



## TYPHOID & PARATYPHOID FEVER 2004-2007

No. 4, 2008

### Clinical manifestation & transmission

Typhoid and paratyphoid fever are caused by *Salmonella Typhi* and *S. Paratyphi A, B and C*. Transmission is faecal-oral via food, water and personal contact, EPI-NEWS 38/02 and 46/04. Typhoid and paratyphoid fever are notifiable for physicians as well as laboratories, and the Department of Epidemiology sends reminders for clinical notification on the basis of laboratory information supplied by the Department of Bacteriology, Mycology & Parasitology (DBMP).

### Notified cases

The period 2004-2007 saw 64 notified cases of typhoid fever and 43 cases of paratyphoid fever, [Table 1](#), including 16 (15%) received in response to reminders. Eighty-nine percent and 86% of the notified patients were admitted to hospital, respectively.

**Table 1. Notified cases of typhoid and paratyphoid fever by age, 2004-2007**

Age (yrs)	Typhoid fever	Paratyph. fever
< 2	1	1
2-6	4	3
7-14	8	10
15-19	9	2
20-29	19	14
30-39	15	2
40-49	3	3
50 +	5	8
Total	64	43

### Mode of transmission, typhoid fever

The majority (80%) of the typhoid fever cases were infected in Pakistan or other parts of Asia, [Table 2](#). A total of 48 of the 64 cases of typhoid fever were immigrants, including 11 children < 15 years, who had visited their country of origin. Two immigrants were infected in Denmark.

Twelve Danes, including two children < 15 years, were infected in India. Two Danes were infected in Denmark. Both presumably had occupational contact with infected persons.

### Mode of transmission, paratyphoid fever

A total of 44% of the paratyphoid fever cases were infected in Pakistan and other parts of Asia. Nine cases were infected in Europe, including three in Denmark. In nine cases,

**Table 2. Notified cases of typhoid and paratyphoid fever by presumed country/area of infection, 2004-2007**

Country/area	Typhoid fever	Paratyph. fever
Pakistan	35	12
India	12	6
Rest of Asia	4	1
Ghana	1	1
Rest of Africa	2	1
Libanon	2	0
Rest of the Middle East	1	1
USA	1	0
Peru	0	2
Rest of South America	0	1
Denmark	4	3
Rest of Europe	0	6
Not stated/ more countries	2	9
Total	64	43

country of infection was not stated, or several possible places of infection outside Denmark were provided, [Table 2](#). A total of 22 of 27 cases of paratyphoid fever in immigrants had visited their country of origin, including 11 children < 15 years. A total of 13 Danes were infected during travels abroad, one in Europe and nine in six different African and Asian countries. In three cases, several possible infection countries were stated. A total of three Danes, including one child < 15 years, became infected with paratyphoid fever in Denmark.

### Culture confirmed cases

[Table 3](#) presents the number of laboratory confirmed cases of *S. Typhi* and *S. Paratyphi A, B or C* diagnosed by culture of sample material or culture sent to DBMP at the SSI.

**Table 3. Laboratory confirmed cases of typhoid/paratyphoid fever, 2004-2007**

Year	Danes	Immigrants	Unknown	Total
2004	1/3	11/7	2/4	14/14
2005	5/4	11/10	2/8	18/22
2006	3/2	13/6	2/6	18/14
2007	2/4	11/3	7/6	20/13
Total	11/13	46/26	13/24	70/63

### Vaccination status, typhoid fever

Two typhoid fever cases had received parenteral vaccination five and 12 months prior to disease onset.

### Commentary

The majority of the notified cases of typhoid and paratyphoid fever were imported and incidence as well as presumed country of infection is in line with previous years. In most cases the disease requires hospitalisation. The major risk is related to travels and stays outside of Europe, particularly in Asia. Consequently, typhoid fever vaccination is relevant prior to stays with relatives and acquaintances in endemic areas, regardless of the duration of the stay, and for prolonged tourist travels in primitive conditions. However, vaccination is relevant in connection with travels to the Indian subcontinent > 2 weeks duration, EPI-NEWS 21-22/2006. Vaccination may be administered orally or parenterally, EPI-NEWS 25a+b, 2007. Outbreaks of typhoid and paratyphoid fever are rarely seen in Denmark.

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### EUROPEAN FIELD EPIDEMIOLOGY STUDY PROGRAMME

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 begins in September 2008 and comprises a two-year long position in another European country. Programme participants 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. Citizens of the EU, Switzerland and Norway with proficiency in English are eligible applicants.

Furthermore, participants are expected to have previous working experience in the field of public health or epidemiology, and an interest in field epidemiology. It is "on-the-job-training" and participation in the study programme is remunerated. For further information, please see [www.epiet.org](http://www.epiet.org) or contact Kåre Mølbak, Department of Epidemiology, Statens Serum Institut.

Deadline for application: 10 February 2008.

(Department of Epidemiology)

## Individually notifiable diseases

Number of notifications received in the Department of Epidemiology, SSI (2008 figures are preliminary)

Table 1	Week 3 2008	Cum. 2008 <sup>1)</sup>	Cum. 2007 <sup>1)</sup>
AIDS	2	3	4
Anthrax	0	0	0
Botulism	0	0	0
Cholera	0	0	0
Creutzfeldt-Jakob	1	4	2
Diphtheria	0	0	0
Food-borne diseases	3	12	23
of these, infected abroad	1	3	4
Gonorrhoea	6	13	16
Haemorrhagic fever	0	0	0
Hepatitis A	2	5	2
of these, infected abroad	0	1	2
Hepatitis B (acute)	0	0	0
Hepatitis B (chronic)	4	8	16
Hepatitis C (acute)	0	0	1
Hepatitis C (chronic)	9	12	21
HIV	4	13	18
Legionella pneumonia	6	8	5
of these, infected abroad	4	4	1
Leprosy	0	0	0
Leptospirosis	0	0	1
Measles	0	0	0
Meningococcal disease	0	1	5
of these, group B	0	0	0
of these, group C	0	1	4
of these, unspec. + other	0	0	1
Mumps	1	1	0
Neuroborreliosis	2	6	10
Ornithosis	0	0	0
Pertussis (children < 2 years)	3	6	6
Plague	0	0	0
Polio	0	0	0
Purulent meningitis			
Haemophilus influenzae	0	0	0
Listeria monocytogenes	0	0	3
Streptococcus pneumoniae	3	7	7
Other aethiology	1	3	2
Unknown aethiology	0	0	0
Under registration	0	7	-
Rabies	0	0	0
Rubella (congenital)	0	0	0
Rubella (during pregnancy)	0	0	0
Shigellosis	2	5	2
of these, infected abroad	2	4	0
Syphilis	0	6	7
Tetanus	0	0	0
Tuberculosis	10	20	18
Typhoid/paratyphoid fever	0	1	0
of these, infected abroad	0	1	0
Typhus exanthematicus	0	0	0
VTEC/HUS	4	8	2
of these, infected abroad	0	1	2

<sup>1)</sup> Cumulative number 2008 and in corresponding period 2007

## Selected laboratory diagnosed infections

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

Table 2	Week 3 2008	Cum. 2008 <sup>2)</sup>	Cum. 2007 <sup>2)</sup>
Bordetella pertussis (all ages)	4	8	14
Gonococci	3	16	23
of these, females	0	2	3
of these, males	3	14	20
Listeria monocytogenes	1	1	8
Mycoplasma pneumoniae			
Resp. specimens <sup>3)</sup>	8	10	76
Serum specimens <sup>4)</sup>	4	11	47
Streptococci <sup>5)</sup>			
Group A streptococci	3	10	9
Group B streptococci	3	8	6
Group C streptococci	0	1	1
Group G streptococci	4	12	6
S. pneumoniae	21	127	97
Table 3	Week 1 2008	Cum. 2008 <sup>2)</sup>	Cum. 2007 <sup>2)</sup>
MRSA	26	26	-
Pathogenic int. bacteria <sup>6)</sup>			
Campylobacter	9	9	43
S. Enteritidis	1	1	0
S. Typhimurium	3	3	1
Other zoon. salmonella	2	2	10
Yersinia enterocolitica	1	1	1
Verocytotoxin-producing E. coli	0	0	2
Enteropathogenic E. coli	1	1	5
Enterotoxigenic E. coli	1	1	1

<sup>2)</sup> Cumulative number 2008 and in corresponding period 2007

<sup>3)</sup> Resp. specimens with positive PCR

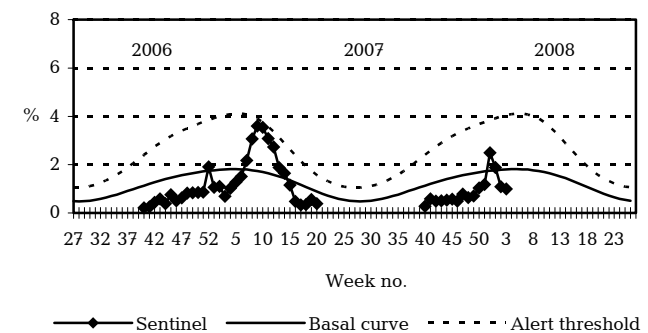
<sup>4)</sup> Serum specimens with pos. complement fixation test

<sup>5)</sup> Isolated in blood or spinal fluid

<sup>6)</sup> See also [www.germ.dk](http://www.germ.dk)

## Sentinel surveillance of the influenza activity

Weekly percentage of consultations, 2006/2007/2008



Sentinel: Influenza consultations (as percentage of total consultations)

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

Alert threshold: Possible incipient epidemic

23 January 2008