WHAT IS LYME DISEASE?

- A bacterial infection spread through the bite of the black legged tick

WHAT ARE COMMON SIGNS AND SYMPTOMS?

- Early localized Lyme disease (Stage 1) symptoms begin days or weeks after infection and are similar to the flu
  - Body-wide itching, chills, fever, general ill-feeling
  - Headache, lightheadedness or fainting
  - Muscle pain, stiff neck
  - There may be a rash in the shape of a “bull’s eye,” a flat or slightly raised red spot at the site of the tick bite with a clear area in the center
    - Image to the right illustrates the characteristic “bull’s eye” rash (erythema migrans) seen in approximately 80% of persons infected with Lyme disease
  - The spot can become quite large
- Symptoms of early disseminated Lyme disease (Stage 2) may occur weeks to months after the initial tick bite:
  - Paralysis or weakness in the face muscles
  - Muscle pain, pain or swelling in the knees and other large joints
  - Heart problems, such as skipped heartbeats (palpitations)
- Late disseminated Lyme disease (Stage 3) symptoms can occur months or years after the initial infection:
  - The most common are muscle and joint pain
  - Abnormal muscle movement
  - Muscle weakness
  - Numbness and tingling
  - Speech problems

WHAT CAUSES LYME DISEASE?

- Caused by bacteria called Borrelia burgdorferi (B. burgdorferi)
- The ticks pick up the bacteria when they bite mice or deer that are infected with Lyme disease
  - Image to the right illustrates the adult deer tick, Ixodes scapularis
- You get the disease if you are bitten by an infected tick

WHAT INCREASES MY RISK?

- Doing outside activities that increase tick exposure (for example, gardening, hunting, or hiking) in an area where Lyme disease is known to occur
  - Northeastern states, from Virginia to Maine
  - North-central states, mostly in Wisconsin and Minnesota
  - West Coast, particularly northern California
- Having a pet that may carry ticks home
- Walking in high grasses

WHAT ARE POSSIBLE COMPLICATIONS?

- Stage 3 (late disseminated) Lyme disease can cause long-term joint inflammation (Lyme arthritis) and heart rhythm problems
- Brain and nervous system problems are also possible such as:
• Decreased concentration
• Memory disorders
• Nerve damage
• Numbness
• Pain
• Paralysis of the face muscles
• Sleep disorders
• Vision problems

WHAT CAN I EXPECT?
• Often, a tick must be attached to your body for 24-36 hours to spread the bacteria to your blood
  • Blacklegged ticks can be so small that they are almost impossible to see
  • Many people with Lyme disease never even saw a tick on their body
• Most people who are bitten by a tick do not get Lyme disease
• Symptoms may come and go
• If diagnosed in the early stages, Lyme disease can be cured with antibiotics

HOW DO I REDUCE MY RISK?
• Avoid direct contact with ticks, especially during warmer months
• Avoid wooded, bushy areas, areas with high grasses and leaf litter
• Walk in the center of trails
• Check yourself, your children, your pets frequently during and after your walk or hike
• When walking or hiking in wooded or grassy areas, spray all exposed skin and your clothing with insect repellant
• You may also treat clothing, such as boots, pants, and socks, with a product that contains permethrin
  • It remains protective for several washings
• Ticks carrying the disease are very hard to see
  • After returning home, remove your clothes, thoroughly inspect all skin surface areas, especially your scalp
  • Shower soon to wash off any unseen ticks
WHAT GENERAL MEASURES SHOULD I TAKE?

- Anyone who has been bitten by a tick should be watched closely for at least a month
- Self care
  - Avoid direct contact with ticks, especially during warmer months
  - Avoid wooded, bushy areas, areas with high grasses and leaf litter
  - Walk in the center of trails
- Activity
  - Check yourself, your children, your pets frequently during and after your walk or hike
  - When walking or hiking in wooded or grassy areas, spray all exposed skin and your clothing with insect repellant
  - You may also treat clothing, such as boots, pants, and socks, with a product that contains permethrin
    - It remains protective for several washings
  - Ticks carrying the disease are very hard to see
    - After returning home, remove your clothes, thoroughly inspect all skin surface areas, especially your scalp
    - Shower soon to wash off any unseen ticks
- To learn more about your condition

WHAT ARE COMMON LABS AND TESTS?

- A blood test can be done to check for antibodies to the bacteria that cause Lyme disease
  - The most commonly used is Lyme ELISA test
  - Western blot test for Lyme Disease is done to confirm ELISA results
- Other tests (when the infection has become more widespread) include:
  - Electrocardiogram
  - Echocardiogram
  - Spinal tap (lumbar puncture) to examine spinal fluid
  - MRI of brain

WHAT ARE MY TREATMENT OPTIONS?

- A single dose of antibiotics only if all of the following is true:
  - You have a tick that can carry Lyme disease attached to their body (this usually means that the tick is identified)
  - The tick has been attached for at least 24 hours
  - You can begin taking the antibiotics within 72 hours of removing the tick
  - You are older than 8 years old and not pregnant or breastfeeding
- A 2-4-week course of antibiotics is used to treat diagnosed Lyme disease
  - The specific antibiotic used depends on the stage of the disease and the symptoms

WHAT MEDICATIONS MAY BE PRESCRIBED?

- Antibiotics for Lyme Disease
- Pain medications (i.e. ibuprofen) are sometimes prescribed for joint stiffness

WHAT CAUTIONS SHOULD I TAKE?

- Without treatment, complications involving the joints, heart, and nervous system can occur
  - However, these symptoms are still treatable
- Rarely, symptoms can occur even after having been treated (post-Lyme Disease syndrome)

WHEN SHOULD I SEEK MEDICAL HELP?

- Call your doctor if you have
  - A large, red, expanding rash that may look like a bull’s eye
  - Had a tick bite and develop weakness, numbness, or tingling, or heart problems
  - Symptoms of Lyme disease
REFERENCES

- Image of Adult Deer Tick courtesy of Scott Bauer, Agricultural Research Service, the research agency of the United States Department of Agriculture [Public Domain] Available at: https://commons.wikimedia.org/wiki/File:Adult_deer_tick.jpg.

DISCLAIMER

This report on patient education is for your information only, and is not considered individual patient advice. Because of the changing nature of clinical information, please consult your physician or pharmacist about specific use or questions. PEPID, LLC represents that the information provided hereunder was formulated with a reasonable standard of care, and in conformity with professional standards in the field. PEPID, LLC makes no representations or warranties, express or implied, including, but not limited to, any implied warranty of merchantability and/or fitness for a particular purpose, with respect to such information and specifically disclaims all such warranties. Users are advised that decisions regarding clinical/medical treatment are complex medical decisions requiring the independent, informed decision of an appropriate health care professional, and the information is provided for informational purposes only. The information is not a substitute for medical care. PEPID LLC, Copyright, 2019. All Rights Reserved.