For Staff / Patient Education

# Diphtheria

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## What is it?

- Diphtheria is an acute, toxin-mediated disease caused by the bacterium *Corynebacterium diphtheriae*- - an aerobic gram-positive bacillus.
- Toxin production (toxigenicity) occurs only when the bacillus is itself infected (lysogenized) by a specific virus (bacteriophage) carrying the genetic information for the toxin (tox gene). Only toxigenic strains can cause severe disease.
- *C. diphtheriae* has four biotypes—gravis, intermedius, mitis and belfanti. All strains may produce toxin and can cause severe disease.
- Diphtheria Clinical Features: Incubation period 2-5 days (range, 1-10 days). May involve any mucous membrane. Classified based on site of disease (anterior nasal, pharyngeal and tonsillar, laryngeal, cutaneous, ocular, genital
- Anterior nasal: indistinguishable from that of the common cold and is usually characterized by a mucopurulent nasal discharge (containing both mucus and pus) which may become blood-tinged. The disease is usually fairly mild because of apparent poor systemic absorption of toxin in this location, and it can be terminated rapidly by diphtheria antitoxin and antibiotic therapy.
- Pharyngeal and Tonsillar Diphtheria: Insidious onset of pharyngitis. Within 2-3 days membrane forms that may cause respiratory obstruction. Fever usually not high but patient appears toxic.
- Laryngeal diphtheria can be either an extension of the pharyngeal form or can involve only this site. Symptoms include fever, hoarseness, and a barking cough. The membrane can lead to airway obstruction, coma, and death.
- Cutaneous (Skin) Diphtheria: most often associated with homeless persons. Skin infections are quite common in the tropics and are probably responsible for the high levels of natural immunity found in these populations. Manifested by a scaling rash or by ulcers with clearly demarcated edges and membrane, but any chronic skin lesion may harbor *C. diphtheriae* along with other organisms. Generally, the organisms isolated from cases in the United States were nontoxigenic.
- Rarely, other sites of involvement include the mucous membranes of the conjunctiva and vulvovaginal area, as well as the external auditory canal.
- Diphtheria Complications: Most attributable to toxin. Severity generally related to extent of local disease. Most frequent complications are myocarditis and neuritis. Death occurs in 5%-10% .

## How is it spread?

- Transmission is 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 (fomites).
- Transmission may occur as long as virulent bacilli are present in discharges and lesions. The time is variable, but without antibiotics, organisms usually persist 2 weeks or less and seldom more than 4 weeks. Chronic carriers may shed organisms for 6 months or more. Effective antibiotic therapy promptly terminates shedding.

## Where is it found?

- Human carriers are the reservoir for *C. diphtheriae* and are usually asymptomatic. In outbreaks, high percentages of children are found to be transient carriers.

## Prevention & Control:

- The best way to prevent diphtheria is to get vaccinated.
- There are four combination vaccines used to prevent diphtheria: DTaP, Tdap, DT and Td. Each of these vaccines prevents diphtheria and tetanus; DTaP and Tdap vaccines also prevent pertussis (whooping cough).
- For close contacts, a diphtheria booster, appropriate for age, should be given; should also receive antibiotics; however, if the strain is shown to be nontoxigenic, investigation of contacts should be discontinued.
- Pharyngeal and Tonsillar Diphtheria droplet precautions should be observed and contact precautions for Cutaneous (Skin) Diphtheria.

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**Source:**
http://www.cdc.gov/diphtheria/index.html

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