



Parvovirus

What is parvovirus?

Parvovirus, commonly called “parvo” for short, is a viral infection of dogs that causes vomiting and diarrhea along with decreased ability to fight infection. The virus is relatively new, having been first identified in the 1970’s, and affected dogs of all ages at that time, but through vaccination and natural immunity from repeated exposure is now primarily a disease of young puppies.

How does parvovirus work?

Parvovirus can be considered to be present everywhere. It is very hardy in the environment, is actually protected by freezing, and remains infective for months after being shed by an infected animal. In other words, *attempting to prevent a puppy from exposure to the virus is futile*. Parvovirus infects your dog through oral ingestion of viral particles. Whether or not the animal gets ill from the virus depends on the current immune status of the animal, environmental factors, and the number of virus particles the animal is exposed to. Once in the body, the virus invades rapidly growing cells, reproduces, and kills the cells to release new virus particles. The cell lines that are primarily affected are the cells that line the intestine, and the infection-fighting white blood cells being made in the bone marrow. The ramifications of this for your pet is that while the lining of the intestines is being destroyed, leaving it open for secondary infection to invade, the immune defenses of the body are being shut down at the same time. It takes a period of 4-14 days after exposure to the virus for the dog to start showing symptoms of illness. Meanwhile, new viral particles are released into the environment by the billions in the feces of an infected dog.

What are the symptoms of parvoviral infection?

Dogs with parvovirus infection typically have a loss of appetite, depression and lethargy, vomiting, and diarrhea that is often bloody with a very foul smell. Dehydration and death can follow quickly in severely affected and very young patients. Parvo should be suspected in all puppies with vomiting and diarrhea, but patients with these symptoms can also be suffering from parasites, stress colitis, or dietary indiscretion. A parvo test, which detects the presence of viral particles in feces and takes just a few minutes to get results, will be performed to confirm the diagnosis. The test can be falsely negative if the puppy is no longer shedding virus in the stool. A fecal sample will also be checked for parasites as puppies often suffer from both parasites and parvovirus.

What is the treatment for parvovirus?

It is important to understand that there is no treatment available that will kill the virus, only the patient’s own immune system can do that. Parvovirus kills its host in one of two

ways: 1. Severe dehydration and electrolyte disturbance from vomiting and diarrhea and 2. Secondary bacterial infection through the damaged intestine, leading to septicemia. Treatment for parvo centers on supportive care and antibiotic coverage to prevent these things while the patient's immune system fights the virus. **Intravenous fluids** are given to correct and prevent dehydration. **Electrolytes** and sometimes dextrose (a sugar source) are often added to the fluids. **Broad spectrum antibiotics** are given, also intravenously, to prevent secondary bacterial infection. **Anti nausea medications** and antacids are used to help patients feel better. **Opiate pain medications** are sometimes used if a patient is very painful. **Endoserum**, a product containing antibodies extracted from horses, is sometimes given to bind toxins of any invading GI tract bacteria. A single dose of **banamine**, an anti-inflammatory drug, is often given. **Tamiflu**, a human flu medication, has emerged as a way to prevent the spread of the virus in the patient's body, but must be given within the first 24 hours of symptoms to have any effect. Very ill patients may need special fluids or plasma transfusions if their blood protein drops too low. **Pet owners must be prepared for a 3 to 7 day hospital stay and considerable expense.** Survival rates are approximately 75 – 85% with intensive care. Home treatment can be attempted in cases of extremely limited finances, but survival drops to around 50% and the owner must be comfortable giving injections. A rare but serious complication of parvoviral infection is intussusception, where the intestine telescopes into itself. The only treatment for this is immediate emergency surgery, which a parvo puppy is unlikely to survive. Euthanasia is often the best choice in this case.

What happens when my parvo puppy comes home?

Patients are discharged from the hospital when they are eating and drinking and no longer vomiting. Your pet will not be 100% recovered. They will likely go home on some oral medications, it is important to give these as prescribed until they are gone. It is typical for stool to remain loose, or to see no stool at all for the first few days. Puppies recovering from parvo often have not eaten for several days, but it is important not to let them gorge themselves on food. Feed smaller meals several times daily for a couple of weeks and do not leave food available all the time. A prescription diet may have been sent home or a home cooked diet recommended (such as boiled chicken and rice or cottage cheese with pasta). It is important to follow these recommendations. Your puppy is recovering from extensive damage to the intestinal tract; a diet that is easily digestible is going to help your puppy recover faster.

Your puppy can be considered a source of infection for about a month, so it is wise and responsible to avoid trips to parks, public areas, obedience schools, and the homes of friends and relatives with unprotected (unvaccinated) or young dogs. Cats, humans, and mature, well-vaccinated dogs are not at risk.

Your puppy can be bathed at any time after coming home, just make sure they stay warm until dry to prevent chill.

Talk to your veterinarian about resuming the puppy's vaccination series after recovery. Your puppy will not likely get parvo again, but should be vaccinated for other viruses, especially rabies.

How can parvovirus be prevented?

Vaccination is the best way to prevent parvo. When puppies are born, they receive antibodies in their mother's first milk that protects them against disease. How much antibody depends on what the mother has been exposed to and how well she was vaccinated. These antibodies decrease by about half every 10 days after the puppy is born. Ironically, vaccines are ineffective until these maternal antibodies are gone, but that happens at a different pace in every individual. To combat this, vaccines are given to puppies every 3-4 weeks until 16-20 weeks of age. Even in well vaccinated puppies there is about a week window in which maternal antibodies have waned off but they cannot yet respond to vaccine. During this week, even well vaccinated puppies can become infected with parvo. To protect your puppy, it is recommended that they be restricted from public outdoor areas where they are most likely to pick up a large viral load, until their puppy vaccination series is completed.

When is it safe to get another puppy?

As mentioned previously, parvo is extremely hard to kill and very easily spread carried on fur, shoes, etc. As such, it is considered to be present everywhere. However, the likelihood of a puppy becoming ill from parvo depends in part on the number of virus particles they encounter, so decontaminating your local environment makes it safer for your other pets and future puppies. Indoors, the virus loses infectivity in about a month. Bleach kills the parvovirus, and this process can be sped up by cleaning all surfaces, bedding, bowls, etc. that can handle bleach with a mixture of one part bleach to 30 parts water. At this point it would be safe to introduce a new puppy *indoors*. Outdoors is another matter. Freezing protects the virus, so anytime the yard is frozen it is not safe until there is a complete thaw. In other times of the year, areas with shade can be considered contaminated for 7 months, areas of good sunlight exposure for 5 months. Thorough watering down of the lawn may dilute the virus load to a level that is not infective. It is not safe to apply bleach to the outdoors.