

Streptococcus Pneumoniae Invasive Pneumococcal Disease and Related Vaccines

Information Sheet

What is pneumococcal disease?

Pneumococcal diseases include ear infections, lung infections (pneumonia), meningitis (inflammation of the tissues that cover the brain and spinal cord), and infections of the blood (bacteraemia). The bacterium *Streptococcus pneumoniae* is responsible for many pneumococcal diseases, and is commonly found in the nose and throat of healthy adults and children. Most of the time, this organism does not cause infections. However, a small number of people are not able to develop effective immunity to this organism, and may develop an infection. Infants, young children and the elderly are especially prone to pneumococcal disease.

How do these bacteria spread?

Pneumococcal bacteria spread through the air or by direct oral contact, (e.g. kissing, sharing drinks, cigarettes) or indirectly through articles freshly soiled with respiratory discharge (e.g. children sharing toys).

How does the disease progress?

The usual pneumococcal infection starts with an ear infection, sinus infection or lung infection. On rare occasions; these infections, if not treated with antibiotics, can develop into invasive pneumococcal disease. This means that the *Streptococcus pneumoniae* bacteria have invaded normally sterile sites such as blood or cerebrospinal fluid (CSF). When this happens, severe illness can result, especially in children, the elderly and other people with weakened immune systems. It is not known why certain individuals develop invasive disease while others do not.

How is invasive *Streptococcus pneumoniae* diagnosed?

Invasive *Streptococcus pneumoniae* is diagnosed when the bacterium is grown from cultures of sterile body fluids, such as blood or CSF. If left untreated, death or lasting impairment may result, particularly in people with high-risk medical conditions and the elderly. *Streptococcus pneumoniae* causes different symptoms depending on the part of the body it infects.

- **Pneumococcal Pneumonia** is an acute bacterial infection which can be characterized by sudden onset with a shaking chill, fever, chest pain, difficulty breathing, increased heart rate, a cough with “rusty-coloured” sputum and a high white blood cell count in lab tests.
- **Pneumococcal Meningitis** symptoms can include severe headache, high fever, neck stiffness, vomiting, disorientation, and sensitivity to light. In small children, the symptoms may be non-specific and include fever, irritability, poor appetite and drowsiness.
- Pneumococcal meningitis is not usually associated with any skin rash. A person with this type of meningitis does not pass it on to others.
- **Pneumococcal Bacteraemia** is an overwhelming bacterial infection in the blood (sepsis). Symptoms can appear at first as a high fever with a very high white blood cell count and no obvious site of infection. It is the most common bacteria found in the blood of children under 2 years old with fevers.

Can pneumococcal diseases be prevented?

There are 90 different known serotypes (variations) of pneumococcus. Some are more common in certain geographical areas and age groups. Presently, there are two types of vaccines available in Canada to prevent pneumococcal diseases.

1. Conjugate Vaccine (Pneumovax)

This vaccine is safe and should be considered for all children from 6 weeks to 9 years of age. It protects well against 7 different serotypes. It is especially recommended for children with chronic medical conditions such as:

- Sickle-cell disease
- Missing spleens
- HIV infection
- Other predisposing conditions, including congenital immune deficiencies, chronic cardiac or pulmonary disease, cerebral spinal fluid leaks, chronic kidney problems, diabetes mellitus, cancer, transplantation and receiving immune deficiency therapy.

Check with a health care provider for scheduling dosages, benefits of the vaccine for your child and potential side effects. Pneumovax should not be given to infants or children if they have:

- Had an allergic reaction to a previous pneumococcal vaccine
- An allergy to any of the components of the vaccine
- A high fever or serious infection
- Convulsions or seizures

2. Polysaccharide Pneumococcal Vaccine (Pneumovax 23, Pneumo 23 & Pnu-Imune 23)

This vaccine provides immunity against 23 different serotypes of pneumococcus. These 23 types account for 9 out of 10 cases of pneumococcal disease. The vaccine protects 50-80 percent of people against pneumococcal infection. Vaccination also makes the disease milder for those who may still catch it. It is especially recommended for:

- Children over the age of 2 at high risk for pneumococcal infection
- High-risk adults, including those with chronic renal disease, diabetes, alcoholism, HIV, cancer, cirrhosis, sickle-cell disease, other chronic illnesses, and those without spleens
- All persons 65 years and older

The dose for this vaccine is normally one single injection. Check with a health care provider to determine the benefits of the vaccine for you, potential side effects, and whether or not you need a second dose. The polysaccharide pneumococcal vaccine should not be given to the following people:

- Children under the age of 2
- Anyone with an allergy to any component of the vaccine
- Any persons who were given the polysaccharide pneumococcal vaccine within the previous 3 years.

How is pneumococcal disease treated?

Illnesses caused by *Streptococcus pneumoniae* are treated with antibiotics. However, some pneumococcal infections do not respond to certain antibiotics because the bacteria have become antibiotic resistant. This is a growing concern in the case of life-threatening pneumococcal diseases.