

Pneumococcal Disease

What is pneumococcus?

Pneumococcus, also called *Streptococcus pneumoniae*, is a bacterium that is commonly found in the nose and throat of healthy people without causing disease. It can spread to different parts of the body to cause a variety of diseases, one of which is pneumonia. *Streptococcus pneumoniae* is the leading cause of bacterial pneumonia.

What diseases does pneumococcus cause?

a) Severe infections known as invasive pneumococcal disease (IPD) occur when the pneumococcus enters the bloodstream (bacteremia) and then through the bloodstream may infect other sites in the body. IPD results in significant morbidity and mortality.

IPD includes:

- pneumonia (bacteremia)
- meningitis
- febrile bacteremia
- arthritis
- peritonitis
- osteomyelitis

b) Less severe but more common diseases occur when the pneumococcus spreads locally from the nasopharynx to the nearby ears, sinuses, and bronchi and include:

- otitis media (middle ear infection)
- sinusitis
- bronchitis

How common is pneumococcal disease?

The most common types of pneumococcal infections include middle ear infections, sinus infections, pneumonia, bacteremia, and meningitis.

What is the disease burden in children?

Streptococcus pneumoniae (*S. pneumoniae*) is responsible for 15–50% of all episodes of community-acquired pneumonia, 30–50% of all cases of acute otitis media, and a significant proportion of bacterial meningitis and bacteraemia in children.

Who is at increased risk of pneumococcal disease?

- Children under five years of age, and especially those under two years of age
- Older people over age 65 years
- Individuals at higher risk for pneumococcal infection include those with HIV infection, sickle cell disease, asplenia, and chronic kidney disease. Among infants, additional higher risk groups are those infants who are not breast-fed and who have indoor smoke exposure.

How is pneumococcal disease spread?

It is spread from person to person through respiratory droplets (e.g., due to coughing or sneezing) from patients and healthy carriers.

Can pneumococcal disease be treated?

Pneumococcal disease can be treated with appropriate antibiotics. Most importantly, it can be prevented by vaccination.

Pneumococcal Vaccine

What is pneumococcal vaccine?

Pneumococcal vaccine protects against **severe** forms of pneumococcal disease, such as meningitis, pneumonia and bacteremia. It will not protect against these conditions if they are caused by agents other than pneumococcus.

Which PCV vaccines are available in India?

There are two types of PCV vaccines (depending on the number of serotypes covered) licensed in India – **PCV 13** [Prevenar-13 (Pfizer)] and **PCV 10** – a) Pneumosil (PCV 10 - Serum Institute of India Pvt Ltd); b) Synflorix (PCV 10 - GSK vaccines).

What is the vaccination schedule for the pneumococcal vaccine?

Routine vaccination:

- **Minimum age:** 6 weeks
- **PCV Vaccine preparations:**
- **PCV13** vaccine is licensed for the prevention of pneumococcal diseases for children between 6 weeks - 18 years age group. It is also licenced for adults >50 years of age.
- **PCV10 is** licensed for children from 6 weeks to 5 years of age.

Primary schedule (For all 3 PCV preparations): 3 primary doses at 6, 10, and 14 weeks with a booster at age 12 through 15 months.

Catch-up vaccination:

- **For PCV 13:**
 - Catch up in **6-12 months:** 2 doses 4 weeks apart and 1 booster;
 - 12-23 months:** 2 doses 8 weeks apart;
 - 24 months & above:** single dose
- **For PCV10:**
 - Catch up in **6-12 months:** 2 doses 4 weeks apart and 1 booster;
 - 12 months to 5 years:** 2 doses 8 weeks apart

Vaccination of persons with high-risk conditions:

- PCV and pneumococcal polysaccharide vaccine [PPSV] both are used in certain high-risk group of children.

- **Age 24 through 71 months** with certain underlying medical conditions, additional dose/s of **PPSV 23** is recommended. The first dose of PPSV 23 should be given at least 8 weeks after the last dose of PCV 13.
- For those who have received **at least 3 doses of PCV 13**, administer 1 dose of PCV13, followed by 1 dose of PPSV23 after 8 weeks. For those who have received **less than 3 doses of PCV 13**, administer 2 doses of PCV13 at least 8 weeks apart, followed by PPSV23 at least 8 weeks later.

For those who are **immunocompromised**, administer the 2nd dose of PPSV23, 5 years after the 1st dose of PPSV23.

Can the pneumococcal vaccine be administered at the same time as other vaccines?

- The pneumococcal conjugate vaccine can be co-administered with other vaccines.
- When co-administered with other vaccines, it should be given in a different injection site - for example, the opposite thigh.
- The vaccine **cannot** be mixed with other vaccines in the same syringe.

Can a premature child be vaccinated?

Yes, a premature child can and should be vaccinated at or after 6 weeks of age

What schedule is recommended for children who are immunodeficient?

The proposed vaccination schedule is the same for all children aged ≤ 23 months, regardless of the presence of underlying medical conditions (e.g., children with HIV infection, sickle cell disease or who are otherwise immunocompromised). Pneumococcal conjugate vaccine has been proven to be safe and well-tolerated even among children infected with HIV. Children with sickle cell disease or HIV infection may be given PCV vaccine.

Who should not get a vaccine?

The pneumococcal vaccine should not be given to the following persons:

- those who have had severe allergic reactions to a prior dose
- those who have had a severe reaction to a vaccine containing diphtheria toxoid
- those who have a severe illness (e.g., temperature $\geq 39^{\circ}\text{C}$); vaccination should be delayed until the condition improves.

How safe is pneumococcal vaccine?

Pneumococcal conjugate vaccine is safe and well tolerated; severe adverse reactions attributable to the vaccine are extremely rare. Mild side effects such as soreness at the injection site, and transient fever of $\geq 39^{\circ}\text{C}$ has been reported in less than 5% of vaccines. It is important to note that, as DTP-HepB-Hib may be given during the same visit as pneumococcal vaccine, the child may also be reacting to co-administered vaccines.

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