

LEGIONELLA

What is Legionella?

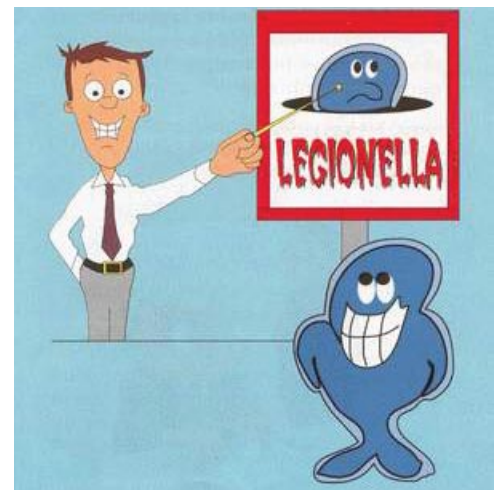
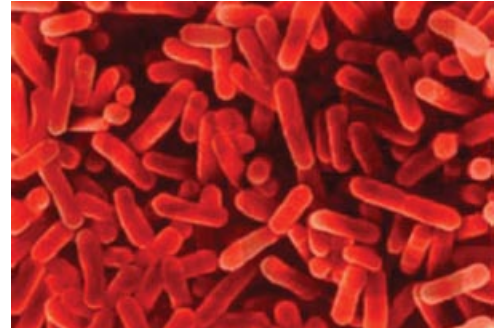
Legionellosis is a lung infection – an uncommon form of pneumonia – caused by a bacterium named *Legionella pneumophila*. There are two forms of legionellosis: Pontiac Fever, the less severe form, and Legionnaires' disease, the more severe illness that is potentially fatal. Legionnaires' disease was named after the original outbreak of the disease at the 1976 American Legion Convention in Philadelphia.

Legionella is found everywhere in the environment and is a natural inhabitant of water. It can also infect other organisms to improve its chances of survival. Once inside its host, *Legionella* is able to multiply quickly and produce more bacteria. Being inside another organism also protects it from being killed when water is disinfected in water treatment plants.

Legionella grows well in warm, still waters that are found in: cooling towers, evaporative condensers, humidifiers, air washers, mist machines, hot water heaters, whirlpool spas, fountains, hot springs and plumbing fixtures. It has been found in water with temperatures ranging from 6-60°C (42.8°F-140°F), but will not multiply below 20°C (68°F) and will die above 60°C (140°F). The major sources of *Legionella* are the water distribution systems of large buildings including hotels and hospitals.

How do I get the disease?

Inhaling small aerosol particles that contain *Legionella* is the most popular theory of how people get infected with legionellosis. The aerosols often come from mists created by a water source. People may be exposed to these mists in homes, workplaces, hospitals, or public places.



New evidence shows a more common way of contracting the disease. Normally, secretions from the mouth go through the esophagus into the stomach, but, when choking, the secretions get past the choking reflexes and enter the lungs by mistake. If the secretions are contaminated with *Legionella*, then the bacteria will have access to the lungs and be able to cause pneumonia. This method of infection is known as aspiration. Direct infection of surgical wounds through contact with contaminated tap water has also been described. 1

How long do the symptoms last?

Pontiac fever will generally resolve within 2 to 5 days. Legionnaires' disease has varying recovery times that depend on the severity of the symptoms developed.

How is it diagnosed?

Specialized laboratory tests are required to determine whether or not illness is caused by *Legionella*. There are many different tests and each has positive and negative properties. Some of the testing methods are: culture on specialized *Legionella* media; direct fluorescent antibody (DFA) stain; antibody testing and the urinary antigen test. The preferred diagnostic method is culturing because it is sensitive and specific, but appropriate test specimens are not always available.

Who is at risk?

The general population is fairly resistant to infection, but middle-aged and elderly people are at a higher risk... especially smokers and those with chronic lung disease. The immunocompromised, including people with immune systems repressed by certain medications or by certain diseases, such as cancer, kidney failure during dialysis, AIDS and diabetes are also at risk. Organ transplant patients are at highest risk because the medicines they take to protect the new organ compromise their defence system against infection. This disease is rare among children, although newborn infants may be at increased risk of contracting *Legionella* infections because their immune systems are underdeveloped. Pontiac fever most commonly occurs in people who are otherwise healthy.

Am I at severe risk for disease?

If *legionellosis* is treated with antibiotics near the onset of pneumonia, the outcome of illness will be excellent. For immunocompromised patients, any delay in appropriate treatment may result in prolonged hospitalization, severe complications and death. Fatigue and weakness may persist for several months following treatment, although complete recovery usually occurs in about one year.

There are different respiratory illnesses that may result from infection with *Legionella*. Acute pneumonia may vary from mild illness not requiring hospitalization to multi-lobe pneumonia that is fatal. Formation of excess fibrous tissue in the lungs and the long-term inflammation of blood vessels are also lung-associated diseases that have been reported. Although it rarely occurs, *Legionella* has also been known to infect the heart and kidney and cause blood infections.

How can I prevent getting legionellosis?

One approach to preventing Legionnaires' disease is to find the *Legionella* source in the environment and get rid of it. Regular inspection of hot water systems should be done so early action can be taken if necessary. Being on the look-out for *Legionella* infections among hospital patients that are considered 'high risk' is also an important tool for reducing illness. It allows for rapid diagnosis and immediate treatment of confirmed cases.

How do I prevent spreading it to others?

Legionella is transmitted directly from the environment to humans. There is no evidence of it being spread from human to human or from animal to human.

What is the treatment for legionellosis?

Early detection and early treatment are essential for a successful outcome to Legionnaires' disease. Treating *Legionella* requires special types of antibiotics different from those used when treating other types of pneumonia. Erythromycin was the antibiotic of choice, but newer, more effective drugs have replaced it. Pontiac fever does not require any specific treatment.

How prevalent is Legionella in surface water/well water?

Legionella lives in both natural and man-made water sources and the presence of other organisms in the water will help it survive and multiply. Because of this, *Legionella* is able to live in drinking water supplies. Gaining access to drinking water sources will help it multiply and spread. Groundwater is also at risk of being infected with *Legionella* and hot springs have shown to be a natural source of the bacteria.

Is my water safe? How can I tell?

Testing for Legionella is the only way to determine if the bacterium is present in your water supply. Trained employees should carry out all testing procedures to avoid the possibility of unreliable results. Laboratories that are qualified to test water for the bacteria should examine the water samples.

What are some ways I can treat my water to ensure its safety?

There are a variety of ways that water supplies can be treated to reduce the spread of *Legionella*. There are two defined categories of disinfection: focal and systemic. Focal disinfection is directed at a specific portion of the system, while systemic methods disinfect the entire system. Each testing method has positive and negative qualities with varying levels of success. The main treatment methods are: ultraviolet light sterilization, instantaneous heating systems, ozonation, thermal disinfection, hyperchlorination and copper-silver ionization.