

# Francisella tularensis Antibodies by ELISA, IgG, and IgM

## Test Highlights

This assay is useful in the detection of IgG and IgM antibodies against *Francisella tularensis*.

### Disease Overview

- *Francisella tularensis* is a small, gram-negative pathogenic pleomorphic coccobacilli that can cause infection in humans and small mammals.<sup>1</sup>
- *F. tularensis* is the causative agent of tularemia, a disease with variable symptoms depending on the site of infection. Five typical forms include ulceroglandular, glandular, oculoglandular, pharyngeal, and pneumonic.
- Ulceroglandular tularemia is characterized by a skin ulcer at the site of a tick or fly bite. This is the most common form of tularemia.<sup>2</sup>
- Glandular tularemia will present with tender regional lymphadenopathy without a skin ulcer.
- Oculoglandular tularemia occurs when infection occurs through the conjunctiva and presents with photophobia and excessive lacrimation followed by painful conjunctivitis, chemosis, and small yellowish conjunctival ulcers or papules in some patients.
- Oropharyngeal tularemia is similar to ulceroglandular tularemia; however, the primary site of infection is the oropharynx. Pharyngeal tularemia presents with fever and tonsillitis; one or more ulcers may be present.
- Pneumonic tularemia symptoms include cough, chest pain, and difficulty breathing. Pneumonic tularemia is the most serious form of tularemia.

### Epidemiology

- Tularemia is found primarily in the northern hemisphere.
- The number of cases of tularemia has steadily declined from 0.15 cases per 100,000 in the 1950s to around 0.05 cases per 100,000 in 2001.
- The number of tularemia cases, which are typically associated with tick bites, peaks during the summer months. Fewer cases occur late in the fall and are often associated with hunting.

### Indications for Ordering

These ELISA assays should be ordered if patients have any of the following symptoms: skin ulcer at the site of a tick or fly bite; tender regional lymphadenopathy near the site of a tick or fly bite; photophobia and excessive lacrimation followed by painful conjunctivitis, chemosis, and small yellowish conjunctival ulcers or papules; ulcers of the oropharynx if surface water of hunted game has recently been consumed; cough, chest pain, and difficulty breathing.

### Methodology

Enzyme immunoassay.

### Interpretation

- A positive result of greater than 15 U/mL is indicative of a detectable and significant level of IgG or IgM antibodies to *F. tularensis*.
- A result of 10–15 u/mL is considered to be equivocal, and retesting is suggested in 10–14 days.
- A result of less than 10 u/ml is considered negative for antibodies to *F. tularensis*.

### Limitations

- This test has been validated for serum and plasma samples only. No other sample types may be used.
- Antibody testing has limited utility in patients who are HIV-positive or otherwise immunocompromised.

### References

1. Mariathasan S, et al., Innate immunity against *Francisella tularensis* is dependent on the ASC/caspase-1 axis. *J Exp Med* 2005;202(8):1043–9.
2. Mendell GL, Bennett JE, Dolin R. 2010. *Mendell, Douglas, and Bennett's principles and practice of infectious diseases*, 7th ed. Philadelphia, PA: Churchill Livingstone Elsevier.

## Test Information

**2005350**

*Francisella tularensis* Antibodies, IgG and IgM

For specific collection, transport, and testing information, refer to the ARUP website at [www.aruplab.com](http://www.aruplab.com).

For information on test selection, ordering, and interpretation, refer to ARUP Consult® at [www.arupconsult.com](http://www.arupconsult.com).

### **AUTHORS**

Julio Delgado, MD, MS

Stephen Merrigan

Ryan Welch