



University of Missouri Pediatric Service Line

Pediatric Emergency • Clinical Practice Guidelines

Pediatric Tick-borne Infection Management

Child presenting with febrile illness in setting of outdoor exposures or tick bite ^{a,b,c}

Obtain CBC and CMP ^d

If concern for sepsis, also
obtain blood culture

Order the following work-up using the
PED Tickborne Infectious Disease SP: ^e
Ehrlichia by PCR ^f
Rocky Mountain Spotted Fever Group
IgG, IgM Antibodies ^g

Travel to
Lyme-endemic
area? ^h

Consider ordering:
Lyme Antibodies,
Total

Concern
for Tularemia? ⁱ

Order Francisella
tularensis
Antibody, IgM
and IgG, ELISA,
Serum

Start oral Doxycycline 2.2mg/kg
(max: 100mg) BID ^{j,k}

Meeting admission criteria? ^l

No

Discharge home with 7
days of Doxycycline and
PCP follow-up

Unclear infectious
etiology, concern for
Tularemia, or needing
outpatient ID follow-up?

Ambulatory Referral to
Pediatric Infectious
Diseases

Yes

Admit to Pediatrics vs
PICU, per unit protocols

Critically ill, unclear
infectious etiology,
concern for Tularemia,
or needing outpatient
ID follow-up?

Consult Pediatric
Infectious Diseases

Contact Pediatric
Infectious
Diseases on-call
if you have any
questions or
concerns



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Footnotes:

- a. Missouri-endemic tick-borne infections include: Ehrlichiosis, Rocky Mountain Spotted Fever (RMSF), Tularemia, and Southern tick-associated rash illness (STARI). See CDC handbook link in references for further learning.
- b. Common symptoms include: fever, chills, malaise, fatigue, headache, myalgias, arthralgias, GI symptoms, lymphadenopathy, bullseye or maculopapular rash, edema, and neurologic changes.
- c. Only 50–60% of patients recall a tick bite. Recent outdoor exposure and compatible clinical presentation should raise suspicion.
- d. Common laboratory abnormalities include: leukopenia, thrombocytopenia, hyponatremia, and elevated transaminases.
- e. In well-appearing outpatient or ED patients, tick-borne infections can often be diagnosed clinically and treated without laboratory evaluation. Do not delay treatment while awaiting serologies.
- f. If not well-appearing, obtain diagnostic testing before starting doxycycline when possible, as Ehrlichia PCR may become negative after 1–2 doses of doxycycline.
- g. Early RMSF serology may also be negative; if suspicion is high, treat and consider repeat serology in 1–2 weeks if confirmation is still desired.
- h. Lyme disease is endemic to: Minnesota, Wisconsin, Northern Iowa / Illinois, Western Michigan, and the Northeastern US. Note: STARI, from bite of lone star tick in Missouri can cause an erythema migrans-like (bullseye) rash that can be mistaken for Lyme disease.
- i. Most common presentations of Tularemia are glandular and ulceroglandular. If suspicion is high or serology is positive, consult pediatric infectious diseases.
- j. Doxycycline is safe in all age groups and should be started promptly when suspicion is high. Counsel about photosensitivity, GI upset, and pill esophagitis; take with food and avoid dairy around dosing.
- k. Oral doxycycline has high bioavailability and is preferred even in critically ill patients unless contraindicated.
- l. Admit patients who meet pediatric SIRS/sepsis criteria, require respiratory, nutritional, hydration, or pressor support, cannot perform activities of daily living, or are at risk of acute decompensation.

References:

1. ["Tickborne Diseases of the United States"](#). Centers for Disease Control and Prevention, Sixth Edition, 2022.
2. Kimberlin DW, Banerjee R, Barnett ED, Lynfield R, Sawyer MH. "Ehrlichia, Anaplasma, and Related Infections (Human Ehrlichiosis, Anaplasmosis, and Related Infections Attributable to Bacteria in the Family Anaplasmataceae)", "Tularemia", "Rocky Mountain Spotted Fever". *Red Book: 2024–2027 Report of the Committee on Infectious Diseases*, American Academy of Pediatrics, 2024. Pages 361–365, 727–730, 929–932.