

Legionella

General Information

A severe outbreak of *L. pneumophila* among people attending a convention in the USA resulted in the identification of the bacterium in 1977. *Legionella* is a small gram-negative rod-shaped bacterium and over 40 individual species of *legionella* are known including *L. pneumophila* which causes most of the human infections.

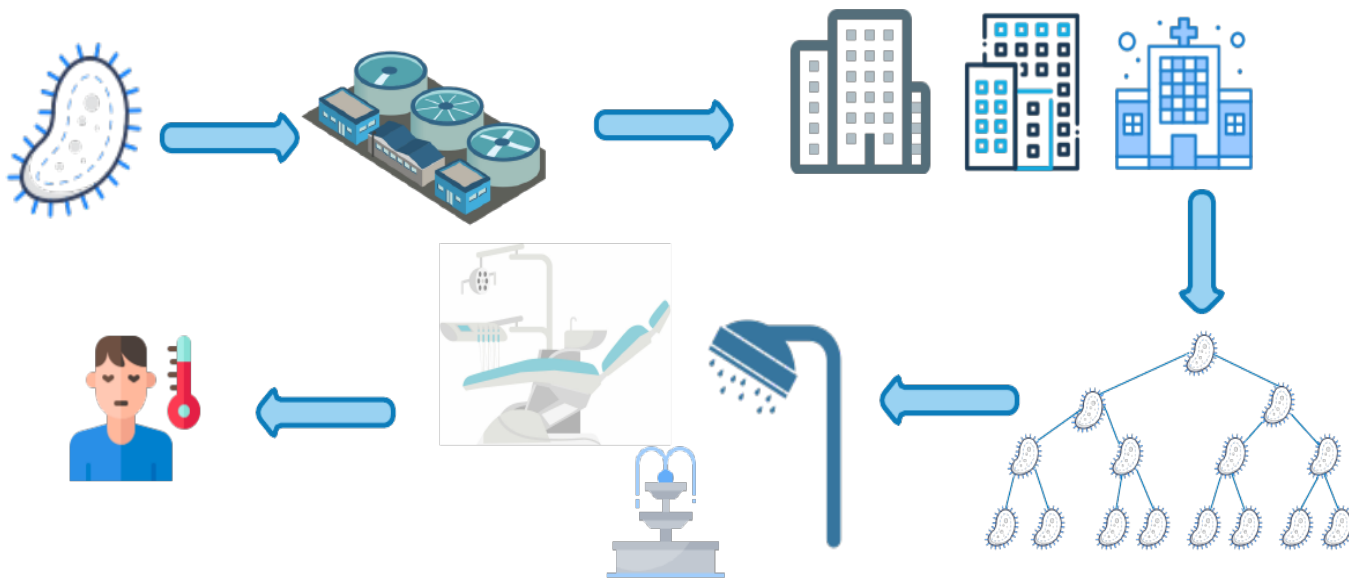
Ecology

Legionella are most commonly found in water – including groundwater, fresh water and potable (treated) water. The optimal environment for the bacteria is a warm, humid area with low water flow. The ideal growth temperature for *legionella* is between 20 - 45°C. This type of environment can e.g be found in dental chairs where the temperature often is above room temperature and the waterflow in the tubes are so low it creates the perfect environment for biofilm formation.



Transmission

Drinking water supplies are the primary source of *legionella*. Once the bacteria have entered the water supply, amplification occurs and bacteria are distributed through waterpipes in e.g., hospitals, hotels, and large apartment complexes to patients or residents. The bacteria are transmitted from the environment to humans via aerosols or small water droplets containing *legionella*.

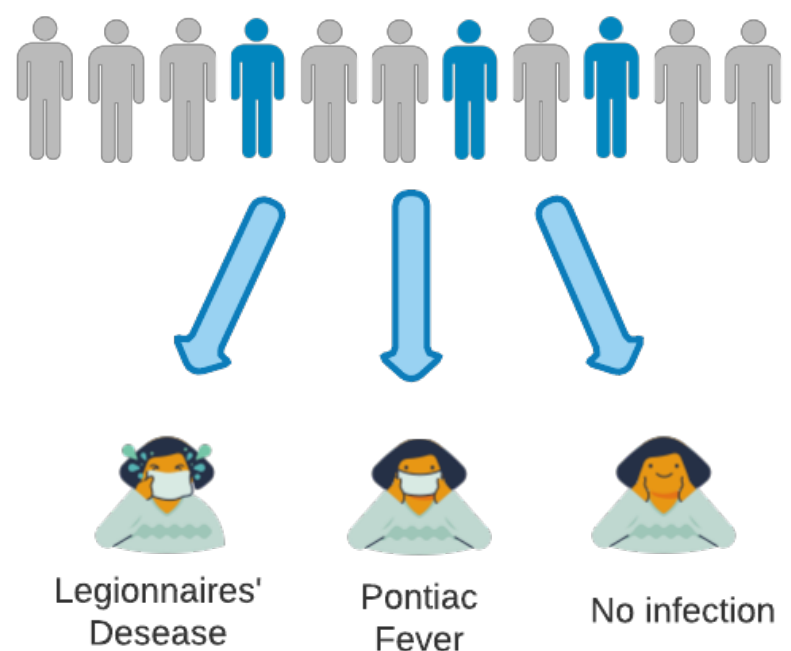
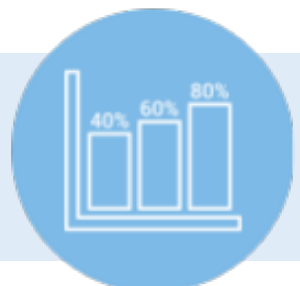


Legionellosis

There are two forms of legionellosis (a illnesses caused by *Legionella*): one of them being more severe than the other. The first one, Pontiac fever (less severe), is characterized by flu-like symptoms such as fever, chills, headache, and muscle pain. For the average patient it will last around 2-5 days. The other one is legionnaires' disease, which is more severe and can have a fatal outcome. The symptoms are similar, but Legionnaires' disease is a pneumonia meaning the infection will inflame the air sacs in one or both lungs.

Healthy individuals (grey), like the general population, is fairly resistance to these kinds of infections. However, immunocompromised patients (blue) in e.g. hospitals are at increased risk at getting Legionellosis. It is therefore extremely important to be able to control and disinfect portable water in these settings.

According to WHO 75-80% of the reported cases of Legionellosis are over 50 years old and 60-70% are male.



Water Treatment

Legionellosis is a worldwide problem and cases have been reported in North and South America, Asia, Australia, New Zealand, Europe, and Africa. Therefore, national surveillance programs and study groups have been conducted such as ESGLI (ESCMID (European Society of Clinical Microbial and Infectious Diseases) Study Group for Legionella Infections).

There is no vaccine available for Legionnaires' disease meaning that the only way to control this disease is through water monitoring and water treatment. There are different ways to disinfect water, however, using electrolysis to generate active chlorine is the designation used by EU in regard to the Biocidal Products Regulation.