



# Equine Infectious Anemia

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Recently, December 2016, a horse in Wasatch County, Utah, tested positive for Equine infectious anemia (EIA). The horse was being sold at auction and a routine screening test identified the gelding as positive. Follow up testing by the Utah Department of Agriculture and Food Animal Industry Division confirmed the diagnosis. Equine infectious anemia is a blood-borne infectious viral disease of horses, donkeys, and mules.<sup>1</sup> Often referred to as “swamp fever” in horses, the disease was first tentatively diagnosed in the United States in 1888. The prevalence of EIA in the United States began to rise in the 1930s and reached its peak in the 1960s and 1970s with over 10,000 horses testing positive in 1975.<sup>2</sup> Today, with proper surveillance and screening procedures, the incidence of EIA is minimal. No vaccine or treatment exists for the disease. The virus causing EIA is categorized as a retrovirus that can mutate quickly, allowing it to evade the immune system of the horse. It is often difficult to differentiate from other fever-producing diseases, such as influenza and equine encephalitis.<sup>3</sup>

## Transmission

Under natural conditions, EIA is spread by the transfer of virus infected blood from one horse to another by biting flies. A fly begins feeding on an infected horse, gets interrupted, and goes to another horse to complete its meal, spreading the virus infected blood to a new uninfected horse. One-fifth of a teaspoon of blood from a horse with acute EIA contains enough virus to infect 1 million horses.<sup>3</sup> Although the disease is considered blood borne, all tissues and bodily secretions are considered

infectious, especially during the acute phase of the disease. The disease spread is purely mechanical; the virus does not replicate in the flies. Horseflies, deerflies, and stable flies are known to be vectors. Insect transmission of EIA is dependent on the number of insects, the housing density of the horses, the amount of blood transferred, and the amount of virus in the infected blood.

People are also known to spread EIA iatrogenically, by using blood-contaminated syringes, needles, surgical, or dental equipment.

## Clinical Disease

Equine Infectious Anemia can present itself in a wide range of clinical signs depending on the virus strain, dose, and immune state of the infected horse. The incubation period can last between 15-45 days. Equine Infectious Anemia classically presents through three phases. The **acute** phase lasts 1-3 days with fever and depression. This phase is followed by a second prolonged **chronic** period of recurring fever, petechial hemorrhage, anemia, weakness, edema, and loss of body condition. The time between the episodes can be days to months. A horse in the chronic phase can be referred to as a classic “swamper” who has lost condition, is lethargic anorexic, has a low hematocrit, and demonstrates a persistent decrease in the number of blood platelets. The chronic phase generally subsides after 1 year and the horse enters the **inapparent** phase as a carrier and reservoir of the EIA virus.

The severity of the disease can range from the horse showing no overt clinical signs to death in the acute and chronic phases. By far the majority of

infected horses pass through the acute and chronic phases and enter the inapparent carrier phase without ever showing any outward signs of the disease. All horses infected with the EIA virus are considered carriers for life. The inapparent form of the disease can revert back to the acute or chronic form due to severe stress, hard work, or the presence of other diseases.<sup>2</sup>

## Diagnosis and Control

In 1970 a scientist named Leroy Coggins developed a test that identified antibodies for EIA in the blood of infected horses. Since then, the classic test to screen for EIA is referred to as a “Coggins Test.” This test, in conjunction with other disease control procedures, has been successful in greatly reducing the number of infected horses in the United States. However, small pools of infected horses pop up across the nation every year. Spread of the disease has been attributed to both natural conditions and iatrogenic transmission.

Currently, testing of horses has to be performed by an accredited veterinarian. The veterinarian identifies the horse being tested by picture, name, and description. Then a blood sample is taken and sent to an accredited laboratory for testing. When a blood sample tests positive, it is sent to a national laboratory for a confirmatory test. If both tests come back positive, national and state officials are notified and quarantines are put into place as mandatory testing occurs in other exposed animals to determine the extent of the spread of EIA. Positive horses will require either euthanasia, or life-long quarantine at the ranch of origin. The quarantine area must provide at least 200 yards of separation from other horses. Horses testing positive must be permanently identified using hot brand, chemical brand, freemark, or lip tattoo. Because infected horses may not test positive in the first 45 days of infection, horses in quarantine areas are retested every 30-60 days. The quarantine stays in place until there are no positive cases for at least 60 days.<sup>1</sup>

To ensure that this disease is not spread, all horses shipped across state lines in the United States are required to test negative for EIA before transport. Utah requires the test to be performed within the 12 months prior to shipment. It is also required that all horses changing ownership or entering an auction must have been tested negative

for EIA within the past 12 months.<sup>2</sup> It is recommended that horse owners implement testing each horse annually as part of a routine health plan. Before introducing a new horse into a herd, an owner should ensure that the new horse tests negative for EIA.

Some recent outbreaks of EIA in the United States have been attributed to transmission by man, especially where needles and syringes have been reused. Good hygiene and proper sterile technique should be adhered to when administering any injectable medications and/or collecting blood samples. Needles and syringes are single use only items and should never be shared between horses, nor reused. Surgical equipment is generally used and maintained by licensed veterinarians who take all precautions not to spread infectious disease. However, dental equipment is often used by people who may not be familiar with sterile technique. As a general rule, any item that comes into contact with equine blood should be disposed of after first use if it is disposable, and sterilized between horses if it is a piece of surgical or dental equipment.

## References

- <sup>1</sup>Merck Veterinary Manual: Overview of Equine Infectious Anemia. Retrieved from <http://www.merckvetmanual.com/generalized-conditions/equine-infectious-anemia/overview-of-equine-infectious-anemia>
- <sup>2</sup>American Association of Equine Practitioners: Horse Health Equine Infections Anemia. Retrieved from <http://www.aaep.org/info/horse-health?publication=757>
- <sup>3</sup>USDA APHIS 2008, *Fact Sheet – Equine Infectious Anemia*. Retrieved from [https://www.aphis.usda.gov/publications/animal\\_health/content/printable\\_version/fs\\_equine\\_infectious\\_anemia.pdf](https://www.aphis.usda.gov/publications/animal_health/content/printable_version/fs_equine_infectious_anemia.pdf)

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