MAYO CLINIC LABORATORIES

Test Definition: QFEVR

Q Fever Antibody Screen with Titer Reflex, Serum

Overview

Useful For

Screening for exposure to *Coxiella burnetii,* the causative agent of Q fever

This test should **not be used** as a screening procedure for the general population.

Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
QFP	Q Fever IgM/IgG, Titer, S	No	No

Testing Algorithm

If the Q fever serology result is reactive, then Q fever antibody confirmation by indirect immunofluorescence will be performed at an additional charge.

For more information see Infective Endocarditis: Diagnostic Testing for Identification of Microbiological Etiology.

Special Instructions

- Infective Endocarditis: Diagnostic Testing for Identification of Microbiological Etiology

Method Name

Enzyme-Linked Immunosorbent Assay (ELISA)

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube:
Preferred: Serum gel
Acceptable: Red top
Submission Container/Tube: Plastic vial
Specimen Volume: 0.6 mL Serum

Collection Instructions: Centrifuge and aliquot serum into a plastic vial.

Forms

If not ordering electronically, complete, print, and send an Infectious Disease Serology Test Request (T916) with the specimen.

Specimen Minimum Volume

Serum: 0.5 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject
Gross icterus	Reject
Heat-inactivated specimen	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	7 days	
	Frozen	7 days	

Clinical & Interpretive

Clinical Information

Q fever, a rickettsial infection caused by *Coxiella burnetii*, has been recognized as a widely distributed zoonosis with the potential for causing both sporadic and epidemic disease. The resistance of *C burnetii* to heat, chemical agents, and desiccation allows the agent to survive for extended periods outside the host.

C burnetii is spread by the inhalation of infected material, largely from dried sheep and goat reproductive material; the organism is also shed in feces, milk, nasal discharge, placental tissue, and amniotic fluid from ruminant animals.

The clinical spectrum of disease ranges from unapparent to fatal. Respiratory manifestations usually predominate; endocarditis and hepatitis can be complications.

During the course of the infection, the outer membrane of the organism undergoes changes in its lipopolysaccharide structure, called phase variation. Differences in the host antibody response between phase I and phase II antigens can help classify infections as either acute or chronic:
-In acute Q fever, the phase II antibody is generally higher than the phase I titer, often by 4-fold, even in early specimens. Although a rise in phase I as well as phase II titers may occur in later specimens, the phase II titer remains higher.

-In chronic Q fever, the reverse situation is generally seen. Serum specimens collected late in the illness from chronic Q fever patients demonstrate significantly higher phase I titers, sometimes much greater than 4-fold.
-In the case of chronic granulomatous hepatitis, IgG and IgM titers to phase I and phase II antigens are quite elevated, with phase II titers generally equal to or greater than phase I titers.
-Titers seen in Q fever endocarditis are similar in magnitude, although the phase I titers are quite often higher than the phase II titers.

Reference Values

Negative
Reference values apply to all ages

Interpretation

Negative:
No antibodies to Q fever (*Coxiella burnetii*) detected. Repeat testing on a new sample collected in 2 to 3 weeks if acute Q fever is suspected.

Reactive:
Not diagnostic. Sample reflexed to the indirect immunofluorescence assay to determine Q fever (*Coxiella burnetii*) phase I and phase II IgM and IgG titers.

Cautions

Serologic responses are time dependent. Specimens collected too early in the disease may not have detectable antibody levels. A second specimen collected 2 to 3 weeks may be necessary to detect antibody.

Cross-reactivity may occur with other closely related intracellular organisms (eg, *Rickettsia* species).

Clinical Reference

1. Hartzell JD, Marrie TJ, Raoult D. *Coxiella burnetii* (Q fever). In: Bennett JE, Dolin R, Blaser MJ, eds. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases. 9th ed. Elsevier; 2020:2360-2367
2. Anderson A, Bijlmer H, Fournier PE, et al. Diagnosis and management of Q fever--United States, 2013: recommendations from CDC and the Q Fever Working Group. MMWR Recomm Rep. 2013;62(RR-03):1-30.
3. Mohammadi MR, Moradkasani S, Latifian M, Esmaeili S. Coxiella burnetii: Emerging threats, molecular insights, and advances in diagnosis and control measures. J Microbiol Methods. 2025;237:107213. doi:10.1016/j.mimet.2025.107213

Performance

Method Description

The test uses microplate strips, each with 8 break-off reagent wells coated with purified native antigens from *Coxiella burnetii* cells in the acute and chronic phase. In the first reaction step, diluted samples are incubated in the wells. In the case of positive samples, specific IgA, IgG, or IgM antibodies will bind to the antigens. To detect the bound antibodies, a second incubation is carried out using an enzyme-labelled anti-human IgA-G-M (enzyme conjugate) catalyzing a color reaction.(Unpublished Mayo method)

PDF Report
No

Day(s) Performed
Sunday through Friday

Report Available
1 to 4 days

Specimen Retention Time
14 days

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Superior Drive

Fees & Codes

Fees
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification
This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information
86638
86638 x4 (if appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
QFEVR	Q Fever Ab Scrn w/ Titer Reflex, S	23019-3

Result ID	Test Result Name	Result LOINC® Value
QFEVR	Q Fever Ab Scrn w/ Titer Reflex, S	23019-3