

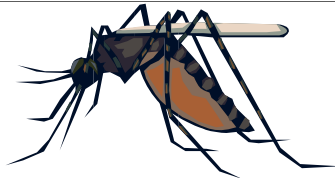


## THE 4DX TEST: WHAT DO THESE RESULTS MEAN?

The IDEXX 4Dx test evaluates for heartworm disease and exposure to Lyme bacteria, Anaplasma, and Erlichia canis. This test costs about \$11 more than the send-out test, which only checks for heartworm disease. This handout will hopefully help clarify what a positive test means for each of the test's four components.

### Heartworm Disease

Heartworm is carried by mosquitoes and transmitted through bites. A positive heartworm test indicates the presence of worms within the dog's heart. Positive tests are typically confirmed through a second test submitted to a laboratory; if the second test is positive, treatment is recommended.



Heartworm disease is very dangerous, with the worms causing serious cardiovascular and pulmonary disease. Treatment is typically about \$400-600 and must be carried out over a six-month period to decrease the risk of complications from killing the worms. Approximately 5-10 cases are diagnosed in St. Louis County each year, but over 1000 cases are annually diagnosed state-wide.

### Anaplasma phagocytophilum

Anaplasma is a rickettsial disease that, like Lyme Disease, is transmitted via deer tick bites. The symptoms are almost identical to Lyme Disease, though it can also cause platelet loss and subsequent bleeding disorders.



Much like Lyme, a positive 4Dx test for Anaplasma shows that your dog has been exposed to Anaplasma, but does not necessarily mean that it has active disease. Very little is known about the incidence of seropositive dogs and its correlation with symptomatic disease. We are seeing a gradual increase in dogs testing positive.

As of this time, the recommendation for a dog that tests positive for Anaplasma on the 4Dx is to monitor for symptoms, and pursue treatment only if symptoms develop. Symptoms include fever, lethargy, joint stiffness, and signs of prolonged bleeding. Prolonged bleeding symptoms include red dots on the gums, bruising, blood in the eye, and vomiting or defecating blood.

### Lyme Disease

Lyme Disease is caused by a bacteria, *Borrelia burgdorferi*, that is transmitted by a deer tick bite. The disease typically causes joint stiffness, fever, and loss of appetite, but in rare cases can also lead to renal failure.



A positive 4Dx Lyme test shows that your dog has been bitten by a deer tick that transmitted the bacteria. It **does not** mean that your dog has active infection! We are seeing more dogs test positive every year, but the number of dogs we see fall ill remains steady, about 50 cases per year.

Your veterinarian may suggest treatment for your dog, even in lieu of symptoms. Regardless, your dog should be watched for fever, appetite loss, and joint stiffness. Treating dogs with antibiotics that are 4Dx positive does not cause the test to become negative; it is quite possible that the dog will always test positive for Lyme, and yet never show symptoms.

However, Lyme nephrosis is very serious and often fatal. Dogs that get renal disease usually spill protein into their urine. **Therefore, we recommend testing of the urine for positive dogs to check for protein. The cost for this is about \$35.**

### Erlichia canis

Erlichia is another tick-borne rickettsial disease. Its primary symptoms are bleeding disorders. It is endemic to the southern United States, and is rarely seen in Minnesota, usually only in dogs that have spent significant time in the southern US.

