

# Legionellosis Standard of Care on the Horizon

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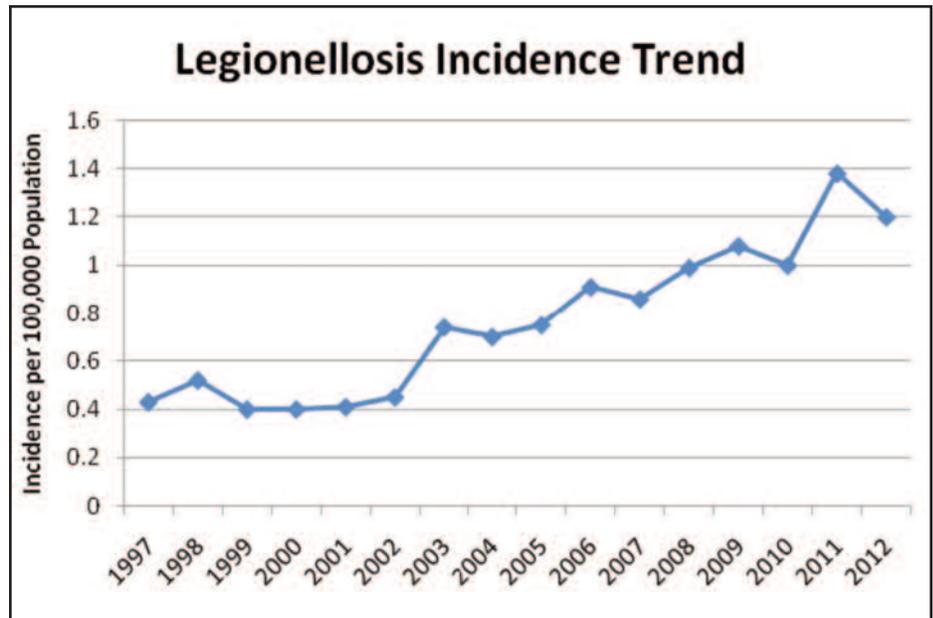
Legionnaires' disease (a grave, sometimes lethal form of pneumonia) and Pontiac fever (a flu-like, self-limited illness) are the two most common forms of Legionellosis. Legionellosis is caused by inhalation of viable *Legionella* bacteria, of which 70 serogroups have been identified. *Legionella* are common, aquatic bacteria found in natural and building water systems. The water-borne pathogens are widely dispersed in nature, and are found in moist soils, creeks, ponds and drinking water.

Pontiac fever, as a self-limited disease, usually resolves itself without intervention. However, if untreated, Legionnaires' disease can be fatal. Although prompt treatment with antibiotics usually cures Legionnaires' disease, some people continue to experience problems after treatment.

Several sources indicate 8,000 to 18,000 persons are hospitalized every year in the United States with Legionnaires' disease with a five to 30 percent mortality rate.<sup>1</sup>

Legionnaires' disease was first discovered in 1976 during an outbreak of pneumonia at an American Legion convention held at The Bellevue-Stratford Hotel in Philadelphia, Penn. The outbreak resulted in 34 deaths amongst the 221 attendees who contracted the disease.<sup>2</sup> Almost 40 years after it was first discovered, it continues to gain public attention, remaining very common and with increased incidences over the past few years around the world.

Among the most notable incidences is an outbreak of 302 cases in Portugal, with nine deaths this past year. All cases are linked to an outbreak in Vila France de Xira, a suburban area of Lisbon.<sup>3</sup> The source of the pathogen has not been confirmed, but officials suspect the cooling towers at a local fertilizer plant.



The U.S. is far from immune to Legionellosis outbreaks. In fact, New York City health officials are currently investigating a spike in Legionnaires' disease in the Bronx with 11 cases reported in December of 2014 alone.<sup>4</sup>

Unlike other water-borne pathogens, Legionnaires' disease is transmitted by breathing in mist containing *Legionella* bacteria. This commonly happens in or near showers, faucets, whirlpools, decorative fountains, swimming pools, or cooling towers in air conditioning systems. The bacteria propagates rapidly in stagnant and warm water, which is why it is so commonly found in untreated potable water systems, air conditioning system components and hot water systems.

Legionnaires' disease can have symptoms like many other forms of pneumonia, making it difficult to diagnose. Signs of Legionnaires' disease include cough, high fever, body aches and shortness of breath. The symptoms normally begin two to 14 days after exposure to the bacteria. These long incubation periods sometimes make it difficult to track down the source of the pathogen, allowing the pathogen to propagate, exposing the risk for extended periods of

time, and leading to outbreaks similar to the one in Portugal. Pontiac Fever, on the other hand, has similar symptoms to Legionnaires' disease, but only lasts two to five days, the host does not develop pneumonia, and the symptoms disappear without treatment once the disease runs its course.

Individuals with greater than normal risk of contracting Legionnaires' disease include the young, elderly, people who have underlying diseases and/or are receiving treatment that weaken the immune system, burn patients, bone marrow or organ transplant recipients, and those who are known to be immune-compromised for other reasons.

Due to the potentially lethal consequences, Legionellosis cases are reported to the U.S. Centers for Disease Control and Prevention (CDC) through the National Notifiable Disease Surveillance System (NNDSS) and the Supplemental Legionnaires' Disease Surveillance System (SLDSS), which are designed to manage surveillance data on cases and enhance outbreak detection. The latest SLDSS report from the CDC assessed cases reported to NNDSS from all 50 states and the

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District of Columbia spanning 2000 through 2009. Based on this data, U.S. Legionellosis cases increased 217 percent, from 1,110 in 2000 to 3,522 in 2009.<sup>5</sup>

Since the reporting program is a passive surveillance system and dependent on healthcare providers and laboratories to report cases, the actual incidence of Legionellosis in the U.S. is most likely higher. Furthermore, in 2012, 3,688 cases were reported to the NNDSS, showing continually rising incidence rates.<sup>6</sup> For additional information on the incidence rate of Legionellosis cases in the U.S. from 1997 to 2012, see the graph above.

Fortunately, Legionellosis is preventable through proper maintenance and treatment of the water systems in which Legionella grow, including drinking water and other building systems. For many years, the American Society of Heating, Refrigerating, & Air Conditioning Engineers (ASHRAE)<sup>7</sup> has provided guidance on minimizing Legionellosis associated with building water systems.

For example, ASHRAE Guideline 12 – *Minimizing the Risk of Legionellosis Associated with Building Water Systems* – provides information and guidance in order to minimize Legionella contamination in building water systems. However, even Guideline 12 falls short of establishing a standard of care for the *prevention* of Legionella contaminations that cause outbreaks of the disease.

Due to the continually increasing incidences of Legionnaires' disease, ASHRAE and the American National Standards Institute (ANSI) Board of Standards Review (BSR)<sup>8</sup> developed BSR/ASHRAE 188P. This proposed standard was created to help building owners establish management strategies to prevent Legionellosis. The first three versions were titled "Prevention of Legionellosis Associated with Building Water

Systems" with a declared purpose "to present practices for the prevention of Legionellosis associated with building water systems." The fourth full public review draft presented a new title, "Legionellosis: Risk Management for Building Water Systems," and a revised purpose "to establish minimum Legionellosis risk management requirements for building water systems."

Perhaps in an effort to reduce legal implications and risk, "prevention" was changed to "risk management" in this fourth and final public review draft, which closed for comments in November of 2014 and is expected to drop the "P" and become ASHRAE Standard 188, *Legionellosis: Risk Management for Building Water Systems*, by Summer of 2015, thus actually becoming an ASHRAE/ANSI standard.

Once approved by ANSI, Standard 188 will finally establish the national standard of care for the minimum Legionellosis risk management requirements for building water systems. The standard is intended for use by building owners, managers, and those involved in the design, construction, installation, commissioning, operation, maintenance and service of centralized building water systems and components.<sup>9</sup>

The standard will require facilities to implement a water management program that includes a written document with certain components and Legionella control measures. More specifically, a water management program will be required if a building or site has any cooling towers, evaporative condensers, hot tubs, ornamental fountains, misters, atomizers, air washers, humidifiers, or any other devices that release water droplets into the air.

But most importantly, the standard will establish a baseline for the minimum requirements of building owners, changing the

landscape of litigation in Legionnaires' disease cases. ❖



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## Endnotes

<sup>1</sup>Barbara J. Marston, MD et al., *Incidence of Community-Acquired Pneumonia Requiring Hospitalization, Results of a Population-Based Active Surveillance Study in Ohio*, ARCH. INTERN MED. 157 (15), at 1709-18 (1997).

<sup>2</sup>Lawrence K. Altman, *In Philadelphia 30 Years Ago, an Eruption of Illness and Fear*, N.Y. TIMES, Aug. 1, 2006.

<sup>3</sup>WORLD HEALTH ORGANIZATION, GLOBAL ALERT & RESPONSE, *Legionnaires' disease - Portugal*, Nov. 13, 2014.

<sup>4</sup>Carl Campanile, *NYC Officials Investigating Legionnaires' Disease Outbreak*, N.Y. Post, Jan. 7, 2015.

<sup>5</sup>CENTERS FOR DISEASE CONTROL AND PREVENTION, *Morbidity and Mortality Weekly Report, Legionellosis - United States, 2000-2009*, Aug. 19, 2011.

<sup>6</sup>CENTERS FOR DISEASE CONTROL AND PREVENTION, *Morbidity and Mortality Weekly Report, Summary of Notifiable Diseases - United States, 2012*, Sep. 19, 2014.

<sup>7</sup>ASHRAE is an industry organization that develops and publishes, through its Members (who are practicing engineers), handbooks, guidelines, and standards for heating, ventilating and air conditioning system design.

<sup>8</sup>The ANSI BSR is responsible for the approval and withdrawal of American National Standards.

<sup>9</sup>BSR/ASHRAE Standard 188P, *Legionellosis: Risk Management for Building Water Systems*, Fourth Public Review Draft, ASHRAE, 2014.