MAYO CLINIC LABORATORIES

Test Definition: BARRP

Bartonella, Molecular Detection, PCR, Varies

Overview

Useful For

Aiding in the diagnosis of *Bartonella* infection

Testing Algorithm

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

Real-Time Polymerase Chain Reaction (PCR)

NY State Available

Yes

Specimen

Specimen Type

Varies

Ordering Guidance

If this test result is negative and there is a strong suspicion of disease caused by these organisms, consider BART / *Bartonella* Antibody Panel, IgG and IgM, Serum and Warthin-Starry tissue stain (PATHC / Pathology Consultation) testing.

Necessary Information

Specimen source is required.

Specimen Required

The high sensitivity of amplification by polymerase chain reaction 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:
Specimen Type: Formalin-fixed, paraffin-embedded tissue block (FFPE)
Sources: Heart valve, liver, lymph node, spleen, or skin tissue papule/lesion/nodule
Supplies: Tissue Block Container (T553)
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:
1. Perform microtomy and prepare five separate 10-micron sections.
2. **Each section (scroll) must be placed in a separate sterile container for submission.**
Specimen Stability Information: Ambient (preferred)/Refrigerated

Specimen Type: Fluid
Sources: Cerebrospinal (CSF) 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
Collection Instructions: For CSF, submit specimen from collection vial 2.

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 synovial fluid 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.

Specimen Minimum Volume

Fresh tissue or biopsy: 5 mm(3); Paraffin-embedded tissue block: two 10-micron sections; Fluid: See Specimen Required

Reject Due To

Tissue in	Reject

formalin, formaldehyde, or acetone	
Specimens other than those listed in Specimen Required	Reject
Slides	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Varies	Varies		

Clinical & Interpretive

Clinical Information

Bartonella henselae and *Bartonella quintana* are small, pleomorphic gram-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.

An effective tool for diagnosing *Bartonella* infection is evaluation of infected tissue or blood using a polymerase chain reaction (PCR) assay. 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* 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 the polymerase chain reaction, 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 *Bartonella 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. Liesman RM, Pritt BS, Maleszewski JJ, Patel R. Laboratory diagnosis of infective endocarditis. J Clin Microbiol. 2017;55(9):2599-2608. doi:10.1128/jcm.00635-17
2. Dumler JS, Carroll KC, Patel R. Bartonella. In: Carroll K, Pfaller M, Landry ML, et al, eds. Manual of Clinical Microbiology. 12th ed. ASM Press; 2019:chap 50

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 polymerase chain reaction (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: Reischl U, Wittwer C, Cockerill F, eds. Rapid Cycle Real-Time PCR Methods and Applications. Springer-Verlag; 2002:3-27; Nolte FS. Target amplification techniques. In: Carroll KC, Pfaller MA, Landry ML, et al, eds. Manual of Clinical Microbiology. 12th ed. ASM Press; 2019)

PDF Report

No

Day(s) Performed

Monday through Sunday

Report Available

2 to 7 days

Specimen Retention Time

1 week

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

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

87801

LOINC® Information

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

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