Infective Endocarditis:
Diagnostic Testing for Identification of Microbiological Etiology

Blood cultures

If surgical excision of valve performed

- PATHC / Pathology Consultation

- QFP / Q Fever Antibody, IgG and IgM, Serum
- BART / Bartonella Antibody Panel, IgG and IgM, Serum

Consider:
- WHIPB / Tropheryma whippelii, Molecular Detection, PCR, Blood

Directed testing based on histopathology findings

Acute inflammation ±microorganisms

- BBBS / Broad Range Bacterial PCR and Sequencing

- CBRP / Coxiella burnetii (Q fever), Molecular Detection, PCR
- BARRP / Bartonella, Molecular Detection, PCR
- TWLP / Tropheryma whippelii, Molecular Detection, PCR

Consider other microorganism-specific PCR such as MHRP / Mycoplasma hominis, Molecular Detection, PCR

Chronic inflammation with macrophage predominance

- PAS-D histopathology stain
- TWLP / Tropheryma whippelii, Molecular Detection, PCR

No evidence of inflammation or microorganisms

- BBBS / Broad Range Bacterial PCR and Sequencing
- CBRP / Coxiella burnetii (Q fever), Molecular Detection, PCR
- BARRP / Bartonella, Molecular Detection, PCR

Consider other microorganism-specific PCR such as MHRP / Mycoplasma hominis, Molecular Detection, PCR

This algorithm is intended for use in patients with clinical and/or echocardiographic findings suggestive of infective endocarditis, based on the modified Duke criteria.

1 Per American Heart Association, European Society of Cardiology, and British Society for Antimicrobial Chemotherapy guidelines, 2 (or more) blood cultures should be positive for a typical microorganism consistent with infective endocarditis (ie, viridans group streptococci, HACEK group bacteria, Staphylococcus aureus, community-acquired Enterococcus species in the absence of a primary focus) to define a positive result.

2 C burnetii anti-phase I IgG antibody titer ≥1:800 is considered indicative of C burnetii endocarditis.

3 The sensitivity of T whippelii PCR from blood in endocarditis is unknown; a negative result should not be used to rule out T whippelii endocarditis.

4 Histologic examination is used to evaluate for infectious and noninfectious etiologies and correlate with microbiology test results.

5 If surgery is not performed, consider testing for noninfectious etiologies.

6 Ideally, a representative sample of valvular tissue should be collected specifically for molecular testing in the operating room in a sterile fashion.

7 If sufficient valvular tissue is available after sampling for histopathological and molecular (microorganism-specific and broad range) testing, consider culture and Gram stain. Due to the low sensitivity and specificity of culture, molecular testing should be prioritized over culture.

8 PAS-D, periodic acid Schiff with diastase. Macrophages infected with T whippelii will stain PAS positive following diastase digestion. Specialty stains are ordered as appropriate by the reviewing pathologist.