

Center for Policy, Planning and Evaluation Administration
Division of Epidemiology – Disease Surveillance and Investigation

July 13, 2018

Health Notice for District of Columbia Healthcare Providers
Prevention and Management of Legionnaires' Disease—
A Disease of Increasing National Significance

Summary

Legionellosis is a respiratory disease caused by *Legionella* bacteria. The bacteria cause a serious type of pneumonia called Legionnaires' disease (LD), or a less serious infection called Pontiac fever that has symptoms similar to a mild case of the flu. Data reported to the United States (U.S.) Centers for Disease Control and Prevention (CDC) indicate that the number of LD cases in the U.S. have grown by nearly four and a half times since 2000. The reason for this increase is unknown but is likely multifactorial. The District of Columbia Department of Health (DC Health) encourages healthcare providers to maintain awareness of patients most at risk and the appropriate testing and management of patients. All cases are required to be reported to DC Health.

Background

There are at least 60 different species of *Legionella*. Most are considered pathogenic, but the majority of disease is caused by *Legionella pneumophila*, particularly serogroup 1¹. *Legionella* is most often transmitted via inhalation of aerosolized water containing the bacteria and less commonly via aspiration of drinking water. Person-to-person transmission is rare. The incubation period for LD usually ranges from two to ten days, with an average of five to six days. Symptoms of LD, similar to other types of pneumonia, include fever, myalgia, cough, shortness of breath, and headache. It can also be associated with confusion, nausea, and diarrhea. The incubation period for Pontiac fever is shorter, 24 to 72 hours after exposure. Symptoms of Pontiac fever are primarily fever and muscle aches; it is not associated with pneumonia.

In 2016 health departments reported about 6,100 cases of LD in the U.S.¹. However, because LD is likely underdiagnosed, this number may underestimate true incidence. Cases of legionellosis are more commonly diagnosed in the summer and early fall, but can occur at any time of the year². Risk factors for legionellosis include the following:

- Age \geq 50 years
- Smoking (current or historical)
- Chronic lung disease (such as emphysema or chronic obstructive pulmonary disease [COPD])
- Immune system disorders due to disease or medication
- Underlying illness such as diabetes, renal failure, or hepatic failure
- Systemic malignancy

Legionella can be found in natural and freshwater environments, but generally is not present in sufficient numbers to cause disease. In human-made water systems, like the premise plumbing of large buildings (consisting of water heaters, storage tanks, and pipes), cooling towers, decorative fountains, or hot tubs, *Legionella* can grow and be transmitted to susceptible hosts via aerosolization. This is particularly true in settings such as hospitals and long-term care facilities since they often have large, complex water systems, use aerosol-generating devices, and host susceptible populations. In 2015, people developed LD from a healthcare facility in 76% of locations reporting exposures and among those who acquired LD while in a healthcare facility, 25% died³.

The key to preventing LD 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 work to eliminate the bacteria. Healthcare facilities should develop comprehensive water management programs to reduce the risk of *Legionella* growth and spread. Learn more about how to develop a water management program at www.cdc.gov/legionella/WMPtoolkit.

Recommendations Healthcare Providers

Indications for LD Testing¹

- Patients who have failed outpatient antibiotic therapy for community-acquired pneumonia
- Patients with severe pneumonia—in particular, those requiring intensive care
- Patients at risk for LD with healthcare-associated pneumonia (pneumonia with onset \geq 48 hours after admission)
- Immunocompromised patients with pneumonia
- Patients with pneumonia in the setting of an LD outbreak*
 - *CDC defines a cluster/outbreak as two or more cases associated with the same possible source during a 12-month period.
- Patients with a travel history (travel away from home within 10 days before symptom onset)

Testing is **particularly** important if any of the following are identified in the healthcare facility:

- Other patients with healthcare-associated LD diagnosed in the past 12 months
- Positive environmental tests for *Legionella* in the past 2 months
- Current changes in water quality that may lead to *Legionella* growth (such as low chlorine levels or nearby construction)

Diagnostic Testing

The best practice is to obtain both a lower respiratory secretion sample (e.g., sputum, bronchoalveolar lavage) for culture and urine (for the urinary antigen test [UAT]) sample concurrently. Ideally the lower respiratory culture sample should be collected prior to antibiotic administration, but antibiotic treatment should not be delayed to facilitate this process (and culture can be attempted even after antibiotic therapy has been initiated).

Culture: Isolation of *Legionella* from lower respiratory secretions, lung tissue, pleural fluid, or a normally sterile site on media that supports growth of *Legionella* (i.e., Buffered Charcoal Yeast Extract agar) is confirmatory

- Detects all species and serogroups, including those that a UAT cannot
- Allows comparison of clinical and environmental isolates
- Affected by appropriate antibiotic treatment

UAT: Detects a molecule of the *Legionella* bacterium in urine

- Only detects *L. pneumophila* serogroup 1⁴ (Lp1) (which may account for up to 84%⁵ of cases)
 - All species and serogroups of *Legionella* are potentially pathogenic, so a patient with a negative UAT result could have LD caused by other *Legionella* species and serogroups
- Test can remain positive for a few weeks after infection, even with antibiotic treatment

Treatment

- Review the most recent [IDSA-ATS guidelines for treatment of community-acquired pneumonia](#) and [IDSA-ATS guidelines for treatment of hospital-acquired pneumonia](#) for treatment guidelines

- If your patient has Pontiac fever, antibiotic treatment should not be prescribed. It is a self-limited illness that does not benefit from antibiotic treatment. Patients usually recover within 1 week.

Reporting

- All cases of legionellosis are required to be reported to DC Health so that we can identify and appropriately investigate cases that may be part of clusters or outbreaks and to accurately assess the burden of disease in the District.
- Cases should be reported online using the Notifiable Disease and Condition Case Report Form, which can be accessed on our website: <https://dchealth.dc.gov/service/infectious-diseases>.
- If a patient spent all of the 10 days before their symptom onset date in the healthcare facility or in multiple healthcare facilities, please promptly report these cases by calling 202-442-9065 in addition to submitting an online report.

References

1. CDC. “Legionella (Legionnaires’ Disease and Pontiac Fever)” <https://www.cdc.gov/legionella/clinicians/disease-specifics.html>
2. Cooley LA. “Legionnaires Disease on Rise in US--2016 Update,” Medscape, Jun 13, 2016.
3. CDC, “Legionnaires’ Disease A problem for health care facilities,” Vital Signs, June 2017 <https://www.cdc.gov/vitalsigns/pdf/2017-06-vitalsigns.pdf>
4. Kalil AC, Metersky ML, Klompas M, et al. Management of adults with hospital-acquired and ventilator-associated pneumonia: 2016 clinical practice guidelines by the Infectious Diseases Society of America and the American Thoracic Society[51 pages]. Clin Infect Dis. 2016;63(5):e61–111.
5. Garrison LE, Kunz JM, Cooley LA, et al. Vital Signs: Deficiencies in environmental control identified in outbreaks of Legionnaires’ disease — North America, 2000–2014. MMWR Morb Mortal Wkly Rep. 2016;65(22):576–84.

Resources/Additional Information

1. What Clinicians Need to Know about Legionnaires’ Disease <https://www.cdc.gov/legionella/downloads/fs-legionella-clinicians.pdf>
2. Resources for Investigating Healthcare-Associated Cases <https://www.cdc.gov/legionella/health-depts/healthcare-resources/index.html>
3. A Practical Guide for Implementing Industry Standards for water management programs <https://www.cdc.gov/legionella/maintenance/wmp-toolkit.html>

Please contact the DC Health Division of Epidemiology–Disease Surveillance and Investigation for more information:

Phone: 202-442-9065 (8:15am-4:45pm) | 1-844-493-2652 (after-hours calls)

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