



**Veterinary Emergency  
+ Referral Center**  
of Hawaii

**Ettinger: Textbook of  
Veterinary Internal Medicine, 7th Edition  
Parvovirus in Dogs  
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**What is Parvovirus?**

Parvovirus infection, commonly called "parvo," is a disease of dogs that affects the intestinal tract and causes vomiting, diarrhea, fever, and decreased ability to fight infection. It is especially severe in puppies. Doberman pinschers and rottweilers are more susceptible and have more severe signs of parvo than other breeds, but puppies of any breed or mixed breed puppies can die from this disease.

Parvo is a relatively new disease entity in dogs that was first identified in the late 1970s. The virus did not exist before that time. It is believed that this is a disease caused by a virus of the cat or other species that adapted itself to dogs. When the virus first emerged, dogs of all ages became infected. Now that the disease is in its second decade, usually only young dogs are infected. This is because the virus is so contagious and so commonly found in the environment that most older dogs have become immune through vaccination or infection early in life.

Oral intake of virus-infected materials transmits the infection to susceptible dogs. Parvovirus multiplies in the intestinal tract of infected dogs, and a billion virus particles per teaspoon of stool can be passed during an infection. The virus is sturdy and persists in the environment for at least 6 months. It is impossible to eliminate the virus from contaminated soil without killing all vegetation. For inside facilities, thorough washing and rinsing followed by careful application of a chlorine bleach solution containing one ounce of bleach per quart of water is needed. Avoid skin and eye contact with the bleach solution.

**What are the symptoms of Parvovirus?**

Infection of puppies usually results from exposure to contaminated soil, and signs of disease are seen from 4 to 14 days after exposure. The initial signs are depression, loss of appetite, and fever. Vomiting and blood-streaked diarrhea develop within 1 or 2 days. These signs progress quickly to dehydration and death in severely affected dogs. Puppies 6 to 8 weeks of age have a higher death rate than older dogs. The age of onset of infection depends on exposure to the virus as well as the pups' level of antibodies against parvovirus. Bitches that are immune by vaccination or previous exposure to the virus pass some of their antibodies to their puppies in milk. Depending on the amount of antibodies passed to the puppies, the antibodies protect them for a few weeks to as long as 3 months. The puppies' bodies gradually degrade or break down the antibodies and the puppies must then produce their own immunity to be protected.

**What treatment is needed?**

The best approach to parvo is prevention of disease with vaccination. Puppies should be started on vaccines at 6 weeks of age and exposure to infected environments should be minimized until the vaccination series is complete. Puppies should be vaccinated every 2 to 3 weeks until 16 weeks of age. The long course of vaccination is necessary because of the maternal antibodies passed from the mother to the pups. Although these antibodies protect against infection, they also interfere with an effective response to vaccination. Low levels of maternal antibodies interfere with vaccination but may not protect puppies from infection. Advances in parvovirus vaccines have resulted in improved vaccines that provide effective protection despite some maternal antibodies. It is advised that the exposure of puppies be minimized until vaccines given at 16 weeks of age have been administered.

**What is the prognosis?**

The initial damage to the body in parvo occurs because the virus destroys the cells in which it reproduces. Unfortunately, no antiviral treatment exists at this time. Treatment of dogs infected with parvo depends on the severity of the infection. Dogs with mild infections can recover with nursing care, but those with severe infection become severely dehydrated. These dogs require intravenous fluid to maintain their hydration because they are unable to take in fluids and are losing large amounts of fluids because of vomiting and diarrhea. In addition to the fluid loss, the virus destroys the lining cells of the intestinal tract, which allows bacteria from the intestine to enter the body. When this bacterial invasion occurs (septicemia), antibiotics must be given to kill the bacteria in the bloodstream. In addition to allowing bacterial entry into the blood stream, the parvovirus damages the bone marrow, where white blood cells are produced. Neutrophils, a specific type of white blood cell necessary for destroying invading bacteria, are severely reduced in numbers. Immune dysfunction causes some dogs with parvo to die in spite of extensive treatment with fluid and antibiotics.