

## Equine Viral Arteritis

Equine viral arteritis (EVA) is an infectious viral disease of horses that causes a variety of clinical symptoms, most significantly abortions. The disease is transmitted through both the respiratory and reproductive systems. Many horses are either asymptomatic or exhibit flu-like symptoms for a short period of time. An abortion in pregnant mares is often the first, and in some cases, the only sign of the disease. EVA has been confirmed in a variety of horse breeds, with the highest infection rate found in adult Standardbreds.

Breeders, racehorse owners, and show horse owners all have strong economic reasons to prevent and control this disease. While it does not kill mature horses, EVA can eliminate an entire breeding season by causing numerous mares to abort. In addition, U.S. horses that test positive for EVA antibodies and horse semen from EVA-infected horses can be barred from entering foreign countries. As the horse industry becomes increasingly internationalized, nearly all major horse-breeding countries are including in their import policies measures to reduce the risk of EVA. The U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service's (APHIS) Veterinary Services (VS) program provides the equine industry with EVA diagnostic and surveillance support.

### History

More than a century ago, a disease fitting the clinical description of what we now call EVA was reported in European veterinary literature. However, the virus was not isolated from horses in this country until 1953 during an epidemic of abortions and respiratory disease.

The most recent EVA epidemic occurred in 1984 when this disease affected 41 thoroughbred breeding farms in Kentucky. This outbreak brought to light two very important findings about EVA: the efficiency with which an acutely infected stallion could venereally transmit the virus and the high carrier rate that immediately occurred in stallions following natural infection with the virus.

### Transmission

EVA is primarily a respiratory disease. Particles from acutely infected horses' nasal discharges are inhaled, often during the movement of horses at sales, shows, and racetracks. Horses are herd animals that tend to commingle, and this close contact facilitates the spread of the virus.

However, unlike other respiratory diseases, EVA can also be transmitted venereally during breeding, either naturally or by artificial insemination. When a mare, gelding, or sexually immature colt contracts the disease, the animal will naturally eliminate the virus and develop a strong immunity to reinfection. On the contrary, infected stallions are very likely to become virus carriers for a long time. Once stallions are in the carrier state, they transmit the virus to mares during breeding.

While the mare will shed the virus easily, a pregnant mare infected with EVA may pass the virus to her unborn fetus. Depending on the stage of pregnancy, the fetus can become infected, die, and be aborted. If the infected foal is born, it will only live for a few days.

### Symptoms

Many horses infected with EVA are asymptomatic. When symptoms do occur in the acute stage of the disease, they can include any or all of the following: fever, nasal discharge, loss of appetite, respiratory distress, skin rash, muscle soreness, conjunctivitis, and depression. Other clinical signs in infected animals are swelling around the eyes and ocular discharge, swollen limbs, swollen genitals in stallions, and swollen mammary glands in mares.

Abortion in pregnant mares is also a symptom of EVA. Abortion rates in EVA-infected mares can be as low as 10 percent or as high as 70 percent.

### Diagnosis

Horse owners should suspect EVA when respiratory symptoms accompany an abortion in a mare. Since the clinical signs of EVA are similar to those of other respiratory disease, and no characteristic lesions are in EVA-aborted fetuses, only diagnostic tests can confirm the disease. Virus isolation can be attempted from swabs of the nose, throat, or eyes; semen, placentas, or fetal tissue; and blood samples. However, the most common method of diagnosis is testing blood for the virus' neutralizing antibodies that cause EVA. While the presence of these antibodies alone does not indicate active infection, it does indicate EVA exposure has

occurred. Very high levels of antibodies on a single sample or a rising antibody titer from paired blood samples collected 14 to 28 days apart indicate active infection.

## Treatment

While there is no specific treatment for EVA, treatment should include rest and in selected cases, antibiotics, which may decrease the risk of secondary bacterial infection. Adult horses recover completely from the clinical disease. However, the virus commonly persists in the accessory glands of recovered stallions, so these carrier stallions continue to shed the virus for years and remain a significant source of infection.

## Prevention and Control

Fortunately, there is a way the industry can work to prevent and control EVA. A safe, effective, and low-cost avirulent live virus is now available. Combining this vaccine with isolation of the vaccinated animal from noninfected horses can prevent the spread of EVA. Since properly vaccinated EVA-negative stallions do not become carriers, all EVA-negative colts less than 270 days old should be vaccinated. The vaccine is not approved for use in pregnant mares.

Blood samples for EVA testing should be collected from all horses before breeding, and virus isolation should be performed on imported semen before use. Strict hygiene and disinfection of instruments and equipment are essential to minimize spread of the virus. EVA-negative mares should be bred only to EVA-negative, noncarrier stallions.

If blood test results are positive in a stallion, but

there is no official documentation of negative EVA status prior to vaccination, the stallion must be tested for the presence of a carrier state. Virus isolation can be attempted on the semen from two separate ejaculations, or by mating two EVA-negative mares with the stallion. Twenty-eight days after breeding, mares' blood should be tested for the development of the neutralizing antibodies to the EVA virus.

Carrier stallions should be bred only to EVA-positive mares or mares that are properly vaccinated. When breeding an EVA-positive or carrier stallion to an EVA-negative, vaccinated mare, isolate both horses for 24 hours after breeding to prevent mechanical spread of EVA from voided semen. If this is the first time the mare has been bred to a carrier stallion, she should be isolated from other horses for an additional 21 days due to potential virus shedding.

All vaccinated horses should receive yearly boosters to protect against infection and, for the stallions, to prevent the development of a carrier state. In a generation or two, these practices could all but eliminate the population of carrier stallions.

## Additional Information

For more information about EVA, contact  
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Current information on animal diseases is also available on the Internet at [www.aphis.usda.gov](http://www.aphis.usda.gov).

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