A Survey of Canine Immunity to, and Vaccines for, Newer Flu Viruses
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The 1918 influenza pandemic infected an estimated 500 million people worldwide and killed potentially 20 million people. In the United States, approximately 675,000 deaths were attributed to this particular virus, which originated in Europe and was carried throughout the world by troops returning home after World War I. It is important to remember that medical science was emerging and missteps were taken. For instance, influenza was not a reportable disease to public health officials at the time, medical doctors were scarce due to the war, doctors often thought it was the common cold, and some thought it was a bacteria causing the symptoms. But, I am not stating this to scare you into running out and getting vaccinated. The 1918 flu was hyper-virulent and mutated several times. Plus, we now have preventive and other measures in place, know more about healthy lifestyles and have a better healthcare system.

In 2008, a groundbreaking study was released about the 1918 pandemic. Eric Altschuler and a team of researchers gathered 32 survivors who were born before 1915. 94% of them (30 people) had produced antibodies that neutralized the 1918 flu virus. The scientists went further and found out that the gene sequence that encoded these antibodies had accumulated many mutations, which suggests that the cells had made further adaptations to similar viruses after 1918. This means they would more than likely not become ill if the 1918 virus cropped up again.

This study proved that naturally generated immunity can be lifelong in humans. At this time, we do not know if dogs have the same lifelong memory cell response to the two newer canine flu viruses, H3N2 and H3N8, because no long-term studies have been conducted at this point in time. I presume dogs would have lifelong immunity to influenza if it is naturally generated.

Researchers and scholars agree that naturally generated immunity is better than vaccine-induced immunity. In regards to influenza, vaccinated immunity is believed to last 2-3 years in humans. Now, let’s pretend that virus XYZ circulated in 2005 and reappeared in 2010. We have three healthy people in their 30’s: one person vaccinated in 2005 and 2010; one person never vaccinated; and, another vaccinated in 2005 but not in 2010. The person that was vaccinated both times will probably not become ill. The person never vaccinated will either become mildly ill or not ill at all since the body recognizes the virus. The person, who was only vaccinated in 2005, will more than likely become sicker than the other two since the body did not learn what to combat by natural exposure to the virus.

Why would the person never vaccinated possibly become just mildly ill? Influenza viruses need to change and mutate to survive. When the vaccine producers predicted that virus XYZ would be circulating again, they were able to adjust it for these potential changes.

As the Centers for Disease Control adroitly points out about flu vaccines, “Antibody elicited by vaccination is generally strain-specific, such that antibody against one influenza virus type or subtype confers limited or no protection against another type or subtype, nor does it confer protection against antigenic variants of the same virus that arise by antigenic drift.” In layman’s terms, influenza vaccines are very specific to the type (Influenza A), subtype (H3N2 and H3N8), and variances of viruses within those categories.

Herein lies the problem with companion animal influenza vaccines: they are generally not adapted for mutations after initial development.
In 2012, Pfizer Animal Health released a study it funded of its H3N8 vaccine which was isolated from dogs in Iowa in 2005. The researchers found that the Iowa vaccine was effective against more recent strains isolated from other parts of the country. However, the researchers noted, "The greatest amount of divergence correlated with the more recent isolates." Would the H3N8 vaccine still be efficacious in 2016? We do not know. We would need to continually complete studies such as this annually.

These days, the headlines are focused on H3N2, which is the latest flu virus to be identified in dogs in the United States. It was isolated in Chicago, and the vaccine was fast-tracked through the United States Department of Agriculture. To date, there has been one challenge study that has proven that the H3N2 vaccine is efficacious. [A combination vaccine covering both H3N2 and H3N8 has also been developed.] Then again, we do not know if it would prevent your companion dog from catching this strain of flu or not – no matter where he lives – because we do not know how fast the virus is changing or mutating. So, we do not know if the vaccine developed from Chicago dogs would be effective for the more recent outbreaks around the country.

You might be thinking to yourself, "Dr. Dodds, so you don’t think I should have my companion pets vaccinated?" As I always say, it depends on the pervasiveness, region, and the level of potential fatality of a disease. Please refer to the minimal vaccination protocol for my recommendations. In regards to influenza, you probably should allow nature to run its course since the symptoms are generally mild and the fatality rate is extremely low. Your pet will more than likely develop natural immunity that will help protect against further adaptations to similar viruses. If your pet was diagnosed with pneumonia in the past, then discuss whether the flu vaccine should be given in this case with your veterinarian and always take preventative measures.

References


