the 2020 pneumococcal disease

guide for health care professionals

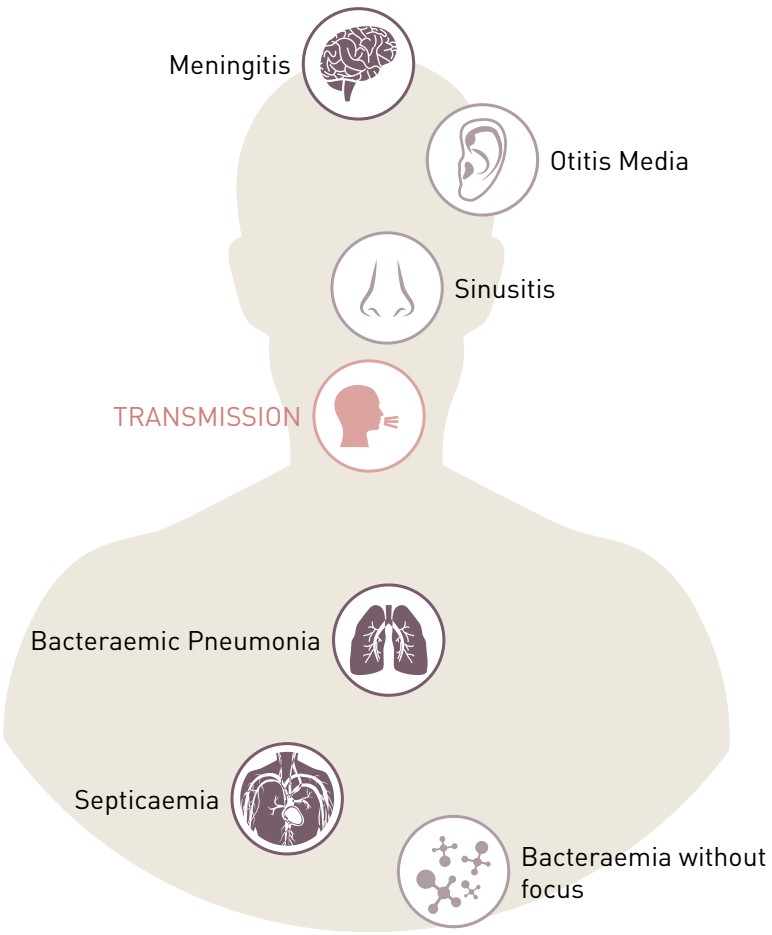
IMMUNISATION COALITION

About Pneumococcal Disease

Pneumococcal disease is caused by the bacterium, *Streptococcus pneumoniae* (pneumococcus). Infection usually starts with a colonising event in the nose and throat, which is asymptomatic, and most infections do not amount to anything beyond colonisation. Some, however, spread locally or invasively to cause disease.

Certain pneumococcal diseases are non-invasive, such as middle-ear infections (otitis media), sinusitis or bronchitis.[4] Others are invasive, involve the blood or a major organ and are potentially life-threatening. Examples of invasive pneumococcal diseases (IPDs) include septicaemia (sepsis), meningitis or bacteraemic pneumonia.

Pneumococci usually possess a polysaccharide capsule, which occurs as more than 90 serotypes, and immunity to the organism is capsule type- specific. Although many serotypes cause disease, only a few cause most infections. The predominant serotypes vary with age, time and geography.[5,6]



Antibiotic Resistance

Pneumococcal disease is mainly treated using β-lactam antibiotics, though pneumococci bacteria are increasingly developing antibiotic resistance. Strains have variably become resistant to penicillin, cephalosporins, macrolides, tetracycline, clindamycin and the quinolones.[7]

Transmission

Transmission occurs through respiratory droplets from people with pneumococcal disease or healthy carriers. If the infected person coughs or sneezes in close proximity of others, infection may spread.

Following acquisition, the bacterium becomes established in the nasopharynx of the host with asymptomatic colonisation. It may then spread to other parts of the body where it causes disease. The bacteria's polysaccharide capsule helps it to resist phagocytosis. If no anti-capsular antibody pre-exists, alveolar macrophages cannot kill the pneumococci.[1-3,5]

Clinical Features

The major clinical syndromes of IPD are pneumonia, septicaemia and meningitis.[2,8] Symptoms of pneumonia include fever, chills, coughing, rapid or difficult breathing, chest pain, rigors, tachycardia, rusty-coloured sputum, cough productive of mucopurulent, dyspnea, tachypnea, hypoxia, or, in older patients, confusion or low alertness.

Meningitis, although least common, is the most severe category of IPD and is often fatal.[2,3] Symptoms include a stiff neck, fever, lethargy, nuchal rigidity, cranial nerve signs, seizures, coma, headache, pain when looking into bright lights, confusion, or, in babies, poor eating and drinking, low alertness or vomiting.

Septicaemia is the most common IPD among young children. Symptoms include fever, chills and low alertness. By 12 months, most children have also experienced otitis media. Pneumococcus is detected in 28 to 55% of middle ear aspirates from children with otitis media. Symptoms include ear pain, a red, swollen eardrum, fever, and sleepiness. Complications of otitis media may include mastoiditis and meningitis.[2,5,9]

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the Pneumosmart Vaccination Tool

Developed to give you the right recommendations and keep you up to date. Scan or go to: www.immunisationcoalition.org.au/pvt/

Scan

Who is most at risk

Anyone can contract IPD though some groups are at heightened risk. These include; people younger than two years of age or older than 65; children in group childcare; children in developing countries; nursing homes residents; smokers; people suffering from chronic conditions such as lung, heart, liver or kidney disease, asthma, diabetes or alcoholism; people with cochlear ear implants, cerebrospinal fluid (CSF) leaks or impaired immunity for any reason, including those arising from conditions such as HIV/AIDS, cancer or a damaged or absent spleen; and Aboriginal and Torres Strait Islander people.[3,10,11]

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Adult Vaccination Recommendations

Both 13vPCV and 23vPPV are recommended for individuals with certain medical conditions (refer to the Australian Immunisation Handbook), however not all are funded by the NIP.

Unless previously received, one dose of 13vPCV and two doses of 23vPPV are recommended and funded by the NIP for individuals with certain medical conditions (see table below), and for all Aboriginal and Torres Strait Islander adults ≥50 years of age. Across a lifetime there is a maximum of two doses. The minimum interval between 23vPPV doses is five years.

One dose of 13vPCV is recommended and funded by the NIP for all healthy non-Indigenous adults ≥70 years of age who have not previously received a dose of 13vPCV.

There are no pneumococcal vaccines subsidised on the PBS.

Risk conditions for funded pneumococcal vaccination for people ≥5 years of age	
Previous episode of invasive pneumococcal disease	Functional or anatomical asplenia, including: •sickle cell disease or other haemoglobinopathies •congenital or acquired asplenia (for example, splenectomy) or hyposplenia
Immunocompromising conditions, including: •congenital or acquired immune deficiency, including symptomatic IgG •subclass or isolated IgA deficiency •haematological malignancies •solid organ transplant •haematopoietic stem cell transplant •HIV infection	Chronic respiratory disease, including: •suppurative lung disease, bronchiectasis and cystic fibrosis •chronic lung disease in preterm infants
Proven or presumptive cerebrospinal fluid (CSF) leak, including: •cochlear implants •intracranial shunts	Chronic renal disease: •relapsing or persistent nephrotic syndrome •chronic renal impairment – eGFR <15 mL/min

Recommended and funded pneumococcal vaccine schedule for adults

All Adults	Non-Indigenous - Without a risk condition	Indigenous - Without a risk condition
Diagnosed with a certain medical condition over 12 months of age	≥70 years of age	≥50 years of age
1 Dose 13vPCV*^	1 Dose 13vPCV*	1 Dose 13vPCV*^
2 Doses 23vPPV* 5 years apart		2 Doses 23vPPV* 5 years apart

* Unless previously received
^The dose of 13vPCV should precede the 1st dose of the recommended 23vPPV by 12 months (although an interval of at least 2 months is acceptable).

When administering 13vPCV for people who have previously receive 23vPPV, the interval should be a minimum of 12 months.

Ref: Australian Technical Advisory Group on Immunisation (ATAGI). Australian Immunisation Handbook, Australian Government Department of Health, 2020, https://immunisationhandbook.health.gov.au