



Tick Safety and Lyme Disease Prevention Introduction for Instructors

Why is this important?

Thank you for taking this opportunity to educate your students about ticks and Lyme disease (LD). Lyme disease is a tickborne disease caused by a type of bacterium called a spirochete (pronounced spy-ro-keet). The specific bacteria that causes Lyme disease is called, *Borrelia burgdorferi*. The tick species *Ixodes scapularis*, also known as blacklegged ticks or deer ticks, can carry the bacteria and may transmit the disease by biting a host animal. These ticks are very common in Pennsylvania and can be found in every county, in rural, suburban, and urban areas -- even in your backyard or school grounds.

Unfortunately, Lyme disease is the most common tickborne disease in the United States. Transmission of Lyme disease occurs primarily in the Northeast and upper Midwest regions of the country. Typically, only 15 states and the District of Columbia report 95% of all LD cases. Pennsylvania regularly reports more Lyme disease cases than any other state and ranks in the top 5 states for Lyme disease incidence per 100,000 people. However, states where Lyme disease is endemic use a variety of surveillance approaches. Thus, it is difficult to make direct comparisons between states.

Scientists and health officials monitor populations of several species of ticks across Pennsylvania. These research and surveillance efforts in Pennsylvania indicate approximately half of the adult *Ixodes scapularis* ticks carry the bacteria that causes LD. Health officials have determined the best way to prevent exposure to the bacterium *Borellia burgdoferi*, is to take individual actions and precautions to prevent possibility of a tick bite in the first place.

Precautions

To prevent LD:

- The risk of being bitten by an infected tick can be decreased by using the following precautions:
 - Use insect repellent containing low concentrations (10 to 30%) of diethyltoluamide (DEET) on clothing and exposed skin;
 - Apply DEET sparingly on exposed skin. Do not apply to the face. Do not use under clothing.
 - Do not use DEET on the hands of young children. Avoid applying to areas around the eyes and mouth.
 - Do not use DEET over cuts, wounds or irritated skin. Wash treated skin with soap and water after returning indoors, and wash treated clothing.
 - Avoid spraying in enclosed areas. Do not use DEET near food.
 - Avoid tick-infested areas;
 - Wear light colored clothing so ticks can be spotted more easily;
 - Tuck pant legs into socks or boots, and shirts into pants;
 - Tape the areas where pants and socks meet;
 - Wear a hat, long sleeved shirt, and long pants for added protection;

- Walk in the center of trails to avoid overhanging brush; and
- Check yourself, family members and pets for ticks after leaving potentially tick infested areas and promptly remove any ticks detected.

If you find a tick:

- If you find a tick attached to your skin, there is no need to panic. There are several tick removal devices on the market, but a plain set of fine-tipped tweezers will remove a tick quite effectively. [Prompt and proper tick removal is very important for preventing possible disease transmission.](#)
 - Use fine-tipped tweezers and protect your fingers with a tissue, paper towel, or latex gloves. Avoid removing ticks with your bare hands.
 - Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Don't twist or jerk the tick; this can cause the mouth-parts to break off and remain in the skin. If this happens, remove the mouth-parts with tweezers. If you are unable to remove the mouth easily with clean tweezers, leave it alone and let the skin heal.
 - After removing the tick, thoroughly disinfect the bite and your hands with rubbing alcohol, an iodine scrub, or soap and water.
 - Avoid folklore remedies such as "painting" the tick with nail polish or petroleum jelly or using heat to make the tick detach from the skin. Your goal is to remove the tick as quickly as possible; do not wait for it to detach.

What are the symptoms of Lyme disease?

Early symptoms of Lyme disease may become evident anywhere from 3 to 30 days after receiving a tick bite. Symptoms often include fever, headache, and a rash that sometimes has a distinctive bull's eye shape, officially called erythema migrans (EM). However, in approximately 20-30% of Lyme disease cases, the EM rash is not present.

Disseminated symptoms, those that are more spread out and may not be obviously connected to the tick bite, may begin to show up days or months after the tick bite. These symptoms may include joint pain and swelling, bullseye rash patches scattered on the body (not necessarily near the bite site), heart palpitations or irregular heartbeat, dizziness, nerve pain, drooping of one side of the face (facial palsy) and short-term memory loss. When identified early, most Lyme disease cases can be successfully treated through a course of antibiotics. Delaying treatment can lead to heart and nervous system-related symptoms.

If you have symptoms related to LD, visit your healthcare provider. Your healthcare provider may diagnose and treat you for LD without testing if you have an EM rash. If you don't have a rash, your healthcare provider will probably order blood tests that can determine if you have antibodies to the bacteria that causes LD.

Why do we want to educate children on ticks and Lyme disease?

Children under the age of 15 have a very high incidence of Lyme disease. There are several factors that may contribute to the increased incidence rate. Children often spend more time playing outside and due

to size, are closer to the ground. Outdoor activities, like laying on the grass at soccer fields, exploring in woods and tall grasses, playing in leaf piles, or even cuddling pets who have carried in ticks on their fur may be contributing actions. Additionally, underdeveloped hygiene practices and limited awareness increase the risk of ticks going unnoticed on a youngster's body.

Currently, we do not have a vaccine against Lyme disease, so the best method of prevention is to avoid ticks and tick bites and checking for ticks regularly in case you have been bitten by a tick. This toolkit provides the information you need on ticks, preventing tick bites, what to do if you're bitten by a tick and knowing the signs of Lyme disease to educate your students.

What does this Lyme Disease toolkit include?

This toolkit includes a PowerPoint presentation with information on ticks, their biology, how they transmit diseases, and actions you and your students can take to prevent contracting Lyme disease. It also includes activities to help develop a better understanding of what Lyme disease is and how it is connected to the tick life cycle and the environment that we share with ticks. It also includes recommendations for fun, educational videos on ticks and Lyme disease.

Grade Level(s): 1-2, 3-4, and 5-6

PA Academic Standards addressed by the lessons in the toolkit

Environment and Ecology

4.3.4 C, 4.3.7 A, 4.5.4 A, 4.5.7, A

Science and Technology

3.3.4 A, B; 3.3.7 A, B

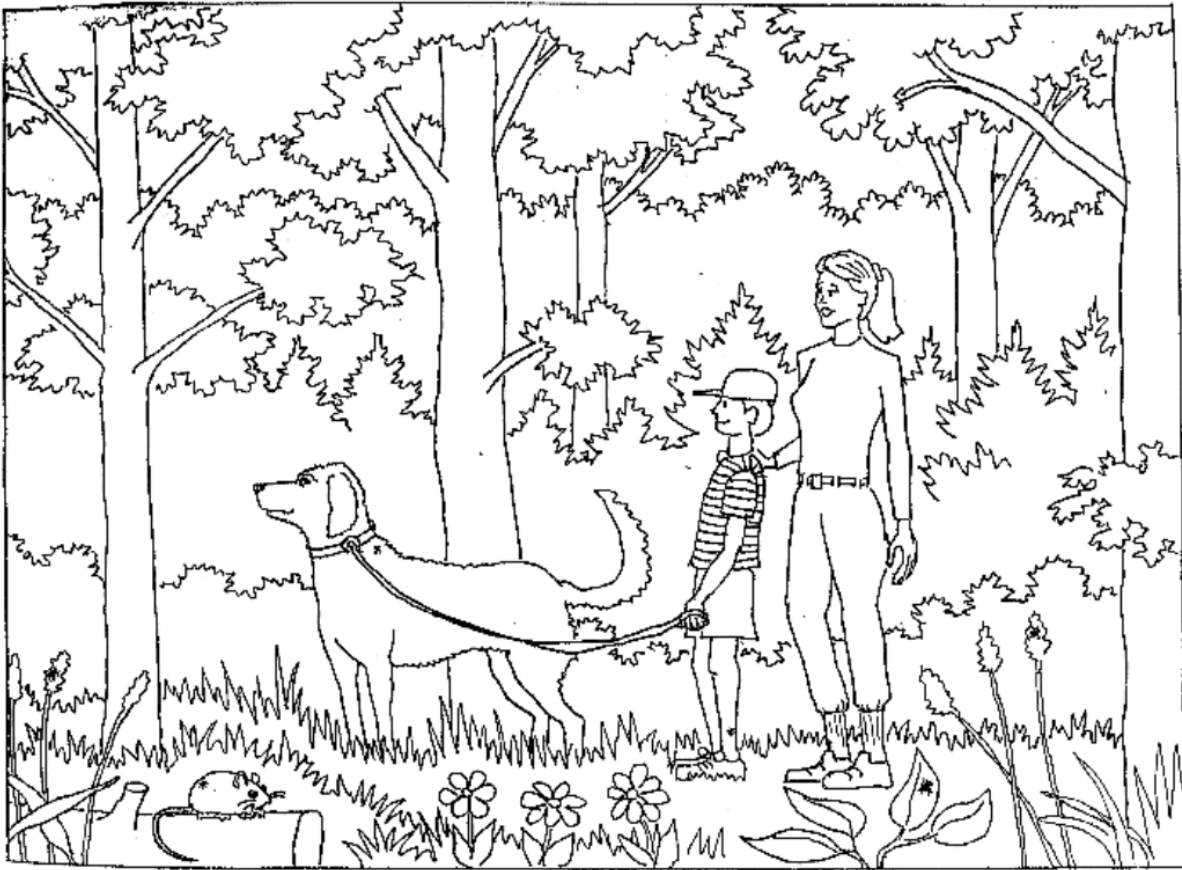
Health, Safety & Physical Education

10.2.3 E, 10.2.6 E; 10.2.9 E, 10.3.3 A

Fun Activities and Videos

All Ages: *“Tick Talk” presentation*— This presentation can be shown in PowerPoint or printed on overhead slides. It focuses on the basic facts about ticks, Lyme disease transmission, Lyme disease symptoms, and ways to prevent Lyme disease.

Younger children: Color and find the six ticks in this picture.



Circle the 6 ticks hiding in this picture. You may color the picture after you find the ticks.

https://www.bwhpreventlyme.org/wp-content/uploads/2007/08/lymetick_find_hidden_ticks.gif

Older children: Draw a picture of your backyard or a park you like to visit. Circle three areas where ticks might like to live.

All Ages: *Schoolyard Tick Walk* — Walk around the schoolyard or playground with your students. Ask students to point out safe places to play versus places where ticks might be. Focus on areas where the schoolyard might border the woods or where there may be longer grasses or weeds. After the schoolyard tour, lead a discussion on safe places to play and walk to school.

Older children: Jeopardy!

Requires access to AV and internet. <https://www.bwhpreventlyme.org/slides/slide2.htm>

Videos (require internet access)

Video of questing tick (0:42)

<https://www.youtube.com/watch?v=TQXmNepivv0>

Ticks Crawl Up! (1:00)

https://tickencounter.org/resources/ticks_crawl_up

How do Deer Ticks become Infected? (1:53)

https://tickencounter.org/resources/how_do_deer_ticks_become_infected

Tick Removal Video (0:55)

<https://web.uri.edu/tickencounter/how-to-remove-a-tick/>

Permethrin Spray Video (0:33)

https://youtu.be/n_XvX9Hyrhw

Lyme Rap Video (3:10) – Fairfax, VA County Health Department

<https://www.youtube.com/watch?v=tFEMRu3m3qM>