

Canine Enteric Coronavirus (CECoV)

Information for Dog Owners



Key Facts

Canine enteric coronavirus (CECoV) is a viral infection that occurs in dogs globally. This coronavirus is not the virus that causes COVID-19 (SARS-CoV-2), the predominately human respiratory disease.

Clinical disease is uncommon in dogs with CECoV. When occurring, disease is often mild and involves self-limiting diarrhea. Rarely, severe disease (and death) can occur in dogs concurrently infected with CECoV and other gastrointestinal organisms (e.g. canine distemper virus, parvovirus). A rare, severe form of CECoV (CCoV-IIa) has been linked to outbreaks of severe gastrointestinal disease in puppies.

Typically, vaccination against CECoV is not recommended due to the low chance of illness related to CECoV and lack of protection for other coronavirus strains (CCoV-IIa).

What is it?

Canine enteric coronavirus (CECoV) is a virus that occurs globally. It is a highly infectious but fragile virus that is easily killed by most routine disinfectants. This virus differs from the virus that causes COVID-19 (SARS-CoV-2), the cause of the 2020 human respiratory disease pandemic.

Veterinarians most often diagnose CECoV infection incidentally. A common example of this would be after a dog (usually a puppy) is examined due to sudden severe illness (e.g. not eating, vomiting, severe diarrhea). The main cause of the dog's severe illness is infection with a gastrointestinal virus, parasite or bacterium, as well as the dog being concurrently (incidentally) infected with CECoV.

Infected dogs typically have recently been around other dogs or places where many dogs visit/are housed (e.g. shelter, kennel, dog park).



Who gets it?

Domestic dogs can be infected with CECoV. Dogs in group housing settings, such as shelters and kennels, are most commonly infected. A rare, severe form of the virus (CCoV-IIa) has been linked to outbreaks of severe gastrointestinal disease (and even death) in puppies in group housing settings.

Can people get sick with it?

No, infection with CECoV 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). This is in contrast to the corona virus SARS-CoV-2 (causes COVID-19) that is predominantly spread from person-to-person but can occasionally infect dogs.



How is it spread? (Transmission & Infection risk)

Canine enteric coronavirus is spread between dogs by direct contact with an infected dog or sniffing or eating an infected dog's feces. Dogs that appear healthy can transmit CECoV. 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. Once a dog has contact with the virus, it enters the dog's mouth and spreads through its body to the intestinal tract, where it causes disease.

Washing hands thoroughly with soap and water or using alcohol-based hand sanitizer will remove/kill the virus. Most commonly used surface disinfectants will kill the virus, removing it from the environment, including toys, clothing and cages. See the *Resources* section for a list of disinfectants effective against this virus – note it is an “enveloped virus.”

What should I look for? (Signs of disease)

Dogs infected with CECoV generally do not show signs of disease, unless they are co-infected with another gastrointestinal organism (e.g. canine distemper virus, parvovirus, parasite) or infected with the corona virus strain CCoV-IIa.

Signs of disease from CECoV infection include mild, self-limiting diarrhea. Signs of disease in dogs infected with CCoV-IIa include severe gastrointestinal disease (e.g. vomiting, profuse diarrhea), immunosuppression, and in some cases neurologic disease and death.

How is it diagnosed?

If your dog has a new episode of diarrhea and has recently been in a dog group setting or is not up-to-date on routine dog vaccines, your veterinarian may ask you to keep your dog in a safe place outside the clinic (e.g. with you in your car) when arriving for an appointment until they can evaluate your dog. This request is made to prevent the spread of infections into the veterinary clinic where other dogs (and humans) may be exposed and become sick.

Your veterinarian will diagnose canine enteric coronavirus (CECoV) based on the following: recent history of dog-to-dog contact (such as at dog group settings), clinical signs (diarrhea) and examination findings. A PCR-based panel test that simultaneously screens for multiple canine gastrointestinal organisms can be performed on fecal material and is commonly used to confirm infection. However, further testing is needed to identify specific coronaviruses (such as CCoV-IIa). Your veterinarian will use caution in interpreting test results from PCR panels due to the occurrence of CECoV in both sick and healthy dogs. This means that if the test is positive for CECoV this may not be the organism causing your dog's illness and, if your dog is healthy, specific therapy is not indicated.

Your veterinarian may perform additional tests (e.g. parvovirus test, complete blood count, serum biochemistry) to determine whether other organisms are likely involved in your dog's illness. If your dog is very ill, these additional tests may be performed to determine the degree of immune suppression (low white blood cell counts), anemia and low protein levels to assist your veterinarian with prognosis and treatment planning. A fecal examination may be advised to help identify and treat parasites that can worsen disease.

Recent vaccination against gastrointestinal organism, such as parvovirus and distemper virus, can make interpretation of test results challenging – it is important to let your veterinarian know when your dog was last vaccinated.

What is the treatment? Will my dog recover?

Treatment is typically not needed for CECoV. If diarrhea is present, your veterinarian will recommend supportive nursing care for your dog. Most dogs can be managed at home under a veterinarian's guidance. If additional organisms are involved resulting in more severe disease, treatment may consist of intravenous fluid therapy. Antibiotics may be used to treat and prevent infections that occur secondary to immunosuppression, along with medications to reduce vomiting, nausea and pain.

Prognosis (recovery) is good, as most dogs who do develop illness related to CECoV have mild disease. However, prognosis will vary dependent on additional organisms being present (e.g. canine parvovirus), if infected with CCoV-IIa, and overall disease severity.



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

Be informed and proactive.

Vaccinate puppies against canine distemper virus and canine parvovirus and keep vaccines up to date. Ensure your dog is routinely dewormed according to your veterinarian's recommendation. Information to help you and your veterinarian make decisions on vaccine schedule, whether your dog is adequately protected from gastrointestinal organisms, titer testing, and booster needs can be found in the *Resources* section.

Socialization of puppies with other puppies and properly vaccinated adult dogs is important. However, socialization of puppies is not advised unless vaccination and deworming 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.

Outbreak management:

Dogs suspected or known to have coronavirus, particularly CCoV-IIa, and other gastrointestinal disease-causing organisms should immediately be isolated (keep separated from other dogs) 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. Prompt and thorough environmental cleaning and disinfection, immediate removal of sick dogs, frequently cleaning hands between contact with different dogs, and reducing unnecessary dog-to-dog contact, are important in preventing transmission of dog gastrointestinal organisms in facilities/settings and controlling an outbreak (see *Resources* for further information).

Additional Resources

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

Alves C, et al. (2018), Identification of enteric viruses circulating in a dog population with low vaccine coverage. *Braz J Microbiol*, 49(4): 790–794.
Available at: <https://www.scielo.br/scielo.php>

Licitra BN, et al. (2014), Canine enteric coronaviruses: Emerging viral pathogens with distinct recombinant spike proteins. *Viruses*, 6(8): 3363–3376.
Available at: <https://www.mdpi.com/journal/viruses>

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

Marks SL, et al. (2011), Enteropathogenic bacteria in dogs and cats: Diagnosis, epidemiology, treatment, and control. *Vet Intern Med*, 25:1195–1208.
Available at: <https://onlinelibrary.wiley.com/doi/epdf/10.1111/j.1939-1676.2011.00821.x>

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

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