

Equine viral arteritis (EVA)



Equine viral arteritis (EVA) is a contagious disease of equids (horses, donkeys, mules) caused by equine arteritis virus (EAV) that is present in many equine populations worldwide. The disease, referred to in the past by a variety of clinically descriptive terms, is believed to have afflicted horses in Western Europe for centuries. Although not considered life-threatening in otherwise healthy, older horses, EVA is of industry concern because it can result in economically significant outbreaks of abortion in pregnant mares and very infrequently, death in young foals, as well as establishment of a long-term carrier state in stallions.

What causes EVA?

The disease is caused by equine arteritis virus (EAV) and is a notifiable equine disease by the Office International des Epizooties (OIE) or World Organisation for Animal Health.

EAV has the ability to cross the placental barrier and cause abortions or the birth of a congenitally infected live but diseased foal in mares exposed to infection very late in gestation. The virus also can persist in the reproductive tract of a percentage of infected stallions for a variable period of time.

Although the virus is not considered especially resistant outside the body, it will retain its infectivity in semen or other biological material for an extended period if these are kept frozen. In contrast to many other equine pathogens, infection with EAV stimulates a long-lasting immunity that protects against development of clinical disease and establishment of the carrier state in stallions.

How widely distributed is EAV?

Based on the outcome of various surveys for antibodies to the virus, evidence of EAV infection has been found in equine populations in many countries worldwide, in both northern and southern hemispheres. The prevalence of infection varies between countries and between breeds in the same country. Highest rates of infection are often found in Standardbred and Warmblood breeding populations. Global spread of EAV is frequently attributed to the movement of carrier stallions or trade in virus-infective semen.

In spite of the worldwide distribution of EAV, laboratory confirmed outbreaks of EVA have, until recent years, been relatively infrequent. This situation would appear to be changing, however, due in part to an increased industry awareness of EVA, improved diagnostic capability, and the continued growth in international trade in horses and semen.

How is the infection transmitted?

Regarded as one of the more significant viral pathogens affecting the equine respiratory tract, EAV is spread most frequently through direct contact with an acutely infected horse and exposure to infective aerosolised respiratory secretions. This is the primary means of virus dissemination at performance events, horse sales, veterinary hospitals and also on studs, or wherever horses are kept closely congregated with one another. While EAV is shed in various secretions and excretions by the acutely infected individual, it is present in greatest concentration in respiratory tract secretions and in the semen of stallions.

Introduction of EAV onto studs can occur by several means. It can be through a visiting mare, a nurse mare or teaser stallion either subclinically infected with the virus or incubating the infection. Experience has shown, however, that many outbreaks originate from the introduction of a carrier stallion or the use of infective fresh-cooled or frozen semen. Since carrier stallions shed EAV solely in semen, they can only transmit the infection by the venereal route. In mares that abort due to EVA, viral exposure occurs by the respiratory route through direct contact with an acutely infected horse, usually an unprotected mare recently bred with infective semen. Congenitally acquired infection in foals occurs infrequently in mares infected with the virus very late in pregnancy. Although of lesser significance in the dissemination of EAV, indirect transmission of infection can take place through the use of virus-contaminated tack, breeding equipment and on the hands and apparel of personnel who fail to observe adequate sanitary precautions in handling infected horses, eg when collecting semen from a carrier stallion.

What is the clinical outcome of infection with EAV?

Where clinical signs of EVA develop, the onset of illness occurs within 3-7 days, depending primarily on

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route of exposure. Signs of the disease can vary widely in range and severity and may persist for several days up to two weeks. Typical cases of EVA present with any combination or all of the following:

- Fever
- Swelling of the dependant parts of the body (limbs, scrotum, sheath, mammary glands)
- Loss of appetite and depression
- Swelling above or around one or both eyes, conjunctivitis, and ocular discharge
- Stiffness of gait
- Skin rash frequently localised to the head or neck but sometimes generalised.

Abortion may supervene in pregnant mares and very uncommonly, pneumonia, and enteritis (inflammation of the intestines) in young foals. Abortion can occur from early to late pregnancy. Abortion rates can vary significantly, from <10% to >70%.

Stallions affected with EVA that develop fever and scrotal oedema of some duration, are likely to experience a period of temporary infertility. Fertility of such stallions returns to its pre-infection level within 3-4 months.

Regardless of severity of clinical illness, horses affected with EVA invariably make complete clinical recoveries, even without symptomatic treatment. Fatalities in naturally-acquired EAV infection have only been observed in neonatal foals congenitally infected with the virus or in foals up to a few months of age.

Chronic infection with EAV occurs only in the sexually mature colt and the stallion in which the virus localises in certain of the accessory sex glands in the reproductive tract and sets up a carrier state. Chronic infection occurs in a variable percentage of stallions, from <10% to >70%. The persistently infected stallion is a constant semen shedder of EAV and can only transmit the infection by the venereal route. Carrier stallions display no clinical signs of disease or suffer any related impairment of fertility. Stallions can remain carriers of EAV for many years; it is important to emphasise that they are the principal natural reservoir of the virus.

How economically significant is EVA?

Direct economic losses due to EVA or EAV infection include:

- Outbreaks of abortion and uncommonly, death in young foals.
- Reduced performance ability during outbreaks at racetracks/equestrian events.
- Loss in commercial value of carrier stallions.
- Denied export markets for carrier stallions and virus infective semen and, in the case of some countries, any horse seropositive to EAV.
- Reduced commercial demand to breed to carrier stallions.

Can EVA be readily diagnosed?

In view of its similarity to a range of other infectious and non-infectious equine diseases, it is not possible to base a diagnosis of EVA solely on clinical evidence of the disease. It is important to seek veterinary assistance if faced with a suspect case/outbreak of EVA. Laboratory confirmation of a provisional clinical diagnosis of the disease should be obtained as soon as possible so that the necessary measures to restrict spread of the infection can be implemented without delay.

What is the treatment for EVA?

There is no specific anti-viral therapy for EVA. Since the vast majority of cases of the disease make uneventful clinical recoveries, symptomatic treatment is only indicated in severe cases of infection associated with high fever and extensive oedema, especially in stallions. Adequate sexual rest and treatment with non-steroidal anti-inflammatory drugs and diuretics are indicated in such individuals. At the present time, there is no proven non-surgical means of successfully eliminating the carrier state in the stallion.

Are there prevention and control programmes for EVA?

Based on knowledge of the disease and the availability of safe and effective vaccines, it has been possible to develop successful programmes for the prevention and control of EVA. Current programmes are directly aimed primarily at curtailing the spread of EAV in breeding horse populations to prevent outbreaks of virus-related abortion and/or losses in young foals, and to minimise the risk of establishment of the carrier

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state in stallions.

All breeding stallions should be vaccinated every 6 months against EVA to prevent establishment of the carrier state. Similarly, all colt foals should be vaccinated between 9 and 12 months of age for the same reason. Carrier stallions can continue to be used commercially, provided they are bred only to EVA-vaccinated mares or mares previously naturally infected with EAV. Where artificial insemination is used, special attention should be paid to determining the infectivity status of shipped semen, especially if imported from abroad.

If you want any other information on health issues concerning your horse please contact Hampden Veterinary Hospital on 01296 423666 and we will be happy to advise you.