

Tick-Borne Diseases

An Update on Diagnosis and Management

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Lyme Disease

- Leading vector-borne illness in the US
- Caused by *Borrelia burgdorferi*
- ~12,000 cases a year
- First described in 1975 by Alan Steere in a cluster of juvenile arthritis in Old Lyme, CT

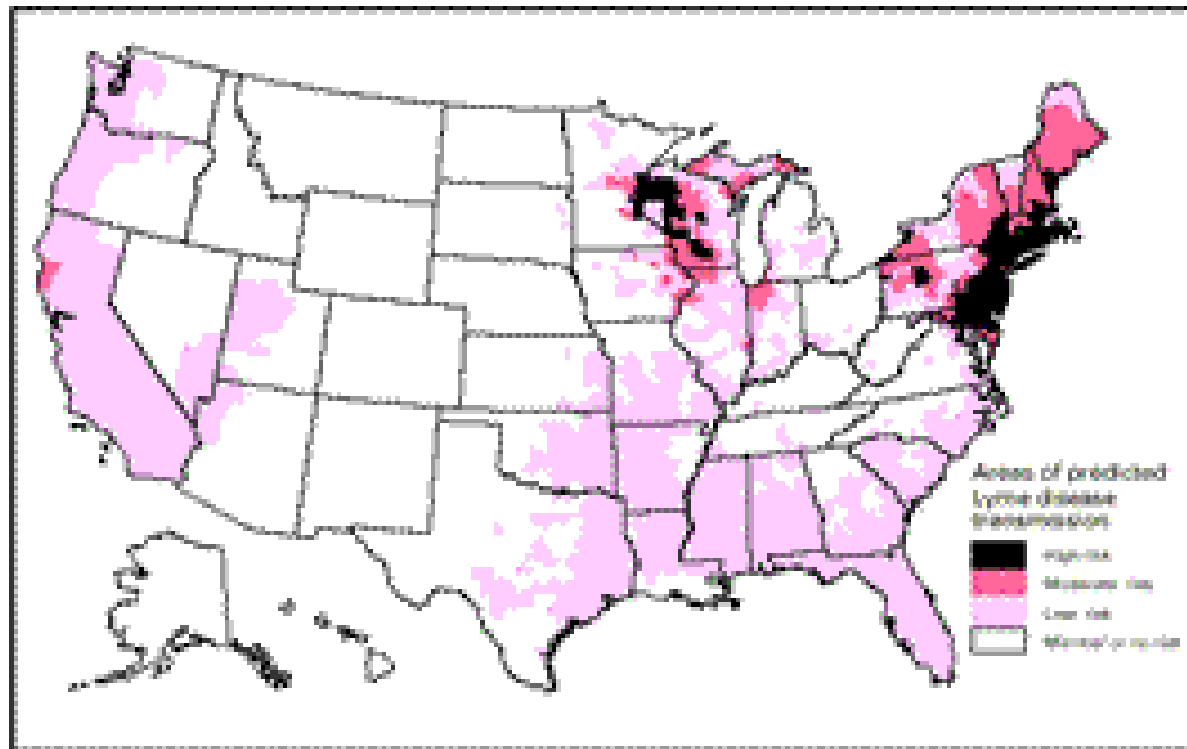


Lyme Disease

- Distribution heaviest New England, Middle Atlantic and Midwest
- Corresponds with distribution of *Ixodes* ticks
- Peak season-spring, summer
- Incubation period-3-30 days

Lyme Disease Risk

National Lyme disease risk map with four categories of risk



Note: This map demonstrates an approximate distribution of predicted Lyme disease risk in the United States. The true relative risk in any given county compared with other counties might differ from that shown here and might change from year to year. Risk categories are defined in the accompanying text. Information on risk distribution within states and counties is best obtained from state and local public health authorities.

Ixodes tick



Lyme Disease

- Fatality rate-very low, if ever
- Asymptomatic cases-common
- Chronic infection- controversial
- Target organ/cell-CNS, cardiac conductive system, synovial membranes
- Culture-not routinely available

Lyme Disease

- DIAGNOSIS
 - History and physical
 - Serology
 - ELISA
 - Western blot

Erythema migrans

- 60-70% have it
- >5cm diameter
- at site of bite
- may be multiple

Erythema migrans



Erythema migrans



Lyme Disease

- Therapy
 - prophylaxis not indicated
 - Doxycycline 100mg PO BID x 21-30 days
 - Alternatives
 - Amoxicillin 500mg PO BID x 21-30 days
 - Cefuroxime 500mg PO BID x 21-30 days

STARI

- Southern Tick-Associated Rash Illness
- Current case definition of Lyme disease requires only erythema migrans
- May overdiagnose Lyme in that EM from tick bites outside the Northeast, upper Midwest and northern California have not been shown to have *B. burgdorferi*

STARI

- Deer ticks in the South feed primarily on reptiles (generally incompetent reservoirs for *B. burgdorferi*)
- Many tick bites in the South are associated with *A. americanum*, which has been found to be a vector for *B. lonestari*-which may be the etiologic agent for STARI

STARI

- Study comparing STARI with Lyme
 - Peak EM earlier in the year
 - More likely to recall a tick bite (80 v 20%)
 - Bite to lesion shorter (6 v 10 days)
 - Less likely symptomatic (20 v 76%)
 - Less likely multiple EM lesions (5 v 27%)
 - EM lesions smaller (8 v 16 cm)
 - More likely central clearing (76 v 21%)

--Wormser GP et al, Clin ID 2005; 41:958-65

Amblyomma americanum

- Lone Star Tick



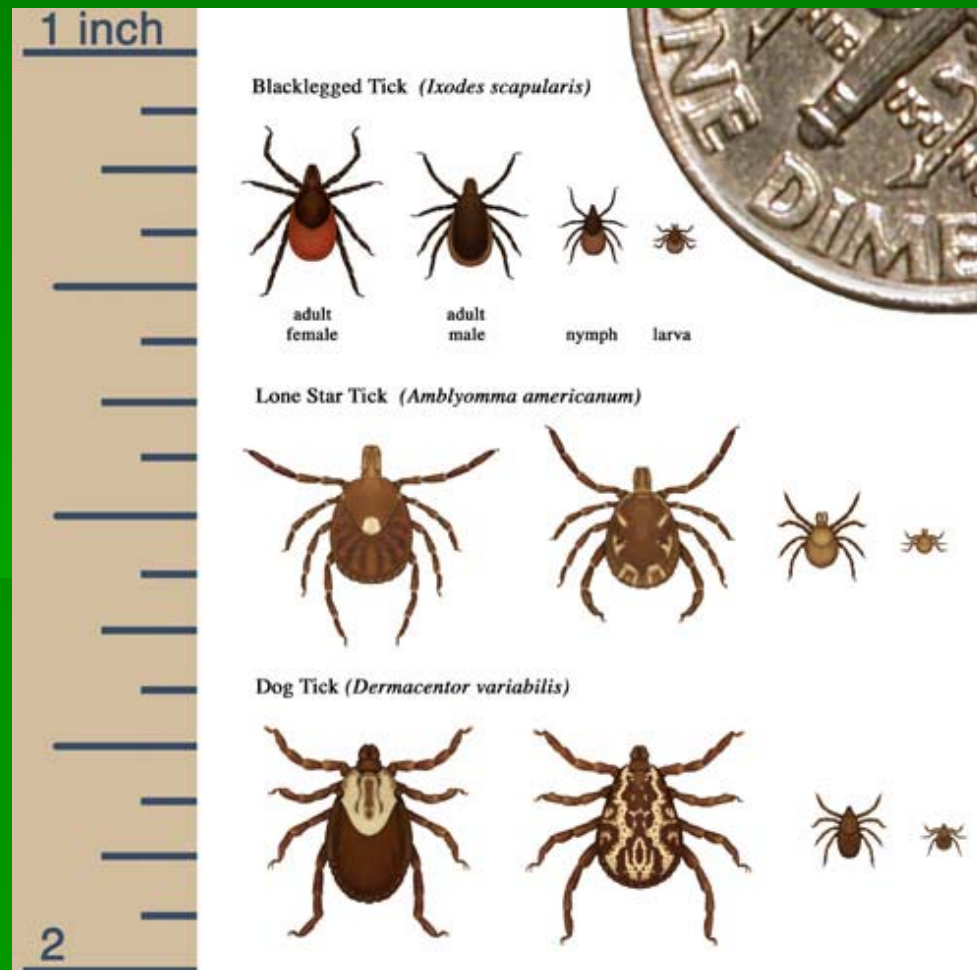
STARI

- Optimal treatment unknown
- Appears to respond to standard treatment for Lyme disease
- No reported chronic illness
- Unknown whether neurologic, arthritic, cardiac complications occur similar to Lyme

STARI

- CDC interested in obtaining samples from STARI patients under an institutional IRB-approved protocol.
- Patients with recent lone star tick bite and an expanding rash at least 5 cm in diameter are encouraged to contact CDC at:
 - **970-221-6400**
 - Must be at least 4 years old to participate.

Tick Comparison



Prevention of Tick-Borne Disease

- Tuck trouser legs into boots, shirt into trousers
- Wear light colored clothing
- Use insect repellent containing DEET
- Treat pants, socks, shoes with permethrin
- Inspect skin at least daily for ticks

Prevention of tick-borne disease



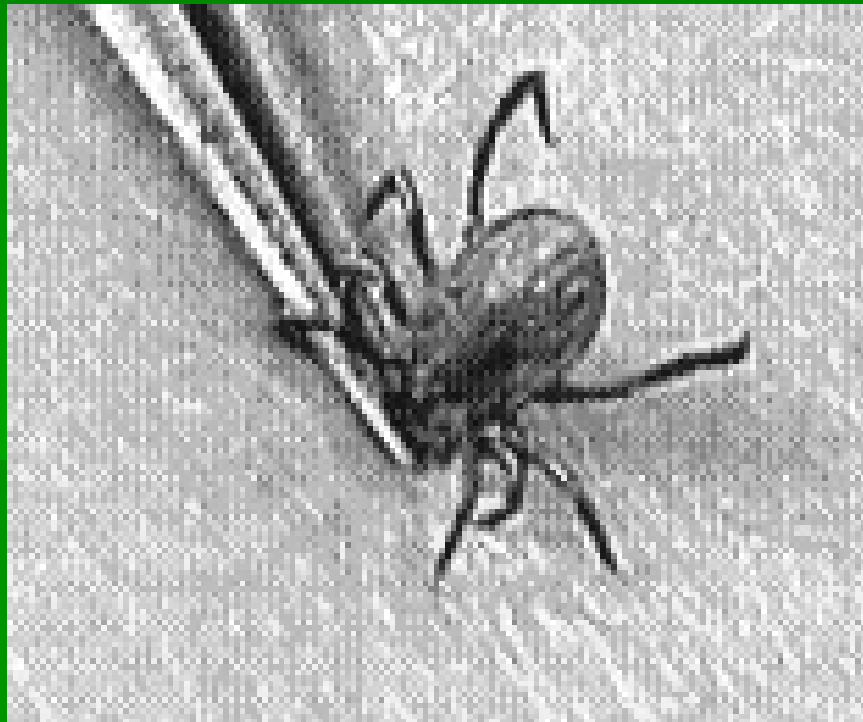
Tick Removal

- Grasp tick as close to skin as possible
- Avoid crushing body
- Disinfect area of bite with alcohol
- Document date of bite on calendar
- Monitor for symptoms for 30 days

Tick Mouthparts



Tick removal



Questions???

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