CONDITION

Legionnaires disease

Legionnaires disease is a serious lung infection caused by breathing in water droplets containing Legionella bacteria.

WHAT IT IS
Bacterial pneumonia linked to contaminated water droplets

BODY SYSTEM
Lungs and breathing

MAIN SYMPTOMS
Fever, cough, shortness of breath, muscle aches

WHAT CAUSES IT
Legionella bacterial infection

HOW IT IS DIAGNOSED
Urine antigen, respiratory sample testing, and chest imaging

MAIN TREATMENT
Antibiotics and supportive hospital care

CAN IT BE CURED?
Yes - antibiotics usually clear the infection

IS IT AN EMERGENCY?
Sometimes - severe breathing difficulty, blue lips, or confusion

LONG-TERM OUTLOOK
Most recover, though tiredness may last months

Overview

Legionnaires disease is a type of pneumonia caused by Legionella bacteria. Pneumonia is an infection that inflames the air sacs in the lungs, making it harder to breathe.

The bacteria grow in fresh water, particularly in human-made water systems where water is warm or does not move regularly. You can become infected by breathing in tiny contaminated water droplets. Less often, infection happens when contaminated water enters the lungs while swallowing.

Possible sources include showers, taps, hot tubs, decorative fountains, cooling towers, and large plumbing systems in hotels, hospitals, and care facilities. Ordinary home and car air-conditioning units do not usually spread Legionella because they do not use water to cool the air.

Most people exposed to the bacteria do not become ill. However, Legionnaires disease can be serious, especially in older adults and people with certain health conditions. Prompt antibiotic treatment improves the chance of recovery.

A milder illness called Pontiac fever is also caused by Legionella . It produces flu-like symptoms without pneumonia and usually gets better on its own. It is different from Legionnaires disease.

Symptoms

Symptoms usually begin 2 to 10 days after exposure, although the gap can sometimes be longer. They may start like flu and then develop into a chest infection.

Common symptoms include:

Some people also have diarrhoea, nausea, vomiting, or abdominal discomfort. Confusion can occur, particularly in older adults or people who are seriously unwell.

Symptoms cannot reliably distinguish Legionnaires disease from other forms of pneumonia. A cough and fever have many possible causes, so laboratory testing is needed to identify Legionella .

- Fever, sometimes with chills
- Cough, which may be dry or produce mucus
- Shortness of breath
- Muscle aches and headache
- Marked tiredness or weakness

Causes and risk factors

Legionnaires disease is caused by infection with Legionella bacteria. Legionella pneumophila is the species responsible for most identified cases.

The bacteria can multiply in poorly maintained water systems, especially where water is warm, stagnant, or protected by scale and a slimy layer called biofilm. Infection occurs when contaminated mist or droplets are breathed into the lungs.

Legionnaires disease is not usually passed from one person to another. Very rare person-to-person transmission has been reported, but normal contact with someone who has the infection is not considered a usual risk.

Anyone can develop the condition, but the chance of becoming seriously ill is higher if you:

Recent travel, a hotel stay, hospital care, or time in a care facility can be relevant because larger buildings have more complex water systems. Hot-tub exposure and work involving water systems or contaminated mist may also matter.

Tell the healthcare professional assessing you about recent travel, overnight stays, healthcare visits, or hot-tub use. This information can help guide testing and may identify a water source that needs investigation.

- Are aged 50 or older
- Smoke or used to smoke
- Have a long-term lung condition, such as chronic obstructive pulmonary disease
- Have a weakened immune system
- Have cancer
- Have diabetes or long-term kidney or liver disease

Diagnosis

A healthcare professional will ask about your symptoms, health, smoking history, and possible water exposures. They will listen to your chest and check measurements such as your temperature, oxygen level, breathing rate, and blood pressure.

A chest X-ray usually confirms that pneumonia is present. However, an X-ray cannot show which germ caused it.

Specific tests for Legionella include:

The commonly used urine test mainly detects Legionella pneumophila serogroup 1. It may miss infections caused by other groups or species. For this reason, a respiratory sample may be tested as well. Culture can also help public health teams compare a person's infection with bacteria found in a suspected water source.

Blood tests may be used to assess inflammation, kidney and liver function, and salt levels. Treatment may begin before all test results return if pneumonia is strongly suspected.

- A urine antigen test, which looks for part of the bacteria in urine
- Culture of mucus or another lower-airway sample
- Molecular testing, such as PCR, where available

Treatment and management

Legionnaires disease is treated with antibiotics like amoxicillin or doxycycline that work against Legionella . Commonly used categories include macrolide and fluoroquinolone antibiotics. The choice and length of treatment are based on illness severity, other health conditions, immune function, test results, and response to treatment.

Many people need hospital care because the infection may reduce oxygen levels or affect other organs. Supportive care can include oxygen, fluids, fever relief, and close monitoring. A person with severe breathing failure may need care in an intensive care unit and temporary help from a breathing machine.

Antibiotics should be taken for the full prescribed course, even if symptoms begin to improve. If side effects make this difficult, contact the prescribing service rather than stopping treatment without advice.

Recovery from pneumonia is often gradual. Fever may settle before cough, breathlessness, weakness, or poor appetite. Rest can help during early recovery, followed by a steady return to activity as symptoms allow. Smoking can slow lung recovery, so support to stop smoking may be useful.

Complications

Legionnaires disease can cause serious complications, particularly when treatment is delayed or a person already has significant health problems.

Possible complications include:

Severe infection can be fatal, but many people recover with prompt care. The likelihood of complications is influenced by age, general health, immune function, and how severe the pneumonia is when treatment begins.

After severe pneumonia, muscle loss and reduced stamina can make everyday tasks difficult for a while. People who needed intensive care may have a longer period of physical and emotional recovery.

- Respiratory failure, when the lungs cannot supply enough oxygen
- Sepsis, an extreme body-wide response to infection
- Acute kidney injury
- Low blood pressure and shock

- Inflammation or injury affecting other organs

Prevention

There is no vaccine against Legionnaires disease. Not every case can be prevented because Legionella occurs naturally in fresh water.

Prevention mainly relies on proper design, maintenance, temperature control, cleaning, and monitoring of building water systems. Building owners and operators are responsible for managing these risks in workplaces, hotels, hospitals, care facilities, and other large buildings.

At home, follow the manufacturer's instructions for cleaning and maintaining hot tubs, humidifiers, and other equipment that produces water mist. Do not use tap water in a device if its instructions require distilled or sterile water. Avoid letting water sit unused in appliances, and clean visible scale or slime as directed.

After a long period away, running infrequently used taps and showers may help replace stagnant water. Take care to avoid splashes and hot-water burns. Do not raise a water heater's temperature without expert advice because very hot water can cause serious scalding.

People with weakened immune systems may need specific advice about water exposure. This is especially relevant after an organ or stem-cell transplant or during treatment that strongly suppresses the immune system.

Living with it and what to expect

Many people begin to improve after antibiotics are started, but recovery is not always quick. Fever and the feeling of being acutely ill may improve first. Cough, breathlessness, poor concentration, low appetite, and tiredness can last for weeks.

After a severe infection, weakness and reduced exercise capacity may continue for several months. Recovery can take longer in older adults, smokers, people with long-term lung conditions, and those who needed intensive care. Some people notice anxiety, low mood, poor sleep, or distressing memories after a serious hospital admission.

A gradual return to normal activity is usually more manageable than trying to resume everything at once. If activity causes significant breathlessness, dizziness, or chest pain, stop and seek medical advice.

Follow-up is based on the severity of the infection and whether symptoms are improving. A healthcare professional may arrange a repeat chest X-ray, particularly if symptoms continue or

there are other reasons to check that the lung changes have cleared.

Legionnaires disease does not usually become a long-term infection after effective treatment. Having it once does not guarantee protection from another exposure, although repeat illness is uncommon. Persistent or worsening symptoms need reassessment rather than being assumed to be part of normal recovery.

When to get medical help

Seek urgent medical assessment if you develop fever, cough, breathlessness, or marked weakness that could be pneumonia. This is particularly important if you are over 50, have a weakened immune system, have a long-term lung condition, or recently stayed in a hotel, hospital, or care facility.

If you are already taking antibiotics, contact the treating service promptly if symptoms are worsening, you cannot keep fluids or medicines down, or you are not improving as expected.

Call emergency services if you have:

Routine follow-up is appropriate when you are steadily improving but still have tiredness, a mild cough, or reduced stamina. Arrange a non-emergency review if these symptoms are not gradually easing or interfere with normal activities.

- Severe difficulty breathing or cannot speak in full sentences
- Blue, grey, or unusually pale lips or skin
- New confusion, extreme drowsiness, or difficulty waking
- Fainting or collapse
- Severe or persistent chest pressure
- Rapid worsening with cold, clammy, or mottled skin

Common questions

Is Legionnaires disease contagious?

It is not usually spread between people. Infection generally comes from breathing contaminated water droplets. Ordinary contact, sharing a room, or caring for someone with the condition does not normally spread it.

Can I get Legionnaires disease from drinking water?

Drinking contaminated water usually does not cause infection. The main risk is breathing in a

fine mist. Infection can occasionally occur if water goes down the wrong way and enters the lungs, which is called aspiration.

How serious is Legionnaires disease?

It can range from treatable pneumonia to a critical infection affecting breathing and other organs. Older age, smoking, chronic illness, and a weakened immune system increase the risk of severe illness. Early assessment and appropriate antibiotics are important.

How long does recovery take?

Some symptoms improve within days of starting effective treatment, but cough, weakness, and breathlessness can last for weeks. Recovery after intensive care or severe pneumonia may take several months. Worsening symptoms are not an expected part of recovery and need reassessment.

Can Legionnaires disease come back?

Effective antibiotics usually clear the infection. The condition does not normally remain dormant in the body, but a person can be exposed again in the future. Previous infection should not be assumed to provide lasting protection.

Does a positive building water test mean I will get sick?

No. Finding Legionella in a water system does not mean everyone exposed will become ill. Risk is affected by the amount and type of bacteria, how exposure occurs, and individual health factors. Public health and environmental teams can assess whether action is needed.

Sources

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