



TYPHOID AND PARATYPHOID FEVER 2002-2003

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Clinical presentation & transmission

Typhoid and paratyphoid fever are septic febrile illnesses caused by the Salmonella serotypes *S. typhi* and *S. paratyphi* A, B and C. A reminder procedure for notifications was introduced in January 2000. The route of infection is faecal-oral from human excrement, and fever is the cardinal symptom, EPI-NEWS 38/02.

Notified cases

In 2002-2003, there were a total of 22 notified cases of typhoid and 29 of paratyphoid fever, [table 1](#).

Table 1. Notified cases of typhoid and paratyphoid fever, 2002-2003

| Year | Typhoid | Paratyphoid |
|-------|---------|-------------|
| 2002 | 11 | 8 |
| 2003 | 11 | 21 |
| Total | 22 | 29 |

As in previous years, typhoid and paratyphoid fever was most common in children and younger adults, [table 2](#). Ninety-one percent and 89% of the notified patients were admitted, respectively.

Table 2. Notified cases of typhoid and paratyphoid fever, by age, 2002-2003

| Age (yrs) | Typhoid | Paratyphoid |
|-----------|---------|-------------|
| < 2 | 1 | 0 |
| 2-6 | 6 | 1 |
| 7-14 | 1 | 7 |
| 15-19 | 0 | 1 |
| 20-29 | 9 | 7 |
| 30-39 | 2 | 6 |
| 40-49 | 0 | 2 |
| 50 + | 3 | 5 |
| Total | 22 | 29 |

Mode of transmission, typhoid fever

The greatest proportion (77%) of patients with typhoid fever were infected in Pakistan and the rest of Asia, [table 3](#).

Table 3. Notified cases of typhoid and paratyphoid fever, by presumed country/region of infection, 2002-2003

| Country/area | Typhoid | Paratyphoid |
|-----------------------------|---------|-------------|
| Pakistan | 12 | 8 |
| India | 2 | 2 |
| Rest of Asia | 3 | 3 |
| Turkey | 0 | 3 |
| Denmark | 3 | 7 |
| Rest of Europe | 1 | 2 |
| Not stated (sev. countries) | 1 | 4 |
| Total | 22 | 29 |

Fifteen of the 22 typhoid patients were immigrants visiting the country of origin, including six children <15 years, [table 4](#). Three immigrants were infected in Denmark, including two children <15 years.

Table 4. Notified cases of typhoid and paratyphoid fever, by place of origin, 2002-2003

| Ethnicity | Typhoid | Paratyph. |
|--|---------|-----------|
| Immigrants inf. in country of origin/ on tourist journey | 15 | 13 |
| Danes infected travelling abroad | 1 | 8 |
| Immigrants infected in DK | 3 | 1 |
| Danes inf. in DK | 0 | 6 |
| Not stated (sev. countries) | 3 | 1 |
| Total | 22 | 29 |

In addition, two Europeans living in Denmark were infected during travel, and one Dane was infected in India.

Vaccination status for typhoid

Information was not provided about vaccination or other prophylaxis in association with the notifications.

Means of transmission, paratyphoid

A total of 41% of patients with paratyphoid were infected in Europe, including 58% in Denmark. The rest were infected in Asia, [table 3](#). A total of 13 out of the 29 patients were immigrants who had visited their country of origin, including five children <15 years. One immigrant child was infected in Denmark, [table 4](#). Eight Danes were infected while travelling abroad, six in Asia and two in Greece. Six Danes, including one child < 15 years, were infected with paratyphoid in Denmark, one via foodstuffs, the rest from an unknown source of infection.

Cases detected by culture

[Table 5](#) shows the number of culture confirmed cases of *S. typhi* and *S. paratyphi* A, B or C, reported in the laboratory based surveillance.

Table 5. Laboratory diagnosed cases of typhoid and paratyphoid fever 2002-2003. Notified cases in ()

| Year | Typhoid | Paratyphoid |
|-------|---------|-------------|
| 2002 | 9 (11) | 10 (8) |
| 2003 | 11 (11) | 21 (21) |
| Total | 20 | 31 |

Comments

Most of the notified cases of typhoid and paratyphoid are imported. Immigrant families are particularly at risk in association with travel to the country of origin. Vaccination against typhoid is particularly relevant in the event of longer trips and stays with family in endemic areas. The vaccine can be either parenteral or oral, EPI-NEWS 21/22a/04. Outbreaks of typhoid and paratyphoid

are occasionally seen in Denmark.

The most recent was in 2002, when members of an immigrant family were probably infected by a carrier who had acquired the infection in Iraq. In addition, a child from a Pakistani immigrant family was infected with paratyphoid A by a sibling after the family had returned from a visit to Pakistan. Outbreaks have been seen before 2002 among Danes on holiday in Turkey, EPI-NEWS 34/99. (C. Kjelsø, K. Mølbak, Department of Epidemiology, S. Ethelberg, Department of Bacteriology, Mycology and Parasitology)

HUMAN TBE IN DENMARK ONLY VERIFIED ON BORNHOLM

Tick-borne encephalitis (TBE) is caused by a flavivirus that may be transmitted to humans and animals through bites from the *Ixodes ricinus* tick, EPI-NEWS 17/01. The disease is endemic on the Danish island of Bornholm. The diagnosis of TBE is made by detection of antibodies towards the virus in a serum sample. Statens Serum Institut established an improved method for the detection of TBE antibodies this summer. One hundred samples from patients living all over the country with suspected encephalitis of unknown aetiology were tested for IgM and IgG TBE antibodies and none was positive. Out of 339 samples submitted from all over the country on suspicion of TBE in the period 15 July to 31 October 2004, 11 samples were positive. Nine patients had caught the infection on Bornholm, one was infected in Sweden, and one in Austria. All patients had meningitis or meningoencephalitis. Human cases of TBE have thus still not been diagnosed in Denmark outside of Bornholm, and there is no indication to change the current recommendations for TBE vaccination, EPI-NEWS 17/01. In periodicals and elsewhere the result of a survey of antibodies to TBE in Danish roe deer has recently received attention. It appears that serological markers have been found in roe deer from several Danish forest districts. On this basis, it is stated that there may be a risk of TBE from tick bites, also outside of Bornholm. However, the investigation of roe deer serum has in itself limited relevance to human medicine, partially because of uncertainty about the serological method selected. (L. P. Nielsen, Department of Virology, K. Mølbak, Dept. of Epidemiology)

Individually notifiable diseases

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

Figures for 2004 are preliminary.

| Table 1 | Week 45 2004 | Cum. 2004 ¹⁾ | Cum. 2003 ¹⁾ |
|--------------------------------|--------------|-------------------------|-------------------------|
| AIDS | 1 | 37 | 30 |
| Anthrax | 0 | 0 | 0 |
| Botulism | 0 | 0 | 1 |
| Cholera | 0 | 1 | 0 |
| Creutzfeldt-Jakob | 0 | 7 | 5 |
| Diphtheria | 0 | 0 | 0 |
| Food-borne diseases | 15 | 545 | 491 |
| of these, infected abroad | 6 | 91 | 109 |
| Gonorrhoea | 7 | 292 | 139 |
| Haemorrhagic fever | 0 | 0 | 0 |
| Hepatitis A | 5 | 203 | 71 |
| of these, infected abroad | 0 | 61 | 37 |
| Hepatitis B (acute) | 0 | 34 | 39 |
| Hepatitis B (chronic) | 2 | 127 | 173 |
| Hepatitis C (acute) | 0 | 1 | 7 |
| Hepatitis C (chronic) | 7 | 229 | 275 |
| HIV | 1 | 271 | 213 |
| Legionella pneumonia | 0 | 90 | 78 |
| of these, infected abroad | 0 | 25 | 24 |
| Leprosy | 0 | 0 | 0 |
| Leptospirosis | 0 | 7 | 3 |
| Measles | 0 | 0 | 0 |
| Meningococcal disease | 0 | 72 | 91 |
| of these, group B | 0 | 40 | 48 |
| of these, group C | 0 | 11 | 20 |
| of these, unspec. + other | 0 | 21 | 23 |
| Mumps | 0 | 2 | 3 |
| Neuroborreliosis | 1 | 88 | 64 |
| Ornithosis | 0 | 5 | 12 |
| Pertussis (children < 2 years) | 4 | 196 | 98 |
| Plague | 0 | 0 | 0 |
| Polio | 0 | 0 | 0 |
| Purulent meningitis | | | |
| Haemophilus influenzae | 0 | 3 | 4 |
| Listeria monocytogenes | 0 | 1 | 1 |
| Streptococcus pneumoniae | 0 | 78 | 95 |
| Other aethiology | 0 | 6 | 4 |
| Unknown aethiology | 0 | 11 | 12 |
| Under registration | 1 | 19 | - |
| Rabies | 0 | 0 | 0 |
| Rubella (congenital) | 0 | 0 | 0 |
| Rubella (during pregnancy) | 0 | 0 | 0 |
| Shigellosis | 1 | 73 | 90 |
| of these, infected abroad | 1 | 61 | 73 |
| Syphilis | 1 | 110 | 53 |
| Tetanus | 0 | 0 | 0 |
| Tuberculosis | 7 | 394 | 354 |
| Typhoid/paratyphoid fever | 0 | 21 | 27 |
| of these, infected abroad | 0 | 19 | 21 |
| Typhus | 0 | 0 | 0 |
| VTEC/HUS | 3 | 131 | 102 |
| of these, infected abroad | 0 | 26 | 27 |

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 45 2004 | Cum. 2004 ²⁾ | Cum. 2003 ²⁾ |
|--|--------------|-------------------------|-------------------------|
| Bordetella pertussis (all ages) | 35 | 870 | 433 |
| Gonococci | 10 | 356 | 217 |
| of these, females | 1 | 44 | 25 |
| of these, males | 9 | 312 | 192 |
| Listeria monocytogenes | 0 | 31 | 25 |
| Mycoplasma pneumoniae | | | |
| Resp. specimens ³⁾ | 46 | 323 | 167 |
| Serum specimens ⁴⁾ | 29 | 366 | 441 |
| Pathogenic int. bacteria ⁵⁾ | | | |
| Campylobacter | 79 | 3419 | 3145 |
| S. Enteritidis | 14 | 477 | 676 |
| S. Typhimurium | 6 | 412 | 404 |
| Other zoon. salmonella | 17 | 467 | 443 |
| Yersinia enterocolitica | 5 | 199 | 211 |
| Streptococci ⁶⁾ | | | |
| Group A streptococci | 0 | 106 | 127 |
| Group C streptococci | 1 | 20 | 19 |
| Group G streptococci | 1 | 93 | 105 |
| S. pneumoniae | 17 | 1036 | 1012 |

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

³⁾ Resp. specimens with positive PCR

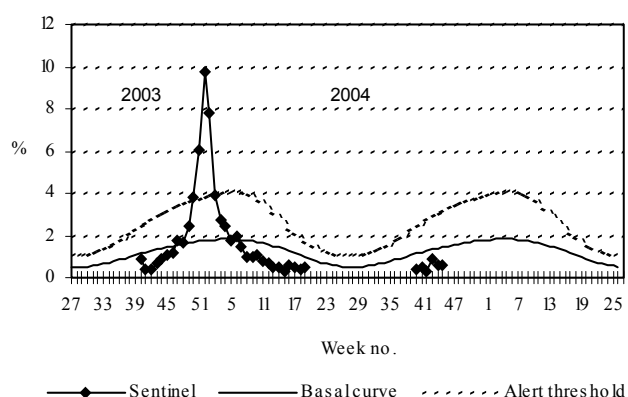
⁴⁾ Serum specimens with pos. complement fixation test, MPT

⁵⁾ See also www.germ.dk

⁶⁾ Isolated in blood or spinal fluid

Sentinel surveillance of the influenza activity

Weekly percentage of consultations, 2003/2004/2005



Sentinel: Influenza consultations (as percentage of total consultations)

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

Alert threshold: Possible incipient epidemic