

What You Probably Don't Know About Canine Influenza

By Anthony Ludwig

It began as an isolated episode of respiratory disease among greyhounds at a racetrack facility in Florida in 2004. Since then, the virus has spread to 39 states and shows no signs of stopping. Canine Influenza Virus (CIV), commonly referred to as dog flu, is an extremely contagious infection caused by a very unique Influenza A subtype H3N8 virus. Unfortunately, because CIV is a new virus, dogs have no natural immunity to it and virtually all dogs are very susceptible to contracting the potentially deadly infection.

Where did CIV come from?

Why did CIV just suddenly appear at a racetrack facility in Florida in 2004? Did it exist prior to this period? These are some of the questions pet owners have been asking themselves as they try to figure out how to protect their dogs from this emerging disease.

Prior to 2004, CIV did not exist as a canine-specific virus and had no relationship to dogs. The virus prior to this time only infected horses and was labeled equine influenza virus. However, something that very rarely happens in nature occurred: the entire genome of the H3N8 equine-specific influenza virus that infected horses only was transferred to dogs. The virus adapted to a new internal environment and evolved from horses to dogs to emerge as a new canine-specific virus wreaking havoc on the immune systems of dogs exposed to it in 39 U.S. states. The virus is considered endemic in the states of Colorado, Massachusetts, New Jersey and New York.

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According to Ronald Schultz, who heads the Department of Pathobiological Sciences at the School of Veterinary Medicine at the University of Wisconsin-Madison, “In general, any dog that is in a closed room with other dogs for at least six hours or more can be considered at risk of contracting the canine influenza virus. Unlike human flu, canine flu does not follow a season, making it difficult to track its spread.” While the virus spreads swiftly from dog to dog, there is no evidence to date that it can be transmitted from dogs to humans.

Dr. Cynda Crawford, a clinical professor at the University of Florida, is credited with having been one of the first veterinary researchers



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to discover and document the interspecies transition of the H3N8 equine influenza from horses to dogs. At a recent lecture she gave at the College of Veterinary Medicine at Iowa State University, Dr. Crawford said that there are around 80 million dogs in the United States, and most of them have no immunity to the disease.

Dr. Crawford conducted one study that involved 1,268 dogs from 42 states. The study revealed that a positive diagnosis of H3N8 CIV was associated with exposure in shelters and boarding kennels in certain geographical areas during the year of testing. One particular study she conducted involved creating a mathematical model for the transmission of canine influenza in animal shelters. The study simulated the conditions of an open-admission shelter that continually admitted new animals and had animals continually exiting. Parameters were set for both direct and indirect transmission and simulated one infected dog coming into the shelter. Unbelievably, almost 100 percent of the simulations they conducted showed the virus becoming an epidemic! Dr. Crawford's study also revealed that larger shelter populations were consistent with higher rates of infection and that the dominant driver for the occurrence of epidemics was indirect virus transmission.

Canine Influenza is spread through the air when an infected dog coughs. The virus particles expelled through the cough contaminate all of the objects in their immediate environment (kennel surfaces,

food and water bowls, collars and leashes), including individuals interacting between infected and uninfected dogs. It is believed that the virus can remain alive and able to infect on surfaces for up to 48 hours, on clothing for 24 hours, and on the hands and bodies of people interacting with infected dogs for 12 hours. The incubation period between the time of CIV exposure and the commencement of symptoms is usually between two and four days. During this inoculation period, viral shedding is highest and infected dogs are most contagious, making it difficult to identify and segregate an infected dog from those that are not.

The first signs of CIV infection include an acute onset of coughing, sneezing, nasal discharge, lethargy and fever. These symptoms typically last a week or two. Infected dogs are believed to shed and spread the virus for about seven days. However, a small percentage of infected dogs, especially puppies and older dogs, will contract pneumonia, which is usually due to secondary bacterial infections and could be fatal. Higher mortality rates have been reported in small groups of greyhounds that have developed hemorrhagic pneumonia—specific to the breed—during outbreaks at racetrack kennels. So, how can you recognize and prevent your dog from being exposed to a newly infected dog that appears on the surface to be healthy? You cannot!

Following recommended infection control precautions are considered key to preventing occurrences and the spread of CIV within susceptible facilities. The Veterinary Information Network advises that protocols should be established for thoroughly cleaning and disinfecting cages, bowls and other surfaces between uses. Employees at shelter, kennel and day care facilities that work with and house dogs are advised to wash their hands with soap and water after handling each dog. This includes after coming in contact with a dog's saliva, urine, feces or blood, after cleaning cages and upon arriving at and before leaving the facility. It is also important to not let the animals lick or kiss kennel staff in the face.

The protocol for dealing with sick animals should be to wear a barrier gown and gloves when handling these animals or cleaning cages. Caregivers should also bring clean clothes to change into at the end of the day.

Many veterinary disease experts, as well as the American Veterinary Medical Association (AVMA), generally advise vaccinating dogs that travel regularly to venues where dogs congregate, such as dog shows, racetracks, kennels, shelters and animal hospitals. Good infection control practices can reduce the risk of CIV infection. Dog owners involved in shows, sports, or other activities, or who board their dogs at kennels should ask whether the facility has a plan for isolating dogs that develop respiratory disease, and for notifying owners if their dogs have been exposed to dogs with respiratory disease. According to the AVMA: "As long as good infection control practices are in place, pet owners should not be overly concerned about putting dogs in training facilities, dog parks, kennels or other areas frequented by dogs."

A CIV outbreak at a kennel would involve shutting down the facility for at least two to three weeks, causing considerable economic hardship for kennels and doggie daycare facilities. As a result, many of these businesses now require that customers entering their facilities present proof that their pets were vaccinated at least two weeks prior to admission. Some kennels

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are vaccinating and isolating dogs upon check in for overnight boarding if they have not been vaccinated for CIV or kennel cough.

A-Animal Clinic in Fort Worth, Texas, one of the largest facilities in the area, require that all dogs left at their facility be vaccinated against CIV. They established the policy after a number of confirmed outbreaks in their region. According to co-owner's Newly and his veterinarian wife, Karen Spikes, the vaccine requirement made good business sense. A past outbreak at their facility cost them almost \$10,000 when they factored in the cost of drugs to treat the hundreds of dogs that came down with CIV symptoms after an outbreak at their kennel in 2007.

Because it takes a week following booster for the vaccine to provide immunity, the vaccine received by the dog upon admission into a facility will not prevent a CIV positive dog from infecting other dogs in the facility. Also, even if the dog received all the proper vaccines prior to admission into the kennel, virus vaccines do not completely prevent the spread of CIV. Vaccines will reduce viral shedding, but cannot completely eliminate it. Veterinary infectious disease experts estimate that there is at least a 40 percent chance that a vaccinated dog can still infect another dog.

Not all veterinarians are sold on the benefits of vaccinating dogs against CIV. Outspoken columnist, Dr. Karen Becker, is a proactive-wellness veterinarian who also contributes a popular column on Animal Health for the Huffington Post. She advises her readers to "Just say no! Too many vaccines like those for CIV, can wreak havoc on your dog's immune system actually compromising its ability to protect your pet from pathogens like the H3N8 virus."

The CIV vaccine has been described as a "lifestyle" vaccine and is not recommended for every dog. Dogs that may benefit from the CIV vaccination include those that receive the kennel cough (Bordetella/parainfluenza) vaccine, because the risk groups have been described as similar.

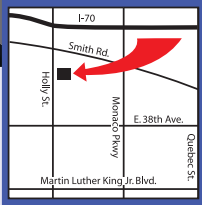
Distinguishing a CIV outbreak from a kennel cough outbreak is not easy. The clinical signs of coughing, sneezing and nasal discharge mimics symptoms associated with other respiratory pathogens and cannot be differentiated from them. As a result, infection by CIV is frequently mistaken for infections caused by Bordetella bronchiseptica parainfluenza virus infection (BBPVI).

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A majority of dogs have a soft, moist cough, whereas others have a dry cough that is similar to that induced by BBPVI. Antibiotics are generally prescribed for nasal discharge which is usually caused by secondary bacterial infections, including *Pasteurella multocida* and *mycoplasma* species.

Antibodies to CIV may be detected in the blood as early as seven days after onset of clinical signs, and the virus may be identified in nasal or pharyngeal swabs during the first four days of illness. The most reliable and sensitive method for confirmation of CIV infection is serologic (blood serum) testing. The Cornell Animal Health Diagnostic Center is currently accepting samples from respiratory secretion specimens for analysis.

Since the first outbreak in 2004, CIV shows no signs of abating. Quite the opposite, CIV is a very real and potentially dangerous epidemic outbreak. In early April this year, six racing dogs died and dozens of others were sickened from a canine influenza outbreak at La Marque's Gulf Greyhound Park. The racetrack was quarantined and races were cancelled as veterinarians treated dogs. General Manager Sally Briggs said that more than 80 dogs became infected with dog flu. "Coughing, throwing up, some had fever. There's like, between 60 [and] 68 Greyhounds in each kennel, and we have ten kennels. That's a lot of dogs...one thing led to another, evidently. It's very contagious. Some had low resistance and we did have some that passed away," Briggs said.

CIV need not be a reason for fear or paranoia amongst concerned dog owners and businesses that cater to dogs. Dogs cough for a variety of reasons, some of which can be serious and others that are signs of an underlying problem. Internal parasites, heartworm disease, distemper, fungus diseases, tuberculosis, allergies and pollutants such as cigarette smoke can cause a dog to cough. Coughs are triggered by irritants in the air passages and can be characterized as dry and hacking, moist and bubbly, gagging, wheezy, harsh or weak. It can be frequent, chronic or intermittent, and is often self-perpetuating as it dries the throat and leads to further irritation. If your dog experiences any of these symptoms, especially after congregating with other dogs, do not hesitate to take your dog to an animal hospital for a check-up. Remember, any repeated episodes of coughing should be investigated immediately. Owners and pet handlers should note any other symptoms that accompany the cough and make a list for the veterinarian.

The AVMA recommends good husbandry and nutrition, which may assist dogs in mounting an effective immune response. A combination of broad-spectrum bactericidal antimicrobials to combat secondary bacterial infections that can contribute to pneumonia, and hydration via intravenous fluids, allow most dogs to recover from canine influenza within two to three weeks.

Anthony Ludwig is a freelance science writer who is following the progress of and research on the Canine Influenza Virus.

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