



NEW YORK CITY DEPARTMENT OF

HEALTH AND MENTAL HYGIENE

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2015 Veterinary Advisory # 2: New Variant of Canine Influenza, H3N2, Identified in Midwest

- **The Cornell Animal Diagnostic Laboratory identified a newly circulating variant of canine influenza A, H3N2.**
- **It is related to Asian strains of influenza A H3N2, which has previously been identified in Chinese and Korean dogs and cats.**
- **Affected dogs in the US are from the Midwestern United States.**

Please share with your colleagues in Veterinary Medicine and your staff

April 22, 2015

Dear Veterinary Colleagues,

A newly circulating strain of canine influenza A, H3N2 has been identified among dogs in Illinois, Wisconsin, Indiana and Ohio. The virus is related to an Asian strain of H3N2 which has been found among dogs in southern China and South Korea.¹ It is different from the seasonal influenza A H3N2 viruses that circulate among people. The recognition of the virus was made by the New York State Veterinary Diagnostic Laboratory at Cornell University in conjunction with the Wisconsin Veterinary Diagnostic Laboratory, while the USDA National Veterinary Service Laboratories has rapidly generated total genomic sequences from a virus isolate provided by Cornell.

It is not clear how the virus arrived in the United States, but is likely due to the international movement of dogs. Infected dogs from Asia may have been imported to the Midwest where they may have exposed local dogs.

The virus causes an illness similar to the canine influenza A virus H3N8. Infected dogs may be asymptomatic or develop fever, anorexia, lethargy, nasal discharge and cough which can persist up to 3 weeks. In more severe cases, pneumonia and sometimes death may occur. The H3N8 canine influenza virus can be detected in the respiratory secretions of both symptomatic and asymptomatic dogs, and they can shed virus for as long as 7 days. Transmission occurs from dog to dog and may be more intense in congregate settings such as shelters and kennels. In Asia, several cats were infected with the virus and suffered a high mortality rate. In research settings ferrets were found to be susceptible to infection but with limited secondary transmission.² There are no reports of transmission of the virus from dogs to people.

The incubation period for H3N8 canine influenza is thought to be 1 to 5 days, with most cases appearing in 2 to 3 days. Dogs inoculated with the H3N2 canine influenza virus developed fever as soon as 1 to 3 days and respiratory signs in 2 to 8 days. In experimentally infected cats, clinical signs first appeared after 2 to 7 days.³

The current canine influenza vaccination will offer protection against H3N8, though at this time, it is unclear whether it offers protection against the H3N2 strain. Dogs in congregate settings such as kennels, shelters,

doggie day care and dog runs are at greater risk for exposure to canine influenza and may benefit from vaccination.

Infection Control

Stringent adherence to infection control is the best way to deal with a potential outbreak of either variant of canine influenza. Guidance on the development of an infection control plan can be found online with The National Association of State Public Health Veterinarians Model Infection Control Program at <http://nasphv.org/documentsCompendia.html> or the Infection Prevention and Control Best Practices for Small Animal Veterinary Clinics from the Canadian Committee on Antibiotic Resistance at [http://www.wormsandgermsblog.com/uploads/file/CCAR%20Guidelines%20Final\(2\).pdf](http://www.wormsandgermsblog.com/uploads/file/CCAR%20Guidelines%20Final(2).pdf).

- Hospitals and shelters should discuss a response plan to address the need to isolate and treat infected dogs and quarantine dogs exposed to canine influenza virus (CIV).
- Isolation protocols should be rigorously applied for all dogs showing signs of respiratory disease.
- Respiratory disease should be investigated, and dogs with suspected CIV infection discovered after entry into the facility should be isolated, evaluated and treated. Exposed dogs in a facility should be quarantined for a minimum of 14 days from last exposure. If possible, quarantined dogs should be separated by a physical barrier.
- Recommend to pet owners that dogs diagnosed with CIV should be isolated for 7 days following onset of illness.
- Clean and disinfect all animal cages, floors, surfaces, food and water bowls, and other objects in contact with animals daily. The CIV is killed by disinfectants (e.g., quaternary ammonium compounds, bleach solutions at a 1 to 32 dilution, or potassium peroxydisulfate) commonly used in veterinary clinics, boarding facilities, and animal shelters. Human influenza A viruses seem to remain viable for less than 24-48 hours on most surfaces, and this is likely similar for canine influenza viruses.
- Veterinarians and staff should institute infection control practices to avoid inadvertent spreading of the virus on contaminated clothing, shoes, and other fomites. This includes the wearing of disposable gloves by persons handling infected dogs or cleaning contaminated cages. Hand hygiene policies should be enforced even if disposable gloves are worn by persons handling ill animals or cleaning cages, etc. Employees should wash their hands with soap and water (or use an alcohol-based hand cleaner if soap and water are unavailable) before and after handling each dog; after coming into contact with a dog's saliva, urine, feces, or blood; after cleaning cages; and upon arriving at and before leaving the facility.

Diagnostic Information

At this time, there is no evidence that H3N2 is circulating in New York. Veterinarians should not necessarily pursue testing for H3N2 except in situations in which dogs with signs of respiratory illness and have a risk factor such as recent travel to or arrival from the Midwest, or a visiting dog or cat from the Midwest in the two weeks preceding illness onset. If H3N2 is identified in the New York or surrounding area, additional notification will be made to inform the veterinary community. Cornell University is developing a system that will help track strains of canine influenza that will be made available to the public online.

Currently, testing can only identify that influenza A virus is present, but cannot differentiate between H3N2 and H3N8. This capability is under development and will be available shortly through the Animal Health Diagnostic Center. Check their website for updates at <https://ahdc.vet.cornell.edu>. In addition to influenza testing, Cornell offers a respiratory PCR panel which can identify canine adenovirus, canine distemper virus, canine parainfluenza virus, canine respiratory coronavirus, canine pneumovirus, *Bordetella bronchiseptica*, and *Mycoplasma cynos*. This can be used to identify pathogens associated with respiratory illness other than influenza.

Influenza Testing

Veterinarians wanting to pursue influenza testing should collect specimens as follows:

Within 4 days of illness onset: Nasal or pharyngeal swabs are the specimens of choice for rRT-PCR or virus isolation. Specimens should be collected within 4 days of illness onset. Swabs should be placed in a red-top blood collection tube with a few drops of sterile saline or viral transport media. Do not place swabs in bacterial transport medium. This specimen can also be used for the respiratory PCR panel for an additional fee.

Between 4 and 7 days of illness: Collect both a nasal or pharyngeal swab and serum to improve sensitivity.

7 or more days after illness onset: Serum should be collected for antibody testing using hemagglutination inhibition (HI). Samples taken late in the infection will not be useful for rRT-PCR or virus isolation.

Fresh tissue: If necropsy is performed, fresh tissue can be submitted. Lung is the specimen of choice. Fixed tissue cannot be used for influenza testing, but if submitted can be used for histopathology to identify other potential causes of illness. Contact the AHDC for collection, storage and shipping information.

Cornell Shipping Information

Veterinarians wishing to use the AHDC for testing can access information online. Ship samples overnight on ice packs. Visit the AHDC website for the following;

Submission form: https://ahdc.vet.cornell.edu/docs/General_Submission_Form.pdf

Labels: https://ahdc.vet.cornell.edu/docs/Shipping_Discount_Program_Information.pdf

Additional Information

Cornell has an H3N2 Frequently Asked Questions web page which can be accessed at:

<https://ahdc.vet.cornell.edu/news/civchicago.cfm>

AVMA also has information:

<https://www.avma.org/KB/Resources/FAQs/Pages/Control-of-Canine-Influenza-in-Dogs.aspx>

As always, we greatly appreciate your partnership and cooperation.

References

1. *Infect Genet Evol.* 2013 Oct;19:251-6.

Avian-origin H3N2 canine influenza virus circulating in farmed dogs in Guangdong, China.

Su S, Chen Y, Zhao FR, Chen JD, Xie JX, Chen ZM, Huang Z, Hu YM, Zhang MZ, Tan LK, Zhang GH, Li SJ.

2. *J Gen Virol.* 2013 Feb;94(Pt 2):293-7. doi: 10.1099/vir.0.042473-0.

Experimental infection and natural contact exposure of ferrets with canine influenza virus (H3N2).

Lee YN¹, Lee DH, Park JK, Yuk SS, Kwon JH, Nahm SS, Lee JB, Park SY, Choi IS, Song CS.

3. Canine Influenza, The Center for Food Security and Public Health, Iowa State University

http://www.cfsph.iastate.edu/Factsheets/pdfs/canine_influenza.pdf