

# West Virginia Department of Health and Human Resources

## Information for Physicians - Legionellosis

### What are the symptoms of legionellosis?

Patients with Legionnaires' disease have pneumonia with initial symptoms that may include anorexia, malaise, muscle aches, and headache followed by fever and chills. A cough (dry or productive), abdominal pain, and diarrhea are also common. Patients with severe disease may progress to respiratory failure or multiorgan failure.

Pontiac fever is a self-limited illness. Patients present with flu-like symptoms and a clear chest X-ray.

### How common is *Legionella*?

Legionnaires' disease is more common in adults over the age of 50 and is extremely rare in those under age 20. It is more common in males than females and in smokers and other individuals with underlying disease.

Pontiac fever is typically recognized when it occurs in outbreaks of flu-like illness in populations of young healthy adults.

### How can I make the diagnosis?

Diagnosis of legionellosis is confirmed by:

- Isolation of *Legionella* from respiratory secretions, lung tissue, pleural fluid, or other normally sterile fluids, or
- Demonstration of a four-fold or greater rise in the reciprocal immunofluorescence antibody (IFA) titer to greater than or equal to 128 against *Legionella pneumophila* between paired acute- and convalescent-phase serum specimens, or
- Detection of *L. pneumophila* in respiratory secretions, lung tissue, or pleural fluid by direct fluorescent antibody testing, or
- Demonstration of *L. pneumophila* serogroup 1 antigens in urine by radioimmunoassay or enzyme-linked immunosorbent assay.

A single increased antibody titer does not confirm the diagnosis due to the fact that IFA titers  $\geq 1:256$  are commonly found in healthy adults. Both IgG and IgM antibodies may be falsely elevated in healthy individuals.

There are multiple tests available to diagnose legionellosis, as summarized in the table below (Am J Med. 2001;110:41-48):

Test	Specimen	Sensitivity	Specificity	Time to Diagnosis	Comments
Culture	Sputum	< 10%	100%	3-7 days	Special methods and effort can increase sensitivity
	Blood	0-6%	100%	3-7 days	
Direct Fluorescent Antibody	Sputum	33-68%	99-100%	1 hour	
Antigen detection	Urine	80-90%	98-100%	< 1 hour	Prolonged excretion; negative early in diagnosis; only detects type 1
Serology	Serum	60-80%	95-99%	6-10 weeks for seroconversion	Single titers unhelpful
PCR	Urine/blood	75-82%	90-100%	2-4 hours	Limited human studies; sensitivity likely to exceed other techniques
	Respiratory secretions	83-100%	90-100%	2-4 hours	

Accurate diagnosis and rapid reporting of patients with legionellosis is important to detect the occurrence of outbreaks due to a common source. Because of the prolonged time required for seroconversion, convalescent serology should be drawn 10 to 12 weeks after onset of illness.

### **What is the prognosis for patients infected with *Legionella*?**

Legionnaires' disease may have a case-fatality rate of five to 15%; higher in some chronically ill hospitalized patients.

Patients with Pontiac fever recover in two to five days without treatment.

### **What therapy is recommended for *Legionella*?**

Pontiac fever resolves without treatment. Erythromycin is the drug of choice for treating Legionnaires' disease. Clarithromycin and azithromycin may also be effective.