CONDITION

Tularemia

Tularemia is a bacterial infection caught from infected animals, insect bites, contaminated water, or airborne particles.

WHAT IT IS
Bacterial infection spread from animals and the environment

BODY SYSTEM
Whole body, skin, lymph nodes, eyes, and lungs

MAIN SYMPTOMS
Fever, skin ulcer, swollen lymph nodes, cough

WHAT CAUSES IT
Infection with Francisella tularensis bacteria

HOW IT IS DIAGNOSED
Bacterial culture or paired antibody blood tests

MAIN TREATMENT
Antibiotic medicines

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

IS IT AN EMERGENCY?
Sometimes - breathing trouble or confusion needs emergency care

LONG-TERM OUTLOOK
Most recover; tiredness or swollen nodes may linger

Overview

Tularemia is an infection caused by the bacterium Francisella tularensis . It mainly affects wild animals, especially rabbits, hares, rodents, and some other small mammals. People can become infected through ticks or biting flies, contact with an infected animal, contaminated water, or breathing in contaminated particles.

The condition can affect different parts of the body depending on how the bacteria entered. For example, a tick bite may lead to a skin sore and swollen lymph nodes. Breathing in the bacteria can cause a lung infection.

Tularemia is uncommon, but it matters because it can become serious without the right antibiotics like amoxicillin or doxycycline . It may also be difficult to recognize because early symptoms can resemble flu, pneumonia, or other infections. Prompt medical assessment is

important when symptoms follow a possible exposure.

Tularemia does not normally spread from one person to another.

Symptoms

Symptoms usually begin suddenly. They often appear within several days of exposure, although they can start sooner or take up to a few weeks.

General symptoms may include:

Other symptoms depend on how the infection entered the body.

Ulceroglandular tularemia is the most common form. A painful or painless bump may appear where a tick, fly, or infected material contacted the skin. It can break down into an open sore, called an ulcer. Nearby lymph nodes may become enlarged and tender.

Glandular tularemia causes swollen lymph nodes without an obvious skin ulcer.

Oculoglandular tularemia affects an eye. It may cause redness, pain, swelling, discharge, sensitivity to light, and swollen lymph nodes near the ear or jaw. This can happen after contaminated material gets into the eye.

Oropharyngeal tularemia affects the mouth and throat, often after contaminated food or water is swallowed. Symptoms may include a severe sore throat, mouth sores, swollen tonsils, and enlarged lymph nodes in the neck.

Pneumonic tularemia affects the lungs. It can cause a dry cough, chest discomfort, shortness of breath, and fever. Lung involvement can follow inhalation of the bacteria or develop when infection spreads from elsewhere in the body.

Typhoidal tularemia causes a general body-wide illness without a clear skin sore or swollen lymph node pattern. Fever, weakness, abdominal symptoms, or breathing problems may occur.

- Fever and chills
- Headache
- Marked tiredness or weakness
- Muscle or joint aches
- Reduced appetite
- Nausea or vomiting

Causes and risk factors

Tularemia is caused by Francisella tularensis . The bacteria can infect animals, insects, and people. They can survive in some natural environments, including water and animal tissue.

People may be exposed through:

Outdoor activities can increase exposure. Examples include hunting, trapping, handling wild game, landscaping, farming, and mowing over an infected animal carcass. Laboratory workers who handle the bacteria also have an occupational risk.

Tularemia is not inherited. Having it does not mean that family members are likely to develop it unless they shared the same environmental exposure.

Different types of F. tularensis occur in different regions. Some can cause more severe illness than others. The likely source and local geography can help healthcare professionals assess the possibility of tularemia.

- Bites from infected ticks or biting flies
- Skin contact with infected animals, especially while skinning or handling them
- Bites or scratches from an animal that has encountered infected wildlife
- Drinking contaminated, untreated water
- Eating undercooked meat from an infected animal
- Breathing in contaminated dust or droplets

Diagnosis

Diagnosis begins with symptoms and a history of possible exposure. Details such as a recent tick bite, contact with a rabbit, use of untreated water, or outdoor work can be important.

Blood tests can look for antibodies, which are immune proteins made in response to the bacteria. These antibodies may not appear during the first days of illness. An early test can therefore be negative. A second blood sample collected later may show a clear rise in antibodies and help confirm the diagnosis.

The bacteria may also be grown from blood, fluid, or tissue in a laboratory. This is called a culture. Molecular tests, such as polymerase chain reaction testing, may detect the bacteria's genetic material and support the diagnosis.

F. tularensis can pose a risk to laboratory staff. If tularemia is suspected, the healthcare team should know about relevant exposures so the laboratory can use suitable safety measures.

A chest X-ray or other imaging may be used when lung infection is possible. Tests may also be

needed to rule out other causes of swollen lymph nodes, ulcers, fever, or pneumonia.

Treatment and management

Tularemia is treated with antibiotics that are active against F. tularensis . The choice of medicine and whether it is given by mouth or into a vein depend on factors such as the form of tularemia, how severe it is, age, pregnancy, and other health conditions.

Some people with mild or moderate infection can be treated outside hospital. Severe infection, breathing problems, meningitis, or other complications may require hospital care and intravenous antibiotics. More than one antibiotic may be considered in certain serious cases.

It is important to complete the prescribed course, even if fever or pain improves earlier. Ordinary antibiotics used for some skin or chest infections may not work against tularemia. Leftover antibiotics should not be used to try to treat it.

Supportive care may include fluids, rest, fever relief, and treatment for nausea or pain. A lymph node that becomes filled with pus may occasionally need drainage. Skin ulcers should be kept clean and covered as advised.

Follow-up helps confirm that symptoms continue to improve. Persistent fever, new symptoms, or a return of illness after treatment needs reassessment.

Complications

Without effective treatment, the infection can spread or cause severe inflammation. Possible complications include:

Complications are more likely with severe infection or delayed treatment. Tularemia can be fatal, but most people who receive appropriate antibiotics recover.

- Pneumonia or breathing failure
- Bloodstream infection and sepsis
- Meningitis, which is inflammation around the brain and spinal cord
- Inflammation around the heart
- Bone or joint infection
- Lymph nodes that remain swollen or form abscesses

Prevention

Not every exposure can be prevented, but several steps can reduce the chance of infection.

Use an insect repellent suitable for ticks and biting flies, and follow its label. Wear long sleeves, long trousers, and closed shoes in brushy or wooded areas. Check your body, clothing, children, and pets for ticks after spending time outdoors. Remove attached ticks promptly using fine-tipped tweezers.

Wear gloves when handling wild animals or carcasses. Avoid touching sick or dead animals with bare hands. Cook wild game thoroughly and prevent uncooked meat from contaminating other food or surfaces.

Do not drink untreated surface water. Avoid mowing or cutting vegetation over a dead animal, because this may send contaminated particles into the air. People whose work may expose them to animal tissue, aerosols, or laboratory cultures should follow workplace protective procedures.

There is no tularemia vaccine routinely available to the general public. Preventive antibiotics are not normally needed after every tick bite or animal contact. They may be considered after a confirmed high-risk exposure, particularly in a laboratory or public-health setting.

Living with it and what to expect

Fever often improves after effective antibiotics begin, but recovery is not always immediate. Weakness, reduced stamina, and poor appetite can continue for several weeks. Swollen lymph nodes may take longer to shrink, and some may temporarily become more painful or form an abscess.

Skin ulcers usually heal gradually and may leave a small scar. Recovery from lung infection can take longer than recovery from a localized skin infection. Activity can be increased slowly as strength and breathing improve.

Tularemia does not usually become a lifelong infection after successful treatment. A return of fever or other symptoms can occur, especially if the first treatment did not fully clear the bacteria. This is why planned follow-up and completing treatment matter.

Most people eventually return to their usual activities. The timing is influenced by the severity and location of the infection, complications, and general health.

When to get medical help

Seek prompt medical assessment if you develop fever or flu-like symptoms after a likely exposure, especially with:

Get emergency help for severe trouble breathing, blue or grey lips, new confusion, fainting, severe chest pain, or difficulty waking. These signs can occur with serious lung infection, sepsis, or another medical emergency.

During treatment, contact the healthcare team promptly if fever continues, symptoms worsen, significant medicine side effects develop, or symptoms return. Persistent tiredness or slowly shrinking lymph nodes can be discussed at routine follow-up if there are no new or worsening symptoms.

- A skin ulcer and nearby swollen lymph nodes
- A painful, red eye after handling an animal
- A severe sore throat after drinking untreated water
- Cough, chest discomfort, or shortness of breath
- Recent contact with a rabbit, hare, rodent, or animal carcass

Common questions

Is tularemia contagious between people?

Person-to-person spread has not been documented under ordinary circumstances. People usually catch it from insects, animals, contaminated water, or airborne particles. Household members do not usually need isolation or preventive antibiotics simply because someone has tularemia.

Can tularemia be cured?

Yes. Appropriate antibiotics usually clear the infection. Starting treatment promptly lowers the chance of serious complications. Some symptoms, particularly tiredness and swollen lymph nodes, may take time to settle after the bacteria have been treated.

Can I get tularemia from a tick bite?

Yes. Ticks are an important source of tularemia in some regions. Not every tick carries F. tularensis , and most tick bites do not cause tularemia. Fever, an ulcer at the bite site, and nearby swollen lymph nodes after a bite should be medically assessed.

What does a tularemia skin sore look like?

It may begin as a small red bump at the exposure site and then open into an ulcer. The sore can have a raised edge or dark base. Its appearance is not unique to tularemia, so a skin sore alone

cannot confirm the condition.

How long after exposure do symptoms start?

Symptoms most often begin within several days. In some cases they can appear as early as the next day or take up to about three weeks. The timing alone cannot confirm or exclude tularemia.

How long does recovery take?

The fever may improve relatively soon after effective treatment, but energy levels can take weeks to return. Enlarged lymph nodes and skin ulcers may resolve more slowly. Severe lung or body-wide infection can require a longer recovery.

Sources

- Centers for Disease Control and Prevention: About Tularemia
- Centers for Disease Control and Prevention: Signs and Symptoms of Tularemia
- Centers for Disease Control and Prevention: Clinical Testing and Diagnosis for Tularemia
- Centers for Disease Control and Prevention: Clinical Care of Tularemia
- Centers for Disease Control and Prevention: Preventing Tularemia
- World Health Organization: WHO Guidelines on Tularaemia, 2007