

DIPHTHERIA

REPORTING INFORMATION

- [Class A\(1\)](#)
- Report by telephone immediately
- [Diphtheria Surveillance Worksheet](#) to be submitted by the local health department to the ODH Immunization Program.

AGENT

Corynebacterium diphtheriae; two strains, one toxigenic and one nontoxigenic, each can cause disease.

CASE DEFINITION

Clinical case definition

An upper respiratory tract illness characterized by sore throat, low grade fever, and an adherent membrane of the tonsil(s), pharynx and/or nose

Laboratory criterion for diagnosis

- Isolation of *Corynebacterium diphtheriae* from a clinical specimen or
- Histopathologic diagnosis of diphtheria

Case classification:

Probable: a clinically compatible case that is not laboratory confirmed and is not epidemiologically linked to a laboratory-confirmed case

Confirmed: a clinically compatible case that is either laboratory confirmed or epidemiologically linked to laboratory-confirmed case

Comment

Cutaneous diphtheria should not be reported. Respiratory disease caused by non-toxicogenic *C. diphtheriae* should be reported as diphtheria. All diphtheria isolates, regardless of association with disease, should be sent to the Diphtheria Laboratory, National Center for Infectious Diseases, CDC. [Submit isolates to CDC only via the ODH Laboratory; [see Section 4 of this manual](#)]

SIGNS AND SYMPTOMS

Diphtheria is often described according to the site of membrane involvement: 1) nasal, 2) tonsillar and pharyngeal, 3) laryngeal and 4) nonrespiratory, which includes skin wounds, conjunctival, and genital lesions.

The onset of nasal diphtheria has symptoms similar to the common cold. Fever, if any, is low-grade. Nasal discharge is at first serous, then contains traces of blood and possible pus. A whitish membrane forms on the nasal septum.

Tonsillar and pharyngeal diphtheria begins with malaise, anorexia, sore throat, and low-grade fever. Within 24 hours a whitish-grey or bluish-white membrane begins forming in the throat. When completely formed, the membrane may include one or both tonsils, uvula, soft palate, and pharyngeal wall. Various degrees of cervical adenitis and periadenitis may be observed. In mild cases the membrane sloughs off in seven to ten days, and recovery is uneventful. Severe disease is characterized by increased toxemia and can result in death within six to ten days.

Laryngeal diphtheria is generally an extension of pharyngeal infection. It can also result from separate involvement. Onset is characterized by fever, hoarseness, and cough. Obstruction of the airway is increased. In mild cases the membrane is coughed up in six to ten days. Occasionally the membrane extends downward and involves the tracheobronchial tree.

DIAGNOSIS

The initial diagnosis of diphtheria should be made on the basis of clinical findings because any delay in therapy poses a serious risk to the patient.

In patients, suspected cases, and contacts, cultures should be taken from the nasopharynx as well as the throat, since 20% of positive cultures can be missed when only one site is cultured. Nasopharyngeal cultures should be obtained with a flexible alginate swab that reaches deep into the posterior nares. Throat cultures are taken with a cotton swab which is firmly applied to any area with a membrane or inflammation. For asymptomatic patients, the tonsillar fossae, posterior pharynx, and retrovular areas should be sampled as well as the nasopharynx. Before cultures of wounds are taken, the lesions should be cleansed with sterile, normal saline and crusted material should be removed. A cotton-tipped applicator is then firmly applied to the base of the wound. For instructions or assistance with culturing, contact the Ohio Department of Health Laboratory ([see Section 4 in this manual](#)).

EPIDEMIOLOGY

Source

Humans.

Occurrence

Considered a disease of colder months. Most cases are seen in inadequately or unimmunized children under 15 years of age and also in adults with inadequate immunization. Rarely found in infants.

Mode of Transmission

The disease is contracted through contact with a patient or a carrier. Bacteria are spread by coughing, sneezing, or even talking.

Period of Communicability

Communicability varies, but is usually two weeks or less and seldom more than four. Chronic carriers (which are rare) might shed organisms for six months or more.

Incubation Period

Generally 2 to 5 days, possibly longer.

PUBLIC HEALTH MANAGEMENT

Case

Watch for any suspected cases in the same geographic area among those who are inadequately immunized.

Treatment

Antitoxin should be given immediately, preferably intravenously, after testing to rule out hypersensitivity. The dosage depends upon the duration of symptoms, area of involvement and severity of the disease. Both penicillin and erythromycin are effective against the organism but should be administered only after cultures are taken, in conjunction with, but not as a substitute for antitoxin.

Following recovery, at least 50% of patients will show immunity for at least a year. Second attacks, although rare, are a possibility. Therefore, appropriate immunization should be carried out following recovery.

Isolation

According to the Ohio Administrative Code ([OAC 3701-3-13 \[J\]](#)), "a person with diphtheria shall be isolated until two cultures, from both throat and nose, and additionally, in the case of cutaneous diphtheria, a culture from skin lesions, are negative for diphtheria bacilli. Cultures shall be taken not less than twenty-four hours apart, and not less than twenty-four hours after cessation of antimicrobial therapy. If culturing is unavailable or impractical, isolation may be ended after fourteen days of appropriate antimicrobial therapy."

Contact

Intimate contacts, if not immune, should be cultured, given an appropriate antibiotic, and immunization started with the first dose of DTaP, DT, or Td, as age appropriate.

Contacts previously immunized should be given a booster dose of DTaP, DT, or Td, as age appropriate.

Prevention and Control

The most effective control and prevention is through widespread routine immunization. For details consult the ACIP Immunization Manual.