



Vaccines

Why are vaccines so important for your new puppy?

When a puppy is born, its immune system is not yet mature. Fortunately, nature has a system of protection. The mother produces a certain kind of milk (colostrum) in the first few days after giving birth, which is rich in all the antibodies that the mother has to offer. After the first couple of days, regular milk is produced and the puppy's intestines undergo what is called closure, which means they are no longer able to take externally produced antibodies into their systems. These first two days are critical to determining what kind of immunity the puppy will receive until its own system can take over.

How long this maternal antibody lasts in a given puppy is totally individual. It can depend on the birth order of the babies, how well they nursed, and a number of other factors. Maternal antibodies against different diseases wear off after different times. We DO know that by 14-20 weeks of age, maternal antibodies are gone.

Puppies receive a series of vaccines ending at a time when we know the puppy's own immune system should be able to respond. We could simply wait until the puppy is old enough to definitely respond, as we do with the rabies vaccination, but this could leave a large window of vulnerability if the maternal antibody wanes early. To give puppies the best chance of responding to vaccination, we vaccinate intermittently (usually every 2-4 weeks) during this period (usually starting at 6 weeks of age), in hope of gaining some early protection.

Diseases We Vaccinate Against

Distemper: commonly spread through droplets or spray from the nose and mouth, such as through sneezing or coughing. However, infected dogs can shed the virus in nearly all bodily fluids. Once infected, the virus moves through the dog's body over the course of a few days; moves through the lymph nodes, spleen, GI tract, urogenital tract, and then finally the central nervous system. Symptoms may include: lethargy, fever, decreased appetite, coughing, shortness of breath, vomiting, diarrhea, dehydration, ataxia, stiff neck, myoclonus, and hyperesthesia. Treatment usually consists of supportive care. Vaccinated dogs with a healthy immune system usually have a good prognosis and show little symptoms.

Adenovirus (Infectious Hepatitis): inflammation of the liver. There are 2 forms of this inflammation; acute and chronic. The hepatitis virus is present in the urine, feces, saliva and in the nose and eye discharges of infected animals. The virus is transmitted by direct contact with these infected materials. Chronic inflammation can cause scar tissue and cirrhosis in the liver. Clinical signs can include: depression, fever, vomiting, diarrhea, abdominal pain, cloudiness of the eyes, and jaundice (severe cases). Treatment includes fluid therapy and medications to reduce symptoms. Dogs with acute hepatitis recover well; those with chronic hepatitis can develop liver disease, in which case the life expectancy is usually 2-3 years.

Parvovirus: a highly contagious disease that attacks the white blood cells, GI tract, and in puppies, it can damage the heart muscle. Canine parvovirus is easily spread by direct contact with infected dogs, contact with feces from infected dogs, or contact with virus-contaminated surfaces. Clinical signs generally include severe vomiting and diarrhea. The diarrhea often has a powerful smell, may contain lots of mucus, and may or may not contain blood. Additionally, affected dogs often exhibit a lack of appetite, marked listlessness and depression, and fever. Confirmation of the disease requires a test at your vet's office. Treatment is usually supportive care, controlling the symptoms, and keeping the dog as comfortable as possible. Dogs/puppies can make a full recovery with aggressive treatment; prognosis can be guarded for unvaccinated, immunocompromised patients.

Parainfluenza: This respiratory virus is one of the most common pathogens of "canine cough" or infectious tracheobronchitis. If your pet has parainfluenza, you may notice a dry or wet cough, a low-grade fever, and a loss of appetite or energy. Vomiting and nasal discharge are other common side effects.

In immuno-compromised pets (or dogs a few months of age), pneumonia can lead to long-term or fatal consequences.

Leptospirosis: is a disease caused by *Leptospira* bacteria that can affect both animals and humans. In fact, it is currently the most common zoonotic disease in the world that can be transmitted from animals to people. Leptospirosis is carried by wildlife such as rats, raccoons, opossums, skunks, squirrels, and deer and is found in places where they may urinate, including lakes, streams, puddles, or soil in your backyard. Once infected, the bacteria will cause blood vessel inflammation, fever, abnormal bleeding/bruising, and tissue edema. In the next stage, the bacteria get comfortable in the kidneys, where that can cause serious, irreversible damage if not treated. Treatment consists of supportive care of the symptoms and Doxycycline; once started it does take about 7 days for the bacteria to stop being shed in the urine so safety precautions must be taken to avoid contamination of other animals/people. If caught early, the prognosis is usually good.

Rabies: a disease that affects the nervous system and is most commonly spread by the bites (saliva) of infected skunks, bats, raccoons, foxes, and coyotes. Once bitten, the virus will attach to the muscle of the pet and slowly try to gain access to the brain. Incubation can take up to one year, but usually in dogs the period is 21-80 days, and then symptoms begin to show. In all animals, initial signs of rabies may include fearfulness, restlessness, increased or decreased appetite, vomiting, diarrhea, a slight fever, enlargement of the pupils, hypersensitivity to light and sound and excessive salivation. Once symptoms are present, there is no treatment - this is a fatal disease and can only be prevented, not cured.

Bordetella: Commonly known as "Kennel Cough," *bordetella bronchiseptica* causes inflammation of your dog's upper respiratory system, which can lead to coughing and/or secondary illness - such as bronchopneumonia in puppies and chronic bronchitis in senior dogs. The disease is spread from dog to dog through nasal/saliva droplets, direct contact, or contact with contaminated surfaces. This is most common in areas where there are many dogs socializing; dog parks, groomers, doggy daycare, training, boarding, etc. Treatment usually consists of rest and a cough suppressant; the disease is usually self-limiting in a week or 2, but if a secondary infection occurs, more aggressive treatment may be necessary.

Lyme: Lyme disease is spread through the bite of a tick, infected with *Borrelia burgdorferi* - the spirochete responsible for Lyme disease. The tick must bite and attach to the host for a minimum of 48 hours; disease transmission does NOT happen before 48 hours. Lyme disease in dogs is different than in humans; 95% of dogs that are carrying the infection will never show symptoms. It can take

weeks-months for symptoms to show and the first symptoms are usually fever and/or joint pain. If untreated, the infection can progress to affect the kidneys and cause serious, irreversible damage (Lyme Nephritis). Testing for Lyme is usually done once a year at your dog's annual check-up. The first time a dog is positive, it is treated with a course of Doxycycline. Dogs can continue testing positive for months-years after the initial infection; if a dog tests positive the following year, a C6 test is done to determine if there is an active infection. If the infection is active, treatment is prescribed; if the infection is not active, no treatment is necessary and the dog will be tested again the next year.