



Canine Distemper (DHPP)

The Canine distemper virus is closely related to human measles and bovine rinderpest viruses. Distemper is an RNA virus from the morbillivirus family. The fatty envelope around the virus is unstable in the environment and is required for infection, so dog to dog contact or contact with extremely fresh body secretions is necessary to transmit the virus.

Dogs that get distemper are usually young, mostly puppies or dogs with incomplete vaccine histories. Puppies are most susceptible during the period between losing protection from maternal antibodies and when they begin their vaccination series. Canine distemper is found throughout the world but incidence is decreasing as vaccination increases.

After entering the body the virus goes through a latent period of ten to fourteen days during which no clinical signs are observed. When symptoms appear they start with discharge from the eyes and nose, sporadic fever, poor appetite, lethargy, coughing and pneumonia. The virus attacks mucous membranes starting with the respiratory tract and eventually moving on to cause vomiting and diarrhea as well as hardening of the nose and foot pads. After causing respiratory and gastrointestinal disease the virus moves into the neurologic phase. This is expected about one to three weeks after surviving the initial infection and includes seizures, behavioral changes, circling and other problems.

The virus is shed in most body secretions and enters the dog's body by the nose or mouth and begins to replicate. When the virus is engulfed by macrophages of the immune system it actually uses the macrophage for transportation throughout the dog's body. Within twenty-four hours the virus is in the lymph nodes of the lung and after almost a week the virus has made its way to the spleen, stomach, small intestine and the liver. The infected dog should have the characteristic fever at this point. After about eight or nine days an immune response should be mounted and the efficiency of the immune system will determine how the infection plays out. A strong immune system can start to clear the virus and eliminate symptoms by the two week mark. A weak immune response may allow the virus to infect the epithelial cells, including those lining the chambers of the brain. The symptoms observed in infected dogs are not constant and some dogs have only a few symptoms and some have many, life-threatening symptoms. The virus can lie dormant for a long time in the nervous system and in the skin even after the infection was considered to be cleared. Due to this ability to "hide" the characteristic hardening of the skin and seizures can occur again later on, so the endpoint of the infection is ambiguous.

The typical vaccine for Distemper also includes Hepatitis, Parvovirus and Parainfluenza. It is possible to vaccinate for Distemper virus alone. The vaccine is given to puppies with at least one booster after the loss of maternal antibodies. At WHVC we recommend starting a vaccination series for puppies at about eight weeks of age with boosters at twelve and sixteen weeks. A vaccine booster is given one year later and all subsequent boosters are every three years. Antibody titers are available before boosting to determine strength of existing immunity because protection may last longer than three years.

Canine Distemper is diagnosed based upon clinical signs, vaccine and exposure histories and an antibody titer. Puppies with recent vaccination may exhibit clinical signs. Antibody titers are affected by recent vaccination, so alone it cannot verify infection. A high IgM antibody titer indicates recent infection or recent vaccination and there isn't a way to tell which. Clumps of the virus called "Distemper inclusion bodies" can be seen under the microscope inside infected cells. Antibodies against Distemper can be tagged with fluorescent markers and will bind to the virus if it is present. This makes the inclusion bodies easier to see and can be used to confirm Distemper infection. However, if inclusion bodies are not detected by this method it doesn't mean there isn't an infection because these inclusion bodies eventually become coated with the dog's own antibodies, which actually block the fluorescent-tagged antibodies. Cerebrospinal fluid can be analyzed to check distemper antibody levels in neurologic distemper cases. Vaccine-induced antibodies don't cross the blood-brain barrier so vaccination won't affect these results. Also, a biopsy of the hardened nose or foot pads can be performed to test for distemper inclusion bodies late in the infection. The bottom line is that a combination of several methods can be used to diagnose Distemper.

Treatment for Distemper is typically directed towards the clinical signs and supportive nursing care to prevent secondary infections. This includes providing comfort, warmth, fluids and disinfecting the environment. The virus is unstable on its own and only lasts about three or four weeks outside its host.

Preventing Distemper infections in dogs includes vaccination, avoiding contact with infected dogs and isolation of puppies until they are vaccinated.