

2024 PERTUSSIS GUIDE

FOR HEALTHCARE PROFESSIONALS



ABOUT PERTUSSIS

Pertussis (also known as whooping cough) is a highly contagious bacterial infection affecting the respiratory system, and can cause severe illness and death.

Children under 6 months of age who get whooping cough, usually require hospitalisation and are at greatest risk of severe disease and death.

A pertussis sufferer is infectious for up to 3 weeks. They infect an estimated **90%** of unprotected and unvaccinated household contacts.^[1]

As a healthcare professional you play a critical role in the patient's decision making.

73% of people would take your advice and have the pertussis vaccine. From a survey conducted in Western Australia, it was suggested that pertussis vaccination rates of **94%** were achievable if providers were to recommend them during pregnancy.^[2]

Between 2008 and 2012, all Australian States experienced their largest pertussis epidemic on record. **The highest rates of disease were in infants <6 months old, and children aged 5–9 years.**^[3]

In 2023, there were **2,449 cases** of pertussis reported nationally. Children under 15 years of age accounted for **55%** of these notifications. In 2022, **483 cases** were reported nationally.^[4]

There was a dramatic drop in reported pertussis cases between 2020 and 2022. This was likely due to the COVID-19 pandemic (e.g. increased physical distancing, travel restrictions, emphasis on hygiene, changes in testing priorities and diversion of resources).^[5]

CAUSE AND TRANSMISSION

Pertussis is an acute respiratory illness caused by the *Bordetella pertussis* bacterium.

Pertussis is highly contagious and only found in humans. It spreads by airborne droplets when an infected person sneezes or coughs. The droplets can be breathed in by others or passed on to others by touching a contaminated surface.

People with pertussis are **most infectious in the first 3 weeks** after the onset of symptoms.

SYMPTOMS

- Symptoms will start to appear 1–3 weeks after exposure to the bacteria. The disease begins like a cold, with a **runny nose, mild fever** and a cough
- The cough gets worse and can last 1–2 months or longer
- The illness is characteristically known for repeated violent bouts of coughing followed by a whooping inspiration
- The whoop may be absent in very young infants, older children, and adults
- Some children cough so much they vomit afterwards



PERTUSSIS COMPLICATIONS

Severe complications, which occur almost exclusively in unvaccinated people, include **pneumonia, hypoxic encephalopathy and death.**

Some of the complications of whooping cough in young babies include:

- haemorrhage
- apnoea
- pneumonia
- inflammation of the brain
- convulsions
- permanent brain damage
- death

HOW IS PERTUSSIS TREATED?

Pertussis is treated with an antibiotic, usually *azithromycin* for 5 days, *clarithromycin* for 7 days or *trimethoprim-sulfamethoxazole* for 7 days.



These antibiotics will prevent the spread of pertussis to other people.^[6]

If patients have been **coughing for more than 3 weeks**, they are rarely infectious. In these cases, **antibiotics are usually not needed.**

WHO SHOULD BE VACCINATED?

Infants and children can receive a free pertussis vaccine under the [National Immunisation Program](#) (NIP).

The NIP schedule is updated when there are changes to the schedule which is announced publicly to HCPs by the Australian Government.



Pertussis-containing vaccine^[*] is recommended in a 5-dose schedule at **2^[**], 4, 6, and 18 months, and 4 years of age.**

Adolescents aged 11-13 years are recommended to receive a booster dose of pertussis-containing vaccine⁷. The recommended age for a booster dose will depend on State or Territory.

Older children and teenagers can receive a free catch up vaccination now available through the NIP for individuals **10 to 19 years of age.**

Humanitarian entrants and refugees aged 20 years and over can receive a free catch up vaccination now available through the NIP.

For **adults**, the combination diphtheria, tetanus and pertussis vaccine (dTpa) is recommended for any adult who wishes to reduce the likelihood of becoming ill with pertussis, but particularly important for special risk groups.

Special Risk Groups – During pregnancy (free on NIP), and those in contact with infants (not funded under NIP for these individuals).

Booster dTpa Vaccinations

- People at 50 years of age, if their last dose was more than 10 years ago
- People 65 years and over who have not had whooping cough vaccine in past 10 years
- People travelling overseas if they haven't had whooping cough vaccine within 10 years

^[*] From 1st July 2023 hexavalent vaccine *Vaxelis*[®] was added to the NIP.

Vaxelis[®] is used against diphtheria, tetanus, pertussis, hepatitis B, poliomyelitis and invasive infections caused by *Haemophilus influenzae* type b (DTPa-hepB-IPV-Hib) for children at 2, 4 and 6 months of age.

Vaxelis[®] is now available as an alternative NIP-funded vaccine to *Infanrix*[®] hexa, and not as a replacement vaccine. There is no preferential recommendation between the use of these two products.

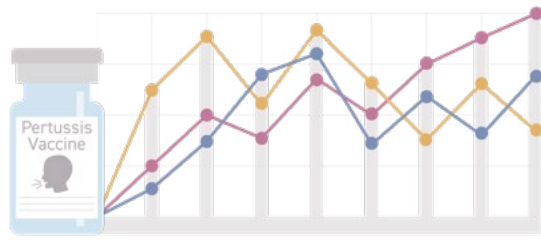
The preparation of *Infanrix*[®] hexa and *Vaxelis*[®] differs:

- *Infanrix*[®] hexa vaccine consists of a single dose 0.5 mL pre-filled syringe and a vial containing a lyophilised pellet. The lyophilised pellet is the Hib component that needs to be reconstituted with the dTpa-hepB-IPV components (a liquid). It should be administered as a 0.5mL dose after reconstitution.
- *Vaxelis*[®] vaccine is supplied as a single dose 0.5mL pre-filled syringe in a ready to use formulation containing all components.

Vaxelis[®] and *Infanrix*[®] hexa can be given at the same time as other scheduled vaccines on the NIP.

^[**] Infants can receive their first dose as early as 6 weeks of age.^[7]

VACCINE EFFECTIVENESS



A 3-dose primary series of immunisation with DTPa vaccine at **2, 4, and 6 months of age** results in **84%** protective efficiency against severe disease.^[8]

Immunity to pertussis wanes over time. Effectiveness of 3 doses of DTPa vaccine declined progressively **from 2 years of age to less than 50% by 4 years of age.**^[9]

A large trial in adolescents and adults demonstrated overall vaccine efficiency against confirmed pertussis of **92% within 2.5 years of vaccination.**^[10]

VACCINATION SIDE EFFECTS

Compared to whole-cell pertussis vaccines (dTpw), acellular pertussis vaccines are associated with a much lower incidence of:

- Fever (20% vs 45%)
- Local reactions (10% vs 40%)³

Extensive limb swelling can occur with booster doses of dTpa. Such reactions commence within 48 hours of vaccination, last 1–7 days and resolve completely.^[11]



VACCINATION CO-ADMINISTRATION

Do not mix dTpa or dTpa-containing vaccines with any other vaccine in the same syringe, unless specifically registered for use in this way.



Pertussis-containing vaccines can be co-administered with most other vaccines.

Pertussis-containing vaccines can be co-administered with influenza vaccine during pregnancy.

PERTUSSIS AND YOUNG INFANTS

Infants less than 6 months are at greatest risk of severe illness and death. **4 out of 5 babies with pertussis get it from someone at home.**^[13]

Create a circle of protection for babies by vaccinating the people in contact with them.



While the following adults may not receive a free pertussis vaccination under the NIP, to best protect infants against pertussis they should follow these recommendations:

- Adult household contacts and carers (e.g. fathers and grandparents of infants) should ideally receive a dTpa vaccine at least 2 weeks before beginning close contact with the infant
- A booster vaccine is recommended for those who have not received one in the previous 10 years
- Adults working with infants and children under 4 should receive a dose of dTpa vaccine with a booster dose every 10 years
- All healthcare workers should receive a dose of dTpa with a booster dose every 10 years

PERTUSSIS VACCINATION DURING PREGNANCY

Pertussis vaccine now funded during pregnancy under the NIP.



The optimal time to vaccinate is between 20 and 32 weeks gestation.^[7]

Studies show no increased risk of adverse pregnancy outcomes (such as stillbirth, foetal distress or low birth weight) related to pertussis vaccination during pregnancy.^[12]

PERTUSSIS IN ADULTS

36% of pertussis notifications in 2023 were adults 20 years and over.^[4]



Patients and physicians may not be aware of the disease and diagnostic tests sometimes have limited sensitivity. Therefore, pertussis is likely to be under-diagnosed.

Pertussis can cause significant morbidity in adults, with a cough persisting for up to 3 months, and includes:

- Average of 10 work days lost
- Disruption to daily life

Adults (and adolescents) are a significant reservoir of infection.

Immunity acquired through vaccination or exposure to pertussis wanes and requires revaccination for protection.

dTpa is recommended for any adult who wishes to reduce the likelihood of becoming ill with pertussis.

Any adult who needs a tetanus-containing vaccine can have dTpa vaccine rather than dT, especially if they have not previously had a dTpa in adulthood.

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