Relapsing Fever *Borrelia* Species

**Indications for Ordering**
- Detect infections caused by relapsing fever *Borrelia* species (RFB)
- Relapsing fever *Borrelia* species include, but are not limited to
  - *B. hermsii*
  - *B. miyamotoi*
  - *B. parkeri*
  - *B. turicatae*

**Test Description**

**Test methodology**
Qualitative real-time polymerase chain reaction (PCR)

**Tests to Consider**

**Typical testing strategy**
Parasites smear (Giemsa stain), blood
- Traditional method to detect relapsing fever spirochetes
- Very poor sensitivity and requires considerable experience

**Primary test**
*Relapsing Fever Borrelia Species by PCR* 3000010
- Detects but does not differentiate nucleic acid from
  - *B. hermsii*
  - *B. miyamotoi*
  - *B. parkeri*
  - *B. turicatae*

**Disease Overview**

**Prevalence and/or incidence**
- True incidence unknown due to poor predicate methods of detection
- Recent identification of RFB in the Northeast and Northern U.S. has led to expanded testing and detection rates
- <500 cases reported in 20 years in the Western U.S. using primarily blood smears

**Symptoms**
- Recurring febrile episodes lasting ~3 days, separated by a 7-day afebrile period
  - 3 episodes typically experienced if untreated
- Headaches, myalgia, chills, nausea in >75% of patients
- Arthralgia, vomiting in >50% of patients

**Diagnostic issues**
Even in endemic regions of the U.S., many physicians are not aware of this infection

**Test Interpretation**

**Sensitivity/specificity**
- Analytical sensitivity
  - *B. hermsii* – 5,000 copies/mL
  - *B. crocidurae* (plasmid) – 125,000 copies/mL
- Analytical specificity
  - No cross-reactivity observed for 68 organisms tested, including *B. burgdorferi*, *B. garinii*, and *B. afzelii*, the causative agents of Lyme borreliosis

**Results**
- Detected
  - Patient’s blood contains nucleic acid from RFB
- Negative
  - No RFB nucleic acid detected

**Limitations**
- Negative result does not rule out
  - Presence of PCR inhibitors in specimen
  - Assay-specific nucleic acid in concentrations below the level of detection

**References**