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New Lyme disease test improves treatment for horses, dogs

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Romping through summer fields seems like a harmless pleasure for dogs, horses and humans alike. But just one bite from the wrong tick can rob an animal of that pastime. The bacteria *Borrelia burgdorferi* catch rides with certain species of ticks and can cause Lyme disease in animals the ticks bite. Catching the disease early is paramount because it becomes progressively harder to fight as the bacteria conduct guerilla warfare from hiding places in the joints, nervous tissues and organs of their hosts.

A new test for Lyme disease in horses and dogs, developed by researchers at the Animal Health Diagnostic Center (AHDC) at the College of Veterinary Medicine at Cornell, will improve our understanding of the disease and pinpoint time of infection, opening possibilities for earlier intervention and more effective treatment plans.

"We've offered Lyme disease testing for years," said Bettina Wagner, the Harry M. Zweig Associate Professor in Equine Health and lead developer of the test, "but we have recently been able to improve our techniques with the multiplex testing procedure. The new test exceeds its predecessors in accuracy, specificity and analytical sensitivity."

The multiplex procedure, which can detect three different antibodies produced in response to the bacteria associated with Lyme disease using a single test on the sample, eliminates the need for separate tests. In addition, it requires smaller samples and answers more questions about the disease. Multiplex technology has been used for the last decade, but

the AHDC is the first veterinary diagnostic laboratory to use it to test for Lyme disease.

Different kinds of antibodies can be found in the body at different stages of infection. The new test can distinguish and measure these differences, giving more information about the timing of the disease.

The bacteria that cause Lyme disease are particularly difficult to detect, according to Wagner, because after infection they tend to hide where they can't be found. They bury in the joints of dogs, causing arthritis or lameness. Serious kidney disease has also been associated with Lyme infections in dogs. In humans and horses, they also burrow into the nervous system, in the spine or the brain, causing pain, paralysis or behavioral changes. By the time such clinical signs appear, the bacteria are usually not in circulation anymore.

"Now we can distinguish between infection and vaccination and also between early and chronic infection stages," Wagner said. "That was not possible before. You were able to say whether an animal was infected, but not when it was infected, or how far the infection had developed."

The test and information the test provides can help veterinarians make advanced decisions about treatment. After the long treatment period ends, veterinarians usually conduct follow-up testing to see if it was successful.

Provided by Cornell University