



Medicine for Managers

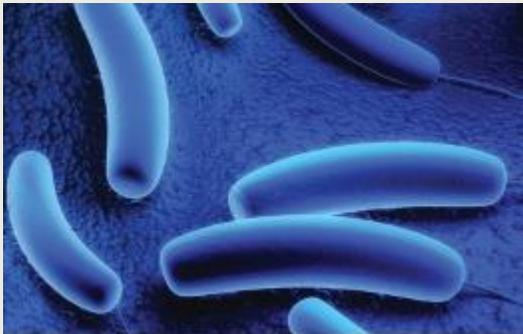
Dr Paul Lambden BSc MB BS BDS FDSRCSEng MRCS LRCP DRCOG MHSM FRSH

Legionnaires' Disease

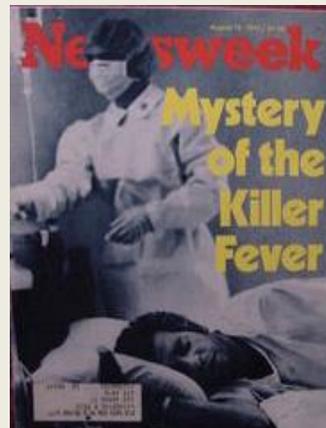
Legionnaires' disease is a type of pneumonia, occurring when the lung is infected with a bacterium of the genus *Legionella*. It is transmitted by infected droplets of water which are inhaled. It is a relatively recently identified infection having first been recognised in 1976. It is common in many environments but infection is relatively rare because it does not spread from person to person.

The bacterium was first identified following an outbreak of what was then a mystery disease at a convention of the American Legion in Philadelphia.

Over two hundred people were affected and about thirty-five of them died.



The outbreak caused concern in the United States as healthcare professionals rushed to find the cause.



The organism was finally identified in early 1977 and named Legionella. It was also found to be the causative organism of a similar but milder outbreak in 1968 in Pontiac, Michigan and named Pontiac fever.

The infection starts off as a flu-like illness with the usual symptoms of raised temperature, headache, aching muscles, tiredness and lassitude.

However once the effects of the attack on the lungs by the bacteria become more profound, the patient will develop a persistent cough, initially dry but later productive of sputum (phlegm) which may contain blood. The patient

also develops breathlessness and may develop pleuritic chest pains.

The legionella bacterium which causes Legionnaires' disease, is normally spread by inhaling droplets of contaminated water. The infection is not contagious and essentially cannot be spread from person to person (although it may have happened in very rare circumstances).

The incubation period for the infection is normally about a week although it may take two weeks or even more for the symptoms to show themselves.

The bacteria may be present (without posing any sort of risk) in low numbers in any bodies of water such as ponds, lakes, reservoirs and rivers. The problem is that they may multiply rapidly if they get into artificial water supply systems such as air conditioning systems.

The ideal culture environment for the bacteria is a source of water at a temperature of between 25 and 45 degrees centigrade containing a substrate (source of nutrition) on which the bacteria can feed, such as algae, limescale or other debris.

Such water systems can be found in larger public buildings, such as hotels, offices and medical premises where larger more complex water supply systems are present, such as hospitals, medical centres and dental surgeries.

Rarely Legionnaires' disease may be present in water from showers and spas. Home and car air-conditioning systems do not use water to cool the air and so are not a risk for Legionella growth.

Hot tubs are also a source of concern and infection unless they are drained after each use or appropriately maintained with suitable



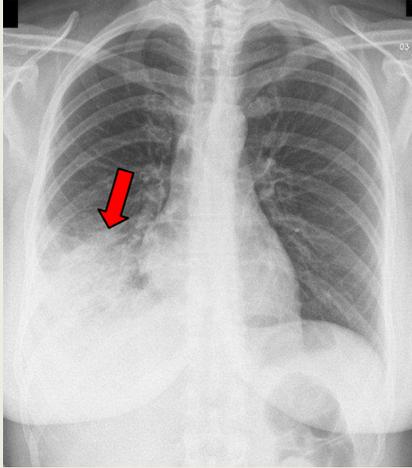
chemicals, such as chlorine. Anyone operating a hot tub should understand how the water should be tested for safety, how it should be disinfected and cleaned as recommended by the manufacturer.

Legionnaires' disease is rare in the United Kingdom with less than three hundred cases reported in 2013, one third of those patients acquiring the infection whilst abroad.

Patients at increased risk of acquisition of Legionnaires' disease are the same categories as for other acute illnesses; smokers, heavy drinkers, those who have co-morbidities such as diabetes, heart disease or kidney disease, those who have a weakened immune system such as patients with cancer or AIDS and those people over the age of fifty.

The diagnosis of Legionnaires' disease is usually not difficult once it has been differentiated from other types of pneumonia.

The presence of infection can be confirmed on chest x-ray.



The bacterium may be identified by urine test, culture of the sputum or blood culture.

Treatment of the infection is with erythromycin or clarithromycin and the route of administration (whether oral or intravenous) depends on the severity of the infection.

Treatment is normally from seven to twenty-one days, again depending on the severity of the infection.

For most patients who are healthy before acquiring the infection, the recovery will be complete, although they may feel tired and lacking in energy for some weeks after the infection is overcome.

Those patients whose health is already compromised are more vulnerable to complications such as septicaemia respiratory failure or other organ failure.

About one in ten of the patients who contract the disease will die from it. In the UK 84 people died from the disease between 2011 and 2013 and most were over age 70.

The disease can be avoided by making sure that water systems are appropriately monitored and sterilised.

If the water is below 20 degrees or above 55 degrees Centigrade, then the organism cannot survive and the water should be kept free of impurities and circulated.

A huge amount of information about Legionella is available on the Health and Safety Executive Website (www.hse.gov.uk). Just put 'legionella' in the search box.

The disease is notifiable, which means that, if diagnosed, the local authority must be informed (Health Protection(Notification) Regulations).

The authority will investigate the infection, identify the source and apply any appropriate precautionary measures.

paullambden@compuserve.com