PENNSYLVANIA DEPARTMENT OF HEALTH
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Anticipated Increase in *Legionella* Infections Due to Seasonality

DATE:	**6/5/2024**
TO:	Health Alert Network
FROM:	Debra L. Bogen, MD, FAAP, Acting Secretary of Health
SUBJECT:	**Anticipated Increase in *Legionella* Infections Due to Seasonality**
DISTRIBUTION:	Statewide
LOCATION:	n/a
STREET ADDRESS:	n/a
COUNTY:	n/a
MUNICIPALITY:	n/a
ZIP CODE:	n/a

This transmission is a "Health Advisory" which provides important information for a specific incident or situation; may not require immediate action.

HOSPITALS: PLEASE SHARE WITH ALL MEDICAL, PEDIATRIC, INFECTION CONTROL, NURSING AND LABORATORY STAFF IN YOUR HOSPITAL
EMS COUNCILS: PLEASE DISTRIBUTE AS APPROPRIATE
FQHCs: PLEASE DISTRIBUTE AS APPROPRIATE
LOCAL HEALTH JURISDICTIONS: PLEASE DISTRIBUTE AS APPROPRIATE
PROFESSIONAL ORGANIZATIONS: PLEASE DISTRIBUTE TO YOUR MEMBERSHIP

Summary

- In Pennsylvania, *Legionella* infections increase each year during spring, summer, and fall months (May-November).
- The preferred diagnostic tests for a *Legionella* infection are culture of lower respiratory secretions (e.g., sputum, bronchoalveolar lavage) on selective media AND the *Legionella* urinary antigen test. Submit *Legionella* isolates to the Pennsylvania Department of Health (DOH) Bureau of Laboratories for characterization.
- Health care providers should maintain a high index of suspicion for Legionnaire's disease in adult patients with pneumonia.
- Report all *Legionella* infections to the health department via PA-NEDSS or by calling DOH (877-PA-HEALTH) or the local health department.

Background

Since 2000, the number of reported *Legionella* infections have been increasing in both Pennsylvania and the United States overall. Pennsylvania had exceptionally high case counts in 2017, 2018, and 2019. *Legionella* infections follow a seasonal pattern. The majority of cases occur between May and November each year. *Legionella* bacteria grow best in warm, humid, wet weather. In addition to seasonality and temperature, stagnant water due to building closures or dead legs in pipe networks may allow for *Legionella* growth. More information on environmental factors that contribute to *Legionella* growth can be found on the CDC's website: https://www.cdc.gov/control-legionella/php/public-health-strategy/index.html .

Many symptoms of *Legionella* infections may be similar to other respiratory infections, including COVID-19. These symptoms include fever, cough, and shortness of breath. Due to these similarities, clinicians may test certain patients presenting with these symptoms for COVID-19 for other respiratory pathogens and not for *Legionella* infection. Delayed diagnosis may slow appropriate treatment. For this reason, it is recommended that all patients hospitalized with pneumonia of unknown cause be tested for *Legionella* infection.

Legionella infection **(legionellosis) can manifest as Legionnaires' disease, Pontiac fever, or extrapulmonary legionellosis.**

- **Legionnaires' disease** is a severe illness with pneumonia. Symptoms include cough, shortness of breath, fever, muscle aches, and headaches. Some patients also experience diarrhea, nausea, and confusion. Most patients are hospitalized, and treatment is required. The case-fatality rate is about 10% for community-acquired Legionnaires' disease and about 25% for healthcare-acquired disease.
- **Pontiac fever** is a milder illness, frequently characterized by fever and muscle aches. Patients with Pontiac fever do not develop pneumonia, do not require treatment, and typically recover within a week.
- **Extrapulmonary legionellosis** is a *Legionella* infection at a site outside the lungs (e.g., endocarditis, wound infection, joint infection, or graft infection). Symptoms and treatment vary according to site of infection.

Risk factors for *Legionella* infection include:

- Age ≥50 years
- Current or former smoker
- Underlying conditions such as chronic lung disease, cancer, diabetes, renal disease, or immunocompromising conditions
- Recent travel with an overnight stay outside of the home
- Recent care at a healthcare facility
- Exposure to hot tubs

A *Legionella* infection occurs when a person inhales aerosolized water containing *Legionella* bacteria. Potential sources include cooling towers, hot tubs, showers, faucets, and decorative fountains. Patients may also be infected through aspiration of contaminated drinking water. In general, people do not spread Legionnaires' disease and Pontiac fever to other people. Most cases are sporadic, but outbreaks can occur.

The incubation period for Legionnaires' disease is generally 5 to 6 days (range 2-14 days). For Pontiac fever, the incubation period is 1 to 3 days but can be as short as 4 hours.

Testing

The preferred diagnostic tests for *Legionella* infection are the *Legionella* urinary antigen test AND culture of lower respiratory secretions. Serologic assays can be nonspecific and are not recommended in most situations. Testing is warranted for the following indications:

- Patients who have failed outpatient antibiotic therapy for community-acquired pneumonia
- Patients with severe pneumonia, particularly, those requiring intensive care
- Patients with pneumonia who are immunocompromised
- Patients who traveled away from their home in the 14 days prior to the onset of illness
- Patients with pneumonia who spent time in a location with a *Legionella* outbreak or a location with a known *Legionella* infection in the last 12 months.
- Patients at risk for *Legionella* infection with healthcare-associated pneumonia (pneumonia with onset ≥48 hours after admission)
- Patients with pneumonia who spent time in a location with a known positive *Legionella* water sample

Best practice is to obtain both the urinary antigen test and sputum culture concurrently. Sputum should ideally be obtained prior to antibiotic administration, but antibiotic treatment should not be delayed to facilitate this process.

- ***Legionella* urinary antigen test**
  The most commonly used laboratory test for diagnosis of a *Legionella* infection is the urinary antigen test, which detects a molecule of the *Legionella* bacterium in urine. The test can remain positive for a few weeks after infection, even with antibiotic treatment. The urinary antigen test only detects the most common cause of *Legionella* infection, *L. pneumophila* serogroup 1. However, other species and serogroups of *Legionella* are pathogenic, so a patient with a negative urinary antigen result could have legionellosis caused by other *Legionella* species and serogroups.

- **Culture of lower respiratory secretions (e.g., sputum, bronchoalveolar lavage) on selective media**
  Culture can detect *Legionella* species and serogroups that the urinary antigen test does not, and it allows for the comparison of clinical and environmental isolates in the event of an outbreak. When specimens are submitted for culture, laboratories must be informed that *Legionella* is suspected because it requires the use of specialized media (Buffered Charcoal Yeast Extract [BCYE] agar).

> ***Legionella* isolates should be forwarded to DOH Bureau of Laboratories for further characterization.**
> - Ship isolates at room temperature. Slanted media is preferred. If plates are sent, please seal with parafilm. Package as Category B sample and ship (Monday through Thursday only) to:
>
> PA Department of Health, Bureau of Laboratories
> 110 Pickering Way
> Exton, PA 19341
> 610-280-3464

Treatment

For patients with Legionnaires' disease, follow the Infectious Diseases Society of America (IDSA)/American Thoracic Society (ATS) guidelines for the treatment of community-acquired and hospital-acquired pneumonia. *Legionella*-directed antibiotics include macrolides and respiratory fluoroquinolones. While it is preferred that diagnostic testing specimens are obtained before antibiotic administration, antibiotic treatment should not be delayed to facilitate this process.

Patients with Pontiac fever should not be prescribed antibiotic treatment. It is a self-limited illness that does not benefit from antibiotics, and patients usually recover within 1 week.

Treatment of extrapulmonary legionellosis varies according to the site of infection.

Reporting

Report all *Legionella* infections (or legionellosis cases) through the health department's web-based reportable disease surveillance system, PA-NEDSS (https://www.nedss.state.pa.us/nedss/default.aspx), or call the local health department or PADOH (877-PA-HEALTH). Timely reporting assists in the quick identification of potential clusters or outbreaks.

Any questions or concerns regarding these recommendations should be directed to the local health department or PADOH (877-PA-HEALTH).

Further information on legionellosis is available at:
Pennsylvania Department of Health: https://www.health.pa.gov/topics/disease/Pages/Legionella.aspx
Centers for Disease Control and Prevention (CDC): https://www.cdc.gov/legionella/index.html.
CDC's *Legionella* information for clinicians: https://www.cdc.gov/legionella/hcp/clinical-guidance/

Individuals interested in receiving future PA-HANs can register at: https://ondemand.mir3.com/han-pa-gov/login/

Categories of Health Alert messages:

Health Alert: conveys the highest level of importance; warrants immediate action or attention.
Health Advisory: provides important information for a specific incident or situation; may not require immediate action.
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This information is current as of June 5, 2024 but may be modified in the future.