

## What is pneumococcal disease?

Pneumococcal disease is caused by *Streptococcus pneumoniae* bacteria. Ninety-three types of the bacteria produce a range of symptoms from relatively minor to very serious. Some types are more likely to cause infection in particular parts of the body than others, such as the sinuses (sinusitis), the ear (otitis media/middle ear infection), or the lungs (pneumonia).

Invasive pneumococcal disease is the most serious type of pneumococcal disease and occurs when the bacteria pass into the blood (septicaemia), inflame the membranes around the brain (meningitis), infect the heart muscle, or infect other sites in the body such as joints or the gut (abdomen).

## How do you catch it?

Pneumococcal bacteria are carried in the nose and throat and are easily passed from person to person by coughing, sneezing and close contact. Not everyone who catches or carries pneumococcal bacteria gets sick from them.

## What are the symptoms of pneumococcal disease?

This depends on what disease it is causing. Pneumococcal pneumonia can start with a fever and shaking chills, chest pain, shortness of breath, cough and rapid breathing or grunting. As the infection worsens the heart rate increases and a lack of oxygen (hypoxia) may occur.

A baby or young child with bacteraemia may only have a fever and be irritable, but an adult may have influenza-like general aches, pains and fever.

A baby with meningitis may have a fever, be irritable, have an unusual cry, refuse feeds, vomit, have a blank expression, look pale, and/or be sleepy or difficult to wake. Children and adults with meningitis may have a fever, joint pain, stiff neck, vomiting, headache, dislike of bright light, and/or be confused or sleepy.

Pneumococcal bacteria can also cause ear infections that are painful and affect hearing.

## How serious is pneumococcal disease?

Pneumococcal pneumonia can become life threatening. Pneumococcal blood infection (bacteraemia) and inflammation of the membranes around the brain (meningitis) are very serious, progress quickly (within hours), and can cause death. Pneumococcal infections can be difficult to treat particularly as some bacteria are resistant to antibiotics.

Long term hearing problems from chronic ear infections can cause speech and learning difficulties during childhood.

In New Zealand during 2016, the highest number of pneumococcal disease cases occurred in babies and children aged under 2 years, and adults aged 65 years or older.

In 2014, pneumococcal meningitis and pneumococcal pneumonia were the most common presentations for babies aged under 1 year. Pneumococcal pneumonia was the most common presentation for children aged 5 years or older, and adults. One child aged under 5 years, six children and adults aged 5–64 years, and 16 adults aged 65 years or older, died from pneumococcal infection.

## Who is at risk?

Children under 5 years of age and the elderly are more at risk of getting pneumococcal disease. Babies aged under 1 year, Māori, Pacific Peoples, and older adults have the highest risk of serious disease.

The risk of serious pneumococcal disease for Māori is just over three times and for Pacific Peoples almost four times higher than the risk for New Zealand Europeans.

Being exposed to tobacco smoke, living in crowded conditions, having another respiratory infection present, e.g. influenza, or a medical condition like diabetes or chronic lung or kidney problem, and/or having a weakened immune system, e.g. from HIV infection, cancer treatments or the person's spleen has been removed, can also increase the risk of pneumococcal disease.

## How do you prevent infection?

It is extremely difficult to avoid coming into contact with the bacteria but good hygiene practices, covering coughs and sneezes, hand washing, and avoiding smoking and contact with smokers may help.

It is important for babies to receive immunisation on time because they are particularly vulnerable to this infection from a very early age. Babies and young children cannot develop their own effective protection against pneumococcal bacteria until they are around 2 years old.

## Which vaccines protect against pneumococcal disease?

From approximately mid-August 2017, Synflorix® will be the free pneumococcal vaccine on the routine Immunisation Schedule at the 6 weeks, 3 months, 5 months and 15 months of age immunisation visits. Synflorix will also be used to catch-up missed immunisation doses up to 5 years of age.

Prevenar® 13 and Pneumovax®23 will continue to be the free pneumococcal vaccines on the 'special groups' Schedule, for children and adults with a medical condition that increases their risk of invasive pneumococcal disease AND is listed on the Pharmaceutical Schedule. For children with an eligible medical condition, Prevenar 13 will be given instead of Synflorix.

- » Synflorix includes 10 pneumococcal bacteria types, and can indirectly protect against two additional types.
- » Prevenar 13 includes the same pneumococcal types as Synflorix, plus three additional types.
- » Pneumovax23 includes 23 pneumococcal types. It works in a different way to Synflorix and Prevenar 13, and can add protection against 11 additional pneumococcal types than Prevenar 13.

## What if my baby starts with Prevenar 13 and changes to Synflorix?

A child who has started their course of pneumococcal protection with Prevenar 13 can complete their course with Synflorix. They are expected to develop full protection for the 10 pneumococcal bacteria types in both vaccines, and may also develop partial protection for the extra three types in Prevenar 13.

## Other pneumococcal vaccine recommendations

Doctors may recommend Prevenar 13 and/or Pneumovax23 for people with a medical condition that is not listed on the Pharmaceutical Schedule, but the vaccines will not be free.

Prevenar 13 and Pneumovax23 can be purchased from Healthcare Logistics for ineligible individuals.

## How safe are the vaccines?

Large international studies and years of monitoring adverse events reported after immunisation with pneumococcal vaccines have shown they have an excellent safety profile and they are well tolerated.

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## How safe are the vaccines? Continued

The most serious response that can occur after any immunisation is a severe allergic reaction (anaphylaxis). The risk of this occurring after pneumococcal vaccination is less than once in one million doses.

Common vaccine responses include temporary redness, swelling and/or pain at the site of injection, irritability or drowsiness, and decreased appetite.

A fever is likely to occur in children who receive Synflorix at the same visit as other immunisations on the Schedule. However, it is recommended that Synflorix is administered at the same visit as other Schedule vaccines, such as rotavirus, diphtheria, tetanus, pertussis, polio, hepatitis B, Hib, measles, mumps, rubella, and varicella vaccines.

Children who receive Prevenar 13 and the flu vaccine at the same visit have an increased risk of fever. Both vaccines can be given at the same visit. However, if parents are concerned about their child having a fever, these two vaccines could be given with two days or more between them.

## Who should not have the vaccine?

Anyone with severe allergy (anaphylaxis) to a previous dose of the vaccine or any component of the vaccine should not receive the vaccine.

Immunisation should be postponed in subjects suffering an acute illness or high fever. The presence of a minor infection is not a reason to delay immunisation.

## How protective are the conjugate vaccines?

Pneumococcal conjugate vaccines, Synflorix and Prevenar 13, significantly reduce the risk of pneumococcal pneumonia and invasive pneumococcal disease caused by serotypes directly or indirectly covered by the vaccines. This was particularly evident in children and somewhat evident in older adults who had received pneumococcal immunisations.

Immunising children also has a protective effect for the rest of the community. Community protection occurs because immunised children are less likely to carry and spread the pneumococcal bacteria.

Emerging evidence also suggests that Synflorix may also help reduce middle ear infections (acute otitis media) in children who receive their immunisations on time from 6 weeks if age.

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Disease	Possible complications of disease	Possible vaccine responses
Pneumococcal infections are caused by the bacterium <i>Streptococcus pneumoniae</i> .	<ul style="list-style-type: none"> <li>• Sinusitis, ear infection (otitis media).</li> <li>• Pneumonia.</li> <li>• Blood infection.</li> <li>• Inflammation of the membranes around the brain (meningitis).                             <ul style="list-style-type: none"> <li>• Around 3 people out of 10 cases with meningitis die.</li> <li>• Of the meningitis survivors, up to half will have serious disabilities.</li> </ul> </li> </ul>	<p><b>Common responses</b></p> <ul style="list-style-type: none"> <li>• Mild pain, redness and swelling around injection site.</li> <li>• Decreased appetite.</li> <li>• Increased or decreased sleep.</li> <li>• Fever.</li> </ul> <p><b>Rare responses</b></p> <ul style="list-style-type: none"> <li>• Hives.</li> <li>• Hypotonic, hyporesponsive episode (HHE) in infants.</li> <li>• Convulsion associated with fever.</li> <li>• Severe allergic reaction (anaphylaxis).</li> </ul>

Vaccines are prescription medicines. Talk to your doctor or nurse about the benefits or any risks.