

# Diphtheria

## Diphtheria Symptoms

Diphtheria is a very contagious bacterial disease. When the bacteria invade the respiratory system, they produce a toxin (poison) that can cause weakness, sore throat, fever, and swollen glands in the neck. Within 2 to 3 days, a thick coating can build up in the throat or nose, making it very hard to breathe and swallow. “We are very fortunate that this disease is virtually absent in the United States today,” says Dr. Melinda Wharton of the Centers for Disease Control and Prevention’s (CDC) National Center for Immunization and Respiratory Diseases. “It’s heartbreaking to see a parent holding and trying to comfort a child who is painfully struggling to breathe.” Effects from diphtheria also can lead to swelling of heart muscle and, sometimes heart failure. In severe cases, the illness can cause coma, paralysis, and death.

## How Diphtheria Spreads

A child can get infected with diphtheria by direct contact with droplets from an infected person’s cough or sneeze. A child also can get infected with diphtheria by coming in contact with an object, like a toy, that has been contaminated with diphtheria bacteria.

## Diphtheria Vaccine for Baby

Babies get DTaP vaccine to protect them from diphtheria and two other diseases caused by bacteria, whooping cough (pertussis) and tetanus. DTaP vaccines are recommended at ages 2 months, 4 months, and 6 months, and at 15 through 18 months old. A DTaP booster is recommended at age 4 through 6 years. To reduce the number of shots needed at a vaccine visit, other vaccines have been combined with DTaP. Your doctor can tell you more about combination vaccines.

Because immunity to diphtheria decreases over time, preteens and adults need to get a booster shot every 10 years to stay protected. Adults should ask their doctor if it’s time for a booster shot.

## Diphtheria Yesterday and Today

It’s hard to imagine how many lives were affected around the world before the diphtheria vaccine was available. In the United States, before there was treatment for diphtheria, up to half of the people who got the disease died from it. It’s safe to say that most families, at one time or another, experienced the horror of this disease in one of their young relatives.

“Thanks to vaccines, diphtheria is very rare in the United States, and parents do not fear the sometimes fatal disease like previous generations did,” says Dr. Tejpratap Tiwari of CDC. “Today’s grandparents may remember having seen people with diphtheria, or even had the disease themselves.”

In the past decade, there were less than five cases of diphtheria in the U.S. reported to CDC. Severe cases of diphtheria occurred among unvaccinated people or those who did not complete all the recommended doses of the vaccine.

## Why Do We Still Vaccinate?

During the 1990s, a diphtheria outbreak in the Newly Independent States of the former Soviet Union showed what could happen if the United States did not have such steady, high vaccination coverage among children year after year with the vaccine that prevents diphtheria.

Every year, several thousand cases of diphtheria occur around the world,” says Dr. Doug Campos-Outcalt of the American Academy of Family Physicians. “If we stopped using vaccine in the United States, then unvaccinated people would be susceptible to the disease and it could easily come back. Just one unvaccinated U.S. resident traveling abroad and coming home infected could cause an epidemic.”

The best way to protect children is with vaccination. “I cannot stress enough how important it is for parents to vaccinate their children on time with the DTaP vaccine,” adds CDC’s Dr. Tiwari.

In the former Soviet states, from 1990 through 1998, there were more than 157,000 reported cases and 5,000 deaths from diphtheria. Experts think that several factors likely caused this diphtheria outbreak. Some states did not have high vaccination rates and an increase in travel made it easier for diphtheria to spread widely.



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Also during the challenging time of transition in the former states, it was difficult to maintain high childhood vaccination rates, even in places that had attained high rates in the past. Many school-aged children missed doses or received them late, and infant vaccination declined to between 60% and 80% in some places.

What can we learn from this outbreak? “Even though the threat of diphtheria may seem low, the disease still exists around the world, and from time to time there are even a few cases in some parts of the United States. So, as the experience in the former Soviet Union shows, keeping vaccination rates high is very important,” says CDC’s Dr. Tiwari.

Standard and consistent vaccination of children and use of booster shots for preteens, teens, and adults are critical to prevent

diphtheria cases and outbreaks. Diphtheria is part of the tetanus-diphtheria (Td) booster vaccine—the shot that all adults should get every 10 years. It is also a part of the tetanus-diphtheria-pertussis (Tdap) vaccine that everyone needs to receive one time. Tdap is recommended for all 11- or 12-year-olds. Anyone who does not get the Tdap vaccine at that age should get one dose as a replacement for their 10-year tetanus-diphtheria (Td) booster shot. Tdap is especially important for expectant mothers and people who will have close contact with babies because it can not only prevent tetanus and diphtheria, but also, potentially deadly cases of whooping cough. Cases of whooping cough are on the rise and can have very serious consequences for young babies.

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## Benefits of DTaP Vaccine

In addition to protecting from tetanus and pertussis (also known as whooping cough), getting a vaccine to protect against diphtheria as recommended—

- Saves lives.
- Prevents hospitalizations.
- Reduces the spread of the disease.
- Protects young children, for whom the disease can be especially serious.
- Protects the community, especially infants who are too young to get DTaP vaccine.

## Risks of DTaP Vaccine

- Mild side effects are fever, redness, swelling or soreness at the site of the injection, fussiness, tiredness or poor appetite, or vomiting.
- Moderate side effects are uncommon. One out of 1,000 children may cry for 3 or more hours; 1 out of 14,000 children may have a seizure; 1 out of 16,000 children may have high fever.
- Severe side effects are rare. For example, fewer than one in a million children have a severe allergic reaction.

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### Selected References

Centers for Disease Control and Prevention (CDC). Diphtheria. In: Atkinson W, Hamborsky J, McIntyre L, Wolfe S, eds. *Epidemiology and Prevention of Vaccine-Preventable Diseases (The Pink Book)*. 11th ed. Washington, DC: Public Health Foundation, 2009. p. 59-69. <http://www.cdc.gov/vaccines/pubs/pinkbook/default.htm>

CDC. Prevention of pertussis, tetanus, and diphtheria among pregnant and postpartum women and their infants: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMMR*. 2008;57(04):1-47,51. <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5704a1.htm>

Dittmann S, Wharton M, Vitek C, et al. Successful control of epidemic diphtheria in the states of the former Union of Soviet Socialist Republics: Lessons learned. *The Journal of Infectious Diseases*. 2000;181(suppl 1):S10-S22. <http://www.journals.uchicago.edu/doi/pdf/10.1086/315534>

Salisbury, G, Salisbury, L. *The Cruellest Miles: The Heroic Story of Dogs and Men in a Race against an Epidemic*. New York: W.W. Norton & Company, 2003.

Vitek CR, Wharton M. Diphtheria in the former Soviet Union: Reemergence of a pandemic disease. *Emerging Infectious Diseases*. 1998;4:539-50. <http://www.cdc.gov/ncidod/eid/vol4no4/adobe/v4n4.pdf>

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*The Centers for Disease Control and Prevention, the American Academy of Family Physicians, and the American Academy of Pediatrics strongly recommend vaccines.*  
**800-CDC-INFO (800-232-4636)**  
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