Acute Tick-Borne Disease Testing Algorithm

Clinical suspicion of tick-borne disease based on patient characteristics:
- Illness during tick season: fever, chills, headache, muscle aches, joint pain, neck pain, skin rash, Bell's palsy, heart rhythm disturbances, jaundice, sepsisⁱ
- Known tick exposure
- Environmental exposure (outdoor activities, wildlife)

Based on geographic exposure, consider the following tick-borne pathogens (choose all that are appropriate):
- At risk for tick-borne relapsing fever (states with highest incidence are Arizona, California, Colorado, Idaho, Kansas, Montana, Nevada, New Mexico, Oklahoma, Oregon, Texas, Utah, Washington, and Wyoming)
- At risk for Rocky Mountain Spotted Fever (states with the highest incidence include North Carolina, Oklahoma, Arkansas, Tennessee, Missouri, Arizona, and the tribal Southwest)
- At risk for Lyme disease, ehrlichiosis, anaplasmosis, babesiosis, and Borrelia miyamotoi disease (BMD)
  - Endemic areas for Lyme disease, anaplasmosis, babesiosis, and BMD include the Northeastern and Upper Midwestern United States, into Canada
  - Ehrlichiosis is most frequently reported from the Southeastern and South Central United States

Perform SP5M / Morphology Evaluation (Special Smear), Blood for detection of relapsing fever Borrelia species spirochetes.

If short disease duration, consider collecting follow-up specimen for repeat testing in 2-3 weeks if clinically indicated

At risk for tick-borne relapsing fever

Decide whether to test:
- YES: Consider empiric treatment for ehrlichiosis/ anaplasmosis while awaiting test results
- NO: Treat as appropriate

Order: SFGP / Spotted Fever Group Antibody, IgG and IgM, Serum
- If short disease duration, submit follow-up specimen for repeat testing in 2-3 weeks if clinically indicated
- No laboratory testing for Lyme disease is needed
- Treat for Lyme disease
- Monitor for symptoms of other tick-borne illness

Classic erythema migrans (target lesion or bull’s-eye rash)

TKPNL Results

TPKNL / Tick-Borne Panel, Molecular Detection, PCR, Blood.³,⁴
- If patient presents with >7 days of symptoms, consider collecting specimen for serologic tests in 2-3 weeks if clinically indicated
- For patients with exposure to ticks in Europe, consider ELYME / Lyme Disease European Antibody Screen, Serum
- If patient presents with >7 days of symptoms, consider collecting baseline serology (TICKS / Tick-Borne Disease Antibodies Panel, Serum)

Perform SPSM / Morphology Evaluation (Special Smear), Blood
- In the presence of severe neurologic symptoms, contact public health department for additional testing options (eg, Powassan/deer tick virus, Heartland virus, Bourbon virus, Colorado tick fever virus)
- Covers testing for the most common tick-borne pathogens in the US. Not all inclusive.

³ Test includes PCR tests for Babesia species, Anaplasma phagocytophilum, Ehrlichia species, and Borrelia miyamotoi.
⁴ In place of the PCR panel, PCR tests for the individual organisms and/or smear for Babesia species can be ordered based on the suspected organism(s).
⁵ PCR testing of blood may be useful for detection of Borrelia mayonii (patients with exposure to ticks in Minnesota or Wisconsin).

See Lyme Neuroborreliosis Diagnostic Algorithm for more information.