

LEGIONELLOSIS

(Legionnaires' disease, Pontiac fever)

REPORTING INFORMATION

- Class A(2)
- Report by end of next business day
- [Confidential Case Report Card](#) (3812.11, rev. 12/81), [lab report](#) (3833.11), or telephone
- Requires completion of [CDC Legionellosis Case Report](#) (CDC 52.56 revised 9/88). To be sent by local health department to ODH, Bureau of Infectious Disease Control, 246 N. High Street, PO Box 118, Columbus, OH 43266-0118.

AGENT

Legionella spp. are gram negative bacilli. Thirteen species have been implicated in causing human disease. The most common species causing infection is *Legionella pneumophila* serogroup 1.

CASE DEFINITION

Clinical description

Legionellosis is associated with two clinically and epidemiologically distinct illnesses:

- Legionnaires' disease, which is characterized by fever, myalgia, cough and pneumonia, and
- Pontiac fever, a milder illness without pneumonia.

Laboratory criteria for diagnosis

- Isolation of *Legionella* from respiratory secretions, lung tissue, pleural fluid, blood, or other normally sterile sites, or
- Demonstration of a four-fold or greater rise in the reciprocal immunofluorescence antibody (IFA) titer to ≥ 128 against *Legionella pneumophila* serogroup 1 between paired acute- and convalescent-phase serum specimens, or
- Detection of *L. pneumophila* serogroup 1 in respiratory secretions, lung tissue, or pleural fluid by direct fluorescent antibody testing, or
- Demonstration of *L. pneumophila* serogroup 1 antigens in urine by radioimmunoassay or enzyme-linked immunosorbent assay (ELISA).

Case classification

Confirmed: A clinically compatible case that is laboratory confirmed.

Comment

The previously used category of "probable case," which was based on a single IFA titer, lacks specificity for surveillance and is no longer used.

SIGNS AND SYMPTOMS

There are two distinct clinical manifestations associated with *Legionella* infections.

Legionnaires' disease

Initially characterized by anorexia, malaise, myalgia and headache. Within a day there is usually a rapidly rising fever associated with chills. Temperatures commonly reach 39-40 degrees C (102-105 degrees F). A nonproductive cough is common. Abdominal pain and diarrhea occur in many patients. Chest x-ray might show patchy areas of consolidation which can progress to bilateral involvement and ultimately to respiratory failure. Immunocompromised hosts are generally at higher risk for acquiring Legionnaires' disease and are more likely to have a poor outcome.

Pontiac fever

Characterized by anorexia, malaise, myalgia, and headache. Mild respiratory symptoms are usually present. Symptoms usually resolve in a few days with no further sequelae.

DIAGNOSIS

See case definition.

Laboratory Procedures Available at ODHL

The ODH Laboratory performs IFA, DFA, and culture of clinical specimens. Local health agencies, physicians, and hospitals may submit paired sera (acute and convalescent) to the ODHL for IFA titer determination. In general, only hospitals may submit tissue and secretion for culture. Current fees are applicable. The ODHL offers identification/confirmation of pure cultures at no charge. Pulsed-field gel electrophoresis (PFGE) of isolates is also available at ODHL.

Cultures from environmental sources are not available at ODHL.

EPIDEMIOLOGY

Source

The reservoir for *Legionellae* is water. They are ubiquitous in fresh water sources and are relatively resistant to chlorination. They have been found in lakes, ponds and creeks, as well as in potable water sources, cooling towers, air conditioners, hot and cold water taps and showers, and hot tubs.

Occurrence

Legionellosis is neither new nor localized. Sporadic cases and outbreaks are more common in the summer and autumn. Immunocompromised hosts have a higher risk for acquisition of Legionnaires' disease than the general population. Those at highest risk for Legionellosis include: persons over 50 years of age, smokers, and those who are immunocompromised either as a result of underlying disease (e.g., diabetes, cancer) or immunosuppressive therapy (e.g., chemotherapy, corticosteroid therapy).

Mode of Transmission

The airborne route appears to be the mode of transmission, most commonly by inhalation of aerosolized contaminated water.

Period of Communicability

Person-to-person transmission has not been documented.

Incubation Period

Legionnaires disease - range 2-10 days, most often 5-6 days

Pontiac fever - range 5-66 hours, most often 24-48 hours

PUBLIC HEALTH MANAGEMENT

Case

Investigation

In most instances, follow-up of single cases will produce little information regarding the source of exposure. Cases should be monitored to ascertain that clustering of cases is not occurring. If clustering by time or place is noticed, contact the Bureau of Infectious Disease Control, (614) 466-0265.

Treatment

Erythromycin is the drug of choice; as well, the newer macrolides, azithromycin and clarithromycin, might also be effective. In severe cases, a second medication, rifampin, can also be administered.

Isolation

There is no indication that person-to-person transmission occurs, therefore there is no need to isolate cases.

Prevention And Control

Domestic or institutional water systems: Water should be stored at >60 degrees C (140 degrees F)

and distributed at >50 degrees C (122 degrees F). If an outbreak investigation should implicate the water system (either by positive culture or epidemiologic implication), the system can be superheated (>160 degrees F) and all outlets flushed using hot water for at least ten minutes.

Tap water should not be used in respiratory therapy devices or the rinsing or preparation of patient care equipment which require high-level disinfection.

Cooling towers: Regular inspection should focus on the presence of slime, sludge, scale, and other deposits. The cooling tower should be drained, washed out, hyperchlorinated, and then thoroughly flushed out. Manufacturer recommendations for routine operation, cleaning, and maintenance should be strictly followed.

Water-operated humidifiers in industrial air handling facilities have not yet been associated with legionellosis. However, they should be kept scrupulously clean.

Room humidifiers have been associated with legionellosis. Their use should be limited as much as possible. If a room humidifier must be used, only equipment which does not produce aerosols and which allows easy and thorough cleaning should be used. These should not be used in health care institutions. Steam humidifiers should be used in high-risk areas of health care institutions.