

# Canine Distemper Virus

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## BASIC INFORMATION

### Description

Canine distemper virus (CDV) is very contagious and infects the respiratory tract, the gastrointestinal (GI) tract, and the central nervous system (CNS, including brain and spinal cord). The disease can be prevented by vaccination.

### Cause

CDV is an enveloped virus closely related to measles virus. It is highly concentrated in respiratory tract secretions and is also found in other body fluids, such as urine. CDV is commonly spread through the air and survives in cold, freezing environments. The virus can be destroyed by sunlight, high heat, drying, and many common disinfectants.

### Clinical Signs

Clinical signs vary widely in severity. Signs may be very mild, with only fever, lethargy, and slight nasal or eye discharge. Severe systemic infection occurs most often in young puppies and unvaccinated adult dogs. Clinical signs in severe cases may include fever, watery or cloudy nasal and eye discharge, and coughing that may be accompanied by difficulty breathing. Decreased appetite, vomiting, and diarrhea may also occur. Examination of the eyes with an ophthalmoscope may reveal inflammation in the retina.

CNS signs include seizures, behavioral changes, weakness, and difficulty walking. Involuntary repetitive contractions (tic, myoclonus) of certain muscles, often in one limb, and twitching of facial muscles may be seen. Neurologic signs may occur at the same time as respiratory and GI signs, or they may occur several weeks after recovery from those signs.

Other findings may include thickened foot pads (known as *hard pad disease*); abnormal tooth enamel (pits, discoloration); and dry, painful eyes from decreased tear production. In some cases, infected dogs have minimal clinical signs initially, then months to years later develop CNS signs. This variant of CDV disease is called *old dog distemper*.

### Diagnostic Tests

No single test is available to make the diagnosis of CDV infection, so a number of tests are usually recommended to search for evidence of the disease, such as the following:

- A complete blood count may show low numbers of lymphocytes (a form of white blood cell affected by the virus).
- A biochemistry panel may show blood protein abnormalities.
- Analysis of cerebrospinal fluid (CSF) taken by a spinal tap may be recommended and may show increased numbers of lymphocytes and high protein concentrations.

- X-rays of the chest and abdomen may be recommended if respiratory or GI tract signs are present.
- Tests for antibodies to CDV in the blood and/or CSF may help identify an active infection.
- Special stains on scrapings or swabs taken from the conjunctiva, skin, or other samples can sometimes reveal viral components in the cells, but false-negative results are common.

Other tests may be recommended to rule out other diseases that cause similar clinical signs.

## TREATMENT AND FOLLOW-UP

### Treatment Options

Dogs with suspected CDV infection should be isolated from other dogs because of the highly contagious nature of the virus. No drug is available that will destroy the virus or rid it from the body, so supportive care is usually instituted.

Supportive care for respiratory and GI infection may include intravenous fluids and antiemetic medications. Nebulization and physical therapy (coupage) of the chest may be done to loosen and remove thickened respiratory secretions. Secretions are also cleaned from the nose and eyes. Antibiotics may be needed to treat secondary bacterial infections.

Animals with CNS disease may require anticonvulsant medications to control seizures, and steroids (prednisone) may be used in some animals to treat CNS inflammation.

### Follow-up Care

Animals that appear to recover from respiratory and/or GI illness may develop CNS signs a few weeks to months later. Close monitoring is needed to watch for neurologic abnormalities. Recovering dogs may shed virus for several weeks, and care must be exercised to minimize or prevent interaction with other dogs, particularly dogs that are not vaccinated.

Prior to disinfection of cages and floors, all organic material must be removed. Disinfectants must contact treated surfaces for prolonged periods, depending on label directions. Immunity to CDV persists for many years following recovery from infection.

### Prognosis

Animals with mild respiratory or GI tract signs may recover; however, many infected dogs will develop CNS disease. Prognosis for dogs with CNS disease is guarded (uncertain) to poor. Some dogs may recover but have permanent problems, such as seizures (that can be controlled with medication), vision abnormalities, and/or involuntary muscle tics. Euthanasia may be considered for severely ill animals that do not respond to supportive therapy.