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, hypotension, jaundice, sepsis
- Known tick exposure
- Environmental exposure (outdoor activities, wildlife)

Based on geographic exposure, consider the following tick-borne pathogens (choose all that are appropriate):

1. At risk for tick-borne relapsing fever (states with highest incidence include Arizona, California, Colorado, Idaho, Kansas, Montana, Nevada, New Mexico, Oklahoma, Oregon, Texas, Utah, Washington, and Wyoming).
2. At risk for Rocky Mountain Spotted Fever (states with the highest incidence include North Carolina, Oklahoma, Arkansas, Tennessee, Missouri, Arizona, and the tribal Southwest).
3. At risk for Lyme disease, ehrlichiosis, anaplasmosis, babesiosis, and Borrelia miyamotoi disease (BMD).
4. Endemic areas for Lyme disease, anaplasmosis, babesiosis, and BMD include the Northeastern and Upper Midwestern United States, into Canada.
5. Ehrlichiosis is most frequently reported from the Southeastern and South Central United States.

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

Order: SFGP / Spotted Fever Group Antibody, IgG and IgM, Serum
Empiric treatment encouraged for high risk patients while awaiting results.

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

YES
- Consider empiric treatment for ehrlichiosis/anaplasmosis while awaiting test results

NO
- Treat as appropriate

POSITIVE

- Report as negative
- If short disease duration, submit follow-up specimen for repeat testing in 2-3 weeks if clinically indicated

NEGATIVE

- No laboratory testing for Lyme disease is needed
- Treat for Lyme disease
- Monitor for symptoms of other tick-borne illness

TKPXL Results

POSITIVE

- Treat as appropriate

NEGATIVE

- Report as negative
- If short disease duration, consider follow-up specimen for serologic tests in 2-3 weeks if clinically indicated using STICK / Tick-Borne Antibodies, Modified 2-Tier, ELISA, Serum (includes Lyme disease serology)

SLYME or ELYME Results

POSITIVE OR EQUIVOCAL

- Order SLYME / Lyme Antibody, Modified 2-Tier, with Reflex, Serum
- If systemic symptoms are present (eg, fever, chills, sepsis) also order TKPXL / Tick-Borne Panel, Molecular Detection, PCR, Blood.
- 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 (STICK / Tick-Borne Antibodies, Modified 2-Tier, ELISA, Serum)
- Order SLYME / Lyme Antibody, Modified 2-Tier, with Reflex, Serum
- Antibody Panel, Serum
- Ehrlichia/Babesia Antibody Panel, Serum
- Individual serologic tests:
  - EHBAP / Ehrlichia/Babesia Antibody Panel, Immunofluorescence, Serum
  - BABG / Babesia microi IgG Antibodies, Serum
  - ANAP / Anaplasma phagocytophilum (Human Granulocytic Ehrlichia) Antibody, Serum
  - EHRCP / Ehrlichia Antibody Panel, Serum

POSITIVE

- Treat as appropriate
- If neurologic or joint symptoms, consider PBORB / Lyme Disease, Molecular Detection, PCR, Varies (for CSF, synovial fluid, or fresh tissue samples)

NEGATIVE

- Report as negative
- If short disease duration, submit follow-up specimen for repeat testing in 2-3 weeks if clinically indicated

In immunocompromised patient, consider PBORB / Lyme Disease, Molecular Detection, PCR, Varies (for CSF, synovial fluid, or fresh tissue samples) AND/OR PBORB / Lyme Disease, Molecular Detection, PCR, Blood

See Lyme Neuroborreliosis Diagnostic Algorithm for more information.

See Lyme Neuroborreliosis Diagnostic Algorithm for more information.