

An Old Disease Causing New Problems for Dogs.

Many of you have probably been hearing from your veterinarian in recent months about this “new” vaccine that should be given to your dogs. With vaccinations having been such a hot-button topic on so many fronts recently, this is likely the last thing you want to hear. Unfortunately, there is a definite resurgence of a bacterial disease our community’s dog population and our local specialty hospitals are strongly recommending that their referring veterinarians stress the importance of vaccination to their clients. The disease is called leptospirosis, or lepto for short.

“Another vaccine for another new disease?”. Well, not quite.

Lepto is by no means a new disease. In fact, our towns may not even be here without it. It is strongly believed that lepto was the culprit behind “Indean Fever”, the disease that wiped out 9 out of 10 coastal Native Americans ahead of the Pilgrims’ landing in 1620. Before they successfully settled Plimoth Plantation, prior attempts at colonizing New England were often met with hostility from the indigenous population. Even without this antagonism, the task of whipping-up farm land from wilderness before our lovely New England winters swooped in was a major setback for settlers’ survival. The Pilgrims faced neither of these issues. Instead, they sailed into Plymouth and found cleared land and fields planted with thriving corn. While luck or the Divine may have been their first thoughts as to how they came upon such good fortune, later scouting trips revealed what really set the stage: the derelict homes filled with bones of the Indians who had died years before. Paleo-epidemiologists, the researchers who look at historic plagues in an effort to prevent their recurrence, strongly believe that this disease was actually leptospirosis brought into America from Europe.

In the early 1600’s, European explorers and slavers came to the New England area and with them they brought every plague’s favorite furry vector: the black rat. Among other wonderful things, rats are known to carry leptospira bacteria within their kidneys. The two get along so well that in one milliliter of rat urine, over 10 million lepto bacteria can be found. As the rats disembarked the explorers’ ships, they began urinating around our coastline and infecting the local wildlife. By 1616, enough bacteria would be in the environment to begin to infect the native population through the cuts and small abrasions common in the people working to survive in the coastal wilderness. The symptoms of this Indean Fever seen by the visiting Europeans strongly correlate to those seen in modern cases of leptospirosis and it would go on to decimate the native villages over the next three years.

Leptospira, the bacteria behind leptospirosis, is from a family of bacteria called spirochetes. Like the Baldwin brothers, this family has members that are more famous than others largely because of their awful behavior. Lyme disease and syphilis are two of the biggies. Unlike these two diseases, which require a tick bite or sexual activity, lepto is much more easily contracted. It is first passed into the environment by an infected host through the urine. Outside of a living organism, its ideal natural habitat is the standing water of puddles, ponds, and bogs. However, given the right humidity, it is also just as happy to live in the soil of your back yard. So why would it leave this ideal environment? The answer is blood. Lepto needs iron to survive and it has evolved to seek this iron from blood cells. Its attraction to blood is so strong that, once on the skin of an animal or person, it will quickly find its way into the body through small cuts or the soft tissue around the eyes, nose, and mouth. There are over 200 different types, or serovars, of leptospira. In most, we have identified reservoir hosts such as rats, squirrels, raccoons, and skunks. In these animals, the bacteria migrate to the kidneys where it sets up shop and lives happily ever after. However, in non-reservoir animals, such as our dogs, the bacteria spread and multiply quickly while producing toxins

that damage the kidneys and liver. There are currently eight serovars that are commonly known to infect dogs.

Many clients ask me why leptospirosis is suddenly such a big deal if it has been around for so long. There are three possibilities for this. The first is the noticeable increase in wildlife. Not many people will deny that they have recently seen more coyotes, fisher cats, and the critters they prey upon around our area. As the numbers of these animals increase, so will the amount of disease that they carry. The second possibility is a drop in vaccination. Older vaccines did exist, but only protected against two types of leptospirosis and tended to cause severe vaccine reactions. About 15 years ago, vets were rarely vaccinating for it. Lastly, it may have been largely undiagnosed. We all know that dogs tend to think that anything that smells awful to us smells awesome to them. In turn, they will eat these things and feel terrible afterwards. As such, not all veterinarians would jump to running lab work when dogs presented to them for simply not feeling well. Instead, they would try treating the clinical signs. Unfortunately, without seeing increases in kidney and liver values on blood tests, red flags for leptospirosis won't go up at all in a doctor's brain. Even with those elevations, testing specifically for leptospirosis has also been difficult and incomplete. A recent study by the veterinary school at Tufts used newer technologies to look at archived kidney tissue from dogs that had died from undiagnosed kidney disease over many of the prior years. They found that over 18% of those cases showed the presence of leptospirosis.

How would my dog catch leptospirosis?

Standing water harbors the highest numbers of leptospirosis. So, whether we're talking about the streams and bogs in the conservation land or the muddy ruts on Gurnet Road, Duxbury's most popular dog walking areas are prime locations for catching this disease. And while many people think their dogs have to drink the water to catch leptospirosis, disease specialists are more concerned about direct passage into the body through tiny lesions on the feet. Anyone who has walked barefoot on Duxbury or Plymouth beaches, especially with their early-season tenderfeet, knows how easy it is to get a small cut or scrape from the shells that were smashed up during the winter storms. Our dogs' feet are no different. Add in their aforementioned affinity for picking up random nastiness from the ground or, at least in the case of my own dog, shoving their faces into the water to check out the mud on the bottom, and the risk level rises sharply.

That said, standing water is far from the only source. Wet soil, like we have on our yards at this time of year, is also a source of infection. When I was an emergency vet outside of Providence, Rhode Island, the majority of leptospirosis cases were actually from small city dogs that rarely stepped foot off of their 1/8th-acre "yard". In these cases, the bacteria was likely living happily in the wet soil where we also know it to be found in large numbers. It is for this reason that many veterinarians feel that springtime is "Lepto Season". After the snow melts, it usually takes months for our yards to dry out. A good rule of thumb is that, if you haven't had to water your lawn, you have leptospirosis in your soil.

So, how do I tell whether my dog may have leptospirosis?

You may not. In Michigan, a study showed that 25% of normal, healthy dogs had been exposed to one of the common varieties of leptospirosis. These dogs were lucky enough to have a mild infection that their body was able to clear. But even those dogs who do become sick can show pretty non-specific signs. One of the most common presentations at animal hospitals are for what vets call ADR: "Ain't doin' right". Owners typically come in with complaints of lethargy, poor appetite, and other vague signs that make vets wish our

patients could speak to tell us what's wrong. However, as the disease progresses, signs become more specific. In the more severe cases, fever and the destruction of kidney tissue will start to cause excessive thirst. The belly can start to become painful and they will be reluctant to lie down. If it is one of the varieties that causes liver damage, yellowing of the skin, eyes and urine can occur. The urine can then become bloody and damage can spread to the eyes and nervous system. When we see this, along with an eventual drop in body temperature, sudden death will soon follow.

Luckily for both your dog and your veterinarian, leptospirosis is becoming easier to diagnose. Until recently, we only had tests whose results took a long time to return, were difficult to interpret as definitive, and were affected by vaccination for the disease. Newer tests have become much more sensitive and rapid. In fact, one veterinary laboratory will be releasing an in-house test this spring that will give your veterinarian results in a matter of minutes with only a few drops of blood.

Can my dog be treated if he gets sick?

The good news is that most dogs that become sick with leptospirosis will recover. As with any disease, their prognosis will depend not only on the severity of the clinical signs but how quickly it is caught. If caught early and before stomach upset occurs, oral antibiotics can be used effectively. However, sicker dogs will require hospitalization, preferably at a full-service referral hospital. Supportive care alone in uncomplicated cases can easily exceed \$3000. But, if the kidneys are compromised, dialysis may be necessary to allow the body to recover. This could put the bill between \$10,000-\$15,000. Ben Franklin is famous for saying "An ounce of prevention is worth a pound of cure". In this case, a \$30 vaccine could be worth half of a year's college tuition.

Can my dog give me Lepto?

While this is possible, it is not likely. Even in the veterinary field where humans are treating infected dogs on a regular basis, infections have rarely been reported. It is much more likely to catch the disease during recreational swimming in contaminated water. In fact, in recent years, extreme races like the Tough Mudder have been a big source of leptospirosis infections (makes that treadmill look a lot more attractive...). Proper handling of waste and proper hygiene will keep most people safe.

As with any new treatment for your pet, the decision should be made between you and your veterinarian. Be sure to discuss any concerns at your next visit. If you are unsure as to whether or not your dog is already vaccinated against Lepto, be sure to call the office to inquire. Many times, the vaccine for Leptospirosis is included within the "distemper" vaccine that is given every 1-3 years. So, you may already be OK. If not, most clinics will have the vaccine given by a technician if your dog has been seen by one of their veterinarians within the last 6-12 months. The Centers for Disease Control also has more information about leptospirosis and vaccination at www.cdc.gov/leptospirosis/pets/.