

## PARVOVIRUS INFECTION

### What is Canine Parvovirus?

Canine parvovirus (CPV) infection is a relatively new disease, appearing first in 1978. It is highly contagious and typically characterized by the development of severe vomiting and bloody diarrhoea. The prevalence of parvovirus in the Macarthur area is high. Although all dogs are at risk of developing CPV, pups under 6 months of age are most susceptible. This article will show you how to best protect your dog from this fatal disease.

### How does a dog become infected?

The cause of CPV is a virus and the main source of the infection is from virus shed in the faeces of infected dogs. Susceptible animals become infected by ingesting the virus from a contaminated environment – the ground at the park, footpaths, shoes and other objects, or directly from infected dogs. Unlike most other viruses, CPV is stable in the environment - surviving potentially for a number of years (under the right conditions). Direct contact between dogs is not required to spread the disease. Handling of an unprotected puppy by people with contaminated hands and clothing is also a source of infection. Insects and rodents may also serve as vectors playing an important role in the transmission of the disease to puppies.

Following virus ingestion it is carried to the intestine where it invades the intestinal wall and causes inflammation. The normal incubation period (time from exposure to the virus to the time when signs of disease appear) is 7-14 days.

### What dogs are at risk?

Any dog which has not been fully vaccinated is at risk of developing parvovirus. Parvo may affect dogs of all ages, but the majority of cases of disease are seen in dogs less than 6 months of age. There are also significant differences in response to parvovirus infections and vaccines among different breeds of dogs, with Rottweilers, Doberman Pinschers, and Labrador Retrievers being more susceptible than other breeds.



### How could this disease affect my dog?

The most common form of the disease is the intestinal form known as **enteritis**. Parvovirus enteritis is characterized by vomiting, diarrhoea (with or without

blood), loss of appetite, dehydration, lethargy and fever. Parvovirus enteritis can be seen in dogs of any breed, sex, or age. The disease progresses very rapidly and death can occur as early as two days after the onset of the disease.

Parvo infection can also affect the heart resulting in a myocarditis (inflammation of the heart muscle) resulting in heart and respiratory failure.

The presence of gram negative bacteria, parasites, or other viruses can worsen the severity of the disease and slow recovery.

### How is it diagnosed?

Not all cases of bloody diarrhoea (with or without vomiting) are caused by parvovirus and many sick puppies have been misdiagnosed as having parvo. The most common way to detect parvovirus is using a faecal ELISA test which can be performed in the clinic and a result obtained within 10 minutes. This test is highly sensitive and specific for parvovirus. Occasionally if a puppy has been vaccinated with a live vaccine in the 10 days preceding testing a false positive may result. Very occasionally a dog with parvovirus can test negative. Blood tests will also usually be performed to assess the severity of disease (particularly for secondary effects on liver and kidney function) and to further guide treatment (correction of glucose and electrolyte imbalances, protein and red blood cell levels).

### Can it be treated successfully?

The virus itself does not directly cause death, however, loss of the lining of the intestinal tract caused by infection results in severe fluid losses dehydration, electrolyte (sodium and potassium) imbalances and septicaemia (infection in the bloodstream). The treatment of parvovirus ultimately involves controlling these signs.

The first step in treatment is to correct dehydration and electrolyte imbalances. This requires administration of intravenous fluids containing appropriate electrolytes and glucose. Antibiotics are given to prevent or control septicemia. Pain relief is given as needed to control abdominal discomfort and anti-emetics to control nausea and vomiting.

Antiviral drugs are now available to treat the virus itself (similar to those used in human HIV patients) however are often cost prohibitive for use in veterinary patients and must be used from the start to be effective.

In severe cases plasma and blood transfusions may be required. Despite aggressive treatment infection may still have a fatal outcome in some cases.

Without veterinary treatment the chance of recovery in a severely stricken animal is very small.

## What is the survival rate?

Most dogs with parvo recover if aggressive treatment is used and if therapy is begun before severe septicaemia and dehydration occur. Very young dogs and some breeds (for reasons not fully understood), notably the Rottweiler, have a much higher fatality rate than other breeds.

## Can it be prevented?

The best method of protecting your dog against parvovirus is vaccination. Puppies require a course of 3 parvovirus vaccinations (included in a C3, C5 or C7 vaccination) received at 6-8, 10-12 and 14-16 weeks of age. After the initial series of puppy vaccinations all dogs require a booster at least once a year. Bitches should be boosted before mating or immediately before whelping (in this case only with a killed vaccine) in order to transfer protective antibodies to the puppies.

It is important to realise that a puppy is not completely protected until 2 weeks after their third vaccination. Until this time pups should NOT be walked outside their own yard or be socialised in an unsafe environment. If your yard has ever been home to a parvovirus infected dog it also remains a source of infection for future unprotected puppies introduced into it.

## Immunity and Vaccination

If a puppy recovers from parvovirus infection, he is immune to reinfection temporarily, however vaccination following recovery is strongly recommended. Although some people have expressed concern about the possibility of modified live vaccines reverting to a virulent strain after being given and then causing disease, studies have repeatedly shown that this does not occur. Commercially prepared vaccines are safe and do not cause disease.

The primary cause of failure of canine parvovirus vaccines is an interfering level of maternal antibody against the canine parvovirus. Maternal antibodies are the antibodies present in the mother's milk during the first 24 hours after the puppy's birth. The age at which puppies can effectively be immunized is proportional to the parvovirus antibody titer of the mother and the effectiveness of transfer of maternal antibody within those first 24 hours. High levels of maternal antibodies present in the puppies' bloodstream will block the effectiveness of a vaccine. For this reason we advise that the final puppy vaccination be given after 14 weeks of age.

## Is there a way to kill the virus in the environment?

The stability of the canine parvovirus in the environment makes it important to properly disinfect contaminated areas. Parvovirus is resistant to the effects of heat, many detergents, and alcohol. Environmental decontamination can be accomplished by cleaning hard surfaces, food bowls, water bowls, and other contaminated items with an appropriate antiviral disinfectant such as F10 or Trigene (at the appropriate dilution) or with a solution of 250 mL of chlorine bleach in 5 litres of water. Each of these products can be impaired by organic matter (such as faeces and vomitus) and needs to have adequate exposure time and proper concentrations to work effectively.

## Does parvovirus pose a health risk to me or to my cats?

At the present time, there is no evidence to indicate that canine parvovirus is transmissible to cats or humans.

## Conclusion

In summary, parvovirus is a very common problem that is a huge killer of puppies. Due to its ability to be transmitted through hands, clothes, and most likely rodents and insects, it is virtually impossible for a dog not to be exposed to the disease at some stage in its lifetime. Modified live vaccines are safe and effective, but despite the best vaccination protocol, all puppies will have a window of susceptibility before they are protected. Prompt treatment by a veterinarian will increase survivability in infected puppies and working with your veterinarian on a vaccination program and taking appropriate precautions prior to obtaining this immunity is important.