

BACKGROUND



Canine Influenza Virus (CIV)

Canine Influenza Vaccine, H3N8



Canine Influenza Virus (CIV)

The following information on Canine Influenza Virus (CIV) is based primarily on the US Centers for Disease Control and Prevention (CDC), Key Facts About Canine Influenza (Dog Flu)¹.

What is canine influenza (dog flu)?

Dog flu is a contagious respiratory disease in dogs caused by a specific Type A influenza virus. This is a disease of dogs, not of humans. The “canine influenza virus” is an influenza A H3N8 influenza virus (not a human influenza virus) that was originally an equine (horse) influenza virus. This virus has spread to dogs and can now spread between dogs.

How long has canine influenza been around?

The H3N8 equine influenza virus has been known to exist in horses for more than 40 years. In 2004, however, cases of an unknown respiratory illness in dogs (initially Greyhounds) were reported. An investigation showed that this respiratory illness was caused by the equine influenza A H3N8 virus. Scientists believe that this virus jumped species (from horses to dogs) and has now adapted to cause illness in dogs and spread efficiently among dogs. This is now considered a new dog-specific lineage of H3N8. In September of 2005, this virus was identified by Dr. Cynda Crawford, University of Florida College of Veterinary Medicine, and Dr. Edward J. Dubovi, Cornell University College of Veterinary Medicine, as “a newly emerging pathogen in the dog population” in the United States.²

What are the symptoms of this infection in dogs?

The symptoms of this illness in dogs are cough, runny nose, and fever. A small proportion of dogs, however, can develop severe disease.

CIV cannot easily be distinguished from other causes of respiratory infection based on clinical signs alone.^{3,4} It is often mistaken for kennel cough and other respiratory infections caused by pathogens in the canine infectious respiratory disease (CIRD) complex because of shared clinical signs. CIRD complex is a relatively new term used to describe respiratory disease in dogs that may be caused by a number of co-mingled viral or bacterial pathogens. Some of the better-known pathogens are distemper virus, adenovirus type 2, parainfluenza, canine herpesvirus and *Bordetella*.⁴



How serious is this infection in dogs?

This is a relatively new cause of disease in dogs and nearly all dogs who are naive to the virus are susceptible to infection. About 80% of dogs will have a mild form of disease. The number of dogs infected with this disease that die is between 5–8% percent. About 20% of infected dogs will show no clinical signs, while 10–20% of infected dogs may progress to a more severe form of the disease. Severe illness is characterized by the onset of pneumonia.³

How does canine influenza spread?

Canine influenza virus can be spread by direct contact with respiratory secretions from infected dogs, through the air via a cough or sneeze, and by contact with contaminated objects such as dog bowls and clothing, or by people moving between infected and uninfected dogs. Therefore, dog owners whose dogs are coughing or showing other signs of respiratory disease should not participate in activities or bring their dogs to facilities where other dogs can be exposed to the virus. Clothing, equipment, surfaces, and hands should be cleaned and disinfected after exposure to dogs showing signs of respiratory disease.

Is there a test for canine influenza?

Testing to confirm canine influenza virus infection is available at veterinary diagnostic centers. A nasal swab test can be taken if the dog is seen within a day or two of the onset of signs. After that, the only practical way to confirm a diagnosis is with a two-sample blood test, the first collected while the animal is sick and the second 2 to 3 weeks later. The timing of diagnostic testing is critical because there is only a short timeframe in which the virus isolation is successful.

How is canine influenza treated?

Not all dogs with CIV require therapeutic intervention. Therapy relies mainly on supportive care while the viral infection runs its course. There is little evidence to support the use of antitussives for reducing frequency and duration of coughing. Antibiotics are indicated for dogs with secondary bacterial infections evidenced by fever, productive cough, purulent nasal discharge, or pneumonia.

Where has canine influenza occurred?

Outbreaks have occurred in shelters, kennels, dog daycare centers, veterinary clinics, dog tracks, and other facilities in Florida, Pennsylvania, New York, New Jersey, Colorado, California, Delaware, and elsewhere. Cases have been identified in 30 states and the District of Columbia.^{5,6}

What is the risk to humans from canine influenza virus?

There is no evidence that this virus infects humans. Not a single human case has been reported. CDC and its partners continue to monitor the H3N8 influenza virus (as well as other animal influenza viruses) along with instances of possible human exposure to these viruses very closely.

Where can I find more information on canine influenza virus?

More clinical information on canine influenza in pet dogs can be found in this article: Influenza A Virus (H3N8) in Dogs with Respiratory Disease, Florida in *Emerging Infectious Diseases*.⁷

The following websites provide additional information about canine influenza and infection control practices:

- CDC Healthy Pets Healthy People
www.cdc.gov/healthypets
- American Veterinary Medical Association
www.avma.org
- Association of Shelter Veterinarians
www.sheltervet.org
- American Animal Hospital Association
www.aahanet.org, www.healthypet.com
- Cornell University College of Veterinary Medicine
www.diaglab.vet.cornell.edu
- ASPCA
www.aspca.org
- The Center for Food Security & Public Health, Iowa State University, College of Veterinary Medicine
www.cfsph.iastate.edu/Factsheets/pdfs/canine_influenza.pdf
- University of California, Davis, School of Veterinary Medicine
www.vetmed.ucdavis.edu



Canine Influenza Vaccine, H3N8

Canine Influenza Vaccine, H3N8, the first vaccine for canine influenza virus (CIV), was granted a conditional license by the United States Department of Agriculture (USDA) on May 27, 2009, for use by veterinarians in the United States.

Why was the vaccine developed?

The vaccine was developed to provide more comprehensive respiratory protection for dogs, specifically to curb the spread of CIV, which has now been diagnosed in 30 states and the District of Columbia.

In addition, in November 2006, the American Veterinary Medical Association (AVMA) Executive Board issued the following statement: “The AVMA believes there is urgent need for an effective canine influenza virus vaccine to improve the health and welfare of animals and reduce the financial impacts of canine influenza.” (http://www.avma.org/issues/policy/canine_influenza.asp)

What do studies show about the vaccine’s safety and effectiveness?

Canine Influenza Vaccine, H3N8, a killed virus, has been shown to significantly decrease the signs, severity, and spread of CIV infection. The vaccine reduces the duration and severity of coughing, protects against the formation and severity of lung lesions, and significantly reduces the duration and degree of viral shedding, the period when the disease is contagious. The vaccine’s safety was confirmed in a 746-dog field study. Over 30 breeds, age 6 weeks to 10 years, participated in the testing.⁸

Which dogs should be vaccinated against CIV?

Because CIV is a new disease, virtually every dog not previously exposed to the virus will become infected. Many dogs are candidates for the vaccine because of routine contact with other dogs who may be carrying the virus, congregating in such places as dog parks, veterinary clinics, boarding kennels, breeding kennels, dog shows, training settings, shelters, adoption centers, pet shops, and other locations.

The vaccine gives veterinarians one more tool in providing their canine patients with more comprehensive respiratory protection. In addition to canine influenza, there are other causes of canine cough, such as *Bordetella*, or kennel cough. The risk factors are the same for both diseases—close contact and closed environments. In addition, kennel cough and CIV are difficult to differentiate in early stages because initial symptoms are similar and diagnostic confirmation of CIV can take up to 2 weeks.^{3,9,10}

What if a dog has CIV? Should it be vaccinated?

The vaccine should be given to healthy dogs, 6 weeks of age or older.

How is it administered?

The vaccine is given by subcutaneous (under the skin) injection in two doses, 2 to 4 weeks apart.

What are the possible side effects?

There were no side effects in the vaccine field safety trial, which included 746 dogs of various ages and breeds. As with any vaccine, allergic reactions may occur in a small percentage of animals.

Can the vaccine cause dogs to get CIV?

No. The vaccine cannot cause the disease because it is made with an inactivated (killed) virus.

How often should the vaccine be given?

Every year. It is recommended that the vaccine be administered annually along with the *Bordetella*, canine parainfluenza, and adenovirus type 2 vaccines to provide more comprehensive protection against canine infectious respiratory diseases.

Is there a particular time of year when it should be given?

The CIV vaccine can be given at any time. Unlike human flu, CIV is not seasonal, and dogs are vulnerable year-round.

Are there new strains of CIV each year, as is the case in human flu?

New strains have not been detected.

Does the CIV vaccine protect against other animal influenzas, such as swine, avian or equine?

The vaccine is specific to canine influenza.

Is Intervet/Schering-Plough Animal Health developing flu vaccines for any other animals?

Intervet/Schering-Plough Animal Health is the leader in equine influenza vaccination with Flu-Alert®, a unique, proprietary intranasal modified live equine influenza vaccine, as well as inactivated equine influenza options in the Prestige® and Encevac® injectable vaccine lines. MaxiVac Excell® 3 killed flu virus vaccine is used as an aid in the prevention of disease associated with swine influenza subtypes H1N1 and H3N2. Nobilis® influenza H7N1 is a licensed European vaccine to protect birds against avian influenza.

Who developed the vaccine and why?

The vaccine was developed by research scientists at Intervet/Schering-Plough Animal Health, a leader in respiratory disease prevention and treatment, as a response to the growing incidence of outbreaks and a call for the vaccine from the AVMA.



Who conducted the studies? Where were they done? Are the results published?

Intervet/Schering-Plough Animal Health conducted the studies. The challenge study has been accepted for publication in the June 2009 issue of *Veterinary Therapeutics*. Additional publications are scheduled for 2009.

What is a conditional license?

Conditional licenses are granted following the acceptance of data supporting product purity, product safety under normal conditions of use in field safety trials, and demonstration that the product has a reasonable expectation of efficacy. In the past, the USDA, through the Center for Veterinary Biologics (CVB), has typically issued conditional licenses to meet an emergency situation, limited market, local situation, or other special circumstances.

Intervet/Schering-Plough Animal Health has conducted extensive studies and continues to work with CVB towards full licensure of the vaccine.

Where can veterinarians and animal care professionals go for more information?

Veterinarians and animal care professionals may contact their Intervet/Schering-Plough Animal Health representative or visit www.intervetusa.com.

References:

1. Key facts about canine influenza (dog flu). CDC Website. Available at: <http://www.cdc.gov/flu/canine>. Accessed May 1, 2009. 2. Media briefing on canine influenza. CDC Website. Available at: <http://www.cdc.gov/od/oc/media/transcripts/t050926.htm>. Published September 26, 2005. Accessed May 1, 2009. 3. Crawford C, Spindel M. Canine influenza. In: Miller L, Hurley K, eds. *Infectious Disease Management in Animal Shelters*. Ames, IA: Wiley-Blackwell; 2009:173–180. 4. Information sheet: Canine infectious tracheobronchitis. UC Davis Koret Shelter Medicine Program Website. Available at: http://www.sheltermedicine.com/portal/is_infectious_tracheobronchitis_canine.shtml. Accessed May 31, 2009. 5. Rezendes A. Influenza continues to infect dogs. AVMA Website. Available at: http://www.avma.org/onlnews/javma/sep08/080901s_pf.asp. Published September 1, 2008. Accessed May 1, 2009. 6. Dubovi EJ, Njaa BL. Canine influenza. *Vet Clin Small Anim*. 2008;38:827–835. 7. Payungporn S, Crawford PC, Kouo TS, Chen LM, Pompey J, Castleman WL, Dubovi EJ, Katz JM, Donis RO. Influenza A virus (H3N8) in dogs with respiratory disease, Florida. *Emerg Infect Dis*. 2008;14:902–908. 8. Data on file at Intervet/Schering-Plough Animal Health. 9. Canine influenza background. AVMA Website. Available at: http://www.avma.org/public_health/influenza/canine_bgnd.asp. Published February 14, 2007. Accessed May 1, 2009. 10. Canine influenza update. UC Davis Koret Shelter Medicine Program Website. Available at: http://www.sheltermedicine.com/portal/is_canine_influenza_update.shtml. Accessed May 1, 2009.

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