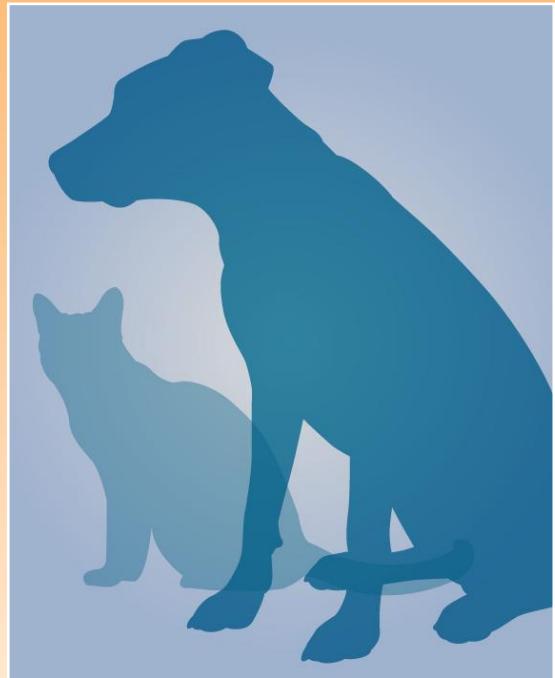


# Canine Influenza

## Basics

### OVERVIEW

- An acute to subacute contagious viral disease with an almost exclusive respiratory manifestation caused by canine influenza virus (CIV), an orthomyxovirus with a direct genetic link to equine influenza virus H3N8 (U.S.) or to an avian H3N2 virus (Korea).
- Natural route of infection is airborne particles or oral contact with contaminated surfaces. Replication of the virus appears to be restricted to epithelial cells of the upper and lower airways with possible involvement of alveolar macrophages. Antibody response detectable by 8 days post-infection and titers remain detectable for > 1 year. Protective immune responses have not been defined.
- H3N8 CIV activity was first detected in all areas with greyhound racetracks in the United States in 2004. Virus is currently enzootic in non-racing dogs in at least three regions of the United States: Florida, Colorado, and the eastern seaboard from Connecticut to Virginia.
- H3N2 CIV was first detected in Korea in 2007. Genetic lineage of the virus has not been determined, nor has the extent of the epizootic been defined.



### SIGNALMENT/DESCRIPTION OF PET

- Natural infections of H3N8 CIV currently limited to dogs.
- All breeds of dog are susceptible and there is no age restriction on susceptibility.
- Greyhounds have shown more severe signs with H3N8 CIV infections, but factors other than breed may contribute to the disease pattern, such as strain of virus.
- H3N2 CIV infections show more severe clinical signs than H3N8 CIV.

### SIGNS/OBSERVED CHANGES IN THE PET

- 60–80% of infected dogs develop clinical signs.
- Incubation period 2–4 days post-infection.
- Modest febrile response 39.4–40°C (103–104°F) 3–6 days post-infection.
- Clear nasal discharge, which can progress to thick, mucoid discharge, most frequently caused by secondary bacterial colonization.
- More severe form of disease shows higher temperatures with development of pneumonia and increased respiration rate 6–10 days post-infection.

- Many dogs develop a cough that can last for several weeks.

## CAUSES & RISK FACTORS

### Respiratory infection caused by canine influenza virus and can mimic “kennel cough”

- Most cases have a history of group housing: kennels, day care centers, and rescue shelters, or contact with dogs that have recently been in group housing.
- As CIV is a relatively new viral infection of dogs, virtually all dogs are susceptible.

## Treatment

- Affected animals should be managed to prevent infection of other dogs.
- Contagious period for civ extends to approximately 6 days post-onset of clinical signs.
- Continued coughing of affected animal beyond 6 days is not a sign of virus shed.
- Strongly recommend treating uncomplicated cases as outpatients to prevent hospital contamination.
- Only hospitalize those with pneumonia that require iv fluid support.
- Enforced rest—for at least 14–21 days (uncomplicated cases); 2 months in cases of pneumonia.
- If dogs develop bordetella bronchiseptica bacterial pneumonia, they may be infectious for this bacterium even up to months after recovery.

## Medications

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive

- Antiviral drugs have not been tested for efficacy.
- Treatment with broad-spectrum antibiotics may be necessary to prevent and control secondary bacterial infections—amoxicillin/clavulanic acid, doxycycline, or trimethoprim-sulfadiazine.
- Severe cases, resistant to first-choice antibiotic therapies above—combination therapy of an aminoglycoside (gentamicin or amikacin) with a cephalosporin (cefazolin). May use enrofloxacin as alternative to gentamicin.
- In severe cases (bronchopneumonia)—continue antibiotic therapy at least 2 weeks past radiographic resolution of signs.
- Resistant bacteria (B. bronchiseptica and others)—important to culture and establish the bacterial sensitivity; may need to deliver antibiotics by nebulization (kanamycin 250 mg; gentamicin 50 mg; polymixin B 333,000 IU) for 3–5 days.
- Cough suppressants (butorphanol or hydrocodone bitartrate)—often effective in suppressing a dry non-productive cough.
- Bronchodilators (theophylline or aminophylline)—offer little help but may relieve wheezing.

## Follow-Up Care

- If infection is established in a kennel situation, evacuate the kennel for 1–2 weeks and disinfect with sodium hypochlorite (1:30 dilution), chlorhexidine, or benzalkonium.
- Uncomplicated cases should resolve within 10–14 days; if patient continues to cough beyond 14 days, question the diagnosis of uncomplicated disease.

- Dogs recovering from b. Bronchiseptica infection are immune for at least 6 months.
- Mortality rate is highly variable and is most likely linked to the degree of secondary bacterial infection, strain of virus, and intensity of veterinary care.
- Currently there is one licensed vaccine for h3n8 civ for use in dogs.

## Key Points

- No evidence humans can catch dog influenza
- It can take a long time and significant nursing care to help dogs recover from more-severe infections
- Early infection may mimic “kennel cough”