

## TICKS AND LYME DISEASE

**Tick populations are exploding.** There's no place in Pennsylvania without deer ticks, also known as the blacklegged tick. The deer tick is a carrier of Lyme Disease, which can trans-mutate into other co-infections if not treated promptly.

Lyme Disease was first recognized in 1908 in Sweden and first identified in Lyme, Connecticut in 1975. The bacteria known as *Borrelia burgdorferi* are spiral shaped spirochetes that transmit Lyme disease.

Ticks are arachnids (class of arthropods), which include mites, spiders and scorpions. Two groups, hard-bodied and soft-bodied, are both capable of transmitting disease.

**For Lyme Disease to exist,** there appears to be a symbiotic relationship between:

- the Lyme Disease bacteria,
- ticks which can transmit them; and
- mammals to provide food for the ticks, such as deer and mice.

Ticks can be found in areas with very high or low temperatures with a constant high relative humidity.

Blacklegged (deer ticks) live in woody, brushy areas that provide food and cover for hosts such as mice and deer. Exposure to these ticks can be greatest along trails and edges of woods.

Tick eggs can be infected with pathogens inside the ovaries, making the new tick infectious upon birth, rather than becoming infected during the first blood meal by an infected host.

**Personal safety.** Perform frequent tick checks while in tick habitats and when at home! Use tick repellents if going into a tick habitat.

For Permethrin-containing products:

- Use on clothing only
- Insect repellent (DEET)
- Insecticide
- Follow directions carefully

For tick repellents containing DEET:

- 30 percent - 40 percent DEET content in a repellent is most effective for ticks
- Use on skin or clothing
- Target shoes and pant legs
- Not for children < 3 yrs.
- See guidelines for children

FOLLOW DIRECTIONS CAREFULLY for each product selected for use.

**Picaridin.** World Health Organization (WHO) 2000 recognized effectiveness of Picaridin as a repellent and in some tests, it proved more effective than DEET.

**Proper Tick Removal.** If you do find a tick embedded in your skin:

1. Use fine-point tweezers or tick removal tool
2. Grasp close to skin
3. Pull gently
4. Wash area with soap, water and antiseptic
  - Do not use gasoline or match
  - Do not use Vaseline

Never use products such as soap or finger nail polish to try and remove a tick - this will trigger injection of the salivary glands and disease causing microbes into your body.

**Other Hazards from Ticks.** Ticks may carry other pathogens, rickettsia, bacteria, viruses and protozoa resulting in the following diseases as examples:

- Rocky Mountain spotted fever
- Tularemia
- Colorado tick fever
- Crimean-Congo hemorrhagic fever
- Lyme Disease

**Lyme Rashes & Recognition.** The transmission of Lyme Disease may be recognized by the presence of various types of Lyme rashes on the skin. Lyme rashes present generally as:

- Typical "bull's eye" rash
- Several concentric circles
- Expands over time
- Raised or flat
- May be warm
- Can be painful, painless or itchy

However, the presence of a bull's eye rash may not be evident in some cases. Multiple rashes may be evident as the bacteria moves through the body; not caused by multiple tick bites.

**Symptoms.** Be aware of Lyme Bacteria symptoms:

- Extreme fatigue, often interfering with activities
- Headaches of all types
- Recurrent fevers, chills, night sweats

- Myalgias and arthralgias; either may be migratory
- Muscle fasciculations (twitching) and weakness
- Paresthesias and neuropathic pain syndromes
- Sleep disturbances
- Cranial nerve dysfunction

### **More Signs & Symptoms:**

- Neuropsychiatric problems: irritability, depression, anxiety, panic attacks, new onset ADHD, mood swings similar to bipolar disease, rage attacks, OCD (Obsessive-Compulsive Disorder)
- Cognitive losses: memory impairment, difficulty multi-tasking, slowed mental processing, speech and language problems, poor concentration, loss of math skills, impaired visual/spatial processing
- Children may have behavioral changes, declining school performance, headache, fatigue, forgetfulness, complex partial seizures, depression and be misdiagnosed with primary ADHD

### **Precautions**

- Less than 50 percent of patients with tick-borne disease even remember a tick bite.
- Of those who do remember a tick bite, only roughly half have an erythema migrans (EM) rash.
  - EM rashes are extremely variable - not being recognized by doctors or patients
  - Rashes are dismissed or misdiagnosed
  - Co-infections go undiagnosed and untreated
- "Watchful waiting" after any tick bite is not wise, seek medical help.

**Co-infections.** Co-infections are the rule, not the exception. As one physician stated: "*80 percent of my pediatric patients are co-infected*"

Co-infections are often best diagnosed clinically. Co-infected patients are:

- Sicker
- More likely to have failed prior treatment

Require longer treatment with multiple agents. The co-infection must be treated before the Lyme Disease can be treated.

### **Lyme Testing:**

One type of test that is often prescribed by the attending provider during the first step of diagnosis is the ELISA or IFA test  
(ELISA: Enzyme-Linked ImmunoSorbent Assay)

### **Second Type of Test:**

- The second type of test and the one many feel is the most preferred uses an immunoblot (this is the Western blot or striped blot test)
- Sometimes two types of Western blot are performed: "IgM" and "IgG"
- Patients who test positive by IgM but not IgG should have the test repeated a few weeks later if they remain ill

**Treatment.** Once the disease has been identified, treatment may include:

- Antibiotics such as:
  - Doxycycline
  - Amoxicillin
  - Ceftin

Usually treated for 4-6 weeks

**Testing Ticks:**

- Some state or local health departments offer tick identification and testing
- Check your local jurisdiction for such a service

**Summary for Safety.** By implementing precautions against exposure to ticks, you can maximize your safety. Remember:

- Be aware of your surroundings
- Limit time in tick-infested areas
- Use proper protection:
  - Clothing
  - Sprays
- Check for their presence after leaving area
- If found, remove properly and seek medical advice

