

Enhanced Lab Capacity for *Legionella* Testing at the Washington State Public Health Laboratory

The Department of Health's (DOH) Public Health Laboratory (PHL) testing capacity for *Legionella* has expanded. PHL is can now provide *Legionella* testing for clinical and environmental



Image: CDC. *Legionella pneumophila*

What is *Legionella*?

Legionella is a bacterium found naturally in freshwater environments, like lakes and streams. It can become a health concern when it grows and spreads in human-made building water systems like showers, decorative fountains, ice machines, or faucets. People can acquire *Legionella* infections when they breathe in aerosolized contaminated water. Clinical types include Legionnaires' disease, Pontiac fever, and Extra-pulmonary legionellosis. For more information, please review the DOH guidelines here: <https://www.doh.wa.gov/ForPublicHealthandHealthcareProviders/NotifiableConditions/Legionellosis>

What types of testing are available for clinical (e.g., sputum) and environmental specimens (e.g., water)?

The PHL can perform culture and RT-PCR for clinical and environmental submissions. A testing algorithm is followed for all testing, so first RT-PCR testing is performed. Positive RT-PCR specimens are cultured and suspicious colonies are tested by latex agglutination or RT-PCR.

What are the benefits of the new lab testing abilities?

The new culture and RT-PCR testing is useful in an outbreak situation to differentiate between different species of *Legionella* (see Table 1). For example, most clinical labs perform urine antigen testing for legionella. However, this method only detects one type of *Legionella* (*L. pneumophila* serogroup 1) and does not allow for molecular comparison to environmental isolates. PHL's more robust capacity can provide both environmental and clinical testing of *Legionella*, which can lead to identification of an epidemiologic link between environmental and clinical isolates and a faster response in resolving an outbreak.

What types of specimens does PHL accept for clinical testing?

Bronchial wash, bronchoalveolar lavage (BAL), or sputum specimens are accepted at PHL. All should be shipped frozen (-20°C) on dry ice or super cold packs. Freeze respiratory specimens immediately after collection and ship all specimens as Category B. For more information:

<https://www.doh.wa.gov/Portals/1/Documents/5240/SCSI-Ref-Legion-Cx-Clinical-V1.pdf>

Where do I find more information on how to submit a clinical or environmental specimen for *Legionella* testing?

<https://www.doh.wa.gov/ForPublicHealthandHealthcareProviders/PublicHealthLaboratories/MicrobiologyLabTestMenu/u16574q/4C6567>

What are the advantages and disadvantages of each test type?

Table 1. Summary of <i>Legionella</i> testing methods		
Test Type	Advantages	Disadvantages
Culture	<ul style="list-style-type: none"> • Detects all species and serogroups • Clinical and environmental isolates can be compared 	<ul style="list-style-type: none"> • Technically difficult • Slow (>5 days to grow) • Sensitivity highly dependent on technical skill • Affected by appropriate antibiotic treatment • Requires specialized agar (i.e., Buffered charcoal yeast extract), which some laboratories may not have readily available
RT-PCR	<ul style="list-style-type: none"> • Can be performed on pathologic specimens (usually lung tissue) • Rapid • Possible to detect species and serogroups other than Lp1 	<ul style="list-style-type: none"> • Assays vary by laboratory and commercial availability may be limited in the United States
Urinary Antigen <i>(Clinical test only. This is not performed at WA PHL)</i>	<ul style="list-style-type: none"> • Rapid (same day) 	<ul style="list-style-type: none"> • Can only be used to detect <i>L. pneumophila</i> serogroup 1-(Lp1) • Does not allow for molecular comparison to environmental isolates
https://www.cdc.gov/legionella/clinicians/diagnostic-testing.html		

How can I learn more how to submit environmental specimens for *Legionella* testing?

- The PHL is now certified as an Environmental Legionella Isolation Techniques Evaluation (ELITE) laboratory through the Centers for Disease Control and Prevention (CDC).
<https://wwwn.cdc.gov/elite/Public/EliteHome.aspx>
- The PHL can provide *Legionella* testing in outbreak situations.
- Prior to submitting a specimen for testing, it's necessary to get approval from the Local Health Jurisdiction (LHJ). To contact your LHJ:
<https://www.doh.wa.gov/aboutus/publichealthsystem/localhealthjurisdictions>
- See CDC sample collection guidance:
<https://www.cdc.gov/legionella/downloads/cdc-sampling-procedure.pdf>

For questions, please contact the Washington State Department of Health:

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