

Lyme Disease

Epidemiology

Source: Infected tick (deer tick)

Transmission

- Vector-borne transmission via tick bites
- NOT person-to-person
- Blood transfusion

Incubation
~ 11 days
(1-55 days)

Clinical case definition

Early Localized Stage:

- Red, expanding rash (erythema migrans) at site of tick bite. Begins as red macule or papule and increases in size. Rarely painful or pruritic. Sometimes "bull's-eye" appearance
- Fatigue, chills, headache, muscle ache, swollen lymph nodes

Early Disseminated Stage:

- Additional EM lesions
- Bell's or facial palsy
- Severe headaches/neck stiffness (meningitis)
- Swelling at large joints

Late Stage:

- Recurrent arthritis, esp. at large joints (knees)
- Possible CNS manifestations

Complications:

In children who do not receive antimicrobial therapy,
-50% develop arthritis
-10% develop central nervous disease
-<5% develop cardiac involvement

Epi Profile:

- Endemic in 3 U.S. regions:
 - Southern New England
 - Eastern mid-Atlantic states
 - Upper midwest
- LA does have Lyme disease but vectors are NOT very effective.
- Few confirmed cases reported every year

Diagnosis

Microbiology: The disease is caused by spirochete *Borrelia burgdorferi*.

Lab Diagnosis

- **Culture:** It is possible to culture biopsy specimen from the perimeter of a skin lesion, but it is difficult and requires special media.
- **Serology:** Early disseminated stage and late stage can be serologically diagnosed using a two-step approach
 - Screening test for antibodies using sensitive enzyme immunoassay (EIA) or immunofluorescent antibody assay (IFA)
 - Positive results should be tested by standardized Western immunoblot for presence of antibodies
- **Two-step testing is necessary because EIA or IFA may yield false positive results.**

Probable:

Clinically compatible case

Confirmed:

Clinically compatible case with known exposure
OR clinically compatible case that is laboratory confirmed

For early stages of Lyme Disease, diagnosis is best made by recognizing the characteristic rash, symptoms, and history of tick bite. Antibodies against *B. burgdorferi* are not detectable for weeks after infection in most individuals, so serologic tests will not be helpful in immediate diagnosis.

Treatment, Prophylaxis

Treatment

- **Early Localized Disease:**
 - **Doxycycline:** Patients >8 years old; 100 mg 2x per day for 14-21 days
 - **Amoxicillin:** Patients <8 years old; 50 mg/kg per day for 14-21 days
 - **Cefuroxime:** Patients <8 years old & allergic to penicillin; 30 mg/kg per day for 14-21 days
- **Early Disseminated & Late Disease:**
 - Treatment may vary depending on symptoms and severity
 - Typically, same oral regimen as for early localized disease but for 21-28 days

Chemoprophylaxis is NOT recommended for cases of tick bites that do not show clinical manifestations.

Standard Precautions

Patients with Lyme Disease should not donate blood.

Control

Prevention:

- In tick-infested areas, make sure to wear clothing that covers any exposed areas.
- Spray tick-repellant (DEET) onto skin; reapply often.
- Inspect yourself for ticks after possible exposure, giving special attention to head, neck, behind the ears, belt line, and axillae.

Report to OPH confirmed cases