

3.9 Legionellosis

Case Definition

Confirmed Case

Clinical presentation with laboratory confirmation of infection:

- Isolation of *Legionella* species or detection of the antigen from respiratory secretions, lung tissue, pleural fluid or other normally sterile fluids

OR

- A significant (e.g. fourfold or greater) rise in *Legionella* species IgG titre between acute and convalescent sera

OR

- IgG titre > 1:128 against *Legionella* species

OR

- Demonstration of *L. pneumophila* antigen in urine

Probable Case

Clinical illness with demonstration of *Legionella* species DNA

Clinical Presentation

Legionellosis can manifest as one of two illnesses:

- Legionnaires' Disease: nonproductive cough, fever, myalgia, pneumonia; can progress to respiratory failure; 15% case fatality rate
- Pontiac Fever: milder illness without pneumonia; cough may or may not be present; recovery takes place 2-5 days without treatment after presentation of symptoms.

Diagnosis

Different for the two manifestations of disease:

Legionnaires' disease:

- A significant (e.g. fourfold or greater) rise in *Legionella* species IgG titre between acute and convalescent sera

OR

- Demonstration of *L. pneumophila* antigen in urine

Pontiac Fever:

- Identification of clinical symptoms in appropriate epidemiological setting
- Diagnostic confirmation via urine antigen and serologic testing

Epidemiology

Occurrence

Legionellosis occurs globally, with an increased number of reported cases in the summer and fall. The most common species of bacteria associated with this disease is *L. pneumophila*, but *L. micdadei*, *L. bozemanii*, *L. longbeachae*, and *L. dumoffii* have been isolated from immunosuppressed individuals with pneumonia. As well, Legionnaire's Disease and Pontiac Fever have very different attack rates. During an

epidemic, Pontiac Fever has an attack rate of about 95%, whereby Legionnaire's Disease has an attack rate between 0.1- 5%.

The prevalence of Legionnaire's disease in Canada is low, with approximately 75 cases reported annually. Only 2 cases of Legionellosis were reported in Newfoundland and Labrador over the past twenty years. Both were travel-related.

Reservoir

The main source of *Legionella* species is manmade water supplies. They can include air conditioning cooling towers, humidifiers, respiratory therapy equipment, and potable water systems (e.g. showers).

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Transmission

Airborne, possibly water aspiration

Incubation Period

Legionnaire's disease 2-10 days, usually 5-6 days; Pontiac fever 5-72 hours, most often 24-48 hours.

Period of Communicability

Person-to-person transmission has not been detected.

Control Measures

Management of Cases

Treatment of Legionnaire's disease requires either newer macrolides (azithromycin) or respiratory fluoroquinolones (levofloxacin). Severe cases of Legionnaire's disease may be more effectively mediated by levofloxacin rather than macrolides. Pontiac fever does not require any treatment.

Management of Contacts

Contact investigation should be initiated and a search for the source of the infection should be undertaken.

Management of Outbreaks

There are several important steps that should be incorporated in the management of *Legionella* outbreaks.

- Determine common exposures of water sources among the cases
- Review maintenance logs for water systems that are potential sources of infection
- Culture can help verify the outbreak's cause
- Thermal eradication and chemical treatment of water supplies may help prevent outbreaks, under appropriate conditions
- Once contained, develop regular cleaning and disinfecting schedule

Education and Preventive Measures

Growth of *Legionella* is most likely to occur in water that is stagnant, warm (25-42 degrees Celsius), contains sediment and scale, and has low biocide levels. Thus, it is important to take precautions to prevent bacterial growth. Manmade water sources need to be maintained and disinfected on a regular basis. Hot water systems should be maintained at temperatures higher than 50 degrees Celsius. Cooling towers need to be cleaned regularly to prevent buildup of sediment and scale, and should be drained when not being used. Appropriate biocides can help prevent growth of *Legionella*. It is not advisable to use tap water in respiratory devices. Instead, sterile water should be used.

For more information on *Legionella pneumophila*, a material safety data sheet is provided at <http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/legionella-eng.php>

A fact sheet is provided at

<http://www.phac-aspc.gc.ca/id-mi/legionella-eng.php>

Reporting Requirements and Procedures

- Physicians, laboratories and communicable disease control nurses (CDCNs), and infection control practitioners (ICPs) must immediately report suspect or confirmed cases to the Regional Medical Officer of Health (RMOH)
- RMOH office will notify local physicians, nurse practitioners, environmental health officers, community health nurses, CDCNs, and ICPs, in the particular region as required for follow-up and case investigation
- RMOH reports to provincial office as per list A
- CDCN enters the case into the electronic reporting system and completes an outbreak report form if indicated
- Provincial Disease Control
 - Reports the aggregate case data to other health regions
 - Reports the identified case to Public Health Agency of Canada