

## Facts about Canine Influenza Virus

### What is canine influenza?

Canine influenza virus (CIV), or dog flu, is a highly contagious respiratory infection of dogs that is caused by an influenza A virus. In the U.S., canine influenza has been caused by two influenza strains. The first strain reported in the United States, beginning in 2004, was an H3N8 influenza A virus. This strain is closely related to the virus that causes equine influenza, and it is thought that the equine influenza virus mutated to produce the canine strain.

In 2015, an outbreak that started in Chicago was caused by a separate strain, H3N2. This strain was almost genetically identical to an H3N2 strain previously reported only in Asia – specifically, Korea, China and Thailand. This H3N2 strain is believed to have resulted from the direct transfer of an avian influenza virus – possibly from among viruses circulating in live bird markets – to dogs.

Two clinical syndromes have been seen in dogs infected with the canine influenza virus—a mild form of the disease and a more severe form that is accompanied by pneumonia.

**Mild form** — Dogs suffering with the mild form of canine influenza develop a soft, moist cough that persists for 10 to 30 days. They may also be lethargic and have reduced appetite and a fever. Sneezing and discharge from the eyes and/or nose may also be observed. Some dogs have a dry cough similar to the traditional “kennel cough” caused by *Bordetella bronchiseptica*/parainfluenza virus complex. Dogs with the mild form of influenza may also have a thick nasal discharge, which is usually caused by a secondary bacterial infection.

**Severe form** — Dogs with the severe form of canine influenza develop high fevers (104°F to 106°F) and have clinical signs of pneumonia, such as increased respiratory rates and effort. Pneumonia may be due to a secondary bacterial infection.

### Are all dogs at risk of getting canine influenza?

Because this is still an emerging disease and dogs in the U.S. have not been exposed to it before, almost all dogs, regardless of breed or age, lack immunity to it and are susceptible to infection if exposed to the active virus. Virtually all dogs exposed to the virus become infected, and nearly 80% show clinical signs of disease, though most exhibit the mild form described above.

However, the risk of any dog being exposed to the canine influenza virus depends on that dog’s lifestyle. Dogs that are frequently or regularly exposed to other dogs – for example at boarding or day care facilities, dog parks, grooming salons, or social events with other dogs present – are at greater risk of coming into contact with the virus. Also, as with other infectious diseases, extra precautions may be needed with puppies, elderly or pregnant dogs, and dogs that are immunocompromised. Dog owners should talk with their veterinarian to assess their dog’s risk.

### **Is there a vaccine available for canine influenza?**

Vaccines are available for both the H3N8 and H3N2 strains. For questions concerning vaccination options, contact your veterinarian.

### **Do dogs die from canine influenza?**

Fatal cases of pneumonia resulting from infection with canine influenza virus have been reported in dogs, but the fatality rate is low (less than 10%). Most dogs recover in 2-3 weeks.

### **Is canine influenza virus transmissible from dogs to humans?**

To date, there is no evidence of transmission of canine influenza virus from dogs to people.

### **Is canine influenza virus transmissible from dogs to cats, horses or other animal species?**

At this time, there is no evidence of transmission of H3N8 canine influenza from dogs to horses, cats, ferrets, or other animal species. The H3N2 strain, however, has been reported to infect cats, and there's also some evidence that guinea pigs and ferrets can become infected.

### **How should testing be performed to diagnose canine influenza?**

It is difficult to determine solely by clinical signs which respiratory pathogen is present in the dog; the [Canine Respiratory Disease Panel qPCR](#) is the best option. It is common to find multiple viruses in these environments and this panel will assist in finding those agents.

TVMDL offers a broad target [Influenza A Matrix \(IAV\) \(qPCR\)](#), which can detect both H3N2 and H3N8 strains.

As with all respiratory viruses, it is critical to take samples for agent detection within a day or two of the onset of clinical signs which include runny nose, low grade fevers, and coughing. Dogs showing clinical signs for >7 days should be tested for CIV by an antibody test as the virus itself will be undetectable in most cases.

Testing for antibodies specific for the H3N8 and H3N2 influenza viruses are generally done using the standard influenza virus test of hemagglutination inhibition (HI). Antibodies to CIV develop rapidly and by 10 days post infection there is a significant antibody titer. In the absence of a history of vaccination, the presence of CIV antibodies following a clinical illness is highly correlated with CIV being part of the clinical event. While TVMDL does not offer a serologic test for CIV, if an animal owner or practitioner requests the serologic assay, TVMDL will forward samples to the Animal Health Diagnostic Center at Cornell University for serological testing.

**Information on TVMDL's testing capabilities, as well as sample collection and submission, can be found online at <http://tvmdl.tamu.edu>.**

*Resources: American Veterinary Medical Association, Animal Health Diagnostic Center at Cornell University*