Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

hpsc

Pneumococcal vaccination information for Individuals at increased risk of invasive pneumococcal disease

Key points on pneumococcal vaccination

- Vaccination can reduce the incidence of invasive pneumococcal disease, particularly in those at increased risk of disease.
- Vaccination with pneumococcal vaccine(s) is recommended for those at increased risk of pneumococcal disease

Pneumococcal disease is caused by a bacterium called the *Streptococcus pneumoniae* (also sometimes called pneumococcus). *S. pneumoniae* is a common cause of acute ear infections, infected sinuses, pneumonia, meningitis, and septicaemia. It can also cause other severe diseases.

The bacteria is surrounded by a capsule, made up of predominantly of polysaccharides (complex sugars). It is this capsule that is the main determinant of infectivity and disease. There are than 90 different capsular types of *Streptococcus pneumoniae.* A minority of these capsular types (8-10) cause the majority of infections.

Pneumococcal disease occurs most commonly in the very young and the elderly. Some individuals are at increased risk of pneumococcal disease because of certain conditions that decrease their immunity (see Table 1 for list of conditions that increase risk of pneumococcal disease).

There are two types of vaccines available to prevent pneumococcal infection.

- **Pneumococcal polysaccharide vaccine (PPV23).** This vaccine contains purified polysaccharide from 23 of the most common capsular types of *S. pneumoniae.* This vaccine is recommended for elderly and at risk children and adults. This vaccine is suitable for individuals 24 months of age or older.
- **Pneumococcal conjugate vaccine (PnC7).** This vaccine contains polysaccharide from seven of the most common capsular types. The polysaccharide is conjugated (bound) to a protein. This vaccine is recommended for at risk children under 5 years of age. It is not recommended for at risk older children or adults.

Updated NIAC pneumococcal vaccination recommendations - 2006
Individuals at increased risk, regardless of age, should be vaccinated with the appropriate pneumococcal vaccines(s) for their age group;

- All at risk children up to the age of 5 years (<60 months) should receive pneumococcal conjugate vaccine (PnC7). The number of PnC7 vaccine doses is age dependent. The schedule is shown in Table 2.
- At risk children between the ages of two and five years (24-59 months) should also receive a single dose of 23-valent polysaccharide vaccine (PPV23), at least two months after the final dose of conjugate vaccine
- At risk children over the age of 5 years (60 months and older) and adults should receive a single dose of pneumococcal polysaccharide vaccine (PPV23).

Booster doses- are not routinely recommended for

- Once children and adults have completed the appropriate vaccination schedule additional booster doses are not currently recommended, unless these individuals have antibody levels likely to decline more rapidly e.g. those with no spleen, with splenic dysfunction, immunosuppression, nephrotic syndrome or chronic renal disease. In these circumstances re-immunisation with 23-valent polysaccharide vaccine should be given at five years after the first dose.

- Adults 65 years or older should receive a 2nd dose of PPV23 if they received vaccine more than 5 years before and were less than 65 years of age at the time of the first dose.
- The need and benefit for repeated booster doses among high risk individuals is unclear and is not routinely indicated.

Table 1. Individuals considered to be at increased risk of pneumococcal disease for whom pneumococcal vaccination is recommended*

• Asplenia or severe dysfunction of spleen including surgical splenectomy and coeliac syndrome
• Chronic renal disease or nephrotic syndrome
• Chronic heart, lung or liver disease, including cirrhosis
• Diabetes mellitus
• Sickle cell disease
• Immunodeficiency or immunosuppression due to disease or treatment including HIV infection at all stages
• Patients with CSF leaks either congenital or complicating skull fracture or neurosurgery
• Individuals who have received, or are about to receive, cochlear implants
• Elderly (65 years of age and older)
• Child < 5 years of age with history of invasive pneumococcal disease **

**National Immunisation Guidelines for Ireland 2002*

**All children <5 years who have IPD should be offered a dose of PCV irrespective of previous vaccination history and investigated for risk conditions. Children < 12 months (regardless of risk condition status) should be vaccinated with PnC7 vaccine with 2 doses < 12 months and a booster > 12 months (as per Table 2). If they have a risk condition, they should receive PPV23 (Table 2).

Table 2. Pneumococcal Vaccines –Immunisation schedule

Age at 1st vaccination	**Pneumococcal Vaccine Type Number of doses and intervals between doses**	
	7-valent Conjugate vaccine PnC7 (e.g. Prevenar™)	**23-valent Polysaccharide vaccine (PPV23) (Pneumovax® II)**
Children aged < 6 months	2 doses - interval of 2 months between doses 3rd dose > 12 months of age	1 dose - after 24 months of age
Children aged 6-11 months	2 doses -interval of 1-2 months between doses, 3rd dose > 12 months of age, at least 1month after 2nd dose	1 dose - after 24 months of age
Children aged 12 to 23 months*	1 dose* (2 doses for children with asplenia or splenic dysfunction)	1 dose - after 24 months of age
Children aged 24-59 months*†	1 dose* (2 doses for children with asplenia or splenic dysfunction)	1 dose - at least 2 months after last dose of PnC7
Children aged 5 years of age or older		1 dose - at least 2 months after last dose of PnC7
Adults		1 dose‡

* if a child has asplenia or splenic dysfunction or is immunocompromised they may have sub-optimal immunological response to 1 dose and a 2nd dose of PnC7 is recommended, with an interval of 2 months between doses

†at risk children who have already received PPV23 should receive one dose of PnC7 at least two months after the polysaccharide vaccine

‡Routine PPV23 booster is not currently recommended except for people whose antibody levels are likely to decline rapidly e.g. asplenic, splenic dysfunction, immunosuppression or chronic renal disease. In these individuals a booster 5 years after the first vaccination is recommended. The need for ongoing boosters is unclear and will be reviewed when more data is available.