diseases | 10 | 147 | 102 |
| of these, infected abroad | 2 | 25 | 27 |
| Gonorrhoea | 3 | 107 | 126 |
| Haemorrhagic fever | 0 | 0 | 0 |
| Hepatitis A | 0 | 10 | 4 |
| of these, infected abroad | 0 | 4 | 1 |
| Hepatitis B (acute) | 0 | 7 | 5 |
| Hepatitis B (chronic) | 1 | 72 | 142 |
| Hepatitis C (acute) | 0 | 2 | 3 |
| Hepatitis C (chronic) | 1 | 85 | 235 |
| HIV | 3 | 84 | 63 |
| Legionella pneumonia | 0 | 29 | 20 |
| of these, infected abroad | 0 | 3 | 3 |
| Leprosy | 0 | 0 | 0 |
| Leptospirosis | 0 | 4 | 3 |
| Measles | 0 | 1 | 11 |
| Meningococcal disease | 0 | 10 | 28 |
| of these, group B | 0 | 3 | 15 |
| of these, group C | 0 | 5 | 5 |
| of these, unspec. + other | 0 | 2 | 8 |
| Mumps | 0 | 4 | 8 |
| Neuroborreliosis | 0 | 25 | 12 |
| Ornithosis | 0 | 1 | 5 |
| Pertussis (children < 2 years) | 0 | 26 | 20 |
| Plague | 0 | 0 | 0 |
| Polio | 0 | 0 | 0 |
| Purulent meningitis | | | |
| Haemophilus influenzae | 0 | 1 | 1 |
| Listeria monocytogenes | 0 | 4 | 3 |
| Streptococcus pneumoniae | 1 | 20 | 26 |
| Other aethiology | 0 | 3 | 1 |
| Unknown aethiology | 0 | 1 | 8 |
| Under registration | 6 | 44 | - |
| Rabies | 0 | 0 | 0 |
| Rubella (congenital) | 0 | 0 | 0 |
| Rubella (during pregnancy) | 0 | 0 | 0 |
| Shigellosis | 1 | 14 | 21 |
| of these, infected abroad | 1 | 7 | 19 |
| Syphilis | 0 | 28 | 21 |
| Tetanus | 0 | 0 | 0 |
| Tuberculosis | 4 | 101 | 102 |
| Typhoid/paratyphoid fever | 0 | 2 | 10 |
| of these, infected abroad | 0 | 2 | 10 |
| Typhus exanthematicus | 0 | 1 | 0 |
| VTEC/HUS | 0 | 47 | 35 |
| of these, infected abroad | 0 | 13 | 10 |

¹⁾ Cumulative number 2007 and in corresponding period 2006

Selected laboratory diagnosed infections

Number of specimens, isolates, and/or notifications received in SSI laboratories

| Table 2 | Week 15 2007 | Cum. 2007 ²⁾ | Cum. 2006 ²⁾ |
|--|-----------------|----------------------------|----------------------------|
| Bordetella pertussis (all ages) | 3 | 45 | 84 |
| Gonococci | 5 | 95 | 123 |
| of these, females | 0 | 13 | 27 |
| of these, males | 5 | 82 | 96 |
| Listeria monocytogenes | 1 | 16 | 9 |
| Mycoplasma pneumoniae | | | |
| Resp. specimens ³⁾ | 3 | 215 | 199 |
| Serum specimens ⁴⁾ | 9 | 230 | 166 |
| Streptococci ⁵⁾ | | | |
| Group A streptococci | 4 | 43 | 45 |
| Group B streptococci | 1 | 25 | 31 |
| Group C streptococci | 3 | 7 | 7 |
| Group G streptococci | 2 | 34 | 36 |
| S. pneumoniae | 35 | 430 | 411 |
| Table 3 | Week 13 2007 | Cum. 2007 ²⁾ | Cum. 2006 ²⁾ |
| Pathogenic int. bacteria ⁶⁾ | | | |
| Campylobacter | 54 | 573 | 425 |
| S. Enteritidis | 4 | 67 | 77 |
| S. Typhimurium | 12 | 77 | 64 |
| Other zoon. salmonella | 10 | 136 | 119 |
| Yersinia enterocolitica | 5 | 77 | 45 |
| Verocytotoxin-producing E. coli | 1 | 52 | 27 |
| Enteropathogenic E. coli | 1 | 43 | 54 |
| Enterotoxigenic E. coli | 0 | 33 | 48 |

²⁾ Cumulative number 2007 and in corresponding period 2006

³⁾ Resp. specimens with positive PCR

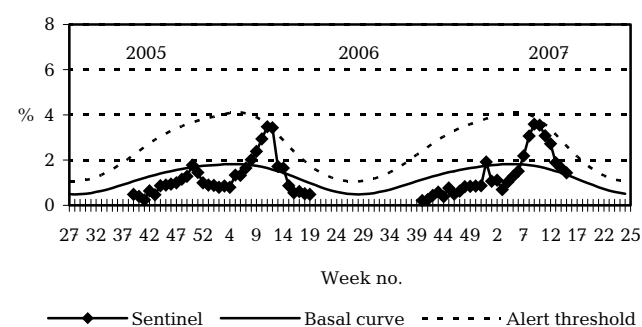
⁴⁾ Serum specimens with pos. complement fixation test

⁵⁾ Isolated in blood or spinal fluid

⁶⁾ See also www.germ.dk

Sentinel surveillance of the influenza activity

Weekly percentage of consultations, 2005/2006/2007



Sentinel: Influenza consultations (as percentage of total consultations)

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

Alert threshold: Possible incipient epidemic

18 April 2007