



LYME DISEASE and RELATED INFORMATION

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NOTE 1 : According to the Centers for Disease Control and Prevention, Lyme Disease bacteria are transmitted to humans by the bite of infected ticks and cause more than 16,000 infections in the U.S. each year. If untreated, the infection can progress to arthritis, neurological problems, and heart disease.

NOTE 2: Endnotes are at end of handout.

1. Signs - symptoms.

- a. Great imitator of other diseases.
- b. Some symptoms may not show up for years after the bite.
- c. Initial stage.
 - (1) Skin lesion or rash, not all patients have, 60-80 % of patients do have.
 - (a) Begins as small red, raised area, expands in size, sometimes reaching 20-inches or more in diameter (round or oblong).
 - (b) May develop clear center, "bull's eye" look, and may be raised or warm to the touch.
 - (c) May be single or multiple lesions.
 - (2) Rash often accompanied by flu-like symptoms including: headache, fever, malaise, muscle aches (myalgia), joint aches (arthaigia), swollen lymph nodes, and stiff neck.
 - (3) Normally appears in 3 to 14-days, up to 30-days.
 - (4) Eventually these symptoms may vanish on their own, deceiving you into thinking you are no longer ill.
- d. Later:
 - (1) Within several weeks to several months or years various neurological (nervous system) and / or heart problems, irregular heartbeat, dizziness, weakness, stiffness, irritability, coordination problems, sleep and concentration problems. Again these symptoms may disappear and reappear without notice.
 - (2) Recurrent attacks of joint swelling and pain, chronic or erratic, effects knees, wrists, shoulders (sometimes followed by chronic arthritis) and / or more severe or chronic neurological problems.
 - (3) Chronic facial paralysis, memory loss or inflammation of brain and spinal cord membranes may also occur.

2. Diagnosis.

- a. Blood tests may aid in diagnosis, but are notoriously unreliable. "Diagnosis should be based primarily on the symptoms experienced by the patient and on the doctor's examination of the patient."
- b. Diagnosis most easily made in early stage of illness. Diagnosis in later stages is more difficult because of time delays between bite and onset of symptoms.
- c. Symptoms may be confused with other diseases, lupus, Guillian-Barr disease, Alzheimer's disease, rheumatoid arthritis, multiple sclerosis, etc.
- d. Only about 1/2 of patients recall tick bite.

- e. Information about routine exposure to tick infested areas (par ex: hiking), travel history, results of blood testing may be useful in making diagnosis of later stage Lyme disease.

3. Treatment.

- a. Treatable. Rarely, if ever, fatal.
- b. Early on with antibiotics like doxycycline, amoxicillin for 3-4 weeks. Other medicines are available to those allergic to penicillin or who cannot take tetracyclines. Later treatment may use other medicines depending on disease severity. In later disease, treatment failures may occur and retreatment may be necessary. Persons may have Lyme disease more than once after re-exposure to infective ticks.
 - c. Best results when treatment given during early stage of disease, nearly 100 %.

4. Blood tests.

- a. Results of blood tests during first stage often negative. It may take up to 8-weeks for there to be sufficient antibodies to turn test positive.
- b. "Treatment should not be withheld while waiting for results of blood test."
 - (1) Second problem with blood tests - antibody production may be reduced or eliminated if patient given correct antibiotic therapy.
 - (2) Usefulness of blood tests currently limited in many instances.
 - (3) Unreliable in first stages of Lyme disease.

5. Carrier.

- a. In N.J. occasionally carried by Star Tick. Lone Star Tick a carrier in N.C. and in SE USA . Lone Star Tick here carries a Lyme-like disease .
- b. American Dog Tick, sometimes called Wood Tick, not known to be involved in Lyme disease transmission.
- c. Deer Tick (ixodes dammini).
 - (1) Adult is size of a sesame seed; nymphs the size of a period on a printed page, or a pinhead.
 - (a) Female dark brown to black, distinctive red abdomen.
 - (b) Male smaller, uniformly dark brown to black.
 - (c) Nymphs, active between May and Aug responsible for most cases.
 - (2) All life stages of ticks will bite people (larvae, nymphs, adult tick). Nymph most commonly infects people.
 - (3) Most bites by immature Deer Tick, size of poppy seed.
 - (4) Seasons different according to different information sources, par ex:
 - (a) Peak time of exposure late spring to fall.
 - (b) Peak incidence spring and summer.
 - (c) Months to watch May - Oct.

(d) Has happened every month of the year; peaks Apr-Oct; all year except when below freezing.

6. Where found.

- a. Wooded areas with dense layer of shrub vegetation; moist, shaded environment; especially areas with leaf litter and low lying vegetation in wooded, brushy overgrown grassy habitat.
- b. Some older fields with woody vegetation.
- c. Larvae and nymphs normally found in leaf litter.
- d. Adults climb on shrub layer vegetation when seeking hosts.
- e. Virginia 1990 to 1999 = 1003 cases. In 1999 Nelson and Amherst Counties = 0 cases. In 1998 Virginia 1.16 cases per 100,000 people. Nationwide = 16,000 cases/year.
- f. Most cases in northeastern, mid-Atlantic, and north central states.

7. Prevention.

- a. Best way - avoid tick infested areas.
- b. Walk in trail center away from brush.
- c. Light colored clothing, easier to see ticks on light background.
- d. Tuck pant legs into socks or boots and/or seal with tape, forces ticks onto pants where they can be seen (blouse boots like military folk do).
- e. Wear long-sleeved shirts, buttoned at cuff.
- f. Those who wear sandals and shorts at greatest risk. Ticks generally located close to ground so high rubber boots may provide additional protection.
- g. Self-examination, periodically when in woods, and when returning home, use buddy system in checking for ticks. After walking/swishing through an open, grassy meadow (tick heaven) do a tick check.
- h. When you get home, strip, place clothes immediately in the washing machine, do self-examination, especially armpits, groin, backs of legs, and shower and wash hair, do second self-examination. Remove ticks (see para 9 below) before they have a chance to feed.

(1) Ticks require many hours to insert mouth parts and begin feeding process.

(2) Ticks must remain attached for 8 to 12-hours (one source), 12 to 24-hours (another source) or 24-hours (another source) for Lyme disease organisms to transfer into the host. CDC now says "unlikely to occur before 36-hours of tick attachment." But an infected Dog Tick only needs to be attached for 4 to 6-hours to cause Rocky Mounted Spotted Fever. Therefore; you should make personal tick checks more than once a day !!!

i. Insect repellents:

(1) Read and follow directions, cautions, and warnings

very thoroughly.

(2) Repellents containing DEET (n,n-diethyl-m toluamide) applied to clothes and exposed skin (NOT under clothes) and permethrin (which kills ticks on contact) applied to clothes and footwear (**not** skin) will lessen risk of tick attachment. DEET can be used safely on children and adults, but should be applied according to Environmental Protective Agency (EPA) guidelines to reduce possibility of toxicity. Refer to www.epa.gov or to www.cdc.gov.

(3) Do NOT apply repellants near mouth, eyes, or ears, or over cuts, wounds, or irritated skin. Wash hands after applying. Do not spray anywhere on head. Do not apply to children's hands. Do not apply to forehead. Sweat will cause it to drip into your eyes.

(4) Wash off with soap and water as soon as possible. Moments after applying the repellent you may have to scratch your eyes, want to eat a snack, or take a wizz. You don't want the chemicals from the repellent in your eyes, in your mouth, in cuts and abrasions, or elsewhere either.

8. Removal.

a. Remove with tweezers (sharp ended or pointed). Ticks imbedded in skin should only be removed by depressing skin around tick with tweezer tips, grasping tick with fine-tipped tweezers as close to skin as possible and applying firm, steady backward pressure until tick dislodged. Touching tick with hands is unwise; if it's infected you can acquire infection through breaks in skin.

b. Do not jerk, twist or burn tick off as head may remain imbedded. But do not be alarmed. Bacteria that cause Lyme disease are contained in the tick's midgut or salivary glands.

c. Removing tick by poisoning tick with nail polish, gasoline, kerosene or turpentine may cause it to regurgitate infectious materials into the (your) skin.

d. After removal, infection may be avoided by washing area thoroughly and applying antiseptic such as peroxide, also disinfect hands and tweezers !!

e. Save removed ticks in jar of alcohol in case of need for identity check.

f. Smothering tick with Vaseline and burning with match worthless. Burning tick may release infectious fluid onto skin. Even if covered with petroleum jelly, tick may continue to feed for days.

9. For detailed information contact the CDC, state health department, or your LOCAL health department.

10. There was a vaccine for outdoors folks who are exposed to the possibilities of Lyme. It was a three-part series. But, as of 25 February 2002, the manufacturer announced that the LYMERix™ Lyme disease vaccine was no longer commercially available. Consult your doctor for advice on this area of prevention. There is a Lyme disease vaccine for dogs. Estimates are that 2.5 times as many dogs catch Lyme as humans. The vaccine is recommended for Tidewater area dogs. Please consult with your veterinarian *before* her or his services area needed. Dogs can also catch Rocky Mountain Spotted Fever from ticks, mine did in Suffolk, VA. There is no Rocky Mountain Spotted Fever dog vaccine.

11. Don't believe ticks are three season pests. On the 20th annual New Year's day hike in 2003 I had one on my hand, and one on my back. Also, on the 26th NY day hike in 2008 I had one on my shirt. Were these anniversary presents ?

12. Besides Lyme disease, various ticks can also carry: two forms of ehrlichiosis (Lone Star Tick, Deer Tick, Dog Tick); tularemia (Rabbit fever); Rocky Mountain Spotted Fever (Dog Tick)(can be fatal); babesiosis. See the CDC web site and go to

Health Topics A-Z.

13. Lyme disease bacteria are NOT transmitted person-to-person through touching, kissing, or sexual contact.

14. *See ENDNOTES below.*

ENDNOTES:

1. Lyme Disease in New Jersey, New Jersey Dept of Health Dec 90 #G1811
Midwest Arthritis Treatment Center, Columbia Hospital, Milwaukee WI card 1989
Suffolk News-Herald 28 May 1991 pg 1
Virginia Wildlife July 1990 p13
Health & You, Sentara Health System, Summer 1991
Wisconsin Pharmacal Co Inc, Jackson WI pamphlet Summer 1991
Daily Press 7 May 1992 pg D7-8
Footnotes, Backpacker Magazine, February 1992
2. *Rocky Mountain Spotted Fever, two forms of ehrlichiosis, tularemia, and babesiosis* are also available through ticks (paragraph # 12). Consult your doctor, the health department, the library, or the web sites in the next endnote, for appropriate information.
3. Centers for Disease Control and Prevention (CDC) www.cdc.gov and Virginia Department of Health <http://www.vdh.state.va.us> data downloaded July 2, 2003
4. Virginia-Pilot Commentary, Sunday, June 9, 2002.
5. Backpacker Magazine Apr 92 pg 12
6. ODU tick expert.
7. Health Hints, Trail Walker, pub of NY-NJ Trail conference, Oct-Nov 89
8. Any dictionary (for description tweezers / forceps).
9. Backpacker Magazine, Truth or Consequences, pg 16, Feb 95
10. Backpacker Magazine Feb 1991, Signposts pg 10