

Canine Parvovirus

Information for Dog Owners



Key Facts

Canine parvovirus is a very contagious viral infection that occurs globally.

Disease typically affects unvaccinated puppies (< 6 months of age) but can occur in unvaccinated dogs of any age.

Clinical signs often include depression, not eating, vomiting and profuse diarrhea which is often blood-tinged. Severe disease can result in death.

Testing and subsequent treatment need to be initiated immediately; mortality is high and prognosis worsens as dogs develop more severe illness.

Vaccination is highly effective at protecting against parvovirus.

The virus is extremely hardy; contaminated environments can remain a source of infection for months.

What is it?

Canine parvovirus (CPV) is a highly infectious and environmentally resistant virus that occurs throughout the world. Veterinarians most often diagnose infection after owners bring their dog (usually a puppy) to be examined because they are suddenly very sick (e.g. not eating, vomiting, not wanting to run or play, severe diarrhea).



Infected dogs are typically unvaccinated or incompletely vaccinated (have not received their entire puppy series) and have a history of being around other dogs or places where other dogs visit (e.g. dog parks).

The virus usually enters the dog through sniffing or eating infected feces or direct contact with an infected dog. Dogs can shed the virus before they show signs of illness and for several weeks after disease has resolved. Therefore, even dogs that appear healthy can transmit parvovirus. The virus is very hardy - it can remain active in the environment for months (e.g. on soil, cages, toys) and serve as a continued source of infection.

Who gets it?

Domestic and wild dogs can be infected with canine parvovirus. Puppies are most susceptible after passive immunity from their dam wanes and when they are unvaccinated.

Certain breeds and types of dogs appear to have a higher risk of parvovirus infection or show more severe illness once infected. These include Rottweilers, Doberman Pinschers, Labrador Retrievers, German Shepherds, Bull Terrier breeds, and Alaskan sled dogs.

Can people get sick with it?

No, infection with canine parvovirus has not been documented in people. However, people can spread it to other dogs if they have the virus on their hands or clothing and then touch other dogs or their environment (e.g. kennel, toys, grooming tools).

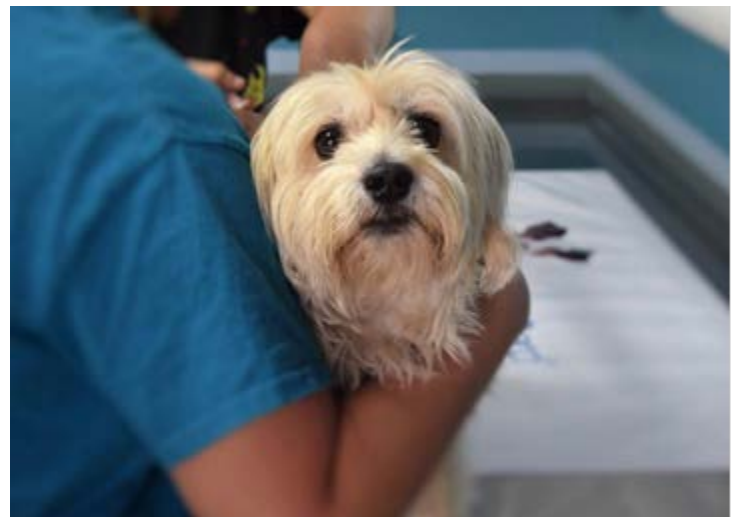
How is it spread?

(Transmission & Infection Risk)

Canine parvovirus is usually spread to a dog after the virus enters the dog's mouth, spreads to the lymph and blood vessels and then moves throughout the body. It can take between 4 to 14 days for disease to develop after infection. The virus attacks the cells of the dog's bone marrow and the intestine. Infected dogs generally become severely immunosuppressed, allowing other bacteria, viruses and parasites to proliferate and worsen disease. Infected dogs develop profuse, often bloody, diarrhea.



Canine parvovirus is spread by direct contact with an infected dog or sniffing or eating infected feces. Infection can also spread through contact with items contaminated with the virus, such as shared bedding, bowls, soil, or even people's hands or clothing, and in this way the virus can be passed from one dog to another. Washing hands thoroughly with soap and water will remove the virus. Specific disinfectants need to be used to remove parvovirus from the environment, including toys, clothing and cages. See the Resources section below for a list of disinfectants effective against parvovirus – note it is a “nonenveloped virus.”



What should I look for? (Signs of disease)

Signs of disease include acute (rapid onset) vomiting, diarrhea or lethargy (acting very tired and weak). Fever can occur; however, some dogs may have a low (subnormal) temperature and concurrent shock (inadequate blood flow to the body, resulting in organ damage) due to severe dehydration. Rarely, sudden death due to heart disease can occur in very young puppies (neonates).

Dogs that survive parvovirus infection may have an increased risk for developing chronic gastrointestinal disease later in life.

How is it diagnosed?

Your veterinarian will diagnose parvovirus based on history (e.g. unvaccinated, recent dog-to-dog contact), clinical signs

(vomiting, diarrhea) and examination findings. A specific and rapid in-clinic ELISA test for parvovirus performed on fecal material is most commonly used to confirm infection.

If your puppy has an acute onset of vomiting or diarrhea and has not been vaccinated or received its entire puppy series of vaccines, your veterinarian may ask you to keep your puppy in a safe place outside the clinic (e.g. with you in your car) until they can evaluate your dog and perform a parvovirus test. This is done to determine the chance your dog has parvovirus, and consequently steps that will be taken to prevent spread of the virus into the veterinary clinic, where other dogs may be exposed and become sick.



Your veterinarian may perform additional blood tests (e.g., complete blood count, serum biochemistry) to determine the degree of immune suppression (low white blood cell counts), anemia and low protein levels. These tests help with prognosis and treatment planning. A fecal examination may be advised to help identify and treat parasites that can worsen disease.

Recent vaccination can make interpretation of the parvovirus ELISA test challenging – it is important to let your veterinarian know if and when your dog was vaccinated against parvovirus.

What is the treatment? Will my dog recover?

Treatment consists of fluid therapy to correct dehydration and losses due to vomiting and diarrhea. Antibiotics are frequently used to treat

and prevent infections that occur secondary to immunosuppression. Medications to reduce vomiting, nausea and pain are also helpful. Nutritional support is critical and speeds recovery.

A monoclonal antibody therapy is available that selectively targets and binds canine parvovirus, preventing the virus from entering and destroying intestinal cells. This treatment requires a single intravenous injection and is intended to be used along with the above-mentioned therapies. If the monoclonal antibody therapy is given early in the disease course, it may reduce the duration and severity of illness as well as reduce the length of time and amount of virus shed in the feces by infected dogs.

Some dogs may require hospitalization and intravenous treatments. Dogs with severe disease will need advanced care at an intensive care facility where they can receive careful monitoring. Dogs with mild illness may be managed at home under the guidance of a veterinarian.

Prognosis (recovery) is good with prompt and aggressive therapy. However, whether your dog improves will depend on 1) how quickly he/she is diagnosed and treated, 2) response to treatment, and 3) in severe illness whether referral to an intensive care facility is an option. Testing and subsequent treatment need to be initiated immediately; prognosis worsens as dogs develop more severe illness.

How can I stop this from happening to my dog and other dogs?

Be informed and proactive. Recovered dogs can shed parvovirus for up to 2 weeks after illness. It is best to keep your dog away from dogs who have been recently infected with parvovirus. Individuals responsible for canine group events or facilities, such as breeders and puppy classes, should immediately notify owners of incompletely vaccinated puppies that may have been infected with parvovirus at their facility. Often this involves a dog at the

facility diagnosed with parvovirus and the owner's puppy likely having had contact with the dog or the shared environment (e.g., floors, kennel), while the dog was sick or up to 2 days prior to the dog becoming sick. These potentially infected puppies should be separated from other dogs for two weeks so that if they do become infected they do not further spread the virus to other dogs. Owners should monitor closely for any clinical signs of parvovirus and promptly seek veterinary care if noted. Environmental decontamination and proper vaccination protocols should be followed as outlined in this document.

Vaccinate puppies to prevent infection with parvovirus - this is especially important for puppies that will have a high level of dog-to-dog contact, e.g. puppy classes or dog shows.

Parvovirus is a recommended core vaccine for all dogs. In general, vaccination should begin at 6 - 8 weeks of age and be repeated at 3- to 4-week intervals until puppies are 16 weeks of age. Boosters at one year of age and then every 3 years are advised to maintain immunity throughout adulthood. Avoid administering vaccines to a pregnant bitch as vaccination during this period poses a potential risk to the fetus. Instead, vaccinate bitches 2 - 3 weeks before breeding to optimize maternal antibodies, which help to protect neonates before they are old enough to be vaccinated.

Your veterinarian may use parvovirus antibody titers to help determine if there is a need for a booster vaccination. In general, a positive titer for CPV correlates with protective immunity. However, given the numerous reasons for titer testing (e.g. prebreeding, successful completion of initial puppy series), titer test types (send out, in-clinic) and companies producing titer tests, owners and veterinary personnel should educate themselves on titer testing and interpretation when considering this instead of booster vaccination. For instance, when

using titers to assess CPV immunity for prebreeding, the bitch should be tested during anestrus 2 - 3 months prior to a planned breeding. This timing is close to breeding, but allows adequate time to assess the results and, if needed, boost the dam's titer through vaccination prior to breeding.

Information to help you and your veterinarian make decisions on vaccine schedule, whether your dog is adequately protected from parvovirus, titer testing, and booster needs can be found in the Resources below.



Socialization of puppies with other puppies and properly vaccinated adult dogs is important. However, socialization of puppies is not advised unless vaccination status of all involved dogs (puppies and adults) is assured. Canine socialization or dog group events should occur as part of well-organized programs that incorporate other preventive measures, such as appropriate environmental cleaning and disinfection and immediate removal of dogs with any signs of illness.

A cleaning and disinfection program is integral to protecting your dog from parvovirus and should be used for all structural indoor and outdoor dog areas (e.g. exercise and housing areas), especially where many dogs are housed or come into contact. Key principles for preventing infection should be followed, including prompt removal of feces and debris,

cleaning with detergent and water, and correct use of a disinfectant (appropriate product, dilution, and amount of time the disinfectant remains wet on the surface to ensure disease agents of concern are killed) in accordance with product instructions.

If a dog is confirmed or suspected to have parvovirus, prompt and aggressive cleaning and disinfection is critical to preventing infection in additional susceptible dogs at that location (e.g. house, yard, doggie daycare). Cleaning should include removal of all fecal material, use of a detergent and water to carefully scrub and rinse all amenable surfaces and objects with which the infected dog likely had contact, followed by disinfection of these areas. A disinfectant known to kill parvovirus must be used. To be effective, items must be clean and the disinfectant must remain wet and in contact with the surface for the allotted time as determined for the disinfectant (generally 10 minutes). Clothing, bedding and toys likely to have been contaminated should ideally be discarded (especially items with heavy contamination). If this is not an option, all fecal material must be removed, items soaked for 10 minutes in dilute household bleach (1 part bleach with 32 parts water) and then machine-washed using hot water and detergent and hot air dried. Cleaning followed by steam cleaning may be useful for furniture or other items for which the above approach is not possible. Disinfecting outdoor surfaces, such as grass, dirt and gravel is, in most cases, not possible. Covering the area with new materials may reduce risks. Otherwise, areas should be left unused by dogs susceptible to parvovirus until adequate time has passed for the virus

to die (up to 7 months). Sunlight will assist in this process.



Outbreak management:

Dogs suspected or known to have parvovirus should immediately be isolated to prevent risk of spread to other dogs. When multiple dogs in a group or at an event become infected, it is recommended to immediately contact someone with experience in veterinary infectious disease risk assessment and outbreak management to help control the further spread of infection. This is particularly important with larger dog group events and facilities such as kennels that house large groups of dogs together. As noted above, prompt and thorough environmental cleaning and disinfection are critical to controlling outbreaks. Additional steps, such as immediate removal of sick dogs, washing hands with soap and water, ensuring participating dogs are adequately protected through vaccination/immune status, and reducing unnecessary dog-to-dog contact, are important in preventing parvovirus transmission and controlling an outbreak (see Resources for further information).

Additional Resources

AAHA Canine Vaccination Guidelines.
Available at:
aaha.org/guidelines/canine_vaccination_guidelines.aspx

Day, MJ, et al. (2016), WSAVA Guidelines for the vaccination of dogs and cats. *J Small Anim Pract*, 57: E1–E45.
Available at:
onlinelibrary.wiley.com/doi/10.1111/jsap.2_12431/full

Kennedy MA, Odunayo A. (2017), Canine parvovirus. *Clinician's Brief*.
Available at:
cliniciansbrief.com/article/canine-parvovirus

Stull, JW, et al. (2016), Disease prevention at canine group settings. Includes content on disinfectants effective against parvovirus.
Available at: vet.osu.edu/preventive-medicine/vpm-research/disease-prevention-canine-group-settings

Larson, L., et al. (2024). Early administration of canine parvovirus monoclonal antibody prevented mortality after experimental challenge. *J Am Vet Med Assoc*, 1: 1-7.
Available at:
<https://doi.org/10.2460/javma.23.09.0541>

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