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Information Sheet

Canine Parvovirus

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Parvovirus is highly contagious, durable in nature, and capable of producing severe or life-threatening disease in dogs. It is critical to prevent transmission of the disease and rapidly identify infected animals in order to provide medical care as deemed appropriate and protection to other dogs in the shelter. Inevitably, Parvovirus will be introduced into shelters from the surrounding community from time to time. If this occurs where preventive medicine is not practiced, in a crowded, busy shelter where staff is already stretched to the maximum, the response to the epidemic is a crisis mode, which is inefficient, very expensive, and much less effective at protecting puppies from disease.

Parvovirus facts

1. Parvovirus is very durable in the environment and can persist in the environment for months or years.
2. Bleach will kill parvovirus, but only at correct dilutions (<1:32) and only if there is no organic matter (i. e. dirt, grass, feces, food particles, and accumulated drool-slime in feeders), which inactivates the bleach.
3. There is no known way to truly disinfect contaminated dirt and grass, although sunlight and drying has some effect. Experts recommend no vulnerable dogs be allowed in contaminated yards for 3-6 months. This means that an adopter whose yard is contaminated with Parvo should not get another puppy for 3-6 months.
4. Parvovirus can be spread on hands, feet, clothing, tools, rodents and flies traveling from kennel to kennel! Dogs may carry the virus on their fur and feet even if they themselves do not get ill. The virus enters the dog through the nose or mouth and has an incubation period of Parvo is between 3 days to 2 weeks (usually 5-7 days).
5. Puppies under 6 months old are most likely to get severe disease. Rottweilers, Dobermans and mixes of these breeds are especially vulnerable. Adult dogs may get mild disease that is indistinguishable from diarrhea of any other cause. Affected dogs have mild to severe diarrhea, may be dehydrated and lethargic, have vomiting, or can develop severe to fatal secondary bacterial infections. Young puppies who acquire parvovirus can die.
6. Vaccination usually prevents disease in adult dogs that have received the full series of vaccines, but does not prevent them from carrying virus on fur if exposed. Puppies between the ages of 6 -16 weeks may not be protected fully by vaccination (vulnerable breeds may not be protected until 6 months).

Diagnosing Parvovirus

There are three ways to "test" for parvo: clinical, by complete blood count (CBC), and by fecal antigen tests.

Clinically: Dogs with parvoviral enteritis typically have vomiting and diarrhea which typically is severe but may be mild. Lymph nodes may be enlarged and the dog may have a fever. Other diseases may mimic parvo, so a clinical diagnosis made without the aid of diagnostic testing is not precise.

CBC: Dogs with parvo typically have very few white blood cells. If the normal lower limits for white blood cell counts on the CBC is 6000 cells/microliter, a dog with parvo may have less than 1000. Although this also does not confirm parvo, it is strong evidence and a dog with some other disease and such a low white cell count requires aggressive treatment or euthanasia regardless.

Fecal antigen test: The fecal tests used in clinics and shelters are assaying for antigens of the virus itself. If the dog has the virus in its feces, the test should be positive. Always keep in mind that:

- Tests must be performed exactly as the literature indicates or the test is invalid.
- Tests should be performed on any dog with diarrhea that is also exhibiting signs of systemic disease: vomiting, lethargy, fever, loss of appetite, dehydration, or dogs with unusually copious, smelly/bloody diarrhea, or any dog with known exposure to parvo within the preceding 14 days who then develops diarrhea.

Interpreting test results

- Some vaccinated dogs may have a false-positive test, i.e. the virus in their feces is vaccine strain. Vaccinated dogs should only be diagnosed with parvoviral enteritis if they have clinical signs strongly suggesting parvo. The vaccine-positive result happens about one week after vaccination with a traditional modified live virus vaccine and within 3 days to a week with a high antigen mass vaccine.
- Some dogs with parvo have negative tests, either because it is very early in the course of the disease or late in the course. Tests may be repeated on dogs that are strong suspects or used in conjunction with a CBC.
- Each shelter should have a decision tree about which tests to use and what to do with a dog once tests are performed. One example: have a transitional area for dogs that have suspect parvovirus but things do not add up (a dog who has a positive test result but who also appears well, a dog with bloody diarrhea that has negative test results). Attempt to clarify the status of such dogs with a CBC and euthanize or treat these dogs if they have less than 4000 white cells/microliter. Retest and monitor "transitional" dogs daily until they are clearly not infected with parvo and then place them up for adoption or they clearly have parvo and then euthanize or treat them.

Limiting the Spread of Parvovirus

- If a shelter ever brings in dogs from the outside, then parvovirus will be introduced eventually.
- Hose sprayers should be set so that the dilution of bleach delivered is 1:32. Or if manual mixing is your method of bleach application pre-measured cups with a clear and permanently marked fill line should be kept within reach of the bleach container (or even tied to the handle of the bleach bottle.)
- Adequate bleach supplies should be maintained. Bleach dissipates in strength when exposed to light and when in contact with organic material. Bleach baths and bleach water in mop buckets should be changed frequently and enough bleach should always be on hand in the event that a full scale major disinfection is required due to a positive parvo finding.
- In addition to a ample supply of bleach shelters should ensure availability of protective gear such as gloves, Tyvek suits, plastic boots, eye protection, and so forth.

Perform routine shelter maintenance to minimize the spread of infection in the event that infection does occur

- Cleaning should be performed routinely (typically daily for tasks like cages and weekly for floors, walls, vehicles etc.) with a 1:32 dilution of bleach.
- All areas of the shelter are to be cleaned with bleach solution (except carpeted areas). This includes vehicles, front lobby, all walkways and common areas, after hours receiving, etc. This should be done weekly on an ongoing basis.
- Vehicles should be washed at the end of each shift, removing all feces and solid matter. Then the areas of the truck or van where dogs are kept should be sprayed with bleach.

- Scrapers and scrub brushes should be designated for each kennel and used only for that kennel to minimize cross contamination. These will be kept in labeled paint buckets for each kennel.
- Remove all gross organic matter from runs. Scrape or scrub as needed to remove dried on debris.
- If necessary, use degreasing solution to clean the kennel.
- Rinse with water.
- Spray with bleach solution. Avoid splashing as much as possible (splashing can spread the virus).
- Allow to air dry, or squeegee if necessary.
- Ideally wait ten minutes before letting dogs back into that area.
- Spray inside and outside walkways with bleach solution after cleaning runs.

Perform routine surveillance and keep track of trends.

- Maintain a logbook for staff to record parvo test results in a convenient location and ensure that staff uses it! It should include the Parvo test date, animal number, and initials of the person running the test (which also allows supervisors to figure out who does not runs tests).
- Keep track of how many cases of diarrhea there are each week and what fraction of the cases are parvovirus.
- Monitor for severe or bloody diarrhea, vomiting, depression or other signs of illness. Also observe for dogs that are found dead in run or any incoming puppy that has an unthrifty appearance. If there is any doubt, that animal should be tested.
- Immediately notify the medical staff if a dog is showing signs of disease.

After parvovirus is diagnosed: individual dog

A written policy should be in place prior to cases of parvo stating whether affected dogs will be treated or euthanized, and if treated, whether in the shelter or at a private clinic. In many shelters, after a dog tests positive for parvo, the following steps should be taken.

1. Notify the veterinarian.
2. From the time that parvo is diagnosed, all staff handling the affected dog(s) are to wear smocks, gloves and shoe covers. This includes staff performing euthanasia or transporting the dogs. Clothes that may have been exposed (including shoes) should be placed into biohazard bags until disinfected with hot water and bleach.
3. Except as described below, dogs testing positive for Parvo are to be euthanized immediately. Euthanasia should be performed in the run, and the body double bagged and transported directly for disposal.
4. If the dog is highly adoptable and is asymptomatic or minimally symptomatic, treatment at an outside clinic may be considered. The dog may be transferred to the outside clinic if it meets these criteria:
 - The dog is eating and drinking, hydrated, and has mild or no depression.
 - The dog does not have a high fever (> 104) or other signs of sepsis.
 - The dog is behaviorally and medically otherwise adoptable.
 - The dog is older than 8 weeks old.
 - The proper authority at the shelter and the receiving clinic has approved the dog's treatment.
5. Treatment must be arranged and the dog transferred to an outside clinic within two hours of diagnosis.
6. The dog should be transported in a crate. Afterwards, the van and crate should be cleaned with bleach solution (1:32). The crate should be broken down completely and cleaned of all organic material using a detergent soap, followed by spraying with bleach solution. This is to be repeated twice, at least 24 hours apart. The crate should be labeled "contaminated with Parvo - do not use until bleached twice". The label should be dated and initialed, and a notation should be made of each cleaning.

After parvovirus is diagnosed: Exposed wards and shelter

1. Immediately upon diagnosing Parvo, a sign should be placed on the affected run stating: "Parvo, staff only to enter." The area should be closed to the public for 14 days.
2. Bleach dip pans are to be set up outside the affected run and outside the doors of the affected ward. Dip pans are to be used every time you pass through the doorway. The towels and bleach solution are to be changed twice daily, including once at the start of cleaning. Enough bleach solution must be used to over-saturate the towel. Towels from dip pans may be laundered after use, or discarded if they are disintegrating.
3. All brushes, watering cans, food and water bowls and toys are to be washed separately after soaking for five minutes in bleach solution. All cleaning supplies are to be used for that ward exclusively.
4. When cleaning, clean the affected ward last and the affected kennel after cleaning the rest of the ward. Remove all remnants of feces and then clean with bleach diluted in water at 1:32. If a scrub brush is used on that kennel, it is to be discarded after the initial cleaning. The affected kennel is then to be left open for the remainder of the quarantine, and sprayed down daily with 1:32 bleach solution along with the other kennels.
5. The entire ward, including walkways, walls and doorknobs should be cleaned of organic matter, then sprayed with bleach solution. Staff entering the area are to wear shoe covers and gowns or jumpsuits

- that are removed immediately upon exiting.
6. No animals are to enter or exit the ward for a 14 day quarantine period. No dogs from the affected ward are to be walked outside during the quarantine period. At the discretion of the veterinarian, individual adult dogs that are current on vaccinations (over one month elapsed from time of last vaccination) may be released after a 7 day quarantine.
 7. Continue to monitor dogs as described in "Surveillance." Check in contact and nearby dogs every day and record.
 8. Play yards are a significant source of contamination. Unless it is known for certain that the Parvo positive dog was never allowed in a play yard, all play yards are to be shut down for three days. Yards known to be heavily contaminated (Parvo positive dogs were in the yard on multiple occasions prior to diagnosis or on a single occasion for a duration of 1 hour or more) are to be shut down for two weeks.
 9. Outside runs are to be closed to dog-walking until they have been sprayed with bleach solution and held open for 24 hours following the first bleach solution application. Signs should be placed on the outdoor areas stating "infectious disease: do not enter".
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Client Information

- Parvovirus is highly infectious and causes diarrhea (sometimes bloody), vomiting, lethargy, weakness, and fever. The virus also attacks white blood cells, leaving the infected dog much more susceptible to other bacterial infections.
- Diarrhea can be mild or severe fatal. Diarrhea in an otherwise bright, alert, eating, drinking dog is more likely due to diet change, stress, parasites, or diet change, than to parvovirus.
- The virus is very contagious and is spread by exposure to feces. Unfortunately, dogs from shelters often have been exposed to parvovirus and should be observed for 14 days after adoption to be sure they are not incubating the virus.
- There is some risk that a dog incubating parvovirus will infect other dogs. The new dog and its feces should be kept away from puppies and unvaccinated dogs for 2 weeks. Dogs that have had at least two vaccines, with the last one at least 2 weeks prior to exposure to an infected dog are fairly protected.
- If you suspect your dog has parvo, call your vet as soon as possible. The earlier the infection is diagnosed and treated with fluids, antibiotics, and nursing care, the more likely it is to do well.

Communicating with the general public when parvoviral infections occur in your shelter

- The presence of cases of parvovirus in the shelter should be communicated to local veterinarians and to the public.
- Adopters should be informed of the exposure status of their new dogs with a copy of any relevant medical records, and should sign an adoption with medical waiver form.
- All adopters should be given a parvo information handout which should include a description of the disease and the associated clinical signs of an infected animal.
- As always people who have recently adopted an animal should be strongly advised to have the animal examined by a veterinarian. In the event that the adopted animal had been kept in an area where there was even a remote chance that it could have been exposed to parvo the adopter should be informed and it should be made clear to them that they should notify their veterinarian so that they may examine the dog, perform any necessary diagnostic tests, and properly advise the owner on the care of their newly adopted animal.