

## Frequently Asked Questions about Canine Parvovirus type 2c

from [http://www.avma.org/animal\\_health/canine\\_parvovirus\\_faq.asp](http://www.avma.org/animal_health/canine_parvovirus_faq.asp)

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[This FAQ document is based on what is currently known about this virus. As more information is received, this document will be updated.]

Q: What is canine parvovirus type 2c?

A: Canine parvovirus type 2c is a variant, or strain, of canine parvovirus. It was first detected in Italy in 2000, and has also been reported in Western Europe, Asia, and South America. Outbreaks of canine parvovirus associated with CPV-2c in the United States were confirmed in 2006 and 2007.

Q: How does canine parvovirus type 2c differ from the typical canine parvovirus strains in the United States?

A: Canine parvovirus type 2 (CPV-2) is the virus that causes "parvo" enteritis in dogs. All of the strains of CPV-2 are genetically related. CPV-2c differs from CPV-2a and CPV-2b at only one point on the DNA strand; however, this one point makes a big difference in the virus. As a result of this difference, the CPV-2c virus has altered its antigenicity. The antigenicity of a virus results from the proteins (called antigens, pronounced ANN-ti-jens) on its surface that stimulate the infected animal's body to mount an immune response. These antigens are what allow vaccines to provide protection from viral infection. Because the antigens of CPV-2c are slightly different than those of CPV-2a and CPV-2b, currently available vaccines may not be as effective in preventing CPV-2c, and some tests do not detect the presence of the CPV-2c virus.

Q: What type of infection does CPV-2c cause?

A: CPV-2c causes the same signs as infection with CPV-2a and CPV-2b. These include loss of appetite, vomiting, diarrhea (which may be bloody), and dehydration. Without treatment, many affected animals die. Severe cases may die despite aggressive treatment. To read more about canine parvovirus, view the AVMA's brochure, "What you should know about canine parvovirus," at [http://www.avma.org/communications/brochures/canine\\_parvo/parvo\\_brochure.asp](http://www.avma.org/communications/brochures/canine_parvo/parvo_brochure.asp).

Q: Who is susceptible to CPV-2c infection?

A: The risk for CPV-2c (as well as many other infectious diseases) infection is highest when large numbers of dogs are housed together in close confinement, such as boarding/training kennels, shelter facilities, dog shows, and racing greyhound kennels. Dogs of all ages and breeds are susceptible to infection, but puppies and unvaccinated dogs are at higher risk of infection and illness. There is no evidence that CPV-2c can infect people.

Q: How is CPV-2c transmitted?

A: As with other parvoviruses, CPV-2c is highly contagious and is spread by direct dog-to-dog contact and contact with contaminated feces (stool), environments or people. The virus can also contaminate kennel surfaces, food and water bowls, collars and leashes, and the hands and clothing of people who handle infected dogs.

Q: How is CPV-2c infection diagnosed?

A: Because the signs are similar for CPV-2a, CPV-2b and CPV-2c infection and illness, the types cannot be distinguished by examination or the signs of disease observed. Also, because the antigens of CPV-2c are slightly different than those of CPV-2a and CPV-2b, some parvo detection tests will not detect CPV-2c; if parvo is suspected but the routine test results are negative, further testing may be necessary to determine if CPV-2c is the cause of infection. For more information on the discovery and testing of CPV-2c in the United States, go to [http://www.cvhs.okstate.edu/index.php?option=com\\_content&task=view&id=437](http://www.cvhs.okstate.edu/index.php?option=com_content&task=view&id=437).

Q: What is the treatment for CPV-2c infection?

A: As with the other strains of canine parvovirus, treatment of individual dogs consists of supportive care and efforts to replace lost fluids and electrolytes, control vomiting and diarrhea, and prevent secondary infections. There is no specific anti-viral therapy for CPV-2c infection. Since CPV-2c is highly contagious, isolation of infected dogs is necessary to minimize spread of infection.

Q: Is there a vaccine for CPV-2c?

A: At this time, there is no vaccine to specifically prevent CPV-2c infection. Some dogs with CPV-2c infection and illness had previously been vaccinated with commercially available parvovirus vaccines, indicating that the vaccines may not be as effective in preventing illness due to CPV-2; however, the report did not state if the dogs were vaccinated at appropriate ages and intervals. There is evidence that the commercially available vaccines may provide some protection, and they are still strongly recommended for prevention of canine parvovirus infection.

Q: If the parvovirus vaccine may not fully protect my dog from CPV-2c, why should I still have my dog vaccinated for parvo?

A: There are several reasons to have your dog vaccinated for parvo. The vaccine provides protection from infection with CPV-2a and CPV-2b, which are more common and widespread. There is evidence that the commercially available vaccines provide some protection from CPV-2c. When a dog develops parvo, treatment can be very expensive, and the dog may die despite aggressive treatment. Vaccinating your dog is the most effective way to prevent infection.

Q: How is CPV-2c infection managed?

A: Strategies for reducing the spread of CPV-2c infection include isolation of ill dogs (as well as any dogs exposed to ill dogs), biosecurity measures (such as changing of clothes and hand washing after handling affected dogs), and effective sanitation. Parvoviruses are very hardy, are resistant to many disinfectants, and can survive in the environment for long periods of time.

Q: How is CPV-2c infection prevented?

A: Although the commercially available parvovirus vaccines may not provide full protection from CPV-2c infection, they are effective against other parvoviral strains and may offer some protection from CPV-2c. Consult your veterinarian for an appropriate vaccination schedule for your dog.

Dogs with vomiting or diarrhea or other dogs who have been exposed to ill dogs should not be taken to kennels, show grounds, dog parks, or other areas where they will come into contact with other dogs.

Similarly, unvaccinated dogs should not be exposed to ill dogs or those with unknown vaccination histories. People who are in contact with sick or exposed dogs should avoid handling of other dogs or at least wash their hands and change their clothes before doing so.

**For additional information:**

Hong C, Decaro N, Desario C et al. Occurrence of canine parvovirus type 2c in the United States. *J Vet Diagn Invest* 2007; 19: 535-539.

Kapil S, Cooper E, Lamm C et al. Canine parvovirus types 2c and 2b circulating in North American dogs in 2006 and 2007. *J Clin Microbiol* 2007; 45: 4044-4047.

Oklahoma State University press release:

[http://www.cvhs.okstate.edu/index.php?option=com\\_content&task=view&id=437](http://www.cvhs.okstate.edu/index.php?option=com_content&task=view&id=437)