



WHOOPING COUGH 2009

Table 2. Laboratory-confirmed whooping cough cases by age, F/M ratio and gender share, as well as incidence per 10⁵, 2009

Age group	No.	(%)	F/Mratio	Incidence
<1 year	76	14	1	117
1 year	14	3	1	21
2-4 yrs	43	8	1	22
5-9 yrs	66	12	1	20
10-14 yrs	148	27	1,1	43
15-19 yrs	51	9	1,2	15
20-29 yrs	22	4	2,1	3
30-39 yrs	32	6	2,2	4
40-49 yrs	55	10	1,8	7
50+	34	6	1,6	2
Total	541	100	1,2	10

This report comprises all cases of laboratory-diagnosed whooping cough detected in Denmark in 2009 by culture and/or PCR. Diagnosis by serology was not available in 2009. A total of 541 cases of whooping cough were detected. The number of cases and incidence per area are shown in [Table 1](#).

This report is based on data from whooping cough cases (number in parenthesis) detected at Statens Serum Institut (188), DCM Herlev Hospital (20), DCM Hvidovre Hospital (13), DCM Odense University Hospital (167), DCM Aarhus University Hospital (76) and DCM Viborg Regional Hospital (77).

Table 1. Laboratory-confirmed whooping cough cases by area and incidence per 10⁵, 2009

Area	No.	Incidence
Copenhagen City	29	4
Copenhagen, subs.	21	4
Northern Zealand	25	6
Bornholm	1	2
Eastern Zealand	5	2
W & S Zealand	39	7
Funen	143	30
Southern Jutland	77	11
Western Jutland	59	14
Eastern Jutland	105	13
Northern Jutland	34	6
Other/not stated	3	-
Total	541	10

Age and gender

Distribution by age and gender are shown in [Table 2](#).

As in previous years, the highest whooping cough incidence was seen in infants below one year of age and in children aged 10-14 years. The incidence in these two groups was 177 and 43 per 10⁵, respectively.

Adolescents and adults aged 15 years and older comprised 35% (194 cases) of the total number of detected cases. The overall 2009 incidence of 10 per 10⁵ was in line with the corresponding numbers from 2007 and 2008 (when incidences of 8 and 9 per 10⁵, respectively, were seen).

As in previous years, the majority in most age groups were girls/women, particularly among adults.

Seasonal variation

The occurrence of whooping cough was unevenly distributed across the year as 31% (167) of all cases were detected in the months of May and June.

Local clusters

The highest numbers of whooping cough cases were detected on Funen, particularly in the municipalities of Faaborg-Central Funen (60 cases) and Odense (49).

In Eastern Jutland, the bulk of cases detected were from the municipalities of Silkeborg (45) and Aarhus (24), and in Southern Jutland the most heavily affected municipality was Sønderborg (50).

Commentary

Whooping cough is extremely contagious and the majority of the population is susceptible, as vaccination and previous whooping cough infection only yields 5-10 years of protection. This is confirmed by the fact that since the introduction of revaccination at 5 years of age in 2003, an increasing share of cases has been seen among adolescents and young adults. Whooping cough typically occurs cyclically with epidemics every 3-5 years. The most recent Danish whooping cough epidemic occurred in 2002, and - not counting the increased occurrence seen in 2004 - it has thus been 8 years since the previous Danish epidemic. (T. Dalby, DBMP)

WHOOPING COUGH IN CHILDREN < 2 YEARS

In children < 2 years of age, whooping cough is individually notifiable. Form 1515 is to be used in laboratory-confirmed cases.

2009 saw a total of 91 notified cases of whooping cough in children below 2 years of age, 48 boys and 43 girls. Reminders were sent out for 39% of the notifications.

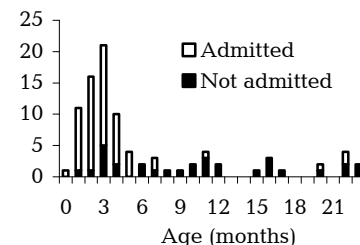
The age distribution was as follows: 28 (31%) were children < 2 months, 31 (34%) were 3-4 months, 17 (19%) were 5-11 months and 15 (16%) were 12-23 months old.

Among the 91 notified children below 2 years, 57 (63%) were unvacci-

nated, while seven (8%) had received three vaccinations.

The share of children below six months of age who were admitted due to whooping cough was 86%. Furthermore, three (23%) children aged 6-11 months and three (20%) aged 12-23 months were admitted, [Figure 1](#).

Figure 1. Notified whooping cough cases in children < 2 years, by age in months and admission, 2009



Transmission

The source of infection was known in 51% of the notified cases in children. Among known infection sources, siblings comprised 52%, other family members 28%, other known persons 11%, whooping cough in the environment 4%, infection at a hospital 1% and at child-care institutions 1%.

Commentary

The 2009 occurrence of whooping cough in children below 2 years of age was slightly below that observed in 2008 (106) and at par with 2007 (94). Protection against whooping cough is only significant after two vaccinations, it is therefore essential to observe the planned vaccination times at 3 and 5 months. However, whooping cough vaccination is not 100% efficient, and some whooping cough should be expected among fully vaccinated children below the age of two years.

(A.H. Christiansen, P.H. Andersen, Dept. of Epidemiology)

Individually notifiable diseases

Number of notifications received in the Department of Epidemiology, SSI (2010 figures are preliminary)

Table 1	Week 43 2010	Cum. 2010 ¹⁾	Cum. 2009 ¹⁾
AIDS	2	48	34
Anthrax	0	0	0
Botulism	0	1	0
Cholera	0	0	0
Creutzfeldt-Jakob	0	14	7
Diphtheria	0	0	0
Food-borne diseases	8	344	462
of these, infected abroad	0	74	85
Gonorrhoea	0	0	466
Haemorrhagic fever	0	0	0
Hepatitis A	0	47	30
of these, infected abroad	0	26	23
Hepatitis B (acute)	0	23	22
Hepatitis B (chronic)	4	164	147
Hepatitis C (acute)	0	2	6
Hepatitis C (chronic)	4	335	264
HIV	2	227	222
Legionella pneumonia	6	105	108
of these, infected abroad	4	28	23
Leprosy	0	0	0
Leptospirosis	1	0	0
Measles	0	4	9
Meningococcal disease	4	60	67
of these, group B	1	27	40
of these, group C	0	18	21
of these, unspec. + other	3	15	6
Mumps	0	30	13
Neuroborreliosis	4	44	43
Ornithosis	0	12	11
Pertussis (children < 2 years)	0	74	97
Plague	0	0	0
Polio	0	0	0
Purulent meningitis			
Haemophilus influenzae	0	2	5
Listeria monocytogenes	0	6	6
Streptococcus pneumoniae	0	61	70
Other aethiology	0	15	11
Unknown aethiology	1	19	21
Under registration	0	4	-
Rabies	0	0	0
Rubella (congenital)	0	0	0
Rubella (during pregnancy)	0	0	0
Shigellosis	2	74	91
of these, infected abroad	2	57	73
Syphilis	18	341	211
Tetanus	0	0	0
Tuberculosis	8	328	293
Typhoid/paratyphoid fever	0	30	22
of these, infected abroad	0	28	19
Typhus exanthematicus	0	0	0
VTEC/HUS	0	124	132
of these, infected abroad	0	32	23

¹⁾ Cumulative number 2010 and in corresponding period 2009

Selected laboratory diagnosed infections

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

Table 2	Week 43 2010	Cum. 2010 ³⁾	Cum. 2009 ³⁾
Bordetella pertussis (all ages)	6	178	177
Gonococci	7	352	358
of these, females	0	93	95
of these, males	7	259	263
Listeria monocytogenes	2	48	71
Mycoplasma pneumoniae			
Resp. specimens ³⁾	46	375	64
Serum specimens ⁴⁾	11	236	97
Streptococci ⁵⁾			
Group A streptococci	3	137	124
Group B streptococci	0	92	103
Group C streptococci	0	50	31
Group G streptococci	3	137	140
S. pneumoniae	18	834	851
Table 3	Week 41 2010	Cum. 2010 ²⁾	Cum. 2009 ²⁾
MRSA	17	816	606
Pathogenic int. bacteria ⁶⁾			
Campylobacter	60	3106	2774
S. Enteritidis	10	318	544
S. Typhimurium	3	467	693
Other zoon. salmonella	19	547	605
Yersinia enterocolitica	3	158	197
Verocytotoxin- producing E. coli	1	153	137
Enteropathogenic E. coli	2	158	169
Enterotoxigenic E. coli	7	348	264

²⁾ Cumulative number 2010 and in corresponding period 2009

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

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