

INFLUENZA: IS THE SKY FALLING?!

Jenifer Chatfield, DVM, DACZM, DACVPM

Dr. Jen the vet

OVERVIEW OF THE ISSUE

With ~75% of all emerging pathogens zoonotic, a One Health approach to infectious disease evaluation becomes increasingly more prudent. No diseases better demonstrate the validity of One Health than zoonotic influenzas. With seemingly infinite combinations of the key components, hemagglutinin (H) and neuraminidase (N), long-term physiological immunity to influenza seems nearly impossible. It is critical for veterinarians to understand the key features of this virus and how to best respond to emerging influenzas.

Influenza transmission is through aerosolized droplets and other respiratory secretions. Influenza survives in the environment, even under some less favorable conditions. Animals and humans are able to shed influenza prior to the onset of clinical symptoms for up to 72 hours, making biosecurity difficult to perform effectively. Diagnosis can be based on clinical presentation or in conjunction with a variety of diagnostic tests. Supportive care shouldn't be overlooked in non-food animals.

During the past year, influenza has reasserted itself as the pathogen of interest for veterinarians, both large and small. High path avian influenza (HPAI) infected a person in the US for the first time in history. Dairy farmers are now feeling the impact of influenza. It seems influenza is rapidly evolving and expanding its reach from a species perspective and from a geographical standpoint. It is only a matter of time before dog owners are once again concerned about influenza. But, take heart! Just as influenza the pathogen continues to evolve, so, too, does vaccine technology and our understanding of the immune system and the role of each cell within.

OBJECTIVES OF THE PRESENTATION

1. List 3 different types of vaccine platforms
2. Describe the current status of HPAI globally
3. List 2 ways to prevent canine influenza infection in a dog

SUMMARY INCLUDING 5 KEY "TAKE HOME" POINTS

1. Social dogs are at risk of influenza infection
2. Social dogs should be vaccinated against influenza
3. H3N8 is no longer the threat it once was
4. Dogs vaccinated with an RNA particle platform vaccine shed less influenza
5. RNA particle vaccine stimulates more robust response than killed vaccines

References/Suggested Reading

1. Sykes JE. Greene's infectious diseases of the dog and cat, Fifth. ed. Philadelphia: Elsevier, Inc; 2023;316.
2. Classe HM, Dant JC, Mogler M, Stachura KA, LaFleur RL, Xu Z, Tarpey I. Efficacy and Safety in Dogs Following Administration of an Alphavirus RNA Particle Canine Influenza H3N2 Vaccine. *Vaccines*. 2024; 12(10):1138.
3. Byrd-Leotis, L., Jia, N., Dutta, S., Trost, J. F., Gao, C., Cummings, S. F., ... Cummings, R. D. (2019). Influenza binds phosphorylated glycans from human lung. *Science advances*, 5(2), eaav2554.
4. Echeverry, Diana & Rodas, Juan. (2011). Influenza virus A H5N1 and H1N1: Features and zoonotic potential. *Revista Colombiana de Ciencias Pecuarias*. 24. 634-646.