

# TULAREMIA

(Rabbit fever, Deer Fly fever)

## REPORTING INFORMATION

- Class A(3)
- Report by the end of the work week
- [Confidential Case Report Card](#) (3812.11 rev. 12/81), [lab report](#) (3833.11) or telephone

## AGENT

*Francisella tularensis*, a small, gram-negative coccobacillus

**Infectious dose:** By whatever route, fewer than 10-50 bacilli. Case fatality rate is 1-15%, depending on the strain of the bacillus.

## CASE DEFINITION

### Clinical description

An illness characterized by several distinct clinical forms, including:

- 1) ulceroglandular (cutaneous ulcer with regional lymphadenopathy)
- 2) glandular (regional lymphadenopathy with no ulcer)
- 3) oculoglandular (conjunctivitis with preauricular lymphadenopathy)
- 4) oropharyngeal (stomatitis or pharyngitis or tonsillitis and cervical lymphadenopathy)
- 5) intestinal (intestinal pain, vomiting, and diarrhea)
- 6) pneumonic (primary pleuropulmonary disease)
- 7) typhoidal (febrile illness without early localizing signs and symptoms)

Clinical diagnosis is supported by evidence or history of a tick or deerfly bite, exposure to tissues of a mammalian host of *Francisella tularensis* or exposure to potentially contaminated water.

### Laboratory criteria for diagnosis

#### Presumptive

- Elevated serum antibody titer(s) to *F. tularensis* antigen (without documented fourfold or greater change) in a patient with no history of tularemia vaccination or
- Detection of *F. tularensis* in a clinical specimen by fluorescent assay

#### Confirmatory

- Isolation of *F. tularensis* in a clinical specimen or
- Fourfold or greater change in serum antibody titer to *F. tularensis* antigen

### Case classification

Probable: A clinically compatible case with laboratory results indicative of presumptive infection

Confirmed: A clinically compatible case with confirmatory laboratory results

## SIGNS AND SYMPTOMS

See case definition.

## DIAGNOSIS

**Laboratory Isolation** - The organism can be isolated from lesions or blood in the first two weeks of illness. Isolation can be performed by the ODHL or at CDC. Proper protocol for CDC testing is to send the sample(s) via the ODHL. Call ODH (614) 644-4659 to arrange for shipment of serum or other specimens to CDC. A convalescent serum should be obtained two weeks later.

**Serology** - The micro-agglutination test for antibodies is generally available in hospital labs. Contact ODH, (614) 644-4659, if you are unable to find a lab to do serology.

## **EPIDEMIOLOGY**

### **Source**

Wild animals such as rabbits, hares, muskrats, beaver. *F. tularensis* can also be found in some domestic animals and can be carried by several common species of ticks.

### **Occurrence**

The disease is found throughout North America and parts of Europe, Russia and Japan. Tularemia was deleted from CDC's nationally notifiable disease list in 1995, but is still reportable to the ODH. Prior to 1995, the median number of cases reported per year in the United States was 197. Between 1989 and 1998, 6 cases were reported to ODH. The most recent case was in 1997. Most Ohio cases have had winter onset (November-January).

### **Mode of Transmission**

Tularemia is transmitted by inoculation of skin, conjunctival sac, or oropharyngeal mucosa as a result of handling infected animals. It can also be transmitted by bite of a variety of arthropods. Case histories in Ohio have included cleaning wild animals (especially rabbits), tick bites, and ingestion of improperly cooked meat. Most Ohio cases have been associated with handling rabbits (95%) or muskrats (5%).

### **Incubation Period**

Incubation period is 1-14 days, usually about 3, and is related to the virulence of the infecting strain and the size of the inoculum.

## **PUBLIC HEALTH MANAGEMENT**

### **Case**

#### Investigation

Routine investigation to determine the source of infection.

#### Treatment/therapy

Treatment consists of antibiotics (gentamycin, streptomycin, tetracycline, chloramphenicol). Clinical relapses are frequent in patients treated with tetracycline and chloramphenicol.

#### Isolation

No isolation is required. Use standard precautions in hospitalized patients with cutaneous or pulmonary infection.

#### Follow-up specimens

Not indicated.

#### Public Health Significance

Low, due to sporadic occurrence of cases.

### **Contacts**

No prophylaxis is indicated. Person-to-person transmission is unlikely.

### **Prevention and Control**

#### Follow-up specimens

Not indicated unless a large number of cases have been identified. Water sources may be involved in an outbreak.

#### Food handlers, patient care and child-care workers, institutions

Small game hunters and trappers should wear rubber gloves when skinning or dressing game. Avoid handling a rabbit that is sluggish or appears ill. Wild game should be thoroughly cooked. Rabbit season in Ohio is generally from early November to late January (contact Ohio Department of Natural Resources for exact dates).

### Vaccination

There is no generally available vaccine.

### **SPECIAL INFORMATION**

Because of buboes and/or severe pneumonia, tularemia may be confused with bubonic plague and other infectious diseases, including streptococcal and staphylococcal infections, cat-scratch fever, and spirotrichosis.

Because this agent can be acquired by a water-borne route, it has potential for use in acts of biological terrorism.

Care should be exercised with this agent in the laboratory. Laboratory-acquired infections have been reported. Researchers working with live bacilli may apply for an experimental, live-attenuated vaccine from the U.S. Army Medical Research and Material Command, Fort Detrick, Maryland.