



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 AND
- Known tick exposure OR
- Environmental exposure (outdoor activities, wildlife)

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

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

YES

YES

SFGP / Spotted Fever Group Antibody, IgG and IgM, Serum
Consider empiric treatment while awaiting test results

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

LAB 10101, Mayo: SFGP

NEGATIVE

POSITIVE

NO
Consider empiric treatment for ehrlichiosis/anaplasmosis while awaiting test results

YES

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

Treat as appropriate

- Perform LYME / Lyme Disease Serology, Serum (Enzyme-Linked Immunosorbent Assay) LAB 788
- For patients with exposure to ticks in Europe, consider ELYME / Lyme Disease European Antibody Screen, Serum
- If systemic symptoms are present (eg, fever, chills, sepsis) also perform TKPNL / Tick-Borne Panel, Molecular Detection, PCR, Blood^{1,2} LAB 4922
- Consider collecting baseline serology (TICKS / Tick-Borne Disease Antibodies Panel, Serum) if patient presents with >7 days of symptoms LAB 1875

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

Ehrlichia/Anaplasma: LAB 2287

TKPNL Results

LYME or ELYME Results

NEGATIVE

POSITIVE

NEGATIVE

POSITIVE OR EQUIVOCAL

- Report as negative
- If short disease duration, consider follow-up specimen for serologic tests in 2-3 weeks if clinically indicated using: TICKS / Tick-Borne Disease Antibodies Panel, Serum (includes Lyme disease serology) LAB 1875

OR

- Individual serologic tests:
 - BABG / *Babesia microti* IgG Antibodies, Serum
 - ANAP / *Anaplasma phagocytophilum* (Human Granulocytic Ehrlichiosis) Antibody, Serum
 - EHRCP / *Ehrlichia* Antibody Panel, Serum

Treat as appropriate

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

- LYWB / Lyme Disease Antibody, Immunoblot, Serum (performed automatically when LYME result is positive or equivocal) LAB 788
- ELYMI / Lyme Disease European Immunoblot, Serum (performed automatically when ELYME result is positive or equivocal)

NEGATIVE

POSITIVE

- Report as negative
- If short disease duration, submit follow-up specimen for repeat testing if clinically indicated
- In immunocompromised patient, consider PBORR / Lyme Disease, Molecular Detection, PCR (for CSF, synovial fluid, or fresh tissue samples) LAB 3743

AND/OR

PBORB / Lyme Disease, Molecular Detection, PCR, Blood³

- Treat as appropriate
- If neurologic or joint symptoms, consider PBORR / Lyme Disease, Molecular Detection, PCR (for CSF, synovial fluid, or fresh tissue samples) LAB 3743
- OR
- LNBA / Lyme CNS Infection IgG with Antibody Index Reflex

LAB 10101, Mayo, PBORB

LAB 10101, Mayo: LNBA

¹The TKPNL includes PCR tests for *Babesia* species, *Anaplasma phagocytophilum*, *Ehrlichia* species, and *Borrelia miyamotoi*.

²In 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).

³PCR 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.