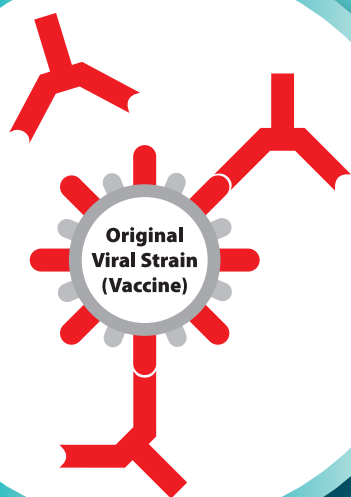
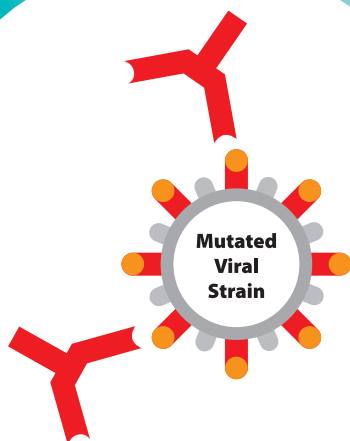


Understanding antigenic drift of equine flu

ANTIGENIC DRIFT DEFINED: Involves the accumulation over time of amino acid changes in surface glycoproteins, HA (haemagglutinin) and NA (neuraminidase) on the influenza virus.



Antibodies form and bind to the virus to neutralize it.



When the virus's surface antigens drift, the antibodies that formed to fight the original strain may not offer as much protection.



Each flu season, it's important to consider updated vaccines that offer direct protection against new viral mutations.

Antibodies form and react to a vaccine.

When vaccinated, horses develop antibodies to the virus found in the vaccine.

When antibodies are present following exposure, they bind to flu receptors to neutralize the virus.

DID YOU KNOW?

Antibodies are produced in the secondary lymphoid tissues. These tissues include bone marrow and lymphoid tissues scattered throughout the body.⁵

As the virus mutates (or drifts), the antibodies become less effective.

Viral strains evolve over time. Surface antigens change or drift. When exposed to a drifted virus, antibodies offer some clinical protection but may have less direct protection.^{1,2} This is known as cross protection.

While cross protection may offer some defense, studies show horses may still shed as much as an unvaccinated horse.¹

DID YOU KNOW?

Some horses may have only mild or moderate clinical signs of disease, but have heavy virus shedding resulting in an increased risk of influenza infection at population level.⁴

Consider up-to-date vaccines to protect against the most recent drifts.

Direct protection is best, but not all flu vaccines are created equally.

It's critical to use updated vaccines that protect from newer flu strains including Florida Clade 1 and Clade 2 strains.

CLADE 1: A/eq/South Africa/04/2003-like or A/eq/Ohio/2003-like use³

CLADE 2: A/eq/Richmond/1/2007-like viruses³

SOURCES

¹ Cullinane A and Newton JR. Equine influenza — A global perspective. *Vet Microbiol* 2013;167(1-2):205-214. *Vetera vaccines, flustory.com*. Accessed March 15, 2018.

² Paillet R, Prowse L, Montesso F, et al. Whole inactivated equine influenza vaccine: Efficacy against a representative Clade 2 equine influenza virus.

³ IFN-gamma synthesis and duration of humoral immunity. *Vet Microbiol* 2013;162(2-4):396-407. *Vetera vaccines, flustory.com*. Accessed March 15, 2018.

⁴ OIE Expert Surveillance Panel on Equine Influenza Vaccine Composition, OIE Headquarters, 22 March 2017, Conclusions and Recommendations.

⁵ <http://www.oie.int/our-scientific-expertise/specific-information-and-recommendations/equine-influenza/>. Accessed March 15, 2018

⁶ Sellers, Lunn, et al. 2011 ACVIM Forum, Gildea et al. 2011 Vaccine 9214-9233. Daly J.M., MacRae S.M., Newton R., et al. *Veterinary Journal* 189 (2011) 7-14.

⁷ <https://thehorse.com/132674/the-equine-immune-system/>