

Pertussis (Whooping Cough)

for parents and caregivers...

What is pertussis?

Pertussis, commonly known as 'whooping cough', is a highly infectious bacterial infection spread by coughing and sneezing. It causes severe bouts of coughing, which may be accompanied by vomiting and a whooping sound. Pertussis can last up to 3 months and is sometimes referred to as the '100 day cough.' The symptoms are more obvious in children, as adults and infants are less like to 'whoop'.¹

What are the symptoms of pertussis?

Pertussis can be divided into three stages:

- The initial stage following the incubation stage, called the catarrhal stage is the most infectious. It lasts 1-2 weeks and can include a runny nose, sneezing, slight fever, and a mild irritating cough.
- The second stage or paroxysmal stage usually lasts 1-6 weeks, but can persist for up to 10 weeks. A paroxysm is a spasm of coughing followed by a big breath in or high pitched whoop. Infants and young children often appear very ill, and may turn blue and vomit with coughing bouts. Infants and adults generally do not have the characteristic "whoop" sound.
- The convalescent stage may last for months. Although the cough eventually disappears after several weeks, coughing fits may recur whenever the patient suffers any subsequent respiratory infection.

How serious is pertussis?

Around 7 out of 10 babies who catch pertussis before the age of 6 months require hospitalisation and 1 in 30 of those hospitalised die from pertussis infection. Severe coughing can temporarily stop the oxygen supply to the brain (hypoxia). In around 2 per 1000 children pertussis leads to permanent brain damage, paralysis, deafness or blindness. Secondary infections such as pneumonia and ear infections can occur.

The disease is usually milder in adolescents and adults, consisting of a persistent cough similar to that found in other upper respiratory infections. Some adults experience rib fracture from violent coughing.¹ Both hospitalisations and deaths are likely to be under-estimated in adults due to the lack of the 'whooping' sound.

How do you catch pertussis?

Pertussis is highly contagious and is spread by coughing and sneezing. It infects around 90% of non-immune household contacts¹ and 50 to 80% of non-immune school contacts. Many babies catch it from their older siblings or parents - often before they are old enough to be fully vaccinated.²

How common is pertussis?

New Zealand has epidemics every 3-4 years¹ with several thousand cases (mostly young children) reported in each epidemic. Adolescent and adult pertussis often goes unrecognised and is often under reported. Up to a third of adolescents and young adults with a persistent cough have evidence of recent pertussis infection.³⁻⁵

Who is most at risk from pertussis?

Those most at risk of serious disease are infants under one year of age. About 90% of whooping cough related deaths occur in infants infected in their first month of life. Infants who do not receive doses of pertussis containing vaccine at the scheduled times of 6 weeks, 3 months, and 5 months have up to a five-fold increased risk of being hospitalised with pertussis.³

How do you prevent pertussis?

On-time immunisations for infants at 6 weeks, 3 months and 5 months in addition to children receiving boosters at 4 years and 11 years is the best prevention.² There appears to be very little maternal protection passed to the newborn against pertussis through the placenta or breast milk.^{1,4} Antibiotics (usually erythromycin) do not cure pertussis but are given to reduce the spread of infection to others. All cases of pertussis should be excluded from early childhood services, school, or community gatherings until they are well enough to attend and have either received five days of antibiotics or three weeks have elapsed since the onset of coughing spasms.

Vaccines and vaccination against pertussis.

Whole cell pertussis vaccines were initially developed in the 1940s. These were replaced by newer acellular pertussis vaccines (to New Zealand in 2000)^{1,5} because there are fewer and less severe reactions to the acellular vaccine than to the whole cell pertussis vaccine.^{6,7}

Pertussis vaccine is given as a single injection in combination with the other vaccines: diphtheria, tetanus, polio, hepatitis B and Hib at 6 weeks, 3 months and 5 months.⁵

A booster dose of pertussis is given at 4 years old in combination with diphtheria, tetanus and a final dose of polio. Due to the short lasting immunity to pertussis, a booster dose is also given at age 11 in combination with diphtheria and tetanus. Some countries routinely immunise adults with a dose of pertussis containing vaccine to further reduce the spread to infants.⁸⁻¹⁰ Adult vaccines against pertussis are available and recommended in New Zealand.

How effective are the vaccines?

Three doses of vaccine during infancy will protect about 80% of recipients from infection through to about 4-6 years of age.^{11, 12} Pertussis immunity wanes over time following both natural infection and vaccination.¹³ Studies on additional booster doses given during adolescence and adulthood show they significantly reduce the rates of disease in these groups.² Re-infection may occur as a persistent cough, rather than typical pertussis. Booster doses are thought to last at least 5 years and may extend longer.¹⁰ However, the duration of immunity of pertussis booster doses have not been formally established.^{1,13}

Who should get the vaccine?

The vaccine is funded for all infants aged 6 weeks, 3 months and 5 months, with booster doses given to children at 4 and 11 years. Immunisation is recommended and sometimes funded, for health professionals working closely with infants and staff of early childhood services. Other adults who wish to receive a booster vaccine should be encouraged to do so.^{2,14}

Who should NOT get the vaccine?

Anyone who has had an anaphylactic reaction to the vaccine or any component of the vaccine should not be vaccinated, nor should anyone with a history of unexplained encephalopathy (inflammation of the brain) within 7 days of a pertussis vaccination. Talk with your doctor or vaccinator for more in depth information.

Who should seek more advice before having the vaccine?

Immunisation in infants with a developmental regressing neurological condition or uncontrolled seizures should be postponed until the condition is stabilised.⁶ These conditions are rare and can be discussed with your child's specialist to determine on a case by case basis what is best for your child.

Do you need all the doses?

As infants are most severely at risk^{3,4,15} it is important to start the immunisation at 6 weeks of age and complete the first 3 doses as well as booster doses on time. Immunity from both the disease and the vaccine wanes over time (immunity from vaccine lasts about 4-6 years) so booster doses are needed for longer term protection, and to minimise the spread particularly to vulnerable babies.^{2,14} As pertussis is a very contagious disease that is difficult to eliminate and due to the limited duration of immunity, it is important to have all the doses on time, every time.

How safe is the vaccine?

Reactions at the injection site such as redness or swelling are common occurring 10-20% of the time. Fever is noted in about 25% of those vaccinated. Extensive swelling at the injection site can occur with booster doses; however it is not associated with pain and fully resolves after a few days. (This is most likely caused by the diphtheria component.) Occasionally, very rare reactions such as seizures or persistent crying have been known to occur. Generally, the pertussis containing vaccines are well tolerated.^{1,6,7,16}

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Pertussis	Risks of Infection	Side effects of the vaccine
<p>A highly contagious bacterial infection which causes a whooping cough and vomiting.</p>	<ul style="list-style-type: none"> • 1-3 per 1000 risk of permanent neurological damage for patients with paroxysmal cough. • Case fatality of 3 or 4 per 100 in hospitalised infants younger than 6 months. 	<ul style="list-style-type: none"> • Pain or redness (2-7%) at injection site. • Fever (25%). • Large painless swelling at injection site (1-8%). <p>Very rare adverse events:</p> <ul style="list-style-type: none"> • Seizures (<7/100,000) • Persistent crying (<5/10,000) • Hypotonic Hyporesponsive Episode (<3/100,000) • Anaphylaxis (<1/1,000,000) very rare.

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

