

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

May 7, 2019

## Health Notice for District of Columbia Healthcare Providers Guidance on Testing and Reporting of Legionellosis

### Summary

Data reported to the United States (U.S.) Centers for Disease Control and Prevention (CDC) indicate that the number of cases of Legionnaire's Disease (LD) in the U.S. have grown by nearly five and a half times since 2000<sup>1</sup>. In 2017, health departments reported almost 7,500 cases of LD in the United States<sup>1</sup>. However, because LD is underdiagnosed, this number may underestimate the true incidence. The number of confirmed LD cases in DC increased by 10% from 2017 to 2018. 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 follow the guidelines below for the appropriate sample collection, testing, and management of patients. All cases of legionellosis are required to be reported to DC Health.

### Background

LD is a severe type of pneumonia caused by *Legionella* bacteria. The bacteria can also cause a less serious illness called Pontiac fever that has symptoms similar to a mild case of the influenza<sup>1</sup>. Collectively, these two illnesses are referred to as legionellosis. The incubation period for LD most commonly 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 24 to 72 hours after exposure. Symptoms of Pontiac fever are primarily fever and muscle aches; it is not associated with pneumonia. Cases of LD are more commonly diagnosed in the summer and early fall, but can occur at any time of the year<sup>2</sup>. Risk factors for LD include the following:

- Age  $\geq$  50 years
- Smoking (current or historical)
- Chronic lung disease (such as emphysema or chronic obstructive pulmonary disease [COPD])
- Compromised immune system due to disease or medication
- Underlying illness such as diabetes, renal failure, or hepatic failure
- Systemic malignancy
- Recent travel with an overnight stay outside of the home, including stay in a healthcare facility

### Additional Information on *Legionella*:

- The majority of disease is caused by *Legionella pneumophila*, particularly serogroup 1 (Lp1)<sup>1</sup>.
- *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.
- *Legionella* can be found in natural and freshwater environments, but is not generally present in sufficient numbers to cause disease.
- In human-made water systems, (e.g. heaters, tanks, pipes, cooling towers, or decorative fountains), *Legionella* can grow in sufficient numbers to pose a health risk. This is particularly true in healthcare facilities since they often have large, complex water systems, use aerosol-generating devices, and host susceptible populations.
- Among people with healthcare facility-acquired LD, 25% will die<sup>2</sup>.
- The key to prevention is maintenance of building water systems to reduce the risk of *Legionella* growth and spread by implementing a water management program.

## Recommendations for Healthcare Providers

### Indications for LD Testing<sup>1</sup>

- 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 currently 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 any *Legionella* species in the past 2 months
- Current changes in water quality that may lead to *Legionella* growth (such as low chlorine levels or nearby construction)
  - If you have concerns about the quality of the water entering your healthcare facility, please contact DC Water at (202) 612-3440

### Diagnostic Testing

The best practice is to obtain both a lower respiratory sample (e.g., sputum, bronchoalveolar lavage [BAL]) for culture, and a urine sample (for the urinary antigen test [UAT]) 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. Culture should be attempted even after antibiotic therapy has been initiated.

**Please note the following important points about testing for LD:**

- Standard urine cultures **do not** test for any *Legionella* species—no urine culture test for *Legionella* currently exists
- The UAT used to test for Lp1 is **not the same test** as a urine culture

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

- Detects all species and serogroups of *Legionella*, including those that a UAT cannot
- Allows for comparison of clinical and environmental isolates to help pinpoint a source (e.g. cooling tower, shower, etc.)
- Is affected by appropriate antibiotic treatment, therefore immediate culture prior to administration of antibiotics is key

**UAT:** Detects lipopolysaccharide antigen of Lp1 in urine

- **Only** detects Lp1<sup>3</sup> (which may miss at least 20% of cases<sup>4</sup>)
  - 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/or *L. pneumophila* serogroups
- Test can remain positive for a few weeks after infection, even with antibiotic treatment

### **Support from the DC Public Health Laboratory (DC PHL)**

The DC PHL is available to serve as a resource for the clinical laboratories with *Legionella* species identification and serogrouping from clinical samples.

- Please collect at lower respiratory sample (e.g., sputum, BAL), preferably before antibiotic treatment.
- Once the sample is collected and packaged appropriately please complete the [Chain of Custody and Test Requisition Forms](#). DC PHL can then send a courier to your facility to collect the samples.
- DC PHL will provide culture results within 10 business days
- If your laboratory has the capacity to culture for *Legionella*, then the DC PHL can also accept bacterial isolates for serogrouping and molecular epidemiology.
- For questions regarding sample collection or transport please call (202) 727-8956 during regular business hours (8:30am – 5:30pm, Monday-Friday). For requests outside of regular business hours, please call our 24/7 on-call phone at (202) 868-6561.

### **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 and accurately assess the burden of LD 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) 442-5843 in addition to submitting an online report.

### **Consultation**

Remember, the *Legionella* Surveillance Program exists to serve as a resource to all healthcare facilities in DC. Please do not hesitate to contact us ([legionella.epi@dc.gov](mailto:legionella.epi@dc.gov)) for any of the following:

- Development of communications related to LD
- Coordination of testing of lower respiratory specimens at the DC PHL
- Referral to resources and guidance related to LD or water management
- Consultation with CDC subject matter experts

**References**

1. CDC. “Legionella (Legionnaires' Disease and Pontiac Fever)”  
<https://www.cdc.gov/legionella/clinicians/disease-specifics.html>
2. CDC, “Legionnaires’ Disease A problem for health care facilities,” Vital Signs, June 2017  
<https://www.cdc.gov/vitalsigns/pdf/2017-06-vitalsigns.pdf>
3. 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. Clin Infect Dis. 2016;63(5):e61–111.
4. 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: 202-442-5843 (8:15am-4:45pm) | 1-844-493-2652 (after-hours calls)  
Fax: 202-442-8060 | Email: [legionella.epi@dc.gov](mailto:legionella.epi@dc.gov)**