

What every bluebirder needs to know ...

LYME FACTS

By Susan Renkel, RN

Pennsylvania had 5,730 cases in 2003, representing 27 percent of the national total, according to the Centers for Disease Control. The number of cases in the state increased 44 percent from 2002 to 2003. Emily Cramer, CDC spokeswoman.

- ◆ Lyme disease is now the leading cause of vector-borne infectious illness in the U.S. **It is preventable, treatable, and curable if diagnosed early.**
- ◆ Although Lyme disease cases have been reported in 49 states, 95% of reported cases are from **Connecticut, Delaware, Maine, Maryland, Massachusetts, Minnesota, New Jersey, New Hampshire, New York, Pennsylvania, Rhode Island and Wisconsin.** If you're in those states, be extra careful.
- ◆ **Highest incidence of Lyme in PA: Berks, Bucks, Cameron, Chester, Elk, Lehigh, Montgomery, Northampton, Pike and York counties.**
- ◆ Lyme disease is transmitted by the bite of a tick that is infected with a spirochete called *Borrelia burgdorferi* (boar-ELL-ee-uh burg-dorf-ERR-eye). Ticks get the spirochete from infected hosts, especially the white-footed mouse, a common inhabitant of nestboxes.
- ◆ According to the CDC, Pennsylvania had 5,730 cases of reported Lyme in 2003. Compare that with West Nile Virus - 15 cases but there were also 3 deaths.
- ◆ Adults ages 50 - 59 and children 5 - 9 years have the highest incidence of LD. They are the most likely to spend time engaging in high risk activity, sometimes in high risk areas.
- ◆ **Monitoring nestboxes, especially in highly endemic areas, is a very high-risk activity but you can minimize your risks by combining several prevention techniques and making them part of EVERY nestbox check.**
- ◆ Lyme disease is highly endemic in some urban areas because humans break up forests and grass lands into fragmented parcels. White-footed mice thrive in these fragmented parcels, especially in areas of 5 acres or less. In one study, 80% of the deer tick nymphs collected and tested, were infected by the spirochete.
- ◆ It usually takes ticks a couple of hours to find a biting spot. Research indicates transmission is highly unlikely if the tick has been attached for 24 hours or less.
- ◆ Disease incubation period: 3-30 days, typically 7-14.
- ◆ **EARLY Lyme disease is preventable, treatable and curable in most cases through the use of oral antibiotics prescribed by your physician. (see "Early Symptoms" next page) If you even remotely suspect you have Lyme please don't put off going to the doctor and let them know what your risk factors are too! (see "Know Your Risks & Prevention")**
- ◆ **Only YOU can prevent Lyme but sometimes you may need to involve your doctor too!**
- ◆ **The longer it takes someone who has Lyme disease to seek diagnosis or treatment, the harder it is to be properly diagnosed and treated.**
- ◆ **DIAGNOSIS** is made by considering risk factors and known exposure, objective physical findings (such as the EM rash), symptoms. Frequently it is also a matter of ruling out other conditions such as Lupus, Fibromyalgia, Chronic Fatigue Syndrome, Multiple Sclerosis, Rheumatoid Arthritis and / or the signs of aging.
- ◆ **20-40% of infected people never get the "bulls-eye" / EM rash yet it is the best objective diagnostic feature.** The rash may vary greatly in both size and appearance. Often it looks like a bull's eye - light in the center, surrounded by red. EM stands for erythema migrans, the medical name for the rash. **(also read Blood Tests & Controversies)**
- ◆ **TREATMENT** consists of oral antibiotics such as amoxicillin, doxycycline, cefuroxime axetil, erythromycin, ceftriaxone or penicillin is used. Treatment in later stages may include I.V. & oral antibiotics. NSAIDs (Nonsteroidal anti-inflammatory drugs) are used for relief of symptoms such as muscle and joint pains.
- ◆ Having Secondary or Chronic Lyme disease can be extremely debilitating and financially draining, especially if you are one of the 45.8 million without health coverage. Even with insurance, costs are high - that's if your insurer doesn't drop you. Read more about this by reading: [Lyme Disease Impact of the CDC Surveillance Criteria on Patients](http://www.townsendletter.com/June2004/newyork0604.htm) <<http://www.townsendletter.com/June2004/newyork0604.htm>> More good information and support can be found through Lyme Net and also check out the links: <http://www.lymenet.org/>
- ◆ There is no available vaccine for humans. There is one for dogs but there is concern about side effects. It's extremely hard to find the tiny deer tick amid furry animals so using continual tick repelling agents on animals is a good idea. The incidence of Lyme in dogs is approx. 6 - 100 times higher than in humans. Pets can bring ticks indoors, the tick falls off, hides out waiting for a new host to complete its life cycle.
- ◆ **Lyme disease, its diagnosis and treatment, is one of the most controversial diseases I've come across - politically, ethically, legally, and medically speaking.**

Symptoms of Lyme Disease

EARLY Symptoms of Lyme Disease

Fever / Chills Headache Lethargy / Malaise
Muscle Pains & Aches Joint Aches EM Rash
Swollen Glands (near rash or all over body)

- Approximately 50% of cases will get some of these symptoms. and 30 - 80% (depending on sources) of people get the EM rash.
- Early symptoms usually occur within 3 - 6 weeks after being bitten and usually resolve in 3 - 4 weeks even without treatment but may show up again later.
- With treatment, all signs and symptoms should resolve completely. Without treatment, the disease progresses to the next stage.

Secondary Lyme Disease or Stage 2

- Symptoms develop within days to months after the tick bite, when the infection spreads via the lymph system or bloodstream to various areas of the body.
- The central nervous system and cardiac system may become affected.
- Symptoms may be intermittent and last for days, weeks, or months, disappear, and then reappear later as Chronic Lyme Disease. (See list of symptoms below)

Chronic / Tertiary / Stage 3

Occurs months to years after the initial infection if the disease remains untreated, or has been unsuccessfully treated. Various symptoms (as above) can come and go. A person doesn't have to have ALL these symptoms, indeed it would be rare if they did. (See list of symptoms below)

Headache
Fatigue
General Weakness
Lethargy
Muscle Pain or Weakness
Stiff Neck
Joint Pain / Inflammation

Fainting
Palpitations
Irregular Heart Beat
Itchy Skin
Rashes / typical or atypical
Sleep Disturbances
Memory Loss

Confusion
Difficulty Concentrating / "Mental Fog"
Behavioral or Emotional Changes
Visual Changes
Droopy Eyelid
Bell's Palsy
Numbness / Tingling of Extremities
Visual Changes: Blurred vision, increased floaters or sensitivity to light

Malaise: General discomfort, uneasiness, or ill feeling

SOURCES FOR ABOVE INFORMATION:

Medline / NIH site: <http://www.nlm.nih.gov/medlineplus/ency/article/000670.htm>

Univ. of Maryland Medical Center: http://www.umm.edu/patiented/articles/what_symptoms_of_lyme_disease_000016_2.htm

TESTING AND CONTROVERSIES

In a nut shell, the FDA and the CDC, do not recommend current available blood test results (testing positive or negative for Lyme) to be used in making a definitive diagnosis of Lyme disease. *"Physicians are advised to base diagnosis on history (including symptoms and exposure to the tick vector), physical findings and other laboratory data (biopsy and culture) other than blood tests."* (FDA Public Health Advisory, 7/97) <http://www.fda.gov/cdrh/lyme.html>

That sounds pretty clear doesn't it? But things get a bit cloudy if you look into what the CDC defines as a "reportable surveillance case". Read "What is a Surveillance Case Definition" at: http://www.cdc.gov/ncidod/dvbid/lyme/ld_statistics.htm

CDC counts only Lyme disease cases in their statistics if laboratory data comes up positive *and* your physician can see *objective* signs of the disease. Confused? You're not alone! And it is no wonder that many experts (including the CDC) believe that Lyme disease is vastly underreported! **Get more info at:** http://www.cdc.gov/epo/dphsi/casedef/lyme_disease_current.htm

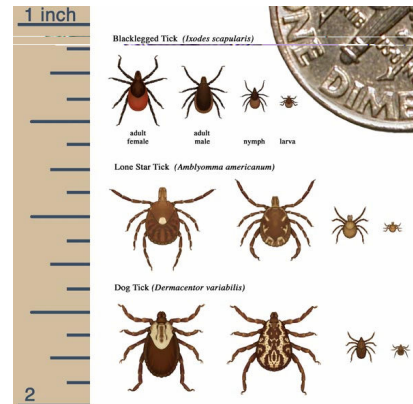
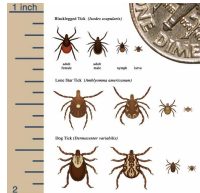
If your physician uses blood tests to "support" a diagnosis, the tests should be performed using a two tier method. An ELISA or IFA should be done first, followed by a Western Blot. Medical authorities agree that these tests should be done at least 4 - 6 weeks after the suspected exposure or bite. Tested too early - your body has not had a chance to build up the antibodies and 'markers' that these tests measure. Certain medications and diseases can also effect the results of the tests. The National Institute on Health is focusing on research and development of more reliable tests but it may take several more years. Many Lyme experts voice concerns that some people (approximately 30%) never develop detectable levels of antibodies (they are sero-negative) and yet these people may be some of the sickest- those with second or third stage Lyme disease. This is a hotly debated issue.

I have tried to present a general, overview of Lyme disease for educational purposes so you may determine your risks - not to give you medical advice. Susan Renkel

Ticks, What *Are* They?

Ticks are Arachnids, not insects and they are in the class of Arthropods, same as mites, spiders and scorpions. They are parasites that feed by latching on to an animal host and sucking its blood. Ticks are responsible for at least 9 different known diseases in humans in the U.S., including Rocky Mountain spotted fever, babesiosis, and more recently, ehrlichiosis. Ticks can be "co-infected" with more than one of these diseases and frequently are. Co-infection is a nice way of saying *you can get 2 or more diseases for the price of one.*

Illustration on right is to scale.



From left to right: adult female, male, nymph, larva
Row 1. Deer Tick (*Ixodes scapularis*)
Row 2. Lone Star Tick (*Amblyomma americanum*)
Row 3. Dog Tick (*Dermacentor variabilis*)

At present, Lyme disease is thought to only be transmitted by the eastern black-legged "deer" tick (*Ixodes scapularis*) and the western black-legged tick (*Ixodes pacificus*). But according to the Michigan Dept. of Health, "*other species of ticks such as the wood, dog, rabbit and lone-star ticks, as well as biting insects such as mites, mosquitoes, deer flies and horse flies have been shown to carry the Lyme disease bacterium so more research is needed.*"

The 2 Year Life Cycle of Deer Ticks

Eggs: In Spring, about 3,000 of them, are laid amid leaf litter, decaying stump bases, cracks and crevices by the female tick.

Larvae: Hatch from the eggs during the summer months, peaking in August. Their size; the period at the end of this sentence. They are born semi-transparent and apparently free from the spirochete that causes Lyme disease. After they hatch, they need a blood meal to progress to the next life stage, the nymph. Larva do not become infected until they take their first blood meal from an infected host. Their favorite host is the white footed mouse. Birds that come to the ground to feed are also "popular meals" although a rabbit, cat, dog, squirrel or chipmunk will also do. If the hosts were not carrying the spirochete, the larva is still free from the spirochete too. If these hosts carry the spirochete the larva is most likely to become an infected vector. After feasting, they drop off the host and molt into nymphs in the fall.

Nymphs: Usually remain inactive throughout winter and early spring however temperatures above 40 degrees F. can cause activity. Mid to late May, nymphs begin their quest for a host, waiting on blades of grass, leaves, weed tips and low lying branches. They have their little "hooks" held out in waiting. They latch onto anything that brushes up against the vegetation. (They do not jump).

Their peak activity: Late May through July.

Hey, that's peak bluebird season, isn't it?

Nymphs are the size of a small sesame seed. They latch onto a host and feed for 4 to 5 days, engorging (or should I say gorging?) with blood and swelling to many times their original size. Unfortunately, this is when we're most likely to see them. Chances are you won't feel the nymph that bites you. They secrete a numbing agent when they bite *and* an anticoagulant. Yuck! Nymphs prefer small mammals and birds, but humans and pets are suitable substitutes. **Nymphs are responsible for the majority of human Lyme cases.** In extremely endemic areas, 50% - 80% of the nymphs have been found to carry the Lyme disease spirochete. Scientists that study these things collect ticks by various methods. One of the places they look for ticks to collect are nesting sites of borrowing or nestbox / cavity using birds. These nests make a great spot for the nymph to hide out and molt into an adult tick. They also hang out on vegetation that is up to 3 ft. tall as well as leaf litter, cracks and crevices in stones / walls, and other "quiet" places waiting for another blood meal.

Adults: Actively seek hosts throughout the fall. If they don't find a host and temps are below 40 degrees, they rest until late February but wake up hungry. They need another blood meal in order to mate and reproduce. Adults can mate on or off their host. Their preferred hosts are deer but any bird, mammal, man, women or child will do! Females *must* have a blood meal in order to mate and lay eggs before she dies. Eggs hatch in summer and so the cycle begins again.

PREVENTION & CONTROL

Minimizing Your Risks

Protect yourself! Use a combination of precautions to reduce your chances of getting Lyme & make them a part of your daily routine when spending time outdoors, especially during peak times of nymphal and adult activity.

- ◆ Learn what the black legged tick looks like in all stages of growth and how to differentiate them from other ticks.
- ◆ Wear enclosed shoes and light-colored clothing with a tight weave to spot ticks more readily.
- ◆ Scan clothes and any exposed skin FREQUENTLY throughout the duration of your outdoor activities.
- ◆ Stay on cleared, well-traveled trails when possible and avoid handling nestbox materials, brushing up against vegetation that might have a tick in waiting.
- ◆ Check your hands, arms, and under your fingernails for ticks after EACH nestbox check. Don't wait!
- ◆ Use insect repellants proven to repel ticks. DEET (Diethyl-meta-toluidide) on skin and/or clothing if you plan to go off-trail, work in the garden, monitor your nestboxes or travel into overgrown areas. A concentration of 10 - 30% is recommended by most authorities. If outdoors for long periods of time, be sure to re-apply DEET using the manufacturer recommendations. Some need applied at regular intervals. Some last for up to 8 hours. Never apply DEET products to a child's face or hands.
- ◆ Permethrin can be applied to clothing and kills ticks that come in contact with it for up to two weeks. Permethrin should NEVER be used on skin.
- ◆ Avoid sitting directly on the ground or on stone walls (havens for ticks and their hosts).
- ◆ Keep long hair tied back and/or under wraps.
- ◆ If you tuck long pants into socks and shirts into pants, be aware that ticks contacting your clothing will climb upward searching for exposed skin. This means they may climb to areas such as your head and neck where they will be next to impossible to find and difficult to get rid of, even with shampooing.
- ◆ A shower and shampoo may help dislodge crawling ticks, but is only somewhat effective. Inspect yourself and your children carefully after a shower. Keep in mind that nymphal deer ticks are the size of poppy seeds; adult deer ticks are the size of sesame seeds.
- ◆ After showering, do a final daily inspection paying close attention to skin folds, groin, belly-button, neck, hairline and underarms.

Always Remember...

Within the endemic range of *B. burgdorferi* (that nasty Lyme causing spirochete), no natural, vegetated area OR the nest inside a nestbox, should be considered completely free of infected ticks.

Did You Find A Tick? Don't Panic!

Remove a tick by grasping it as close to the skin as possible with a good pair of tweezers. Use a slow, steady pull. This can take up to 30 seconds. Do not twist. Avoid squeezing the tick itself, this can cause it to regurgitate and release more infectious spirochetes. Wash the area with soap and water or antiseptic.

After removal, place the tick in an air-tight container for safe keeping. Wash the bite with soap, water and antiseptic. Contact your health care provider as soon as possible so you can decide on a course of action. Let them also know you have the tick and ask if it should be preserved in some other way in case they want to see it or send it away for evaluation and/or identification.

Special Editors Note

I have done the absolute best that I could to provide you with the most factual, up-to-date information on this topic after several months of research. Sources I have used: Center for Disease Control, National Institutes of Health, various medical journals, the PA and other State Health Departments, Lyme Disease Foundation, The Lyme Disease Network, and various state and county extension resources. There are discrepancies among the best of them. Parts of "Lyme Facts" & Prevention & Control came from Elizabeth Zimmerman and the wonderful website she maintains. <http://www.sialis.org/>

PLEASE: IF YOU SUSPECT LYME, PLEASE SEE YOUR MEDICAL / HEALTH PRACTITIONER!