

GOT TICKS? GET INFORMATION!



Tickborne Disease Prevention in Schools and Communities

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Tick Borne Diseases 101

Lyme disease:

- *Borrelia burgdorferi* transmitted by blacklegged tick (*Ixodes scapularis*)
- Northeast and Upper Mid-west
- Non-specific “flu-like” early symptoms (chills, fever, muscle/joint aches, stiff neck, headache, swollen lymph nodes, etc.) and/ or presence of typical *erythema migrans* or atypical rash
- Diagnosed as acute, chronic or late

Babesiosis:

- Caused by malaria-like parasite (*Babesia microti*) from blacklegged tick (*Ixodes scapularis*)
- Northeast and Upper Midwest
- Symptoms can take 1-6 weeks to present: fatigue, myalgia, chills, high fever, headache

Anaplasmosis:

- *Anaplasma phagocytophilum* transmitted by blacklegged tick (*Ixodes scapularis*)
- Other names: Human Granulocytic Erlichiosis or Human Granulocytic Anaplasmosis
- Typical symptoms: fever, headache, chills, night sweats, myalgia

Borrelia Miyamotoi disease (BMD)

- Closely related to *Borrelia burgdorferi* bacteria
- Symptoms; fever, headache, myalgia
- CDC cites 3 cases of human infection in U.S.

Deer Tick Virus/Deer Tick Encephalitis

- Resembles Powassan virus
- Isolated in 1997 from deer ticks in MA and CT

Surveillance and Reporting

Lyme Disease in Massachusetts: A Report Issued by the Special Commission to Conduct an Investigation and Study of the Incidence and Impacts of Lyme Disease (Feb. 28, 2013)

- MDPH receives 2,000-4,000 Lyme + lab reports/year.
- Sufficient clinical info to classify only 2,000-4,000 confirmed and up to 1,000 probable
- MDPH estimates 5-10 fold under reporting for Lyme Disease

Surveillance and Reporting

- “Regions of particularly high incidence include Cape Cod and the Islands, as well as some areas in Norfolk, Middlesex, Essex and southern Berkshire counties.”
- “Incidence of tick borne disease (Lyme disease and co-infections) is on the rise, both numerically and geographically...MA ranks among the most highly endemic states, with evidence rates that placed it in second place in the nation in 2008.”
- CDC – true prevalence of Lyme disease underestimated by a factor of 10.
- Cost of Lyme disease in MA: millions of dollars lost in employee absences; hundreds of school children miss school; millions of dollars spent in medical care.

Tick Borne Diseases are PREVENTABLE!

Our challenge: *We know **how** to prevent these diseases; we need to get people to **do** prevention.*

Health Belief Model: emphasizes people must

- (1) believe they are susceptible to the disease;
- (2) believe the disease has potentially significant adverse consequences for their well-being;
- (3) believe that preventive behavior is effective;
- (4) believe they have the ability to engage in the preventive behaviors. (*Lyme Disease in Massachusetts, p. 30*)

Health Promotion Campaign Messages

1. Where they are at risk and likelihood of tick encounters.
2. Habitats and activity seasons of vector ticks.
3. Disease associations with different types of ticks.
4. How to conduct daily tick checks.
5. How to safely remove a tick.
6. How to most effectively repel ticks
7. How to effectively reduce tick encounter risk in the home environment
8. How to protect pets from ticks and how to prevent pets from carrying ticks to people
9. Role of wildlife in propagating ticks and disseminating disease agents
10. That a single tick can carry concurrently more than one disease

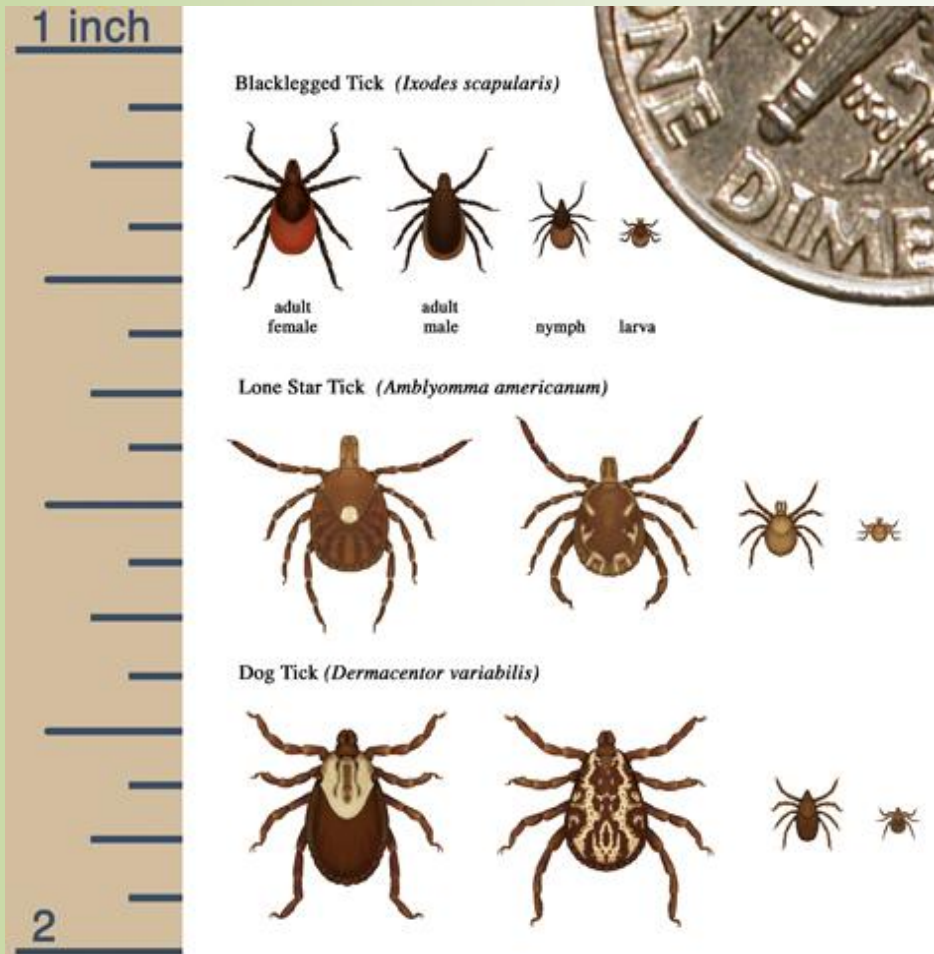
(Lyme Disease in Massachusetts, p.14)

Prevention Education in Schools and Communities

I. Knowledge about Tickborne Diseases:

- Tick information: appearance and life cycle
- Risky times to be bitten
- Risky activities
- Symptoms of diseases
- Diagnosis
- Treatment
- Personal advocacy with healthcare providers

Tick Appearance & Size Comparison



Engorged Deer Tick

Risk of infection *may* be high for partly or fully engorged tick:

- 30% for a nymphal tick
- 60% for an adult tick (though usually lower)

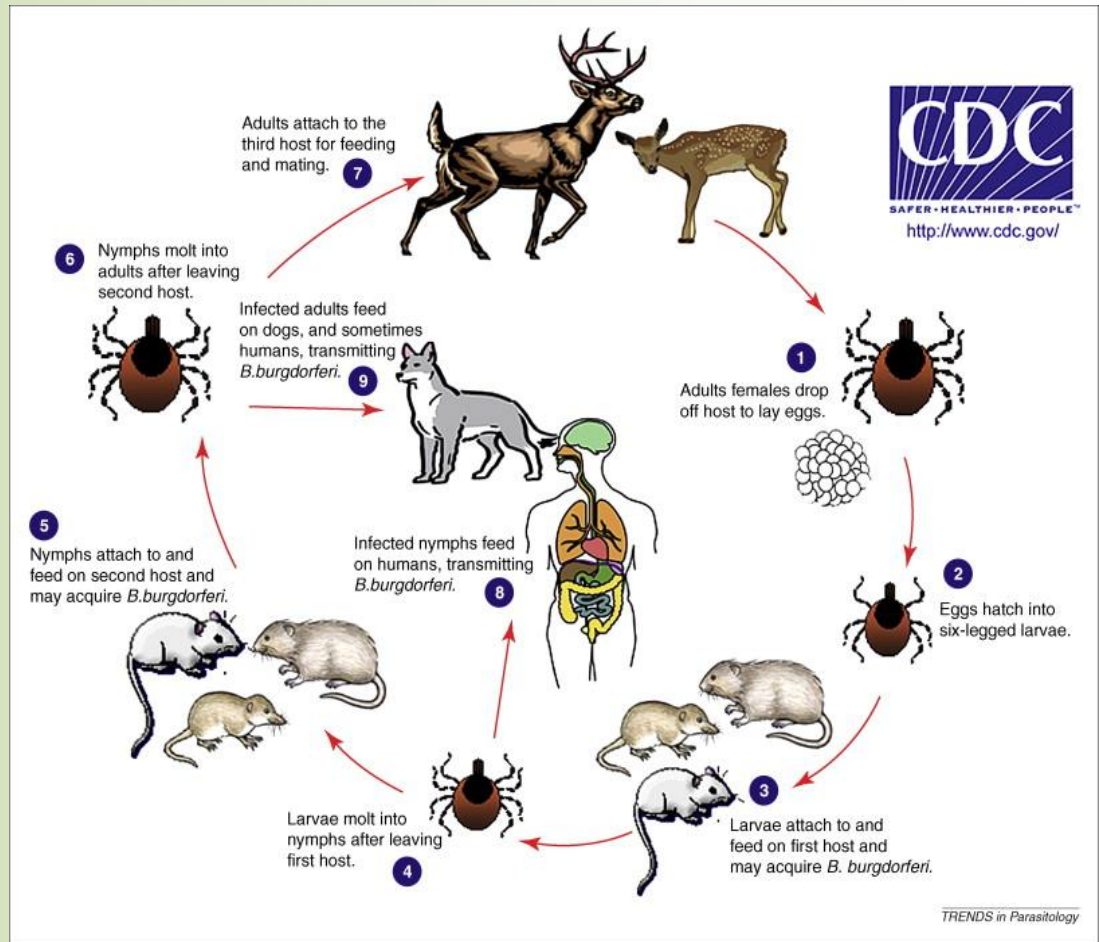
Infected tick + engorged tick =
Infection highly likely

(*Tick Management Handbook*, p.39)



Deer Tick Life Cycle

- 2 year life cycle
- 4 Stages:
 - Eggs
 - Larvae
 - Nymphs
 - Adults
- 2 blood meals required for adulthood



Risky Times and Activities

Risky Times:

- Ticks active all year with right temperature (>32 degrees) and humidity (85% at level of vegetation)
- Nymph Feeding Stage: May – July
- Adult ticks most active during spring and fall

Avoid:

- Wooded, bushy, moist, and grassy areas
- Off trail walking
- Shaded areas
- Leaf litter
- Sitting on stone walls or logs near high grass or weeds

II. Diagnosis and Treatment

Diagnosis:

Clinical:

- Evidence or report of tick bite \geq 36 hours
- Symptoms present
- *Erythema migrans* or atypical rash (may be present in 50-75 % of cases)

Laboratory: Can take several weeks to develop sufficient antibodies to be detected.
CDC recommends 2-step testing:

#1 - EIA (enzyme immunoassay) or IFA (indirect immunofluorescence assay)
– if negative, then no more tests. If positive or equivocal, do...

#2 – Western Blot test

Results are considered positive if EIA/IFA & W. blot are positive.

Diagnosis and Treatment

Treatment:

Lyme:

Adults and Children: Doxycycline x 14-21 days
Amoxicillin
Cefuroxime axetil

Anaplasmosis:

Adults and Children: Doxycycline x 5-7 days minimum

Babesiosis:

Adults: Atovaquone + Azithromycin x 7-10 days
Clindamycin + Quinine x 7-10 days

(CDC: Tickborne Diseases of the United States- A Reference Manual for health Care Providers, 2013)

Prophylaxis Treatment of Lyme Disease

Single dose 200 mg. **doxycycline** within 72 hrs for adults and children ≥ 8 yrs. of age (4 mg/kg up to 200); not 100% effective. Not recommended for children < 8 years old.

Conditions:

- Attached tick can be reliably identified as I. scapularis tick estimated to have been attached > 36 hours by degree of engorgement or certainty about time of exposure
- Prophylaxis can start within 72 hours of tick removal
- Rate of local infection with B. burgdorferi is $> 20\%$
- Doxycycline not contraindicated

Prophylaxis not recommended as a means to prevent anaplasmosis or babesiosis.

Erythema migrans



III. Personal Protection

- Minimize exposure to tick-infested areas
- Wear protective clothing
 - Light-colored; long-sleeved shirt, long pants
 - Tick repellent clothing
 - Tuck pants into socks
- Use repellents – best to do both
 - **Permethrin** on clothing
 - **DEET** (30-40% concentration) on skin; Might prevent tick attachment but not deter tick from walking to unexposed or untreated area; effective for one to several hours.
- Shower soon after outdoor activity; Clothes in hot dryer x 15 minutes
- Perform Tick Checks
- Safely remove ticks (Use tweezer for embedded; duct tape for clothes/skin)
- Treat and check pets

Tick Checks

Check daily:

Inside and behind ears

Along hairline

Back of neck

Armpits

Belly button

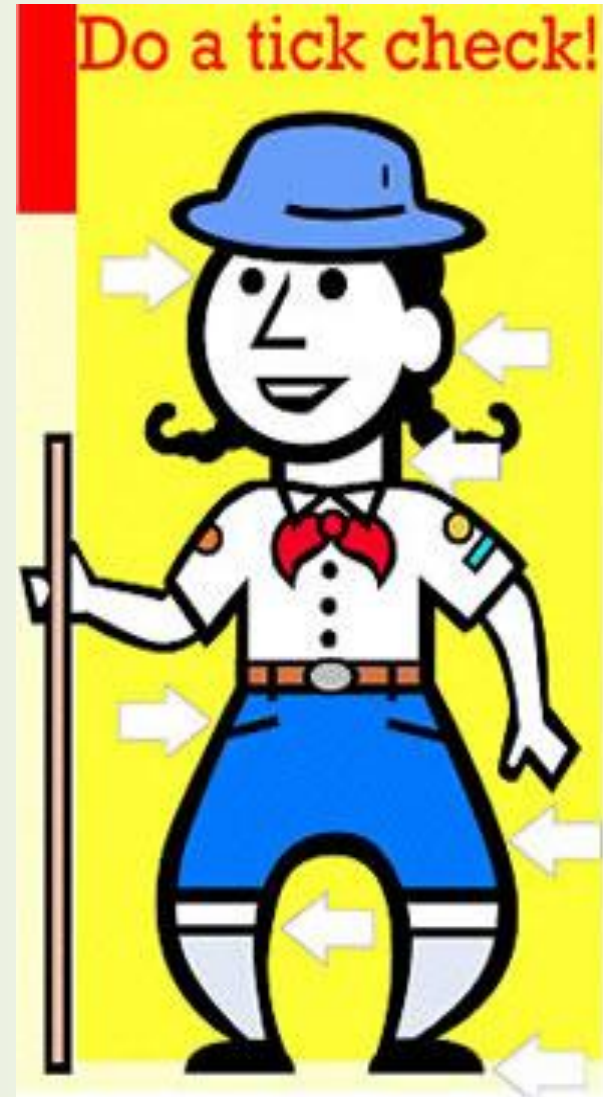
Groin

Legs

Behind knees

Between toes

Ticks are tiny –look for new freckles



Tick Check Shower Cards

(TickEncounter Resource Center)



Tick Removal



IV. Personal Property Protection

Landscaping a Tick Safe Zone



IV. Personal Property Protection

- Deer Deterring Plants
- Tick Tubes:
 - Distribute around property in July-August (larvae) and mid-April – June (nymphs)
- Area-wide chemical control:
 - Insecticide sprays most effective when combined with landscaping changes to decrease tick habitat
 - Spray once in May-early June for nymphs; October for adults

Health officials believe that over 75% of reported cases of Lyme Disease originated from a tick found on the person's property.

(Source: CT Dept. of Agriculture)

Targeting Schools

- State LD report cites schools as important sites for education
- Train new generation to protect themselves
- Key role of School Nurses
- Parent/Caregiver education: newsletter articles, brochures, tick cards
- Prevention Posters around school – “Tick Check” reminders
- Classroom/assembly presentations
- School Nurses remove tick and send home with student
- Field trip notices about personal protective measures
- Also --Preschool, Day Care centers, After school programs

Getting Students' Attention



Targeting Communities

- “Lyme Disease Awareness Month” activities
- Public Forums
- Resource materials in public places:
 - libraries, stores, town halls, senior centers, town meetings, town day celebrations/parades, elections, summer camps, doctors’ offices and clinics
- Public Media:
 - town websites, local newspapers, clubs’ newsletters, local cable TV, recreation department brochures
- Tick warning trail signs on trails and conservation lands
- Training for DPW and Conservation workers
- Local Town or Regional Tick Task Forces

**Thank you for your attention today
and
the good work you do in your communities
every day.**