Tickborne Diseases

Lyme Disease and Rocky Mountain Spotted Fever

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FAST FACTS

April—October
High season for early localized and early disseminated Lyme disease

~50%
of Lyme disease cases occur during June and July

~50%
of RMSF cases do not report tick bite

WHEN TO REFER

If concerns for RMSF: Refer to the emergency department for immediate care. RMSF usually requires hospitalization and inpatient management.

If concerns for Lyme disease with signs of meningitis: Refer to the emergency department.

If concerns for persistent or worsening Lyme disease symptoms after treatment: Refer to the emergency department. These symptoms can include arthritis and carditis.

For urgent issues or to speak with a pediatric infectious disease on call 24/7, call the Physician Priority Link® at 1-888-987-7997.

Due to various factors, the incidence of tickborne diseases, especially Lyme disease, is rising in the Midwest. This tool provides guidance for assessing and treating Lyme disease and Rocky Mountain Spotted Fever (RMSF). Early diagnosis and appropriate, timely treatment is essential.

ASSESSMENT

Perform standard health history and physical exam with probing questions about plausible geographic exposure to ticks. The diagnosis of Lyme disease and most other tickborne diseases relies primarily on recognition of a consistent clinical illness in people who have likely been exposed to ticks.

The following signs and symptoms of Lyme disease and RMSF are often non-specific and can mimic other illnesses.

- Chills
- Fatigue
- Fever
- Headache
- Muscle and joint aches
- Swollen lymph nodes

Additional signs and symptoms consistent with Lyme disease include:

- Arthritis
- Isolated facial palsy
- Single or multiple lesions consistent with erythema migrans, the classic "bulls-eye" rash associated with Lyme disease

Additional signs and symptoms consistent with RMSF include:

- Lack of appetite
- Nausea
- Rash (common but may not appear in early stages of disease)
- Stomach pain
- Vomiting

HISTORY AND PHYSICAL EXAM RED FLAGS

- For Lyme disease, red flags include signs and symptoms of meningitis, e.g. altered mental status, arthritis, or carditis, which usually manifests as atrioventricular heart block.
- For RMSF, red flags include later signs and symptoms like petechial rash, multi-organ failure, septic shock, meningoencephalitis, necrosis of digits or limbs, severe thrombocytopenia, and hyponatremia.

MANAGEMENT

If concerns for Lyme disease and no signs of meningitis are present, order lab testing and begin treatment (see reverse side for guidance). Do not delay treatment while awaiting laboratory confirmation or because of lack of history of tick bite. See referral guidance at left for other concerns.

The standard testing method for Lyme disease is a two-tier serologic algorithm. Clinical labs may refer to this as Lyme ELISA, Lyme antibody screen, total Lyme antibody or Lyme IgG/IgM. If first-tier result is negative, no further testing is needed. If positive, a second-tier confirmatory test is required. This is either a western immunoblot or an EIA test cleared by the FDA. For guidance refer to cdc.gov/mmwr/volumes/68/wr/mm6832a4.htm?s_cid=mm6832a4_w

If you would like additional copies of this tool, or would like more information, please contact the Physician Outreach and Engagement team at Cincinnati Children's.

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Patient Presents

Standard Workup

Perform standard health history and physical exam with probing questions about plausible geographic exposure to ticks. An interactive map showing Lyme disease cases is available at cdc.gov/lyme/datasurveillance/lyme-disease-maps.html.

Signs and symptoms for Lyme disease and RMSF include:

- Fever
- Chills
- Headache
- Fatigue
- Muscle and joint aches
- Swollen lymph nodes

Additional signs and symptoms consistent with Lyme disease include:

- Arthritis
- Isolated facial palsy
- Erythema migrans (single or multiple lesions)

Additional signs and symptoms consistent with RMSF disease include:

- Lack of appetite
- Nausea
- Rash (common but may not appear in early stages of disease)
- Stomach pain
- Vomiting

HISTORY AND PHYSICAL EXAM RED FLAGS

- For Lyme disease, red flags include signs and symptoms of meningitis, e.g. altered mental status, arthritis or carditis, which usually manifests as atrioventricular heart block.
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Signs and symptoms of Lyme disease-associated meningitis, arthritis or carditis?

- **Yes** → **Refer to emergency department**
- **NO signs and symptoms of Lyme disease:** → Continue assessment
- **NO, but signs and symptoms of Lyme disease:** → Order lab testing and begin treatment

Clinical concerns for RMSF?

- **Yes** → **Refer to emergency department**
- **No** → Continue assessment

Treatment For Lyme Disease

If erythema migrans (single or multiple lesions) at any age:
Doxycycline, 4.4 mg/kg per day, orally, divided into 2 doses (maximum 200 mg/day) for 10 days

OR: Amoxicillin, 50 mg/kg per day, orally, divided into 3 doses (maximum 1.5 g/day) for 14 days

OR: Cefuroxime, 30 mg/kg per day, orally, in 2 divided doses (maximum 1 g/day) for 14 days

OR for a patient unable to take a beta-lactam or doxycycline:
Azithromycin, 10 mg/kg/day, orally, once daily for 7 days

If isolated facial palsy:
Doxycycline, 4.4 mg/kg per day, orally, divided into 2 doses (maximum 200 mg/day), for 14 days

If arthritis:
An oral agent as for early localized disease, for 28 days

A single dose of prophylactic doxycycline is only recommended in areas that are highly endemic for Lyme disease (average Lyme disease incidence of >10 confirmed cases/100,000 for a period of 3 consecutive years). Because rates in Hamilton County are currently <2/100,000, prophylactic doxycycline is NOT recommended when tick bites occur in our area.

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