

# Canine influenza

dog flu occurring in canine animals.

Canine influenza is caused by varieties of influenza virus A, such as equine influenza virus H3N8, which in 2004 was discovered to cause disease in dogs.

-Because of the lack of previous exposure to this virus, dogs have no natural immunity to this virus. Therefore, the disease is rapidly transmitted between individual dogs.

-It is a disease with a high morbidity but a low mortality.

## Transmission

Canine influenza virus (CIV) is highly contagious and rapidly spread by a combination of aerosols, droplets, and direct contact with respiratory secretions or contaminated fomites.

A substantial amount of virus is found in droplets and aerosols generated during coughing or sneezing.

The virus particles form suspensions that remain airborne for prolonged periods of time, after which they settle on surfaces.

This aerosolization is an important factor in the rapid spread of CIV, and is likely the cause of the explosive onset of disease in many dogs over a short period of time.

Direct dog-to-dog transmission via contact with respiratory secretions and fomite-associated transmission are two other important mechanisms of CIV spread.

Influenza viruses have been shown to persist for several hours in dried mucus.

They may be picked up and passed on by human hands touching an inanimate object, such as a doorknob contaminated with mucus, and then spread to other dogs.

Human handling of infected dogs followed by contact with other dogs has greatly contributed to the spread of canine influenza in shelters

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## **Clinical signs**

### Mild, Uncomplicated Disease

The most common clinical presentation of CIV infection is a mild upper respiratory tract infection. The typical presentation is:

Lethargy ,Anorexia ,Low-grade fever

Nasal discharge

Dry, nonproductive cough (more common in mild disease) or soft, moist cough

The nasal discharge is typically clear initially but becomes mucopurulent rather quickly.

- Coughing may last for several weeks, even up to 3 or 4 weeks, regardless of treatment with antibiotics and antitussive therapy.

### Severe, Complicated Disease

Dogs at higher risk for a more severe form of canine influenza include those that are:

In poor condition and/or are debilitated

Concurrently exposed to other pathogens .

Very young or very old .

However, it is important to note that even healthy dogs can develop more severe disease. In a clinical study of CIV involving experimentally infected dogs with no secondary bacterial or viral infections, every dog developed lung consolidation and lesions.

Dogs with more severe disease usually present with:

A high fever (104-106°F)

An increased respiratory rate

Other signs of pneumonia

In most cases, the severe course is attributed to secondary infection with bacteria or Mycoplasma that manifest as compromised pulmonary defenses. The recovery from this form may be prolonged.

Necropsy finding

When dogs with fatal disease are examined, they often show hemorrhages in the lungs, mediastinum, and pleural cavity.

The lungs often appear dark red to black and may have signs of severe interstitial or bronchointerstitial pneumonia.

Data from puppies that were experimentally infected with CIV showed that the puppies that were most severely affected had diffuse, small localized areas of hemorrhage in their lungs, but no evidence of hemorrhagic pneumonia.

Diagnostic Methods

It is important for diagnostic tests to be performed to determine the cause of canine cough outbreaks because canine influenza cannot be distinguished from other respiratory infections based solely on clinical signs.

Several laboratory testing methods are available for detection of influenza infection, including:

Virus isolation

Virus antigen detection by immunoassays

Virus nucleic acid detection by polymerase chain reaction (PCR)

Serology for virus-specific antibody

### **Differential Diagnosis**

The clinical signs of CIV infection usually begin less than 5 days after infection and are very similar to those of -infectious tracheobronchitis or

canine cough due to other causes such as *Bordetella bronchiseptica* or other respiratory viruses ( parainfluenza, adenovirus, canine respiratory coronavirus, canine herpesvirus).

CIV cannot be distinguished from these other causes of acute respiratory disease based on clinical signs alone.

The course of canine influenza is mild in most dogs, but some dogs develop a more severe form with pneumonia and/or systemic illness.

### **Treatment**

Treatment of dogs with CIV infection includes providing adequate supportive care and prescribing antibiotics for secondary bacterial infection.

The presence of fever, productive cough, purulent nasal discharge, leukocytosis, and thoracic radiograph changes may indicate a secondary bacterial infection.

Antibiotics are indicated in these cases,( Cephalosporins ).

Dogs with more severe illness such as pneumonia usually require intravenous (IV) fluids.

Supplemental oxygen and nebulization with corticosteroids may also be very beneficial.

#### Vaccination:

In June 2009, the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) approved the first canine influenza vaccine.

This vaccine must be given twice initially with a two-week break, then annually thereafter.

An effective vaccine for canine influenza is now available. Nobivac® Canine Flu H3N8