

# Growing Threat of Lyme Disease Calls for Facility Action

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The beautiful and lush surroundings of many senior care communities offer residents the opportunity to stroll in the woods and through parks. However, the proximity of trees, streams, lakes, and forests also means an increased risk for Lyme disease. This disease, transmitted through deer ticks, affects approximately 30,000 people annually; and it is on the rise in the U.S. Between 2001 and 2002 alone, the incidence of Lyme disease in this country increased 40%.

Lyme disease causes pain and discomfort for those who have it, and it can contribute to decreased mobility and quality of life in the elderly. It even can lead to other illnesses, such as arthritis and even heart disease. ALFs have a responsibility to protect their residents from tick-borne illness and to educate them about the importance of reporting any tick bites or signs and symptoms of Lyme disease.

## History of Lyme Disease

Lyme disease is an inflammatory illness characterized by a skin rash and flu-like symptoms that are caused by the bacterium *Borrelia burgdorferi*. While the condition only has received widespread attention in recent years, it actually was first documented as a skin rash in Europe back in 1883. In subsequent years, researchers there identified other features of the dis-



ease, including:

- An unidentifiable bacteria that was treatable with penicillin
- The role of the Ixodes tick as its carrier
- Symptoms that affected the nervous system

Tick infections first received the attention of American researchers in the early 1900s. However, the full syndrome known as Lyme disease was not identified or named here until the 1970s, when Dr. Allen Steere studied several cases in Connecticut originally thought to be

juvenile rheumatoid arthritis. The disease was named after two of the towns involved in these cases—Lyme and Old Lyme. In 1982, Willy Burgdorfer isolated the infecting agent, which was named after him.

In addition to Lyme disease, there are two other infections carried by Ixodes ticks:

- Ehrlichiosis
- Babesiosis

Although both of these are tick-borne diseases carried on the Ixodes tick, they are entirely different from Lyme disease. While all three

illnesses can be carried by the same tick, the risk of co-infection is yet unknown. However, there is no evidence to date that co-infection with Lyme disease and ehrlichiosis or babesiosis causes more severe conditions than any one of the infections separately.

### **Hitting the Bull's Eye: Signs of Lyme**

Lyme disease can be challenging to detect, particularly in the early stages. One challenge is that deer ticks are extremely small and can be difficult to see. As a result, many people with Lyme disease never see a tick or remember any kind of tick bite. Additionally, while flu-like syndromes are symptoms of Lyme disease, only about 50% of individuals actually exhibit these signs. Other symptoms of the disease may point to other illnesses such as a flu or sinus infection, but it is important to consider the possibility of Lyme disease when residents report the following:

- A flat or slightly raised red lesion
- Expansion of the red lesion to several inches over several days
- Rash that clears in the center, creating an annular rash that resembles a bull's eye
- Headache
- Fever
- Lethargy
- Muscle pains and aches
- Joint aches
- Swollen glands, either near the rash or all over the body

When residents exhibit signs of Lyme disease, it will be useful to question them about their activities in recent weeks, including walks in the woods, trips to the mountains, and interactions with dogs or other animals that may carry ticks. Remember that the tick bites are painless and individuals may not remember being bitten, so this should not be the only criteria for a suspected diagnosis of Lyme disease.

### **Diagnosing Lyme Disease**

Dermatological manifestations—the rash and bite-site lesion—are key to the diagnosis of Lyme disease. However, diagnosis of early Lyme disease can be made in absence of the rash on the basis of evidence of the bite and other symptoms. Blood tests are not necessarily reliable and can give false results if performed in the first month after the initial infection. Later on, tests are considered to be more reliable, although no test is 100% accurate.

In instances where early signs go undetected or ignored and more severe symptoms develop weeks,

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months, or even years later, the Centers for Disease Control and Prevention recommend ELISA and Western-blot blood tests to determine whether or not an individual is infected.

### **The Truth about Treating Lyme**

Recognizing and addressing Lyme disease early is key. Not only is the recommended treatment—a course of antibiotics—fairly inexpensive and uncomplicated, it also can save victims of the disease much pain

and trouble. Untreated Lyme disease can cause people to develop serious health problems such as arthritis, nervous system problems, joint pain, and—in rare instances—heart disease.

According to the Infectious Diseases Society of America's (IDSA) clinical practice guideline for the treatment of Lyme disease, routine use of either antimicrobial prophylaxis (E-I) or serological tests (D-III) after a tick bite is not recommended. Instead, the guideline suggests that individuals who remove or have removed attached ticks should be monitored closely for signs and symptoms of Lyme disease or other tick-borne illness for up to 30 days. In particular, says the guideline, the site of the tick bite should be observed for the appearance of a skin lesion.

To treat early Lyme disease, the guideline recommends administration of doxycycline (100 mg twice daily) or amoxicillin (500 mg 3 times daily) for 14-21 days. This recommendation is for diagnoses in the absence of neurological involvement or third-degree atrioventricular heart block.

Because of its higher price tag, cefuroxime axetil (500 mg orally twice daily), which is as effective as doxycycline in the treatment of erythema migrans, should be reserved as an alternative agent for residents who cannot take doxycycline or amoxicillin.

The IDSA guideline does not recommend macrolide as first-line therapy for early Lyme disease. When these drugs are used, they should be reserved for residents who cannot take amoxicillin, doxycycline, and cefuroxime axetil. While effective, ceftriaxone (2 g IV daily) is not superior to oral agents.

While antibiotic treatment does not speed the resolution of seventh-cranial-nerve palsy associated with *B. burgdorferi*, antibiotics are recommended to prevent further sequelae.

Usually, Lyme arthritis can be

treated effectively with antimicrobial agents administered either orally or intravenously. Doxycycline (100 mg twice daily orally) or amoxicillin (500 mg 3 times daily), in each instance for 28 days, is recommended for individuals who have no clinically evident neurological disease.

Oral therapy is easier to administer than IV antibiotics and are associated with fewer serious complications. They also are much less expensive. Of course, some individuals treated with oral agents subsequently have exhibited overt neuroborreliosis; so IV therapy may be necessary in some cases. Further controlled trials are necessary to compare oral and IV therapy.

Neurological evaluations—including lumbar puncture—are appropriate for residents if their physician or other clinician strongly suspects neurological involvement. Residents who have both arthritis and evidence of neurological disease should receive IV ceftriaxone.

The IDSA guideline recommends repeat antibiotic therapy or IV ceftriaxone for individuals who have persistent or recurrent joint swelling after a recommended course of antibiotic therapy.

### Prevention Possibilities

The good news about Lyme disease is that there are many fairly easy prevention strategies. Facilities should educate staff about these—via posters and fliers, luncheon presentations, or other means—at the beginning of summer and in the early fall when tick bites are most likely to occur.

The most common prevention activities include:

- Tucking long pants into socks, wearing shoes, socks, and long-sleeve shirts when walking in wooded areas.
- Checking one's body for ticks frequently, especially after walks in the woods or park or trips to the mountains or country. Pay special attention to the head,

## The Path of Lyme Disease

- The Ixodes scapularis tick (deer tick) carries the *B. burgdorferi* bacterium in the Northeast and North Central states. In the Northwest, the Western blacklegged tick (*Ixodes Pacificus*) is the infecting insect. (The frequency of Lyme disease is much lower in this part of the country because the tick must first feed on an already-infected dusky-rooted wood rat—the animal carrier of the infection—before it can spread the disease to humans.)
- The tick is born from eggs as a larva, develops into the nymph stage, and then enters the adult stage. It needs a blood meal to pass from larva to the other stages.
- Small vermin such as a mouse is likely the tick's first blood meal.
- The animal's blood commonly is infected with the *B. burgdorferi*; and after its "meal," the tick becomes a carrier of the bacterium.
- The infected tick moves onto another host—nearly any mammal, including mice, deer, dogs, humans, or birds. If the tick bites its new host, there is the risk of passing on the *B. burgdorferi*.
- The bite of the nymph tick is estimated to be responsible for about 90% of all Lyme disease cases.
- After biting into and feeding on its host, the tick eventually falls off. However, the tick can still infect the host with Lyme disease, even if it is removed before it becomes engorged and drops off.

- Checking pets frequently for ticks. Pay particular attention to the area of the head, neck, ears, and legs. Remove any ticks immediately as described previously. Destroy ticks by "suffocating" them in a piece of tape or burning them with a match.

It is important to note that there currently are no vaccines for Lyme disease on the market.

### Lyme Disease Doesn't Have to Be a Lemon in AL

Many illnesses and conditions are common or unavoidable in elderly populations. However, Lyme disease has the benefit of being easily preventable. By educating residents and family members about how to prevent tick bites and training staff to watch for signs and symptoms of Lyme disease, facilities can keep this illness on the back burner where it belongs. ALC

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underarms, and torso. Remove any ticks immediately by using tweezers—pull carefully and steadily. Call a physician or other practitioner; and preserve the tick by fully enclosing it in a piece of clear tape. It will be important for a professional to determine if the tick actually is a deer tick and a possible carrier of Lyme disease.