

# DIPHTHERIA



## ABOUT THIS DISEASE

Diphtheria is a serious disease caused by a toxin (poison) from the bacterium *Corynebacterium diphtheriae*. Diphtheria usually affects the respiratory tract (parts of the body that help with breathing). It causes a thick coating in the back of the nose or throat that makes it hard to breathe or swallow. Less commonly, diphtheria can cause cutaneous (skin), vaginal, eye, or ear infections. Cutaneous infections caused by *Corynebacterium diphtheriae* are more frequent in tropical areas and among the urban homeless.

Complications from diphtheria may include:

- Blocking of the airway
- Damage to the heart muscle (myocarditis)
- Nerve damage (polyneuropathy)
- Loss of the ability to move (paralysis)
- Lung infection (respiratory failure or pneumonia)

For some people, diphtheria can lead to death. Even with treatment, about 1 out of 10 diphtheria patients die. Without treatment, as many as 1 out of 2 patients can die from the disease. In children younger than 5 years old, as many as 1 out of 5 children who get diphtheria dies.

## SIGNS AND SYMPTOMS

When *Corynebacterium diphtheriae* get into and attach to the lining of the respiratory tract, they produce a toxin that can cause:

- Weakness
- Sore throat
- Fever
- Swollen glands in the neck
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The toxin destroys healthy tissues in the respiratory system. Within two to three days, the dead tissue forms a thick, gray coating that can build up in the throat or nose, making it very hard to breathe and swallow. The toxin may also get into the blood stream and cause damage to the heart, kidneys, and nerves.

## TRANSMISSION

Diphtheria is spread from person to person, when an infected person coughs or sneezes. Rarely, people can get sick from touching open sores (skin lesions) or clothes that touched open sores of someone sick with diphtheria. A person can also get diphtheria by coming in contact with an object, such as a toy, that has *Corynebacterium diphtheriae* on it.

A person with diphtheria who does not receive treatment can spread the disease for about 2 weeks after infection.

## DIAGNOSIS

Doctors usually decide if a person has diphtheria by looking for common signs and symptoms. They can use a swab from the back of the throat and test it for *Corynebacterium diphtheriae*. A doctor can also

take a sample from a skin lesion (like a sore) and try to grow the bacteria to be sure a patient has diphtheria.

## **TREATMENT**

Getting treatment quickly for diphtheria is important. Treatment should start right away if a doctor suspects diphtheria and should not wait for laboratory tests to confirm disease.

Diphtheria treatment involves:

- Using diphtheria antitoxin to stop the toxin produced by the bacteria from damaging the body
- Using antibiotics to kill and get rid of the bacteria

Persons with diphtheria may need help with their airway and breathing.

For cutaneous (skin) diphtheria, thorough cleansing of the lesion with soap and water and administration of an appropriate antimicrobial agent for 10 days are recommended.

Diphtheria patients should be kept in isolation until they are no longer contagious. This usually takes about 48 hours after starting antibiotics. It is important to finish taking the full course of antibiotics to make sure the bacteria are completely removed from the body. After the patient finishes taking the antibiotic, the doctor will run tests to make sure the bacteria are not in the patient's body anymore.

Close contacts of persons with diphtheria, especially household contacts, should be given a diphtheria booster vaccine (see below). Contacts should also receive antibiotics and should be closely watched for signs of illness.

## **IMMUNITY**

Unimmunized or under immunized persons with diphtheria should be vaccinated when they are getting better, because disease does not necessarily provide protection in the future.

## **RISK IN HAWAII**

Summary of Reported Cases of Notifiable Diseases:

<http://health.hawaii.gov/docd/resources/reports/summary-of-reported-cases-of-notifiable-diseases/>

## **PREVENTION**

The best way to prevent diphtheria is to get vaccinated. Diphtheria vaccination is recommended for all babies, children, teens, and adults. There are three vaccines used in the United States to prevent diphtheria, all of which are combined with vaccines for other diseases:

- [Diphtheria, tetanus, and pertussis \(DTaP\) vaccines](#)
- [Tetanus, diphtheria, and pertussis \(Tdap\) vaccines](#)
- [Tetanus and diphtheria \(Td\) vaccines](#)

Each of these vaccines prevents diphtheria and tetanus; DTaP and Tdap also help to prevent pertussis (whooping cough). DTaP is given to children younger than 7 years old. Tdap and Td are given to children 7 years and older, teens, and adults.

**Infants and children** need 5 doses of DTaP vaccine for maximum protection, at ages 2, 4, 6, 15-18 months, and at 4-6 years.

**Preteens** need a booster dose of Tdap vaccine at age 11-12 years.

**Teens or adults** who didn't receive Tdap as a preteen should receive one dose. Td vaccine is recommended every 10 years.

Diphtheria vaccines are estimated to work well for people who receive the primary series (three doses for people 7 years old or older and four doses for children younger than 7 years). Nearly all people (95 out of 100) who receive the primary series are protected against diphtheria for approximately 10 years. Protection decreases over time, so preteens should receive a Tdap vaccination at age 11-12 years and adults need to get a Td booster shot every 10 years to stay protected.

#### **ADDITIONAL RESOURCES**

- CDC Website: <https://www.cdc.gov/diphtheria/>
- Vaccine Information Statements:
  - DTaP: <https://www.cdc.gov/vaccines/hcp/vis/vis-statements/dtap.pdf>
  - Tdap: <https://www.cdc.gov/vaccines/hcp/vis/vis-statements/tdap.pdf>
  - Td: <https://www.cdc.gov/vaccines/hcp/vis/vis-statements/td.pdf>

#### **INFORMATION FOR CLINICIANS**

- CDC Website: <https://www.cdc.gov/diphtheria/clinicians.html>