

DONNINGTON GROVE LABORATORY EVA Test Fact Sheet



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Equine viral arteritis (EVA) is an infectious disease caused by the Equine Arteritis Virus (EAV). Although not life-threatening to adult horses, EVA can cause abortion in pregnant mares and death in young foals. Horses can be permanent carriers and this is of particular concern for breeding stallions. It is a notifiable disease in the UK.¹

Testing Requirements for Sales and Exports

These are variable but may require that blood samples are taken within thirty days of an event (e.g. a sale). If a sample is positive, another blood sample could be taken a minimum of 14 days later and the test repeated to see if the antibody titre has dropped. Horses deemed to be of "high risk" may require two blood tests at least 7 days apart.

Laboratory Tests

There are several methods used as evidence for previous or current EAV infection divided into:

1. Detection of an immune response against the virus.

These assays test for the presence of antibodies raised by the immune system against the virus. The two most frequent methods used to detect antibodies are:

- ELISA. This is a method that detects antibodies that can bind to an EAV protein.
- Virus (or Serum) Neutralisation Test (abbreviated to VNT or SNT). This is the gold-standard assay for detecting antibodies that are active against the virus as it assesses the ability of the antibodies to bind and neutralise live virus.

2. Detection of viral nucleic acid.

To detect the presence of the virus itself, a reverse-transcription polymerase chain reaction (RT-PCR) assay can be performed. This is a good indicator of a current infection with the virus.

These methods for detecting EAV infection were assessed by the World Organisation for Animal Health as shown below²:

Method	Purpose		Assay comments
	Individual animal freedom from infection	Confirmation of clinical cases	
Virus identification			
PCR	+++	+++	Easy, same day result
Detection of immune response			
ELISA	++	++	Easy, same day result
VNT	+++	+++	More complex; takes 3

Key: +++: recommended method; ++ - suitable method

¹ <https://www.gov.uk/guidance/equine-viral-arteritis#legislation-relating-to-equine-viral-arteritis>

² Chapter 2.5.10 Equine Viral Arteritis (Infection with Equine Arteritis Virus). OIE Terrestrial Manual 2013.

Our tests

We offer the ELISA for blood samples and also PCR for nasopharyngeal swabs or semen samples. Both tests are rapid with results available same day if required.

What does a positive ELISA result mean?

Approximately 1 in 40 samples tested by ELISA by us return a borderline or positive result, yet in almost all of such cases the animal does not have an infection with EAV. A positive result in the ELISA may merely reflect that the horse has responded to an infection by EAV and raised antibodies to remove it i.e. it has no current infection and does not have the disease EVA. Additionally, vaccinated horses will be positive in these assays as no antibody test can differentiate between antibodies raised against a virus infection and antibodies raised by vaccination. Also, occasionally the antibodies detected may have arisen from exposure to a different virus but that virus has some similarity to EAV and returns a positive result in the test (called a "false positive").

So, overall, a negative result is likely to correctly identify the sample as lacking EAV antibodies i.e. a true negative, but a positive result in the ELISA assay requires an additional alternative test to confirm if the sample has antibodies to the virus in its blood at a level that is indicative of a current infection (or of successful vaccination), which is done using VNT, or if actual virus is present in the animal, can be done by PCR.

Recommended timeline for testing

We recommend you allow at least 14 days before requiring a confirmed negative result. This is because if there is a positive or inconclusive result in-house, we would forward the sample to an external laboratory for the Virus Neutralisation Test. This latter test can take around 7 days to be processed.