



## ZOONOTIC INTESTINAL INFECTIONS 2008

No. 11, 2009

Zoonoses are diseases that are transmitted from animals to humans. Zoonotic intestinal infections arise after ingestion of contaminated food-stuffs or water, or after contact with infected animals or humans.

### Overall trends

Bacterial enteropathogens are monitored through the laboratory notification system. Additionally, food-borne infection is individually notifiable on form 1515, provided a specific meal or food is under suspicion. The number of salmonella cases increased from 1,659 in 2007 to 3,654 (67 per 100,000) in 2008, [Figure 1](#). *S. Typhimurium* (with 2,002 cases, [Table 1](#)) was the most frequent serotype.

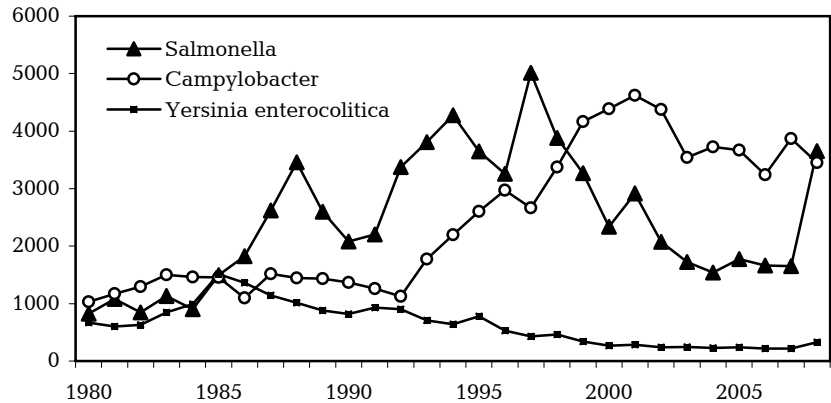
**Table 1. Salmonella cases (episodes) by serotype, 2008**

Serotype	No.	(%)
<i>S. Typhimurium</i>	2002	(55)
<i>S. Enteritidis</i>	638	(17)
<i>S. Agona</i>	71	(2)
<i>S. Newport</i>	59	(2)
<i>S. O:4,5,12; H:i:-</i>	57	(2)
<i>S. Derby</i>	55	(1)
<i>S. Stanley</i>	44	(1)
<i>S. Java</i>	40	(1)
<i>S. Infantis</i>	38	(1)
<i>S. Saintpaul</i>	36	(1)
Other serotypes	614	(17)
Total	3654	(100)

2008 saw six times as many cases of this type as 2007. The incidence among neonates and infants was remarkably high, [Table 2](#). *S. enteritidis* (638 cases, [Table 1](#)) increased by 12% from 2007, while the remaining serotypes (1,014 cases) increased by 37%. This last group comprised 119 different serotypes.

In 2008, a total of 3,454 (63 per 100,000) *Campylobacter jejuni/coli* infections were reported, 11% less than the preceding year, [Figure 1](#). There were 330 notifications of *Yersinia enterocolitica* (6.0 per 100,000), 23% more than in 2007. A total of 161 cases of verocytotoxin-producing *E. coli* (VTEC) (2.9 per 100,000) were registered, practically the same number as the previous year. In 2008 a total of 19 (12%) of the VTEC were serogroup O103 and 15 (9%) serogroup O157. VTEC infections and cases of haemolytic uraemic syndrome (HUS) are clinically notifiable. A total of 139 VTEC cases were notified, four of whom had HUS. Furthermore, two cases of HUS with no

**Figure 1. Number of recorded infections caused by Salmonella, Campylobacter and Yersinia enterocolitica, 1980-2008**



**Table 2. Zoonotic intestinal infections 2008, age-specific incidence per 10<sup>5</sup>**

Age (yrs)	Campylobacter	<i>S. Enteritidis</i>	<i>S. Typhimurium</i>	Other salmonella	<i>Yersinia enterocolitica</i>	VTEC
< 1	54	17	253	130	19	19
1-4	87	22	147	57	27	27
5-14	43	11	41	12	9	9
15-24	115	13	41	20	8	8
25-44	74	9	25	14	4	4
45-64	53	13	24	15	4	4
65+	37	10	24	17	3	3
Total	63	12	36	19	6	3

VTEC detection were notified. Further information concerning the number of bacterial intestinal infections is available at [www.germ.dk](http://www.germ.dk).

### Infections acquired abroad

In 2008 SSI collected travelling information by phone interviews from all salmonella patients and patients with campylobacter residing in the former counties of North Jutland, Aarhus and Roskilde. The patients were asked about the date of disease onset and whether they had travelled abroad within a seven-day period prior to disease onset. Patients who had travelled were asked about their destinations. Information was obtained from a total of 83% of salmonella and 82% of campylobacter cases in the three former counties. Among the responding patients, 33% of campylobacter cases were acquired abroad, while the corresponding figures were 61% for *S. Enteritidis*, 7% for *S. Typhimurium* and 35% for the remaining serotypes. The final figure comprises considerable variation in terms of serotypes.

### Commentary

For the first time since 1998, 2008 saw more cases of Salmonella than Campylobacter and for the first time since 1990 *S. Typhimurium* was more fre-

quent than *S. enteritidis*. This was primarily caused by an unusually large outbreak of *S. Typhimurium*, phage type U292, EPI-NEWS 27-33/08. Nevertheless, outbreaks of other phage types were also registered, including e.g. DT135, DT3, U288 and U312, EPI-NEWS 49/08 and 9/09. Additionally, the number of infections in the group other serotypes continued its upward trend. Improved data on travels abroad showed that *S. enteritidis* is now mainly travel-associated, while *S. Typhimurium* is chiefly acquired in Denmark. The final point should, however, be seen in the light of the many 2008 outbreak cases. The marked increase in the number of salmonella cases is unusual for a country which is otherwise well-reputed for its considerable efforts to limit salmonella. To maintain Danish food safety, it is essential to identify the factors causing this extraordinary situation.

Campylobacter remains a very frequent cause of bacterial intestinal infections. The primary source of infection is poultry and approx. 1/3 of the infections are probably imported. (S. Ethelberg, K. Mølbak, Department of Epidemiology, K.E.P. Olsen, F. Scheutz, DBMP)

## Individually notifiable diseases

Number of notifications received in the Department of Epidemiology, SSI (2009 figures are preliminary)

Table 1	Week 10 2009	Cum. 2009 <sup>1)</sup>	Cum. 2008 <sup>1)</sup>
AIDS	1	6	10
Anthrax	0	0	0
Botulism	0	0	0
Cholera	0	0	0
Creutzfeldt-Jakob	0	2	1
Diphtheria	0	0	0
Food-borne diseases	10	71	56
of these, infected abroad	0	7	13
Gonorrhoea	0	96	63
Haemorrhagic fever	0	0	0
Hepatitis A	1	7	13
of these, infected abroad	0	3	5
Hepatitis B (acute)	0	4	2
Hepatitis B (chronic)	0	14	42
Hepatitis C (acute)	0	3	3
Hepatitis C (chronic)	9	42	88
HIV	0	46	38
Legionella pneumonia	2	22	20
of these, infected abroad	0	2	10
Leprosy	0	0	0
Leptospirosis	0	0	1
Measles	0	8	4
Meningococcal disease	1	16	18
of these, group B	0	6	7
of these, group C	0	6	3
of these, unspec. + other	1	4	8
Mumps	0	2	10
Neuroborreliosis	0	2	16
Ornithosis	0	0	1
Pertussis (children < 2 years)	7	16	14
Plague	0	0	0
Polio	0	0	0
Purulent meningitis			
Haemophilus influenzae	0	2	0
Listeria monocytogenes	0	2	1
Streptococcus pneumoniae	0	21	25
Other aethiology	0	2	10
Unknown aethiology	1	3	7
Under registration	5	18	-
Rabies	0	0	0
Rubella (congenital)	0	0	0
Rubella (during pregnancy)	0	0	0
Shigellosis	2	19	13
of these, infected abroad	2	19	11
Syphilis	0	38	24
Tetanus	0	0	0
Tuberculosis	8	78	76
Typhoid/paratyphoid fever	0	3	7
of these, infected abroad	0	0	5
Typhus exanthematicus	0	0	0
VTEC/HUS	5	23	21
of these, infected abroad	0	6	6

<sup>1)</sup> Cumulative number 2009 and in corresponding period 2008

## Selected laboratory diagnosed infections

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

Table 2	Week 10 2009	Cum. 2009 <sup>2)</sup>	Cum. 2008 <sup>2)</sup>
Bordetella pertussis (all ages)	5	29	29
Gonococci	5	77	83
of these, females	2	16	15
of these, males	3	61	68
Listeria monocytogenes	0	14	4
Mycoplasma pneumoniae			
Resp. specimens <sup>3)</sup>	2	21	34
Serum specimens <sup>4)</sup>	4	36	37
Streptococci <sup>5)</sup>			
Group A streptococci	4	49	29
Group B streptococci	2	18	20
Group C streptococci	0	6	3
Group G streptococci	7	34	23
S. pneumoniae	33	343	275
Table 3	Week 8 2009	Cum. 2009 <sup>2)</sup>	Cum. 2008 <sup>2)</sup>
MRSA	4	114	85
Pathogenic int. bacteria <sup>6)</sup>			
Campylobacter	20	207	239
S. Enteritidis	5	34	48
S. Typhimurium	14	157	51
Other zoon. salmonella	11	93	115
Yersinia enterocolitica	4	28	35
Verocytotoxin-producing E. coli	3	18	16
Enteropathogenic E. coli	4	23	12
Enterotoxigenic E. coli	6	26	48

<sup>2)</sup> Cumulative number 2009 and in corresponding period 2008

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

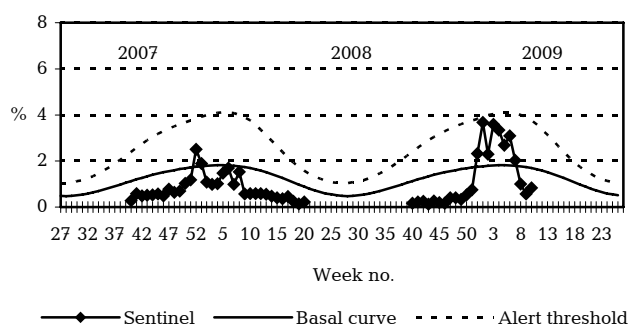
<sup>4)</sup> Serum specimens with pos. complement fixation test

<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, 2007/2008/2009



Sentinel: Influenza consultations (as percentage of total consultations)

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

Alert threshold: Possible incipient epidemic