

TUBERCULOSIS

(mycobacterial disease)

REPORTING INFORMATION

- Class A(2)
- Report by the end of the next business day
- [Confidential Case Report Form](#) (3812.11, rev. 12/81), [lab report form](#) (3833.11) or telephone
- The CDC form adapted by ODH, [Report of Suspected/Verified Case of Tuberculosis](#) (form HEA 3325 (6/93) parts A-D) must be completed by the local health department and submitted to the ODH Tuberculosis Registry, 35 E. Chestnut, 7th floor, PO Box 118, Columbus, OH 43266-0118.

AGENT

Mycobacterium tuberculosis complex, which includes *M. tuberculosis*, *M. bovis*, *M. africanum*, and atypical mycobacteria.

CASE DEFINITION

Clinical description

A chronic bacterial infection caused by *Mycobacterium tuberculosis*, characterized pathologically by the formation of granulomas. The most common site of infection is the lung, but other organs may be involved

Clinical case definition

A case that meets the following criteria:

- A positive tuberculin skin test
- Other signs and symptoms compatible with tuberculosis (e.g., an abnormal, unstable [i.e., worsening or improving] chest radiographs, or clinical evidence of current disease)
- Treatment with two or more antituberculosis medications
- Completed diagnostic evaluation

Laboratory criteria for diagnosis

- Isolation of *M. tuberculosis* from a clinical specimen* or
- Demonstration of *M. tuberculosis* from a clinical specimen by nucleic acid amplification,** or
- Demonstration of acid-fast bacilli in a clinical specimen when a culture has not been or cannot be obtained

Case classification

Confirmed: a case that meets the clinical case definition or is laboratory confirmed

Comment

A case should not be counted twice within any consecutive 12-month period. However, cases in which the patients had previously had verified disease should be reported again if the patients were discharged from treatment. Cases also should be reported again if patients were lost to supervision for > 12 months and disease can be verified again. Mycobacterial diseases other than those caused by *M. tuberculosis* complex should not be counted in tuberculosis morbidity statistics unless there is concurrent tuberculosis [however, they are required to be reported to the Bureau of Infectious Disease Control at ODH; *M. bovis* is reportable except when it is determined that the infection is due to a recent BCG vaccination or recent BCG cancer immunotherapy, both of which must be documented].

*Use of rapid identification techniques for *M. tuberculosis* (e.g. DNA probes and mycolic acids high-pressure liquid chromatography performed on a culture from a clinical specimen) are acceptable under this criterion.

** Nucleic acid amplification (NAA) tests must be accompanied by culture for mycobacteria species. However, for surveillance purposes, CDC will accept results obtained from NAA tests approved by the FDA and used according to the approved product labeling on the package insert. Current FDA approved NAA tests are only approved for smear-positive respiratory specimens.

SIGNS AND SYMPTOMS

Indications of tuberculosis range from a significant PPD test in an asymptomatic patient to fever, diaphoresis, weight loss, productive cough, hemoptysis, and extensive infiltration with cavitation in the lung on chest x-ray in the very ill patient. *Mycobacterium tuberculosis* complex can cause disease in any organ of the body. Most patients will experience symptoms of malaise, fatigue, anorexia, productive cough, and a low grade fever. More specific symptoms will depend on the organs involved and the extent of disease process.

DIAGNOSIS

The definitive diagnosis of tuberculosis requires the isolation of *Mycobacterium tuberculosis* complex from the patient. The greatest single problem in recovering mycobacteria from clinical specimens is the presence of large numbers of contaminating microorganisms. This problem is partially solved by obtaining a fresh specimen and by refrigeration of any specimen that cannot be processed promptly.

Since mycobacteria might be released from the lung irregularly, sputum specimens can be positive one day and negative the next. For this reason, a minimum of three specimens collected on different days should be obtained from patients suspected of having pulmonary tuberculosis.

Urine may also be submitted for analysis. The preferred specimen is a first morning, cleanly-voided midstream sample. One specimen each day for three consecutive days should be evaluated. Do not use bottles with preservatives. A minimum of 40 ml of urine is required.

The ODH Laboratory, in addition to preparing smears, culturing, and identifying mycobacteria, also provides confirmation and antibiotic susceptibility testing on *Mycobacterium tuberculosis* complex. Reference cultures sent to the ODHL may be shipped at ambient temperatures.

EPIDEMIOLOGY

Source

Mycobacterium tuberculosis complex is found primarily in humans.

Occurrence

Present in all parts of the world. Incidence normally increases with age, is higher in males than in females, and is higher among the poor.

Mode of Transmission

Person-to-person, by inhaling the organism coughed or sneezed into the air by a person with infectious disease.

Period of Communicability

As long as infectious tubercle bacilli are being discharged and the patient is untreated or inadequately treated, the tuberculosis organism is communicable.

Incubation Period

It takes about 4 to 12 weeks for a person to progress from infection to demonstrable primary lesion. Risk of progressive disease is greatest during the first 1-2 years after infection, yet can persist for a lifetime if the infection is untreated.

PUBLIC HEALTH MANAGEMENT

Case

All pulmonary/laryngeal cases are to be interviewed for contacts to identify persons who were exposed during the infectious period. Cases must be monitored to insure that they become non-infectious and complete adequate treatment. Anyone at high risk for non-adherence is a candidate for directly observed therapy (DOT). Additionally, cases of pediatric TB are to be interviewed to identify a possible source case.

Treatment

Initial treatment should include an approved three- or four-drug regimen until drug susceptibilities are reported. The currently recommended treatment guidelines of the Centers for Disease Control and Prevention, the American Thoracic Society, and the American Lung Association are found in the *American Journal of Respiratory and Critical Care Medicine* 1994;149:1339-1374.

Isolation

Appropriate respiratory isolation of cases from the public should be used until the patient's symptoms have improved, there is documentation of adequate therapy, and the patient has had three consecutive negative sputum smears collected on different days. The Ohio Administrative Code ([OAC 3701-3-13 \[Z\]](#)) states that "a person with infectious tuberculosis shall be isolated until three consecutive sputums, collected on three different days, are negative for acid fast bacilli on direct smear, or in accordance with section 339.42 of the Revised Code, until the local authorized TB authority or his or her designee approves that person's removal from isolation."

Contact

All persons identified as being exposed to an infectious case should be given a tuberculin test using the Mantoux method with 5-TU PPD material. All contacts with an initial nonsignificant Mantoux test should have a repeat test three months following the last date of exposure. If the reaction of either test is significant, a chest x-ray and medical evaluation are necessary to determine if there is current disease. All contacts who are infected and do not have disease should receive preventive treatment with INH for at least six continuous months. Uninfected contacts (<15 years of age) should receive preventive treatment which can be discontinued should the skin test be nonsignificant at three months. Those with disease should be followed appropriately.

Prevention and Control

New cases should be instructed to cover their mouth and nose when coughing and sneezing. The most important control measure is the adherence to the treatment program as prescribed.