

What Clinicians Need to Know about LEGIONNAIRES' DISEASE

Legionnaires' disease is a sometimes fatal form of pneumonia that is on the rise in the United States. Unfortunately, this disease is also underrecognized and underdiagnosed. Clinicians are in a unique position to make sure cases are detected, allowing rapid investigation by public health officials and prevention of additional cases.

Diagnosis, Testing, and Treatment

Clinical features of Legionnaires' disease include cough, fever, and radiographic pneumonia. Signs and symptoms for Legionnaires' disease are similar to pneumonia caused by other pathogens; the only way to tell if a pneumonia patient has Legionnaires' disease is by getting a specific diagnostic test. Indications that warrant testing include:

- Patients who have failed outpatient antibiotic therapy for community-acquired pneumonia
- Patients with severe pneumonia, in particular those requiring intensive care
- Immunocompromised patients with pneumonia
- Patients with pneumonia in the setting of a Legionnaires' disease outbreak
- Patients with a travel history within 2 weeks before the onset of illness

Clinicians should also test patients with **healthcare-associated pneumonia** for Legionnaires' disease. This is especially important among patients at increased risk for developing Legionnaires' disease, among patients with severe pneumonia (in particular those requiring intensive care), or if any of the following are identified in your facility:

- Patients with Legionnaires' disease, no matter where they acquired the infection
- Positive environmental tests for *Legionella*
- Changes in water quality that may lead to *Legionella* growth (such as low chlorine levels)

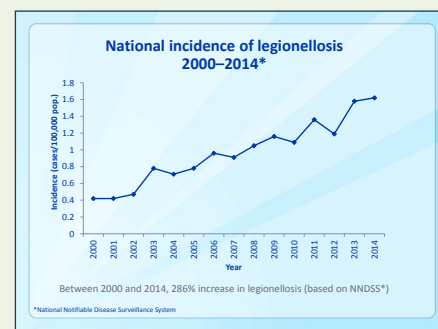
The preferred diagnostic tests for Legionnaires' disease are culture of lower respiratory secretions on selective media and the *Legionella* urinary antigen test.

Serological assays can be nonspecific and are not recommended in most situations. Best practice is to obtain lower respiratory specimens for culture at the time urinary antigen testing is ordered, preferably before the administration of antibiotics. The urinary antigen test detects *Legionella pneumophila* serogroup 1, the most common cause of Legionnaires' disease; isolation of *Legionella* by culture is important for detection of other species and serogroups and for public health investigation. Molecular techniques can be used to compare clinical isolates to environmental isolates and confirm the outbreak source.

If your patient has Legionnaires' disease, see the most recent guidelines for **treatment** of community-acquired pneumonia:

http://cid.oxfordjournals.org/content/44/Supplement_2/S27.full.

Use both a urinary antigen test and culture of a lower respiratory specimen when testing patients for *Legionella*.



In the United States, reported cases of Legionnaires' disease have grown by nearly four times since 2000. About 5,000 cases of Legionnaires' disease are now reported to CDC each year, but this number is likely an underestimate as the illness is thought to be underdiagnosed.

More illness occurs in the summer and early fall, but Legionnaires' disease can happen any time of year.



**U.S. Department of
Health and Human Services**
Centers for Disease
Control and Prevention

Reporting

Timely identification and reporting of cases is important, as this allows public health officials to quickly identify and stop potential clusters and outbreaks by linking new cases to previously reported ones. Most investigations examine where patients may have been exposed to contaminated water during the 14 days before symptoms began. The incubation period for Legionnaires' disease is typically 2–10 days, although cases have been reported with onset up to 19 days after exposure. Healthcare facility exposures are important to document; because many people receiving treatment in hospitals are highly susceptible to *Legionella*, even a short stay can result in infection. Inpatient, outpatient, employee, and visitor exposures to healthcare settings should be quickly reported to ensure that steps can be taken to prevent further cases. Outbreaks among travelers are common but can be difficult to detect because of the low attack rate and the dispersal of people from the source of the outbreak, so collecting and reporting information about overnight travel in the 14 days prior to onset is needed for public health officials to link cases together.

Etiology

Legionnaires' disease is a severe form of pneumonia that often requires hospitalization and is fatal in about 10% of cases. Legionnaires' disease is caused by *Legionella* bacteria. There are at least 60 different species of *Legionella*, and most are considered capable of causing disease. However, most disease is caused by *L. pneumophila*, particularly serogroup 1.

Transmission

While *Legionella* is found in natural, freshwater environments, it can become a health concern in human-made water systems (e.g., plumbing system of large buildings, cooling towers, decorative fountains, hot tubs) where conditions allow it to multiply and come in contact with vulnerable persons. People contract *Legionella* by inhaling aerosolized water droplets containing the bacteria, or, less commonly, by aspiration of contaminated drinking water. *Legionella* is usually not transmitted from person to person; however, a single episode of person-to-person transmission has been reported. Fortunately, most people exposed to the bacteria do not become ill.

Risk Factors

Risk factors for developing Legionnaires' disease include:

- Renal or hepatic failure
- Diabetes
- Chronic lung disease
- Systemic malignancy
- Smoking (current or historical)
- Immune system disorders
- Age ≥ 50 years

Prevention

The key to preventing Legionnaires' disease is maintenance of the water systems in which *Legionella* may grow. If *Legionella* is found in a healthcare facility's water system, the facility should be prepared to eliminate the bacteria. CDC encourages all building owners, and especially those in healthcare facilities, to develop comprehensive water management programs to reduce the risk of *Legionella* growth and spread.

Timely reporting of Legionnaires' disease cases is important for controlling clusters and outbreaks.

Common Sources of Infection

Outbreaks of Legionnaires' disease are most often associated with large or complex water systems, like those found in hospitals, long-term care facilities, hotels, and cruise ships.

The most likely sources of infection include:



Water used for showering (potable water)



Cooling towers (parts of large air conditioning systems)



Decorative fountains



Hot tubs