
Overview

Useful For

Aiding in the diagnosis of *Bartonella* infection

Testing Algorithm

See [Infective Endocarditis: Diagnostic Testing for Identification of Microbiological Etiology](#) in Special Instructions.

Special Instructions

- [Infective Endocarditis: Diagnostic Testing for Identification of Microbiological Etiology](#)

Method Name

Real-Time Polymerase Chain Reaction (PCR)

NY State Available

Yes

Specimen

Specimen Type

Varies

Ordering Guidance

BART / *Bartonella* Antibody Panel, IgG and IgM, Serum and Warthin-Starry tissue stain (PATHC / Pathology Consultation) should be considered if PCR is negative and there is a strong suspicion of disease caused by these organisms.

Necessary Information

Specimen source is required.

Specimen Required

The high sensitivity of amplification by PCR requires the specimen to be processed in an environment in which contamination of the specimen by *Bartonella* species DNA is unlikely.

Submit only 1 of the following specimens:

Specimen Type: Fresh tissue or biopsy

Sources: Heart valve, liver, lymph node, spleen, or skin tissue papule/lesion/nodule

Container/Tube: Sterile container

Specimen Volume: Entire collection or 5 mm(3) - approximately the size of a pencil eraser

Collection Instructions:

1. Collect fresh tissue specimen.
2. Submit tissue only, do not add fluid to tissue.
3. Refrigerate or freeze specimen.

Specimen Stability Information: Refrigerated (preferred) <7 days/ Frozen <7 days

Preferred Paraffin-embedded tissue block:

Supplies: Tissue Block Container (T553)

Specimen Type: Formalin-fixed, paraffin-embedded tissue block (FFPE)

Sources: Heart valve, liver, lymph node, spleen, or skin tissue papule/lesion/nodule

Container/Tube: Tissue block

Collection Instructions: Submit a formalin-fixed, paraffin-embedded tissue block to be cut and returned.

Specimen Stability Information: Ambient (preferred)/Refrigerated

Acceptable: Paraffin-embedded tissue block:

Specimen Type: Formalin-fixed, paraffin-embedded tissue block (FFPE)

Sources: Heart valve, liver, lymph node, spleen, or skin tissue papule/lesion/nodule

Container/Tube: Sterile container for each individual cut section (scroll).

Collection Instructions: Perform microtomy and prepare five separate 10-micron sections. **Each section (scroll) must be placed in a separate sterile container for submission.**

Specimen Stability Information: Ambient (preferred)/Refrigerated

Specimen Type: Fluid

Sources: Cerebrospinal or ocular (eg, vitreous humor fluid)

Container/Tube: Sterile vial

Specimen Volume: 0.5 mL

Specimen Stability Information: Refrigerated (preferred) <7 days/Frozen <7 days

Specimen Type: Synovial fluid

Container/Tube:

Preferred: Lavender top (EDTA)

Acceptable: Pink top (EDTA), royal blue top (EDTA), sterile vial containing EDTA-derived aliquot, red clot tube (no anticoagulant), or sterile container

Specimen Volume: 0.5 mL

Collection Instructions: Send specimen in original tube (preferred).

Specimen Stability Information: Refrigerated (preferred) <7 days /Frozen <7 days

Forms

If not ordering electronically, complete, print, and send a [Microbiology Test Request](#) (T244) with the specimen.

Reject Due To

Tissue Tissue in formalin, formaldehyde, or acetone; bone marrow; slides

Specimen Minimum Volume

Fresh tissue or biopsy: 5 mm(3)

Paraffin-embedded tissue block: two 10-micron sections

Fluid: 0.5 mL

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Varies	Varies (preferred)		

Clinical & Interpretive

Clinical Information

Bartonella henselae and *B quintana* are small, pleomorphic Gram stain-negative bacilli that are difficult to isolate by culture due to their fastidious growth requirements. *B henselae* has been associated with cat scratch disease, bacillary angiomatosis, peliosis hepatitis, and endocarditis. *B quintana* has been associated with trench fever, bacillary angiomatosis, and endocarditis.

The diagnosis of *Bartonella* infection has traditionally been made by Warthin-Starry staining of infected tissue or serology. However, these methods may be falsely negative or nonspecific, respectively. Culture is insensitive.

Evaluation of infected tissue using PCR has been shown to be an effective tool for diagnosing *Bartonella* infection. Mayo Clinic Laboratories has developed a real-time PCR test that permits rapid identification of *Bartonella* species. The assay targets a unique sequence of the citrate synthase gene present in *Bartonella* species.

Reference Values

Not applicable

Interpretation

A positive result indicates the presence of *Bartonella* species DNA.

A negative result indicates the absence of detectable *Bartonella* DNA, but does not negate the presence of the organism and may occur due to inhibition of PCR, sequence variability underlying primers or probes, or the presence of *Bartonella* DNA in quantities less than the limit of detection of the assay.

Cautions

This test does not differentiate between *Bartonella henselae* and *B quintana*.

Test results should be used as an aid in diagnosis. The single assay should not be used as the only criteria to form a clinical conclusion, but results should be correlated with patient symptoms and clinical presentation. A negative result does not negate the presence of the organism or active disease.

Inhibition of less than 2% has been noted in formalin-fixed, paraffin-embedded tissues. In a study of 178 ocular fluids, no inhibition was detected, although this is a possibility due to the relatively small number of specimens tested.

Clinical Reference

1. Karem KL, Paddock CD, Regnery RL: *Bartonella henselae*, *B. quintana*, and *B. bacilliformis*: historical pathogens of emerging significance. *Microbes Infect* 2000 August;2(10):1193-1205
2. Agan BK, Dolan MJ: Laboratory diagnosis of *Bartonella* infections. *Clin Lab Med* 2002 December;22(4):937-962
3. Maguina C, Gotuzzo E: Bartonellosis. New and old. *Infect Dis Clin North Am* 2000 March;14(1):1-22
4. Vikram HR, Bacani AK, Devaleria PA, et al: Bivalvular *Bartonella henselae* prosthetic valve endocarditis. *J Clin Microbiol* 2007 December;45(12):4081-4084
5. Lin EY, Tsigrelis C, Baddour LM, et al: Candidatus *Bartonella mayotimonensis* and endocarditis. *Emerg Infect Dis* 2010 Mar;16(3):500-503

Performance**Method Description**

Bacterial nucleic acid is extracted from the specimen using the automated MagNA Pure instrument. The purified DNA is placed on the LightCycler instrument, which amplifies and monitors by fluorescence the development of target nucleic sequences after each PCR cycle. A specific target sequence from *Bartonella* species is amplified and the resulting segment is detected using specific hybridization probes. Detection of the *Bartonella* target is performed through melting curve analysis using the LightCycler software. (Cockerill FR, Uhl JR: Applications and challenges of real-time PCR for the clinical microbiology laboratory. *In* Rapid Cycle Real-Time PCR Methods and Applications. Edited by U Reischl, C Wittwer, F Cockerill. Berlin, Germany, Springer-Verlag, 2002 pp 3-27; Dumler JS, Carroll KC, Patel R: *Bartonella*. *In* Manual of Clinical Microbiology. 12th edition. Edited by K Carroll, M Pfaller. Washington DC, ASM Press, 2019, pp 893-904)

PDF Report

No

Specimen Retention Time

1 week

Performing Laboratory Location

Rochester

Fees & Codes**Test Classification**

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

CPT Code Information

87801

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
BARRP	Bartonella PCR	48864-3

Result ID	Reporting Name	LOINC®
SRC51	Specimen source	31208-2
84440	Bartonella PCR	48864-3