

Frequently Asked Questions about Canine Respiratory Coronavirus

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Q: What is canine respiratory coronavirus?

A: Canine respiratory coronavirus (CRCoV) is a group 2 coronavirus. It is genetically related to the bovine coronavirus (which can cause respiratory infections in cattle) and the human coronavirus that causes the "common cold" in people.^{1,2} CRCoV is NOT related to the group 1 enteric coronavirus that can cause diarrhea in dogs.

Q: Where does CRCoV occur?

A: CRCoV was initially discovered in dogs with acute respiratory infection in England in 2003.¹ This virus commonly infects dogs in the United Kingdom, Ireland, Greece, Italy, and Japan.³⁻⁶ Recent studies have shown that CRCoV is also present in the U.S. and Canada, where about 50% of tested dogs had antibodies to the virus, indicating past infection.^{6,7}

Q: What type of infection does CRCoV cause?

A: CRCoV can cause an acute respiratory infection, and is part of the complex of viruses and bacteria associated with canine infectious respiratory disease (CIRD) or "kennel cough". CRCoV infection alone can cause CIRD, but also occurs in co-infections with other canine respiratory pathogens such as parainfluenza virus, adenovirus, distemper virus, herpes virus, influenza virus, Bordetella bronchiseptica, Mycoplasma spp, and Streptococcus zooepidemicus.

Q: Who is susceptible to CRCoV infection?

A: The risk for CRCoV 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. There is no evidence that CRCoV can infect other animal species or people.

Q: How is CRCoV transmitted?

A: As with other respiratory pathogens, CRCoV is highly contagious and is spread by direct dog-to-dog contact, aerosols of respiratory secretions, and contact with contaminated environments or people. The most efficient transmission occurs by direct contact with infected dogs and by aerosols generated by coughing and sneezing. 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: What are the clinical signs of CRCoV infection?

A: Most dogs have a mild disease consisting of cough, sneezing, and nasal discharge. Some dogs have a subclinical infection with no clinical signs, yet they shed virus that can infect other dogs. A small minority of dogs infected with CRCoV have progressed to pneumonia, particularly if co-infected with other respiratory pathogens. The incubation time from CRCoV exposure to clinical disease is unknown, but may be a few days. The number of days that virus is shed is also unknown. The clinical signs usually resolve after 1-2 weeks, depending on whether co-infection with other pathogens is involved.

Q: How is CRCoV infection diagnosed?

A: Virtually all the viral and bacterial respiratory pathogens in CIRDC cause similar clinical signs of coughing, sneezing, and nasal discharge. Therefore, CRCoV cannot be diagnosed based on clinical signs. IDEXX has developed a canine respiratory pathogen PCR panel that detects the nucleic acid of 7 respiratory pathogens, including CRCoV, parainfluenza virus, adenovirus, distemper virus, herpes virus, influenza virus, and Bordetella bronchiseptica. The URL for this diagnostic panel is: <http://www.idexx.com/animalhealth/laboratory/realpcr/tests/crd.jsp>. Nasal and pharyngeal swabs collected from dogs with clinical signs of CIRDC can be submitted to IDEXX for this PCR panel.

Q: What is the treatment for CRCoV infection?

A: There is no specific anti-viral therapy for CRCoV infection. Treatment consists of supportive therapy based on clinical signs. Antibiotics may be needed if there are signs of secondary bacterial infection. Since CRCoV is highly contagious, isolation of infected dogs is necessary to minimize spread of infection. The quarantine time for infected dogs is unknown since the time period for virus shedding has not been defined. A conservative estimate based on other respiratory viruses is 3 weeks. However, co-infection with other pathogens such as distemper virus or Bordetella bronchiseptica will extend the quarantine time since these agents can be shed for months.

Q: Is there a vaccine for CRCoV?

A: At this time, there is no vaccine to prevent CRCoV infection or reduce the clinical disease. CRCoV is not related to the canine enteric coronavirus; therefore, vaccines for canine enteric coronavirus are NOT effective. Studies have shown that CRCoV infection generates antibodies that reduce the risk for re-infection or at least reduce the clinical disease if infection occurs. The duration of infection-induced immunity is unknown.

Q: How is CRCoV infection managed?

A: Important management strategies for reducing spread of CRCoV infection include isolation of sick and exposed dogs, biosecurity measures (such as changing of clothes and hand washing after handling affected dogs), and effective sanitation. The length of time that CRCoV persists in the environment is unknown, but may be at least several hours. Most viruses that cause CIRDC are inactivated by routinely used disinfectants (except for adenovirus). Disinfected surfaces should be thoroughly dried because moisture promotes virus survival.

Q: How is CRCoV infection prevented?

A: Even though there is no vaccine for CRCoV, dogs in boarding/training kennels, shelters, and dog shows should be vaccinated against other respiratory pathogens for which vaccines are available, including parainfluenza virus, adenovirus, distemper virus, and Bordetella bronchiseptica. This will reduce the risk for co-infection with these pathogens. Clinical disease in dogs infected with CRCoV can be more severe if co-infections occur.

Importantly, dogs with respiratory infection and dogs exposed to other dogs with respiratory infection should not be taken to kennels or show grounds. 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.

References

Erles K, Toomey C, Brooks HW, Brownlie J. Detection of a group 2 coronavirus in dogs with canine infectious respiratory disease. *Virology* 2003; 310:216–223.

Erles K, Shiu KB, Brownlie J. Isolation and sequence analysis of canine respiratory coronavirus. *Virus Res* 2007; 124:78–87.

Erles K, Brownlie J. Investigation into the causes of canine infectious respiratory disease: antibody responses to canine respiratory coronavirus and canine herpesvirus in two kennelled dog populations. *Arch Virol* 2005; 150:1493–1504.

Priestnall SL, Brownlie J, Dubovi EJ, Erles K. Serological prevalence of canine respiratory coronavirus. *Veterinary Microbiology* 2006. 115:43–53.

Yachi A, Mochizuki M. Survey of dogs in Japan for group 2 canine coronavirus infection. *J Clin Microbiol* 2006; 44:2615–2618.

Priestnall SL, Pratelli A, Brownlie J, Erles K. Serological prevalence of canine respiratory coronavirus in southern Italy and epidemiological relationship with canine enteric coronavirus. *J Vet Diagn Invest* 2007; 19:176–180.

Ellis JA, McLean N, Hupaelo R, Haines DM. Detection of coronavirus in cases of tracheobronchitis in dogs: a retrospective study from 1971 to 2003. *Can Vet J* 2005; 46:447–448.