

Tularemia

Disease Category: Zoonotic

Timeframe to follow-up: Same day

Signs and Symptoms¹

- Clinical presentation and syndromes will vary depending on how the bacteria enters the body.
- Major symptoms include fever, chills, headache malaise, fatigue, anorexia, myalgia, sore throat, abdominal pain, vomiting, and diarrhea.

Clinical syndromes

- Ulceroglandular-most common form, skin ulcer accompanied by swelling of regional lymph glands, usually in the armpit or groin.
- Glandular-similar to ulceroglandular without ulcer
- Oculoglandular-irritation and inflammation of eyes and swelling of lymph glands in front of the ear.
- Oropharyngeal-sore throat, mouth ulcers, tonsillitis, and swelling of lymph glands in the neck
- Pneumonic-most serious form: cough, chest pain and difficulty breathing. Hilar adenopathy, infiltrate, or pleural effusion can be present on chest imaging.
- Typhoidal-combination of general symptoms without localizing symptoms of other syndromes

Incubation¹

Typically, 3-5 days; range 1-21 days

Case Classification

Clinical criteria:

- In the absence of a more likely etiology if any of the following clinical presentations mentioned in the Signs and Symptoms section above, often accompanied by fever.
- Other rare clinical manifestation(s) known to be associated with tularemia such as meningitis, septic arthritis, or endocarditis.

Confirmed:

- Meets confirmatory laboratory evidence AND meets clinical criteria, OR
- Meets confirmatory laboratory evidence AND meets Tier 1 or Tier 2 epidemiologic linkage criteria.

Probable:

- Meets presumptive laboratory evidence AND meets clinical criteria, OR
- Meets presumptive laboratory evidence AND meets Tier 1 or Tier 2 epidemiologic linkage criteria, OR
- Meets supportive laboratory evidence AND meets clinical criteria AND meets Tier 2 epidemiologic linkage criteria, OR
- Meets supportive laboratory evidence AND meets Tier 1 epidemiologic linkage criteria, OR
- Meets clinical criteria AND meets Tier 1 epidemiologic linkage criteria.

Suspect:

- Meets the confirmatory laboratory evidence OR presumptive laboratory evidence OR supportive laboratory evidence, OR
- Meets clinical criteria AND meets Tier 2 epidemiologic linkage evidence, OR

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	Meets vital records criteria: death certificate lists tularemia as a cause of death or a significant condition contributing to death.
Differential Diagnosis ⁷	Broad and depends on clinical presentation. - Ulceroglandular and glandular: Conditions such as cat scratch disease, staphylococcal or streptococcal lymphadenitis, sporotrichosis, toxoplasmosis, fungal or mycobacterial infection should be considered. - Oculoglandular: Differential diagnoses include adenoviral infections, herpes simplex virus infections, and other bacterial conjunctivitis. - Oropharyngeal: This form may be confused with streptococcal pharyngitis, infectious mononucleosis, and adenovirus. - Pneumonic: Considerations include atypical pneumonias caused by pathogens like <i>Coxiella</i> infection, psittacosis, mycobacterial infection, pulmonary mycoses, and pneumonic plague. It can also be mistaken for lung cancer. - Typhoidal: Diseases such as typhoidal fever, brucellosis, malaria, rickettsioses, anaplasmosis, ehrlichiosis and viral illness.
Treatment ^{7,8}	Tularemia is treated with antimicrobials, and treatment regimen is adjusted depending on age, medical history, underlying health conditions, pregnancy status or allergies. Vaccination for Tularemia is generally not available in the U.S., and it is not useful for managing sick patients. Antimicrobial class typically recommended includes fluoroquinolones, aminoglycosides, and tetracyclines.
Duration	The duration of tularemia symptoms varies based on the form of the disease and the timeliness of treatment. Without appropriate antibiotic therapy, symptoms can persist for several weeks. However, with prompt and effective treatment, patients often experience a more rapid recovery.
Exposure ^{9,10}	- Vector-borne Transmission: Bites from infected ticks and deer flies. - Direct Contact: Skin contact while handling infected animals. - Inhalation: Breathing in contaminated dust or aerosols. - Ingestion: Consuming contaminated water or undercooked meat of infected animals. - Laboratory or occupational exposure-farming or landscaping activity that runs over infected animals or carcasses.
Laboratory Testing	Local Health Authority can arrange testing if an outbreak is suspected OR for contacts of cases: Southern Nevada Public Health Laboratory (SNPHL) Nevada State Public Health Lab (NSPHL)
Control of Contacts ¹⁰	Person-to-person transmission of tularemia has not been reported.
Key areas of focus during investigation	Recent insect bite history especially ticks or deer flies, contact with animals, occupation, underlying medical conditions, exposure to contaminated water or consumption of undercooked meats.
Public Health Actions	Reports of Tularemia cases must be made to the Local Health Authority immediately following the identification of the case. Local Health Authority to notify Office of State Epidemiology (dpbhepi@health.nv.gov) or call 775-400-0333 for individual cases or if outbreak suspected. For individual confirmed or probable cases:

	• Confirm diagnosis, if possible • Coordinate transport of specimens to NSPHL to confirm diagnosis if needed • Identify potential exposures • Prepare a case report and submit to the Chief Medical Officer (through OSE) within 7 days after completing the case investigation • Identify potential outbreaks from common sources • Provide education about how to prevent transmission To the best of the local health authority's ability, each step of the investigation should be completed within the same day or in alignment with NAC 441A.
Key Partner Agencies	• Local Health Authorities • Laboratories including Nevada State Public Health Laboratory (NSPHL) • Federal partners like CDC, DHS, or FBI if bioterrorism is suspected • Nevada Department of Agriculture if related to animal exposure

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I. DISEASE REPORTING

A. Legal Reporting Requirements

A report to the health authority may be made by telephone; telecopy (in the form prescribed by the health authority); or any form of electronic communication identified by the health authority, following the specified format and procedure.²

1. *Health Care Providers and Health Care Facilities*

Health providers and facilities must notify the health authority where provider is located immediately after identifying the case.²⁻⁴

2. *Laboratories*

Laboratories must notify the health authority immediately after identifying the case.¹ If the lab is located outside of Nevada, notify the Nevada Chief Medical Officer through the Office of State Epidemiology (OSE) within the same timeframe.^{2,5}

3. *Local Health Authority (LHA)*

LHA's shall notify OSE as soon as possible of any Tularemia cases reported in their jurisdiction. LHA's shall submit a case report to OSE within 7 days after completing the case investigation.⁶

II. THE DISEASE AND ITS EPIDEMIOLOGY

A. Background

Tularemia also known as rabbit fever, water-rat trappers disease, wild hare disease, and Ohara disease, is a rare but potentially serious zoonotic disease that can affect both animals and humans.⁹ Rabbits, hares, and rodents are especially susceptible. The bacterium can be transmitted to humans through various routes, including arthropod bites, direct contact with infected animals, inhalation of contaminated aerosols, ingestion of contaminated food or water, laboratory exposure and use as a bioterrorism agent.

B. Etiologic Agent

Tularemia is caused by *Francisella tularensis*, a highly infectious, gram negative, non-motile coccobacillus.¹¹ There are several subspecies, with the most common being *F. tularensis* (Type A).¹¹ Type A is further divided into A1 (East) and A2 (West) subpopulations. Type A is more virulent with overall case-fatality rate of 2%-3% and is found only in North America.¹¹ *F. tularensis* (Type B) found throughout the Northern Hemisphere and responsible for majority of cases reported globally is less virulent with a case-fatality rate of <1%, but it can cause protracted illness, disability and substantial mortality.¹¹

C. Description of Illness

Tularemia usually starts with nonspecific systemic symptoms such as fever, chills, anorexia and malaise which last 3-5 days following exposure.⁷ Depending on portal of entry for the bacteria individuals can present with different clinical syndromes upon presentation.

Clinical Syndromes^{1,7}

- **Ulceroglandular** This is the most common form of tularemia. A skin ulcer appears at the site where the bacteria entered the body. The ulcer is accompanied by swelling of regional lymph glands.
- **Glandular** Similar to ulceroglandular tularemia but without an ulcer. Generally acquired through the bite of an infected tick or deer fly or from handling sick or dead animals.
- **Oculoglandular** Bacteria enter through the eye. This can occur when a person is butchering an infected animal and touches their eyes. Symptoms include irritation and inflammation of the eye and swelling of lymph glands in front of the ear.
- **Oropharyngeal** This form results from eating or drinking contaminated food or water. Symptoms include sore throat, mouth ulcers, tonsillitis, and swelling of lymph glands in the neck.
- **Pneumonic** This is the most serious form. Symptoms include cough, chest pain, and difficulty breathing. This form results from breathing dusts or aerosols containing the organism. It can also occur when other forms of tularemia (e.g. ulceroglandular) are left untreated and the bacteria spread through the bloodstream to the lungs.
- **Typhoidal** This form is characterized by any combination of general symptoms without prominent regional adenopathy or other localizing signs that does fit other syndromes

D. Disease Burden in Nevada

Tularemia incidence has seasonality that is bimodal. Arthropod-associated infections occur during the summer months while rabbit-associated infections occur during the winter.¹² About 200-300 cases are reported in the U.S. annually. Cases have been reported from every state except Hawaii.¹¹ Thus far in 2026, there have been no cases of Tularemia reported in Nevada. In 2025, 2 cases of Tularemia were reported in Nevada.

See the [Nevada Office of State Epidemiology Communicable Disease Dashboard](#) for Nevada specific data on Tularemia (zoonotic & vector-borne section).

E. Reservoirs^{1,12}

Primary reservoirs include rabbits and hares, and various rodent species such as voles, beavers, muskrats, squirrels, prairie dogs. These animals can experience rapid and often fatal infections, leading to significant die offs during outbreaks. Ticks, particularly species such as the dog tick, wood tick, and lone Star tick, serve both as vectors and reservoirs for *Francisella tularensis* while deer flies are considered vectors.

F. Modes of Transmission¹⁰⁻¹²

- Arthropod bites: From infected ticks and deer flies
- Direct contact with infected animals: Handling infected animals, especially rabbits, hares, and rodents, can lead to transmission through skin contact, particularly if there are cuts or abrasions.
- Ingestion of contaminated food or water: Consuming undercooked meat, oven infected animals, or drinking contaminated water can result in oropharyngeal tularemia.
- Inhalation of contaminated aerosols: Activities such as mowing over animal carcasses or grinding of infected tissues without proper protective equipment in a laboratory setting.

G. Incubation Period¹

Tularemia typically presents an incubation period of 3-5 days, though it can range from 1 to 21 days.

H. Period of Communicability¹⁰⁻¹²

Tularemia transmission from person-to-person has not been reported. However, drainage from tularemia lesions is potentially infectious. Long term immunity follows recovery, and reinfection is extremely rare but has been reported in laboratory staff.

I. Testing⁷

Diagnosis of Tularemia is confirmed either through positive culture or by serology. When Tularemia is suspected it is important to alert the laboratory for special diagnostic and safety procedures.

J. Treatment^{7-8,14}

Early and effective antimicrobial therapy is associated with less morbidity. Regimen selection depends on age, medical history, underlying health conditions, pregnancy status or allergies. Individuals with severe infection should be treated initially with an aminoglycoside, if possible. Antimicrobials with well-established clinical efficacy include aminoglycosides, fluoroquinolones, and tetracyclines. Post-exposure prophylaxis is usually recommended for occupational exposures and potential bioterrorism events, not exposure to naturally occurring Tularemia from a tick bite or close contact with an individual with Tularemia.

III. EPIDEMIOLOGIC CASE INVESTIGATION

The public health authority should begin investigating the case of Tularemia, step by step, within the same day of notification or in alignment with [NAC 441A](#).

A. Step 1: Review relevant information about the disease.

1. *Review scientific information in [Control of Communicable Diseases Manual](#), most current edition.*
2. *Review Tularemia most recent case definition [[Tularemia \(Francisella tularensis\) 2026 Case Definition | CDC](#)].*

B. Step 2: Begin investigating the case.

1. *Contact Reporting Source and/or Reported Case*

Upon receiving an initial case report, review lab test results and available clinical details and epidemiologic factors. Attempt to contact the provider to gather additional clinical information. Then attempt to contact the case (regardless of whether contact was made with the provider). Please make three attempts to contact the case (text and phone calls) on separate days, at different times of the day (morning, afternoon, late afternoon). Document all attempts to contact a reporting source and/or reported case in the “Encounters” tab of EpiTrax. Please use the questions in EpiTrax to gather accurate information about the case. Focus on the key data elements listed below. If PDF CMR is used, the completed PDF version should be attached to the CMR in EpiTrax in the “Notes” tab. The CMR should be completed within 7 days of completing the investigation of the case.⁶

C. Step 3: Identify potential sources of infection

The investigation focuses on exposures about 3 weeks before symptom onset. Ask about any exposures such as tick and deer fly bites, skin contact with potentially infected animals such as rabbits and certain rodent species, occupational exposure, inhaling potentially contaminated aerosols, or agricultural and landscaping dust.

D. Step 4: Initiate control measures for case and/or for contacts (see Section IV – Section VI below).

E. Step 5: Provide Education and Prevention messaging to the case and/or contacts (see Section VII below).

IV. CONTROL OF CASE^{7,14}

1. *Management/Exclusions for Specific Groups or Settings*

All cases

Since there is no evidence of person-to-person transmission, exclusions are not recommended. In a healthcare setting, standard precautions are considered adequate for hospitalized patients, but additional protective equipment should be used to protect eyes, nose and mouth during procedures that could result in spraying or generation of aerosols.

Per NAC 441A.715, if there is a case of Pneumonic Tularemia in a medical facility, the medical facility shall provide care to the case in accordance with isolation precautions for not less

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than 48 hours after the initiation of treatment specific for the disease. A case with open lesions must be cared for in general accordance with drainage and secretion precautions or other appropriate disease specific precautions.

V. CONTROL OF CONTACTS

No exclusions are needed for contacts as there is no person-to-person transmission.

VI. CONTROL OF CARRIERS

There are no carriers because Tularemia does not pass from person to person.

VII. MANAGEMENT OF SPECIAL SITUATIONS/OUTBREAK CONTROL

Coordinate with senior epidemiology staff to determine if an outbreak is occurring. If so, notify DPBH Environmental Health, local health authorities, or infection control, as appropriate.

A. Occupational exposure to *Francisella tularensis*:¹⁵

People working in a microbiological laboratory and veterinary or other animal care have a higher risk of infection with *Francisella tularensis* compared to those in human healthcare. Management options for exposed workers include a “fever watch” or antimicrobial prophylaxis. Type of exposure should be assessed as high or low risk and immediate prophylaxis should be considered for high-risk exposures.

1. Fever Watch: workers monitor their temperature for 14 days after exposure and seek immediate medical evaluation and treatment for tularemia if they develop a fever (defined as a single oral temperature above 101 °F or 38.3 °C) or other concerning symptoms such as trouble breathing, skin ulcer, swollen lymph nodes, or abdominal pain.
2. Prophylaxis for adults: doxycycline (100 mg orally BID X 10-14 days), ciprofloxacin (500 mg orally BID X 7 days), and levofloxacin (500 mg orally daily X 7 days)

Examples of high-risk exposures:

- Working with cultures outside a biosafety cabinet
- Bites from infected animals
- Needlesticks
- Scalpel wounds
- Mucous membrane exposures during necropsies
- Aerosol-generating procedures on cultures or tissues conducted without personal protective equipment

Personnel working in the same laboratory where a specimen has been processed by someone else are generally at low risk.

B. Bioterrorism event involving *Francisella tularensis*:¹⁶

Francisella tularensis is classified as a Tier 1 select agent due to its potential use as a bioterrorism agent.

Some factors that may suggest possible bioterrorism:

- An unusual number or type of cases, such as several cases of pneumonic tularemia occurring in the same area or time period
- Tularemia cases in urban areas among people who lack exposure to arthropods or wildlife

If bioterrorism involving *F. tularensis* is suspected, public health, law enforcement, and CDC would work together with federal, state, and local partners to investigate and coordinate a response.

VIII. PREVENTION^{7,17}

Prevention Tips:

- Use EPA-registered insect repellents that are also effective against ticks
- Wear long pants, long sleeves, and long socks to keep ticks and deer flies off your skin
- Remove attached ticks promptly
- Don't drink untreated surface water
- Don't mow over sick or dead animals. When possible, check the area for carcasses prior to mowing
- Wear mask, eye protection, and gloves when disposing of dead animals, including those brought home by cats and other pets
- Using gloves when handling animals, especially rabbits, muskrats, prairie dogs and other rodents
- Cook game meat thoroughly before eating

IX. REFERENCES

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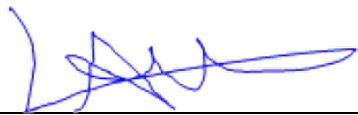
X. ACKNOWLEDGEMENTS

This document was developed based on the content and format of the disease investigation guidelines of several state and local health jurisdictions:

- Oregon Health Authority Investigative Guidelines
- Washington State Department of Health Reporting and Surveillance Guidelines
- Washoe County Health District Epidemiology and Communicable Disease Program Investigation of Communicable Disease Manual

The Nevada Office of State Epidemiology would like to acknowledge the work of these great partners.

XI. UPDATE LOG



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Chief Medical Officer

10/7/26

Chief Medical Officer Approval Date