Test Definition: QFP

Q Fever IgM and IgG, Titer, Serum

Overview

Useful For

Diagnosis of *Coxiella burnetii*, the causative agent of Q fever

Testing Algorithm

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

Method Name

Only orderable as a reflex. For more information see QFEVR / Q Fever Antibody Screen with Titer Reflex, Serum.

Indirect Immunofluorescence

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Only orderable as a reflex. For more information see QFEVR / Q Fever Antibody Screen with Titer Reflex, Serum.

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube:
Preferred: Serum gel
Acceptable: Red top
Submission Container/Tube: Plastic vial
Specimen Volume: 0.5 mL
Collection Instructions: Centrifuge and aliquot serum into a plastic vial.

Specimen Minimum Volume

0.25 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject
Gross icterus	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

Only orderable as a reflex. For more information see QFEVR / Q Fever Antibody Screen with Titer Reflex, Serum.

Q fever phase I antibody, IgG
<1:16

Q fever phase II antibody, IgG
<1:16

Q fever phase I antibody, IgM
<1:16

Q fever phase II antibody, IgM
<1:16

Reference values apply to all ages.

Interpretation

A negative result argues against *Coxiella burnetii* infection. If early acute Q fever infection is suspected, collect a second specimen 2 to 3 weeks later and retest.

A negative result following a reactive *C burnetii* enzyme immunoassay screen suggests a falsely reactive screen. In cases of suspected acute *C burnetii* infection, repeat testing in 2 to 3 weeks is recommended.

Phase I antibody titers greater than or equal to phase II antibody titers are consistent with chronic infection or convalescent phase Q fever.

Phase II antibody titers greater than or equal to phase I antibody titers are consistent with acute/active infection.

In Q fever sera, it is common to see IgG titers of 1:128 or greater to both phase I and phase II antibody titers. IgG class antibody titers appear very early in the disease, reaching maximum phase II titers by week 8 and persisting at elevated titers for longer than a year. Phase I titers follow the same pattern, although at much lower levels, and may not be initially detected until convalescence.

In Q fever sera, it is common to see IgM titers of 1:64 or greater.

IgM class antibody titers appear very early in the disease, reaching maximum phase II titers by week 3 and declining to very low levels by week 14. Phase I titers follow the same pattern, although at much lower levels, and may not be initially detected until convalescence.

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.

Low level positive titers (ie, <1:256) may remain for prolonged periods of time following resolution of disease.

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 [published correction appears in MMWR Recomm Rep. 2013 Sep 6;62(35):730]. MMWR Recomm Rep. 2013;62(RR-03):1-30

Performance

Method Description

An indirect immunofluorescence test is used for the measurement of IgM and IgG antibodies to *Coxiella burnetii.* Specific antibodies present in the serum of the patient react with rickettsial cells that have been previously fixed on a glass microscope slide. Fluorescein-labeled antihuman IgG or IgM conjugate is used to stain specific antibody bound to the substrate cells. The slides are examined with a fluorescence microscope for characteristic, apple-green fluorescence of the infected cell.(Edligner B. Immunofluorescence serology. A tool for prognosis of Q fever. Diagn Microbiol Infect Dis. 1985;3[4]:343-351; package inserts: Q fever IFA IgG. Focus Diagnostics, Inc; 12/2022; Q fever IFA IgM. Focus Diagnostics, Inc; 12/2022)

PDF Report
No

Day(s) Performed
Monday through Saturday

Report Available
Same day/1 to 3 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 has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information
86638 x 4

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
QFP	Q Fever IgM/IgG, Titer, S	77175-8

Result ID	Test Result Name	Result LOINC® Value
80965	Q Fever Phase I Ab, IgG	34716-1

24011	Q Fever Phase II Ab, IgG	In Process
81115	Q Fever Phase I Ab, IgM	9710-5
24009	Q Fever Phase II Ab, IgM	9711-3
24010	Interpretation	69048-7