

TULAREMIA

Disease Overview

Tularemia is caused by the bacterium *Francisella tularensis*. It is found mainly in the Northern Hemisphere. Infection in people is not common in Canada.

Symptoms

Symptoms can appear within one to 14 days and depend on the entry route of bacteria into the body. Illness ranges from mild to life-threatening. All forms are accompanied by fever. Main forms are:

- Ulceroglandular is the most common form and occurs following an infected tick or deer fly bite or after handling an infected animal. A skin ulcer appears at the site where the bacteria entered the body. The ulcer is accompanied by swelling of regional lymph glands, usually in the armpit or groin.
- Glandular form occurs following an infected tick or deer fly bite or after handling an infected animal. Swelling of regional lymph glands occurs, usually in the armpit or groin.
- Oculoglandular form occurs when bacteria enters through the eye. Irritation and inflammation of the eye and swelling of lymph glands occurs.
- Oropharyngeal form occurs after eating or drinking contaminated food or water. Symptoms include sore throat, mouth ulcers, tonsillitis, and swelling of lymph glands.
- Pneumonic is the most serious form and occurs after breathing dusts or aerosols containing bacteria. Cough, chest pain, and difficulty breathing occurs. This form can also occur if other forms of tularemia are not treated.

Reservoir

Animal reservoirs: rabbits and other wild animals (rodents, hares, muskrats and beavers) and domestic animals. Also found in ticks and deer flies.

Mode of Transmission

Usually by direct contact with infected animals or their cages/immediate environment. This includes handling or eating undercooked infected meat.

Vector borne transmission by infected ticks and deer flies can occur.

Less common modes of transmission are drinking contaminated water or breathing in dust from contaminated soil.

Tularemia is not known to spread from person to person.

Incubation period

Usually three to five days after exposure to the bacteria but can be as long as 14 days or as short as one day to appear.

Period of Communicability

Direct person to person transmission does not occur.

Risk factors

Increased risk for acquiring/severe illness:

- Occupational exposures to infected animals (veterinarians and persons handling rabbit, hare and rodent carcasses).

Surveillance Case Definition

Confirmed case

Clinical illness with laboratory confirmation of infection:

- isolation of *Francisella tularensis* from an appropriate clinical specimen
- OR
- a significant (e.g. fourfold or greater) change in serum antibody titre to *F. tularensis* antigen

Probable case

Clinical illness with laboratory evidence:

- detection of *F. tularensis* in a clinical specimen by fluorescent assay
- OR
- detection of *F. tularensis* nucleic acid
- OR
- $\geq 1:128$ microagglutination titre or $\geq 1:160$ tube agglutination in a single serum specimen

Clinical diagnosis is supported by evidence or history of a tick or deerfly bite, exposure to the tissues of a mammalian host of *Francisella tularensis* or exposure to potentially contaminated water. Clinical illness is characterized by several distinct forms:

- **Ulceroglandular:** cutaneous ulcer with regional lymphadenopathy
- **Glandular:** regional lymphadenopathy with no ulcer; oculoglandular conjunctivitis with preauricular lymphadenopathy; oropharyngeal stomatitis or pharyngitis; or tonsillitis and cervical lymphadenopathy
- **Intestinal:** intestinal pain, vomiting, and diarrhea; pneumonic primary pleuropulmonary disease; typhoidal febrile illness without early localizing signs and symptoms

Diagnosis and Laboratory Guidelines

Diagnosis is most commonly clinical and confirmed by a titer rise in specific serum antibodies that usually appear during the second week of the disease.

The appropriate clinical specimen varies according to the form of the disease. Please contact your regional laboratory for more information on specimen collection and transport.

Reporting

Per Policy 2.2 Disease and Event notification to OCMOH and Disease and Event Reporting section

- Routine surveillance (RDSS) for all confirmed cases.

Case Management

Education

Case or relevant caregiver should be informed about:

- Nature of infection, length of communicable period, mode of transmission, and disease ecology
- Hand washing
- Food safety
- Animal handling
- Safe water source
- Tick bite prevention
- Mosquito bite prevention

Investigation

Search for history of exposure to infected animals particularly rabbits and other rodents, and trace to place of origin. Other common source of infection would include arthropods, water or food.

Tularemia is a potential agent of bioterrorism.

Exclusion/Social Distancing

For cases of cutaneous tularemia with open lesions secretion precautions should apply. Lesions should remain covered by adequate dressings at all times.

Treatment

Tularemia is treatable with antibiotics.

Immunization

Not applicable.

Contact Management

Education

Per case management.

Investigation

Contacts of cases are not at risk as there is no direct person to person transmission.

Contacts include those who were exposed to the same common source as the case and who were not wearing appropriate protective equipment. Contacts should be informed of symptoms, and instructed to notify Public Health and to seek immediate medical attention if symptoms appear.

Exclusion/Social Distancing

Not applicable.

Prophylaxis

Not applicable.

Outbreak Management

Activate the local outbreak plan when an outbreak is declared.

Management of Special Situations

Potential Agents of Bioterrorism

Consider bioterrorism for two or more cases linked in time and place or a single confirmed case if not explained either occupational risk or exposure in an endemic area; or if investigating a pneumonic case of tularemia.

If bioterrorism is suspected:

- Inform relevant agencies and partners including Central Office, local law enforcement and others as appropriate.
- Take any relevant actions in order to prevent further human exposures.
- Determine if an environmental or food samples need to be collected and analyzed.