

Diagnostic testing for Legionnaires' disease: Trends in BC

Legionnaires' disease is often severe and is a potentially fatal form of bacterial pneumonia, particularly in individuals with compromised health status. *Legionella pneumophila* serogroup 1 accounts for the majority of cases worldwide.¹ Other species of *Legionella* may be similarly pathogenic. This organism may also cause the milder syndrome referred to as Pontiac fever. In the pneumonic form, nonproductive cough, abdominal pain, diarrhea, and confusion/delirium are common. Pontiac fever, in contrast, is a self-limiting, influenza-like illness that can last 3 to 5 days after exposure in healthy individuals. Exposure to Legionnaires' disease is commonly associated with contaminated whirlpools/spas, water towers, and home humidifiers. Outbreaks due to Legionnaires' disease have been identified globally, including in Canada, and are most

often associated with cooling towers.¹⁻³ Transmission does not occur from person to person. Risk factors in adults include age (being over 50 years old), cigarette smoking, alcohol consumption, diabetes, chronic heart and lung disease, and immune suppression. Pediatric cases of Legionnaires' disease are uncommon.

The BC Public Health Microbiology and Reference Laboratory offers a wide range of laboratory tests for *Legionella* including urine antigen, molecular, culture, and serology. The **Figure** shows testing trends in BC from 2010 to 2014 and the number of positive cases identified during that period. Although requests for urine antigen tests have been steadily increasing since 2011, the number of positive cases remains stable. In 2014 a small cluster of positive cases in one health authority likely contributed to the increase in cases during that year. This is in contrast to requests for respiratory PCR tests, which remained fairly consistent over the 5-year period and for which the number of posi-

tive cases has remained stable. Culture tests are less commonly ordered, with few positive cases identified, but culture testing is required for subtyping purposes. *Legionella* serology has been offered since September 2012, with one positive case of *Legionella maceachernii* detected in 2014.

Rapid and accurate detection of positive *Legionella* cases is important for patient care and public health follow-up. The follow-up requires either a culture or PCR amplicon for molecular subtyping to allow for cluster detection, which in turn assists in source detection and public health intervention.

Appropriate diagnostic tests should be ordered for patients with clinical presentations consistent with Legionnaires' disease. For critically ill patients it is reasonable to submit urine for antigen testing and a lower respiratory sample (e.g., bronchoalveolar lavage) for PCR. Serology testing should be reserved for patients whose urine antigen and PCR tests are negative but whose symptoms

This article is the opinion of the BC Centre for Disease Control and has not been peer reviewed by the BCMJ Editorial Board.

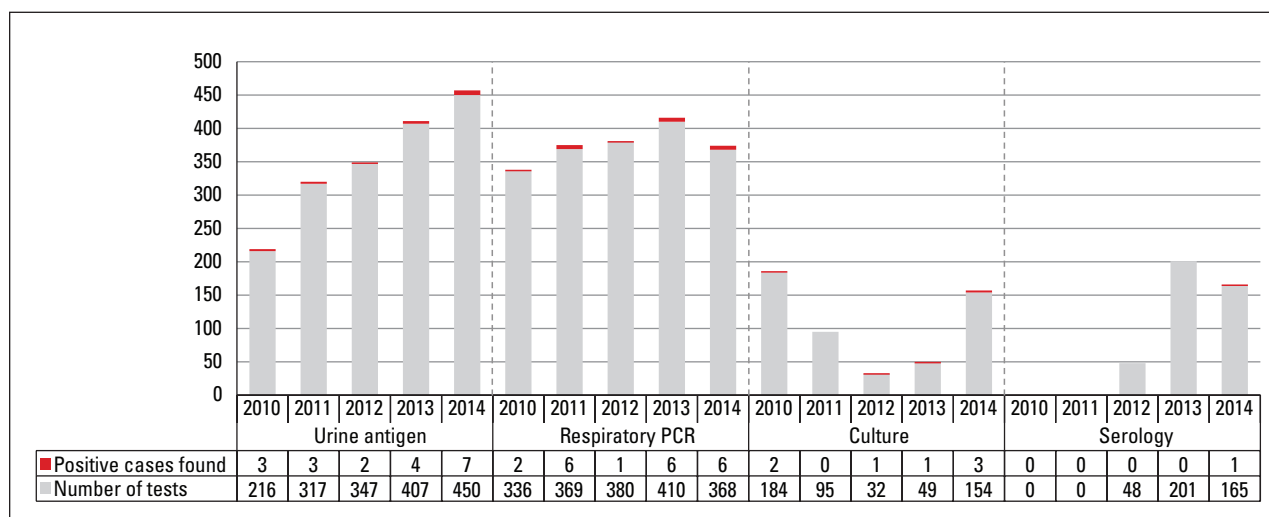


Figure. Number of diagnostic tests performed by the BC Public Health Microbiology and Reference Laboratory from 2010 to 2014 and the number of positive cases found.

are consistent with Legionnaires' disease, suggesting the possibility of *Legionella* species other than *L. pneumophila*. A blood sample in a gold-top serum separator tube is needed for serology testing. Health care professionals are asked to refer to the BC Public Health Microbiology and Reference Laboratory *Guide to Programs and Services* for specimen and collection system details.

Legionnaires' disease is a reportable communicable disease in BC, and both physicians and laboratories are reminded to report this infection to public health authorities.

—**Muhammad Morshed, PhD,**
SCCM

—**Yin Chang, MSc**

—**Linda Hoang, MD, FRCPC**

Acknowledgments

Thanks to Yvonne Simpson, Jonathan Laley, and Rob Azana for assistance with data extraction for this study, and to the BC Legionella Working Group for reviewing this article.

References

1. Bartram J, Chartier Y, Lee JV, et al. (eds). *Legionella and the prevention of Legionellosis*. Geneva: Switzerland, WHO Press; 2007.
2. Newton HJ, Ang DK, van Driel IR, et al. Molecular pathogenesis of infections caused by *Legionella pneumophila*. *Clin Microbiol Rev* 2010;23:274-298.
3. Lévesque S, Plante PL, Mendis N, et al. Genomic characterization of a large outbreak of *Legionella pneumophila* serogroup 1 strains in Quebec City, 2012. *PLoS One* 2014;9:e103852.

Mobile support from the College Library

An increasing number of physicians use smartphone apps as educational and reference tools to support clinical practice.¹ However, the quality of medical apps varies and regulation is in its infancy.² The College Library offers BC physicians access to apps that link to clinical information from established medical publishers. While all clinical information should be appraised according to relevance and validity prior to application, the following resources are excellent starting points for locating reliable clinical guidance.

- Access Medicine offers an app for iOS and Android containing the current editions of *Quick Medical Diagnosis and Treatment*, *Fitzpatrick's Clinical Dermatology Atlas*, *Diagnosaurus*, and *Pocket Guide to Diagnostic Tests*.
- The Audio-Digest app for iOS and Android provides lectures recorded from US medical conference presentations on topics in various specialties including family practice, psychiatry, pediatrics, obstetrics and gynecology, internal medicine, emergency medicine, and others. The content is accredited by the College of Family Physicians of Canada for Mainpro-M2 credits and by the Royal College of Physicians and Surgeons of Canada under section 2 (self-learning) of the MOC Program.
- The BMJ Best Practice app (iOS and Android) gives a user-friendly interface to patient-focused decision tools for diagnosis, treatment, and follow-up. The content

is based on systematic reviews, meta-analysis, controlled trials, guidelines, and, where necessary, expert opinions. The app contains almost 1000 modules. The College has licensed Best Practice for registrants with library privileges as well as all UBC medical residents.

- The First Consult app is for iOS devices only. Like Best Practice, First Consult is a clinical decision support resource of evidence-based medical information for evaluation, diagnosis, clinical management, prognosis, and prevention. The app requires a free ClinicalKey account. Account setup instructions are provided on the College Library's website.

Visit the Apps and Audiovisual webpage for more information (www.cpsbc.ca/library/search-materials/audiovisual).

—**Karen MacDonell, PhD, MLIS**
Director, Library Services

References

1. Nason GJ, Burke MJ, Aslam A, et al. The use of smartphone applications by urology trainees. *Surgeon* 2015;13:263-266.
2. Buijink AW, Visser BJ, Marshall L. Medical apps for smartphones: Lack of evidence undermines quality and safety. *Evid Based Med* 2013;18:90-92.

This article is the opinion of the Library of the College of Physicians and Surgeons of BC and has not been peer reviewed by the BCMJ Editorial Board.

Now we're here for you 24 hrs a day, seven days a week.

Call at
1-800-663-6729
or visit
www.physicianhealth.com.



Physician Health Program
British Columbia

Connecting Physicians to Health