Seegene

Nudge scholar

The insights to drive smart ideas
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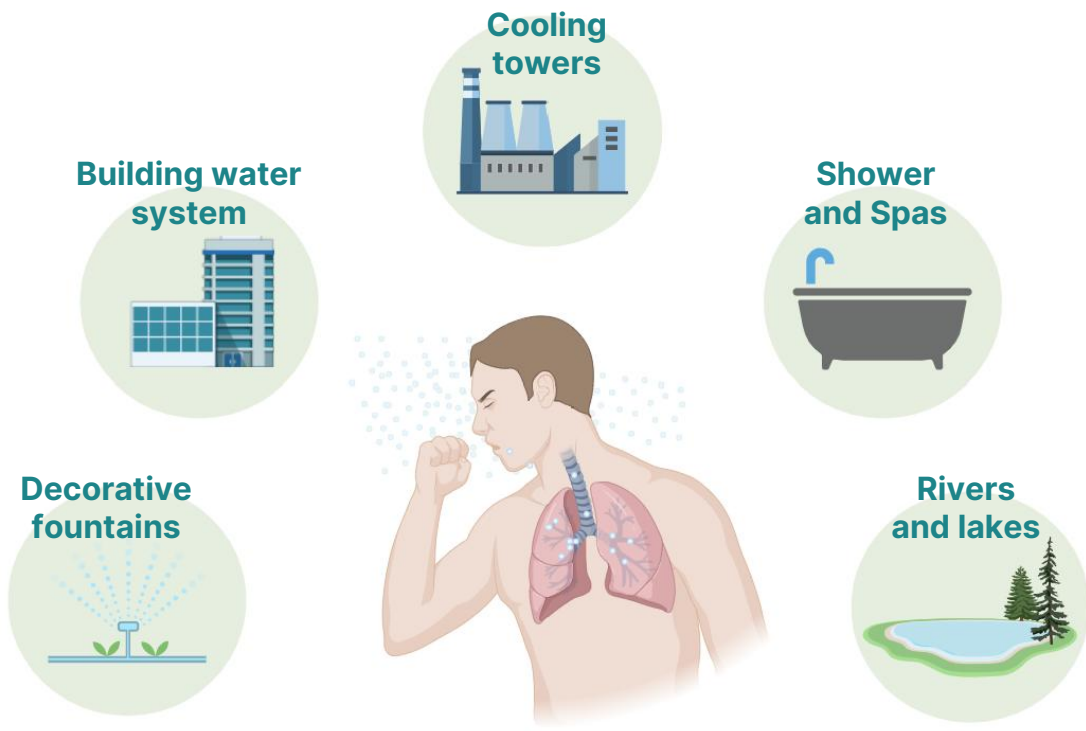
For More Info

Legionella: A Hidden Threat, Calls for Precise Diagnosis

Legionella biofilm in water system

- **Difficult for disinfectants to penetrate and eliminate**
- **Allows long-term survival of *Legionella*, acting as a persistent infection source**
- **Release of bacteria from biofilm into water increases aerosol transmission risk**



Host-related risk factors

- **Age ≥ 50 years**
- **Smoking (current or historical)**
- **Immune system disorders**
- **Chronic lung disease**
- **Individuals with medical conditions**

Figure. The transmission sources of *Legionella*[1,2,3,4]

Legionnaires' disease, leading to severe pneumonia, demands a timely and accurate diagnosis

Overview

Legionellosis includes Legionnaires' disease and Pontiac disease, which are caused by *Legionella* bacteria, commonly transmitted through aerosols from water[1]. The *Legionella* biofilm raises the risk of transmission, and the host condition increases the severity of infection (Figure).

Pontiac disease is an acute and self-limiting influenza-like illness.

Legionnaires' disease is a serious pneumonia caused by *Legionella* bacteria, with ***Legionella pneumophila*** being the most common species[1].

Outbreaks

Legionnaires' disease has been recorded in several outbreaks worldwide in 2025.

Austria announced an outbreak in February, confirming 41 cases. *Legionella* strains from patients were genetically related and the same type of *Legionella* was detected in the cooling tower of a plant[5]. **Australia** also confirmed 12 cases between March and April and detected *Legionella* bacteria in one cooling tower.

In May, *Legionella* bacteria were found in a hot spring in **Japan**, reaching 620 times the standard level. Three people were diagnosed with Legionnaires' disease and 47 users reported abnormal symptoms[7].

Severe pneumonia

L. pneumophila is a major cause of severe **community-acquired pneumonia**, particularly in older adults and immunocompromised individuals[8]. It presents with fever, cough, dyspnea, and sometimes gastrointestinal or neurological symptoms[1].

The ATS/IDSA* guidelines recognize *Legionella* as a leading pathogen in ICU-level pneumonia, and delayed antibiotic therapy significantly increases mortality[9]. In severe cases, mortality ranges from 5% to over 30%[8,9].

Early and accurate diagnosis is critical to timely treatment and improved outcomes[10].

*American Society of Transplantation/ Infectious Diseases Society of America

Diagnosis

Legionnaires' disease can be diagnosed using various laboratory methods, including urinary antigen testing (UAT), culture, and molecular methods like PCR[11,12].

UAT typically detects *L. pneumophila* serogroup 1 only, but infections with other types can occur. Thus, it is recommended that UAT be combined with molecular testing on lower respiratory specimens[12].

PCR is advantageous for its speed and accuracy, showing 95-99% of sensitivity and >99% specificity. Furthermore, PCR can be more sensitive than culture for detecting *Legionella* infection after antibiotic treatment begins[12].

Seegene Solution

L. pneumophila not only causes pneumonia but also can develop into a severe illness. Therefore, fast detection is essential for an accurate diagnosis and timely intervention to stop the progression of the disease.

Allplex™ PneumoBacter and **Respiratory Panel 4 Assays** can differentiate *L. pneumophila* from other bacterial pathogens that often present with similar symptoms, making it useful for diagnosing respiratory infections.

Allplex™ PneumoBacter Assay and **Allplex™ Respiratory Panel 4**

- *Legionella pneumophila (LP)*
- *Haemophilus influenzae (HI)*
- *Streptococcus pneumoniae (SP)*
- *Mycoplasma pneumoniae (MP)*
- *Chlamydophila pneumoniae (CP)*
- *Bordetella pertussis (BP)*
- *Bordetella parapertussis (BPP)*

Ref. [1] WHO; [2] How *Legionella* Spreads, CDC; [3] Clinical Overview of Legionnaires' Disease; [4] Priscilla Declerck, 2010; [5] Outbreaknewstoday; [6] seslhd; [7] mk; [8] Phin N et al.,2014; [9] Metlay JP et al., 2019; [10] StatPearls; [11] SGmedical; [12] Laboratory Testing for Legionella, CDC