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NATIONAL SURVEILLANCE OF COMMUNICABLE DISEASES

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PCV COVERAGE AND INVASIVE PNEUMOCOCCAL DISEASE 2010

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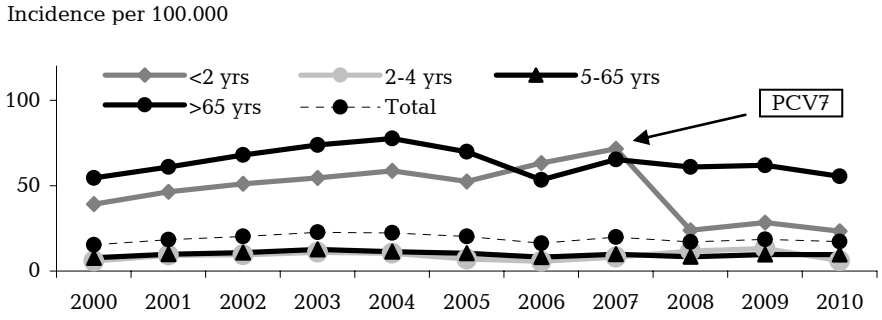
The 7-valent conjugate pneumococcal vaccine (PCV7) was comprised by the Danish childhood vaccination programme since 1 October 2007. The vaccine protects against invasive pneumococcal disease (IPD) caused by 7 pneumococcal serotypes (PS). IPD cases are defined on the basis of positive culture for Streptococcus pneumoniae from cerebrospinal fluid, blood or other normally sterile material. As from week 16, 2010, the 13-valent conjugated pneumococcal vaccine (PCV13) was delivered instead of PCV7, EPI-NEWS 15/10. Vaccinating physicians were encouraged to exhaust their stock of PCV7 before introducing PCV13. The 2010 transition year will be considered a PCV7 year in the following.

Table 1. PCV7 vaccination coverage percentages for birth years 2006-2010

	Standard programme				Catch-up-programme	
					Age at programme initiation	
					4-11 mths.	>=12 mths.
Vaccine	2010	2009	2008	2007*	2006/2007	2006**
PCV 1	65	89	87	85	76	58
PCV 2	48	91	89	86	71	51
PCV 3	-	81	88	86	57	12

*) Incl. children born from 1 june 2007
**) Only 2 doses offered

Figure 1. Age-specific and overall incidence of laboratory-confirmed cases of invasive pneumococcal disease, 2000-2010



Background
PCV7 is given at the ages of three, five and 12 months in the standard childhood vaccination programme. Children, who on 1 October 2007 were aged 4-11 months or 12-17 months, were offered three and two doses, respectively, as part of an introduction programme, EPI-NEWS 37a+b/07. Prior to the introduction of PCV7, the seven PS included in the vaccine caused 60-65% of all IPD cases in children < 5 years of age.

Vaccination coverage
Vaccination coverage was recorded using the administrative service codes indicated by GPs when settling the first, second and third vaccinations.
As per 31 December 2010, the coverage of the standard childhood vaccination programme for the birth cohorts 2007-2009 was 85-89% for the first PCV7 and 86-91% for the second, Table 1. Coverage of the third PCV7 was 86% (children born from 1 June and therefore comprised by the childhood vaccination programme) and 88% for the 2008 cohort.
The 2009 and 2010 birth cohorts had not been fully vaccinated when the data were analysed.
Among children aged 4-11 months at the initiation of the introduction programme, coverage was 76%, 71% and 57% for the first, second and third PCV7, respectively. Among children aged > 12 months 58% and 51% had received the first and second PCV7, respectively.

Changes in IPD occurrence
Figure 1 shows the age-specific occurrence of laboratory-confirmed IPD cases per 100,000 inhabitants before and after the introduction to the childhood vaccination programme. The report is based on national data from the Neisseria and Streptococcal Reference Laboratory, Statens Serum Institut.
The overall IPD incidence before PCV7 was 20 cases per 100,000 (on average 1,055 annual cases). The incidence decreased to 18 cases per 100,000 (on average 982 cases per year).
The decrease in IPD incidence was strongest in children < 2 years: from 54 cases per 100,000 in 2000-2007 to 25 cases per 100,000 in 2008-2010. In this age-group, the incidence of IPD caused by the serotypes included in the vaccine decreased from 37 to four per 100,000 following the introduction of PCV7. This is equivalent to an estimated 87% programme efficiency against the seven vaccine serotypes, counting vaccinated as well as unvaccinated children.
Among children below the age of five years, mortality following IPD was nearly 2% in the 2000-2007 period before the vaccine was introduced. After the introduction of the vaccine, the 2008-2010 period has seen a single death among IPD cases below five years of age, corresponding to a 0.6% mortality. Furthermore, the mean number of notified cases of pneumococcal meningitis in children below the age of five years fell from 23 per year to 13 per year following the introduction of PCV7.

Commentary
The IPD incidence in children < 2 years has been more than halved compared with the average incidence recorded in the eight-year-period leading up to the introduction of PCV7 to the childhood vaccination programme. This is primarily owed to a decrease in the occurrence of the PS included in the vaccine.
A small increase was observed in the IPD incidence of the PS not comprised by the PCV7. Specifically, the increase was caused by PS 7F, 1 and 19A which are all comprised by the currently used PCV13.
PCV coverage is approximately two percentage points lower than that of the DTaPIPV/Hib which is given concurrently. DTaPIPV/Hib coverage will be reported in a future issue of EPI-NEWS.
The somewhat lower coverage corresponds to approx. 1,300 children of the 2008 birth cohort consisting of about 66,000 children receiving the DTaPIPV/Hib vaccine but not the PCV vaccine. The cause of this choice not to receive the vaccine is unknown, but the vaccine's efficiency is assessed to be satisfactory at the current coverage.
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Individually notifiable diseases

Number of notifications received in the Department of Epidemiology, SSI (2011 figures are preliminary)

Table 1	Week 18 2011	Cum. 2011 [1]	Cum. 2010 [1]
AIDS	0	22	19
Anthrax	0	0	0
Botulism	0	0	0
Cholera	0	1	3
Creutzfeldt-Jakob	0	0	0
Diphtheria	0	2	4
Food-borne diseases	16	119	195
of these, infected abroad	0	5	13
Gonorrhoea	0	0	0
Haemorrhagic fever	0	2	10
Hepatitis A	3	76	67
of these, infected abroad	0	4	0
Hepatitis B (acute)	0	79	157
Hepatitis B (chronic)	4	99	84
Hepatitis C (acute)	0	0	0
Hepatitis C (chronic)	0	21	33
HIV	0	0	0
Legionella pneumonia	3	27	35
of these, infected abroad	0	4	6
Leprosy	0	1	0
Leptospirosis	0	1	0
Measles	2	49	79
Meningococcal disease	0	11	23
of these, group B			
of these, group C	0	1	0
of these, unspec. + other	0	2	3
Mumps	2	38	39
Neuroborreliosis	0	6	8
Ornithosis	0	3	9
Pertussis (children < 2 years)	0	2	0
Plague	1	52	25
Polio	0	12	13
Purulent meningitis	1	28	8
Haemophilus influenzae	0	12	4
Listeria monocytogenes	3	46	2
Streptococcus pneumoniae	0	5	6
Other aethiology	1	3	6
Unknown aethiology	0	0	0
Under registration	0	0	0
Rabies	0	0	0
Rubella (congenital)	0	0	0
Rubella (during pregnancy)	0	0	0
Shigellosis	0	0	0
of these, infected abroad	1	27	33
Syphilis	0	21	24
Tetanus	24	167	137
Tuberculosis	0	0	0
Typhoid/paratyphoid fever	2	138	123
of these, infected abroad	0	7	17
Typhus exanthematicus	0	7	15
VTEC/HUS	1	36	49
of these, infected abroad	1	13	13

[1] *Cumulative number 2011 and in corresponding period 2010*

Selected laboratory diagnosed infections

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

Table 2	Week 18 2011	Cum. 2011 [3]	Cum. 2010 [3]
Bordetella pertussis (all ages)	0	28	48
Gonococci	4	81	168
of these, females	1	17	49
of these, males	3	64	119
Listeria monocytogenes	0	10	19
Mycoplasma pneumoniae			
Resp. specimens [3]	5	199	39
Serum specimens [4]	7	168	84
Streptococci [5]			
Group A streptococci	19	98	69
Group B streptococci	7	54	41
Group C streptococci	5	22	18
Group G streptococci	3	52	56
S. pneumoniae	15	454	485
Table 3	**Week 16 2011**	**Cum. 2011 [2]**	**Cum. 2010 [2]**
MRSA	37	356	219
Pathogenic int. bacteria [6]			
Campylobacter	20	550	692
S. Enteritidis	2	62	88
S. Typhimurium	3	62	143
Other zoon. salmonella	4	156	197
Yersinia enterocolitica	5	62	50
Verocytotoxin-producing E. coli	1	35	51
Enteropathogenic E. coli	1	40	48
Enterotoxigenic E. coli	1	64	147

[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*