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Lyme Disease in Horses

Lyme disease is caused by the bacterial spirochete: *Borrelia burgdoferi.* Lyme disease is transmitted by ticks. Lyme disease was first diagnosed in man in 1975 in Lyme Connecticut, thus the name Lyme disease. Medical scientists however, in retrospectively reviewing the medical literature recognized Lyme disease symptoms being reported by European physicians in the late 1800's and early 1900's. The principle East Coast tick vector is the deer tick also called the black-legged tick, *Ixodes scapularis*; but the Lyme bacteria has been identified in other tick species including the very common dog tick. Lyme disease affects man along with a number of domestic animals including dogs, horses, sheep and cattle. The Lyme bacterium lives in the tick gut and is transferred to a susceptible horse during the tick taking its blood meal. The process of tick attachment feeding and transferring the Lyme spirochete bacteria takes 24-48 hours.

A wide variety of clinical signs and syndromes has been blamed on Lyme bacterial infection in the horse, but veterinary medical researchers fall short at this time in being able to document with proof, the true nature of Lyme disease in the horse. What makes Lyme so difficult to describe with certainty in the horse is the experimental reality that when veterinary researchers attempt to artificially infect ponies with Lyme disease, the resultant disease is of a very mild nature. This leaves us with the current dilemma that until we can document a specific and reproducible cause and effect relationships of bacterial infection to specific Lyme disease signs, we must use our best medical guess with respect to the true nature of Lyme disease in our horses. Clinical signs veterinarians most commonly associate with Lyme disease in the horse are mild fevers, body stiffness, and lameness that may shift from one leg to another and/or lameness that are difficult to specifically characterize.

Diagnosis of Lyme disease in the horse is equally difficult. Diagnosis is complicated by the vagueness and nonspecific signs just outlined. Additionally, diagnosis is doubly complicated by the reality that a major portion of our horse population has been infected by the Lyme bacteria. In blood-test exposure studies where horse populations were blood tested to determine Lyme exposure, it was revealed that 50-70% of our northern horses have been exposed and infected with Lyme bacteria at some point in their lives. We refer to such infections as sub-clinical, in that the horses do get infected with the Lyme bacteria, but never develop overt or recognizable disease signs. This means when routine diagnostic blood studies are performed on a Lyme suspect horse, it has a 50-70% chance of demonstrating exposure positive irrespective if the positive blood result can be correlated to the signs the horse is showing. The good news is that if your horse truly does have Lyme disease, your veterinarian can effectively treat the bacteria by using the tetracycline family of drugs. Intravenous tetracycline was completely effective in eliminating Lyme bacteria infection in experimentally infected ponies. Antibiotic treatment will

be required for an extended period of time; generally veterinarians start with intravenous tetracycline switching after 7-10 days to oral doxycycline for weeks longer. Blood studies will be taken periodically to monitor response to therapy.

A major point in me writing this bulletin is not to confuse you more about a very confusing disease. Rather, the intention of this bulletin is to provide guidelines in the prevention of Lyme disease. The elements of effective Lyme disease control center around effective tick control; ticks love to trouble our horses. They particularly enjoy attaching at the base of the tail, the mane, ear canals, and lower legs; but can be found almost anywhere on the body. As stated earlier, it takes 24-48 hours of tick attachment to transfer Lyme bacteria form tick to horse. Therefore, daily tick removal is an effective control measure. This practice however, is more difficult to achieve in the horse than human because of the small size of the tick and large, hair covered size of our horses. Prevention and treatment of our horses with insecticidal agents becomes our most effective tool. Many of the most effective anti-tick chemicals are by veterinary specific recommendation and prescription, so your veterinarian is essential in your horse's Lyme-tick control program. Most tick species prefer forests, scrubs, and grasslands near forests, keep this in mind when grazing sites for your horses are determined. Also, the deer tick Lyme vector specifically requires the white tail deer and the white footed mouse to complete its life cycle, so deer and rodent control in your horse pastures are significant helps in controlling Lyme disease. On specific farms where Lyme disease is a profound threat, there is some evidence that the use of the dog Lyme vaccine in the horse may be of protective benefit. Again, since this like the above mentioned insecticides is an extra-label use of the vaccine, your veterinarian's assessment and collaboration will be absolutely necessary. Tick control measures require our most attentive consideration from late summer through early winter as this is the period of most active feeding of the Lyme infected tick.