EPI-NEWS

NATIONAL SURVEILLANCE OF COMMUNICABLE DISEASES

Editor: Peter Henrik Andersen
Dept. of Epidemiology
Statens Serum Institut • 5 Artillerivej • DK 2300 Copenhagen S

Tel.: +45 3268 3268 • Fax: +45 3268 3874
www.ssi.dk • epinews@ssi.dk • ISSN: 1396-4798

PNEUMOCOCCAL VACCINE IN CHILDHOOD VACCINATION PROGRAMME No. 37a, 2007

On 1 October 2007 vaccination using heptavalent conjugated pneumococcal vaccine (PCV7) will be introduced to the Danish childhood vaccination programme.

Vaccination programme
PCV7 will be given as three 0.5 ml doses when the child is 3, 5 and 12 months of age, i.e. concurrently with the DTaPIPV/Hib vaccine. The two vaccines should be administered as intramuscular injections at separate injection sites. PCV7 should be administered in the side of the outer anterior part of the thigh (lateral great muscle) in children below the age of 1 year and in the upper arm (deltoid muscle) in older children. It is recommended that PCV7 be administered to the left side.

Introduction programme
During the introduction period, children born after 30 April 2006 who are 4-17 months by October 2007 will also be offered the vaccination (see table on reverse of EPI-NEWS 37b/07). Such children will receive a letter informing them of the introduction programme.
Children who at the first vaccination are 4-11 months old will be offered three vaccinations. The minimum interval between the two first vaccinations is one month, and the second and third vaccination should be separated by a minimum interval of two months. The third vaccination should be administered when the child is at least 12 months old.
Children aged 12-17 months at first vaccination will be offered two vaccinations with a minimum interval of two months.

Service code
Specific administrative service codes have been created for the first (8344), second (8345) and third (8346) PCV7 dose. Where a child participates in the introduction programme and only receives 2 doses, the first (8344) and second (8345) service codes should be used.
It is essential that the correct codes are used for all vaccinations. The service codes constitute the foundation of the Danish childhood vaccination registry and will be used for the ongoing monitoring of vaccination coverage.

Pneumococcal disease
Pneumococcal disease is caused by the pneumococcal bacterium (Streptococcus pneumoniae), which is a Gram-positive bacterium with a polysaccharide capsule. There are 91 known types of pneumococci. Pneumococci are an important causal factor of sinusitis, otitis media, pneumonia and invasive diseases, including sepsis and meningitis. The highest occurrence of invasive pneumococcal disease is found in children under the age of two years and in elderly persons above the age of 64 years. The risk of invasive pneumococcal disease diminishes considerably towards the age of two years and children above four years of age only have a very limited risk of invasive pneumococcal disease.
Pneumococci are the primary cause of bacterial meningitis in Denmark. In children below the age of five years, pneumococcal meningitis constitutes nearly 1/3 of all invasive pneumococcal disease cases: 13% suffer permanent events including hearing loss and brain damage, and 7% die.

Conjugated pneumococcal vaccine
In children under the age of 2 years, the immune system is not yet sufficiently matured to react effectively to pure polysaccharide vaccines. By using a vaccine in which the pneumococcal capsule polysaccharides 4, 6B, 9V, 14, 18C, 19F and 23F are coupled (conjugated) to a carrier protein, the needed protection against invasive pneumococcal disease caused by these types of pneumococci is achieved. The same conjugation principle is used in the current Hib vaccine.
The seven pneumococci types included in PCV7 cause 64% of all cases of invasive pneumococcal disease in children below the age of five years in Denmark. In the age group from six months to two years, PCV7 protects against 75% of invasive pneumococcal disease. Thus, invasive pneumococcal disease may still occur even among vaccinated children due to the types of pneumococci that are not part of PCV7.

Adverse events
PCV7 has been registered in Denmark for more than two years and mandatory notification only covers unexpected or serious adverse events.
Given concurrently with the DTaP-IPV/Hib vaccine, adverse events are expected in the form of fever $\geq$ 38°C in up to half of the vacinees and > 39.5°C in up to 3 % of the vacinees. Consequently, fever cramps may occur. After vaccination drowsiness, irritability, unsettled sleep, vomiting, diarrhoea and reduced appetite frequently occur. Local reactions presenting as tenderness and swelling is expected in 35-40% of the vacinees.

Expected effect of the introduction of pneumococcal vaccination
Once all children in the age group below five years have received PCV7 vaccination, the programme is expected to reduce the annual number of invasive pneumococcal disease cases by 50 and prevent one annual death among children below the age of five years.
The PCV7 vaccination is also expected to reduce the occurrence of upper and lower respiratory infections caused by pneumococci, EPI-NEWS 37b/07.
Furthermore, vaccination of children is expected to reduce the spread of pneumococci in the entire population. Consequently, it is estimated that the vaccination may prevent about 150 additional cases of invasive pneumococcal disease and 30 deaths annually, primarily among the elderly. The scope of such indirect effect depends on vaccination coverage and on the degree to which the types of pneumococci covered by the vaccination will be replaced by others not found in the current vaccine.

Mandatory laboratory notification
To improve the monitoring of the pneumococcal vaccination's effect under the childhood vaccination programme, notification of all invasive pneumococcal diseases is made mandatory for laboratories as from 1 October 2007. Notification should be made to Statens Serum Institut.

Commentary
PCV7 has formed part of the childhood vaccination programme of the U.S. since 2000. In the American context, a 4-dose regimen has led to considerable reduction of invasive pneumococcal disease cases in vaccinated children and some reduction among elderly adults. This indirect effect among the elderly is attributed to herd immunity protection. Several other European countries have introduced PCV7 to childhood vaccination programmes as 3-dose regimens, including Norway in 2006 and Great Britain and Belgium in 2007.
(P. Valentiner-Branth, P.H. Andersen, A.H. Christiansen, L. Vestergaard, S. Glismann, Dept. of Epidemiology, J.J. Christensen, Z.B. Harboe, H.B. Konradsen, DBMP)

12 September 2007

Individually notifiable diseases

Number of notifications received in the Department of Epidemiology, SSI (2007 figures are preliminary)

Table 1	Week 36 2007	Cum. 2007 [1]	Cum. 2006 [1]
AIDS	1	37	31
Anthrax	0	0	0
Botulism	0	0	0
Cholera	0	0	0
Creutzfeldt-Jakob	0	6	14
Diphtheria	0	0	0
Food-borne diseases	22	421	375
of these, infected abroad	2	80	89
Gonorrhoea	13	260	313
Haemorrhagic fever	0	0	0
Hepatitis A	1	18	22
of these, infected abroad	0	7	11
Hepatitis B (acute)	1	19	15
Hepatitis B (chronic)	6	195	244
Hepatitis C (acute)	0	4	6
Hepatitis C (chronic)	11	260	367
HIV	5	196	158
Legionella pneumonia	4	73	80
of these, infected abroad	0	16	20
Leprosy	0	0	0
Leptospirosis	0	8	7
Measles	0	2	26
Meningococcal disease	0	50	59
of these, group B	0	27	29
of these, group C	0	17	12
of these, unspec. + other	0	6	18
Mumps	1	4	12
Neuroborreliosis	1	54	41
Ornithosis	0	7	8
Pertussis (children < 2 years)	3	52	35
Plague	0	0	0
Polio	0	0	0
Purulent meningitis			
Haemophilus influenzae	0	2	1
Listeria monocytogenes	0	8	7
Streptococcus pneumoniae	1	81	66
Other aethiology	0	11	6
Unknown aethiology	0	11	16
Under registration	1	10	-
Rabies	0	0	0
Rubella (congenital)	0	0	0
Rubella (during pregnancy)	0	0	0
Shigellosis	31	128	41
of these, infected abroad	2	28	36
Syphilis	5	70	51
Tetanus	1	1	2
Tuberculosis	9	289	259
Typhoid/paratyphoid fever	2	16	20
of these, infected abroad	2	15	20
Typhus exanthematicus	0	2	0
VTEC/HUS	4	113	97
of these, infected abroad	0	31	33

[1] *Cumulative number 2007 and in corresponding period 2006*

Selected laboratory diagnosed infections

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

Table 2	Week 36 2007	Cum. 2007 [2]	Cum. 2006 [2]
Bordetella pertussis (all ages)	4	138	141
Gonococci	5	258	312
of these, females	1	40	55
of these, males	4	218	257
Listeria monocytogenes	2	37	35
Mycoplasma pneumoniae			
Resp. specimens [3]	6	267	292
Serum specimens [4]	5	315	258
Streptococci [5]			
Group A streptococci	0	84	111
Group B streptococci	3	70	70
Group C streptococci	0	16	16
Group G streptococci	1	88	104
S. pneumoniae	8	730	705
Table 3	**Week 34 2007**	**Cum. 2007 [2]**	**Cum. 2006 [2]**
MRSA	24	396	-
Pathogenic int. bacteria [6]			
Campylobacter	147	2590	1982
S. Enteritidis	8	335	371
S. Typhimurium	19	228	249
Other zoon. salmonella	3	449	405
Yersinia enterocolitica	11	183	118
Verocytotoxin-producing E. coli	6	112	98
Enteropathogenic E. coli	6	122	170
Enterotoxigenic E. coli	13	167	169

[2] *Cumulative number 2007 and in corresponding period 2006*

[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*

Commentary

In week 36, a tetanus notification was received concerning a 68-year-old female who had acquired a necrotic toe wound. She had received her latest tetanus vaccination 30 years ago. (Department of Epidemiology)