DIPHTHERIA

WHAT IS DIPHTHERIA?

Diphtheria is a potentially serious infectious disease caused by the *Corynebacterium diphtheriae* bacterium; humans are the reservoirs of the bacteria and are usually without symptoms. After being spread by coughing and sneezing or by direct contact with wounds or items contaminated by infected people, diphtheria infects the throat and upper airways or, in some cases, the skin. While the disease is no longer prevalent in many parts of the world due to successful immunisation campaigns, cases continue to appear in regions without access to these programs and in communities with poor vaccination uptake.

There are different infecting strains of the bacteria, and some produce toxins that can cause more severe diseases affecting the nerves and heart. However, the areas of the body most commonly affected are the upper respiratory tract (nose, pharynx, tonsils, larynx and trachea - respiratory diphtheria), skin (cutaneous diphtheria), or rarely, mucous membranes at other sites (eye, ear, vulva).

WHAT ARE THE SYMPTOMS?

The appearance of symptoms follows an incubation period of 2–5 days (range 1–10 days), beginning with malaise, loss of appetite, mild fever, swollen glands in the neck (bull neck) and a sore throat which makes breathing and swallowing difficult. After about 2 -3 days, a firm, fleshy, grey coating (pseudomembrane) develops in the throat and nasal tissues, potentially blocking the airways - it will bleed if an attempt is made to remove it. If left untreated, people with diphtheria have a high risk of suffocation, heart & kidney injury and severe nerve damage.

WHERE IS IT FOUND?

Diphtheria is endemic in many countries of Asia, the South Pacific, the Middle East, Eastern Europe, Haiti and the Dominican Republic, and outbreaks continue to occur in these regions. Cutaneous diphtheria is found most commonly in tropical countries.

RISK TO TRAVELLERS

The risk to travellers is generally low. However, both respiratory and cutaneous diphtheria have been reported in travellers.

Although diphtheria infection is now rare in Australia, vaccination remains paramount in reducing the risk of disease in unimmunised travellers, which can then be passed on to their contacts back home. The few notified cases seen in Australia have either been imported from overseas, associated with their contacts[TB1] or, rarely, in unimmunised residents.

HOW IS DIPHTHERIA TRANSMITTED?

Most often, person-to-person spread from the respiratory tract. Rarely, transmission may occur from skin lesions or articles soiled with discharges from lesions of infected persons.

HOW IS DIPHTHERIA TREATED?

Treatment involves the use of antibiotics, an antitoxin and supportive airway care while the patient is in isolation to prevent the infection from passing to others.

WHAT IS DIPHTHERIA VACCINATION?

Australian children are vaccinated against diphtheria as part of the standard childhood immunisation schedule, and the last dose is given at 11-15 years of age.

Travellers visiting countries where health services may be limited or difficult to access, are recommended to receive a booster dose of dT vaccine if their last dose was more than 10 years ago. If they have not had a pertussis vaccination since childhood they are recommended to receive a dTpa vaccine.

Some travellers may be at a higher risk of acquiring diphtheria, these are recommended to receive a booster dose of dT if their last dose was more than 5 years ago. Areas with a high risk of diphtheria include:

- Southeast Asia
- New Guinea
- states of the former Soviet Union
- Baltic countries
- eastern European countries

For adults who need extra protection against polio, use dTpa-IPV vaccine.

Type: Injectable

The diphtheria vaccine is a bacterial toxoid, i.e. an inactivated toxin. In Australia, adult and childhood immunisations containing diphtheria are only available in combination with other antigens such as pertussis, tetanus and polio.

- **Children under 4 years**: Diphtheria toxoid is given in combination with tetanus and others
- **Adults**: Diphtheria toxoid is given in combination with tetanus, tetanus/pertussis or tetanus/ pertussis/ polio

Contraindications:

The only absolute contraindications to diphtheria-containing vaccines are:

- Anaphylactic reaction after a previous dose of any diphtheria-containing vaccine
- Anaphylactic reaction after any component of a diphtheria-containing vaccine

Precautions:

People with latex allergy

SCHEDULE

The primary childhood immunisation series is given from 6-8 weeks of age. Three doses are administered at least 4 weeks apart with boosters at 4 and 11-17 years of age.

A single booster of tetanus/diphtheria-containing vaccine (preferably also with pertussis) is given from 50 years of age if the last dose was more than 10 years ago.

Please note: Simultaneous and consecutive administration of diphtheria-containing vaccines with meningococcal meningitis conjugate vaccines should be discussed prior with your health care professional.

LEVEL OF PROTECTION

Over 95%

POSSIBLE SIDE EFFECTS

Possible side effects:

Mild discomfort or pain at the injection site is common after receiving the diphtheria-containing vaccine.

Other less common side effects include:

- headache
- lethargy
- malaise
- myalgia
- fever

Very rare side effects include:

- allergic reactions
- hives
- peripheral neuropathy

As with all vaccines, there is a small risk of allergic reactions.

References:

Australian Immunisation Handbook https://immunisationhandbook.health.gov.au/vaccine-preventable-diseases/diphtheria

Australian Institute of Health and Welfare https://www.aihw.gov.au/reports/immunisation/vaccine-preventable-diseases/contents

US Centers for Disease Control https://www.cdc.gov/diphtheria/vaccination.html

US Centers for Disease Control and Prevention: Chapter 4 Travel-Related Infectious Diseases – Diphtheria https://wwwnc.cdc.gov/travel/yellowbook/2020/travel-related-infectious-diseases/diphtheria

World Health Organization factsheet: https://www.who.int/immunization/diseases/diphtheria/en/

FAQS

~~HAS AUSTRALIA HAD ANY RECENT CASES OF DIPHTHERIA?~~

In July 2022, Australia saw the first childhood case of respiratory diphtheria in 30 years when an unvaccinated toddler contracted the disease. The child from the far north coast of New South Wales was admitted to an intensive care unit in hospital after contracting respiratory diphtheria, which affects the throat. A close family contact aged six was also infected.

Diphtheria, earlier known as “The Strangling Angel of Children”, was once one of the top 10 causes of childhood and adolescent deaths in Australia. More than 4,000 children died from diphtheria here between 1926 and 1935, but cases fell dramatically after vaccines were introduced in the 1940s. People can be chronic carriers without knowing they have the disease.

~~HOW LONG DOES A DIPHTHERIA VACCINE COURSE LAST?~~

Once a primary course of diphtheria-containing vaccinations is completed, health authorities recommend a vaccination for diphtheria every 10 years if you are travelling in countries with poor health care or where health services are a challenge to access. If you’re travelling to regions where diphtheria is endemic or if there is an outbreak, which makes it high risk, vaccination may be recommended every five years.

HOW LONG DOES DIPHTHERIA-TETANUS-POLIO VACCINE LAST?

As with the single-dose diphtheria vaccine, after completion of the primary course, a booster of the triple vaccine for tetanus- diphtheria-polio (or the tetanus- diphtheria-polio- pertussis vaccine) lasts 10 years. This booster dose provides rapid protection.

HOW MUCH DOES DIPHTHERIA VACCINE COST?

The Australian Government covers childhood vaccinations and catch-up vaccines, including diphtheria, for eligible residents until a person turns 20. Then, unless you qualify for the Government's free vaccine program, you could pay for the GP visit and the vaccine, which can cost from $50 to $120. Check with your GP or travel doctor for updated prices and eligibility.

IS DIPHTHERIA A LIVE VACCINE?

No, the toxin or protein made by the diphtheria bacteria is inactivated. Following vaccination, a person develops a protective immune response to this toxoid.

WHEN WAS DIPHTHERIA VACCINE INTRODUCED IN AUSTRALIA?

A widespread school-based diphtheria vaccination program began in Australia in 1932. Since 1975, diphtheria vaccination has been an important part of the Australian National Immunisation Program (NIP).

WHO CREATED THE DIPHTHERIA VACCINE?

In 1923, Gaston Ramon, from the Pasteur Institute in Paris, discovered the diphtheria toxoid. Others, such as American Dr John G Fitzgerald from the Antitoxin Laboratory at the University of Toronto and Dr Peter Malony from Canada, were instrumental in developing a vaccine. Dr Fitzgerald learned of Dr Ramon's discovery and was sure Connaught Laboratories could produce the vaccine on a large scale. Dr Maloney developed the Diphtheria Toxoid-Reaction (Moloney) Test for allergies to the vaccine.

In 1936, Connaught Laboratories began manufacturing the toxoid, and by October 1925, the vaccine was ready to be administered to children.

WHY DO ADULTS NEED THE DIPHTHERIA VACCINE?

If your parents chose not to get you vaccinated as a child, or they were unable to access them, you may be wondering if you should catch up on all those vaccinations you missed. There are many other reasons for people to grow up unvaccinated or to forego boosters.

There are religious reasons, a fear of side effects, and there are some who follow conspiracy theories surrounding vaccines. Also, there's a "she'll be right, Jack" attitude with many Australians who are low risk at home but not when travelling to high-risk areas overseas. They prefer to rely on luck. Check with your GP to see if you need a catch-up series of vaccinations for childhood diseases such as whooping cough, diphtheria, tetanus, polio and others, which can be severe if contracted as an adult.

WHERE CAN I GET A DIPHTHERIA VACCINE NEAR ME?

If you need vaccination against diphtheria or a four-in one dose including tetanus, pertussis or polio, find a Travelvax clinic near you. Our clinics across Australia are staffed by experienced doctors and professionals with access to state-of-the-art equipment to help keep you safe on your next trip.

More information on Diphtheria is available during your pre-travel consultation with Travelvax.
Call 1300 360 164 for the location of the clinic nearest to you.