

Quarantine

Whenever Biosecurity SA is of the opinion that stronger action is necessary to manage and control a suspected or confirmed HeV situation, it may place the premises in quarantine and implement a disease control program. A private veterinarian does not have the legal powers to quarantine a property but can advise the owner of voluntary actions they need to implement to manage the immediate situation.

If Biosecurity SA makes a decision to quarantine the property, Biosecurity SA will assume responsibility for the animal disease control program. Biosecurity SA may retain the services of the private veterinary practitioner as part of this response. If this course of action is chosen, the veterinary practitioner will be offered a short term contract by Biosecurity SA.

Workplace health and safety obligations will be met in collaboration with the property owner/manager and the private veterinarian.

Costs associated with the husbandry and general care of horses are treated as normal costs and are paid by the horse owner.

Useful contacts

- Biosecurity SA: 8207 7900 (9 am–5 pm weekdays)
- Emergency Animal Disease Watch Hotline: 1800 675 888 (24 hours)
- VETLAB: 8202 3300 (24-hours)
- SA Health: 1300 232 272 (24 hours/ 7 days).
- Health Direct: 1800 022 222
- SafeWork SA Help Centre: 1300 365 255.

Information in this booklet has been sourced from the *Hendra Virus - veterinary practice manual* (May 2010) by the kind permission of the State of Queensland, Department of Employment, Economic Development and Innovation (Biosecurity Queensland).



Understanding Hendra virus

For equine veterinarians



This information should be used in conjunction with the Queensland Government publication *Guidelines for veterinarians handling potential Hendra virus infection in horses*. The most current version of these guidelines is available from the Biosecurity Queensland website at www.biosecurity.qld.gov.au

Hendra virus is a notifiable disease

If Hendra virus (HeV) is suspected, a government veterinarian must be notified immediately.

Call **Biosecurity SA** on 8207 7900 (9am–5pm weekdays) or the **Emergency Animal Disease Watch Hotline** on 1800 675 888 (24 hours).

HeV in horses

HeV can cause a range of clinical signs in horses. In particular, HeV is recognised as causing neurological and/or respiratory signs. The virus has an affinity for endothelial cells, causing **systemic vasculitis**. The organ/system where the greatest damage occurs would appear to contribute directly to the clinical signs seen.

There are no pathognomonic signs that define HeV infection in horses. Horses that are infected with HeV have shown variable and often vague clinical signs.

In several documented HeV cases, **one or more horses have died suddenly before HeV was suspected or diagnosed** in another horse on the same property.

Common clinical signs

- acute onset of illness
- increased body temperature
- increased heart rate
- discomfort/weight shifting (both fore and hind limbs)
- depression
- rapid deterioration.

The submitter determines the type of tests conducted for health testing. Usually a PCR is sufficient.

The submitting veterinarian/client is responsible for all costs associated with sending samples to the laboratory for health testing where there is no suspicion of disease.

There is no legislative requirement for health testing of horses moving between jurisdictions or properties.

Disinfectants

HeV is a member of Category A viruses. Category A viruses contain a lipid envelope.

Disinfectants named here have been selected from a list of disinfectants that are either known to have an effect against all viruses, or have specific action against Category A viruses. These include:

- soaps and detergents
- Virkon®
- hypochlorites
- iodophors/iodine
- biguanidines (e.g. chlorhexidine)
- quaternary ammonium compounds.

Other disinfectants are considered effective, however they require special precautions for their safe use and are not listed here. They can be referenced from the AUSVETPLAN decontamination manual available at <http://animalhealth.com.au>

Human exposure concerns

Biosecurity SA will notify SA Health (Communicable Disease Control Branch) when HeV is suspected or confirmed.

People concerned about exposure to HeV should seek medical advice and contact their local General Practitioner or SA Health on 1300 232 272 (24 hours/ 7 days).

- ELISA positive (or indeterminate) results require additional testing to determine whether they are *actually* a true positive and not a false positive reactor.

3. Virus neutralisation test (VNT)

- Indirectly detects the presence of HeV antibodies in a sample.
- The test involves mixing blood sample with live virus to see if virus is killed (neutralised) by antibodies and must be conducted under high-level biocontainment. As such, all VNT are conducted at AAHL in Geelong.
- Any positive (or indeterminate) ELISA will go on for VNT.
- Can take up to two weeks to complete.
- Remains the gold standard for detection of an antibody response to HeV infection.

Diagnostic testing fees

Fees are not charged for laboratory diagnostic testing of suspected cases of Hendra virus. This may range from exclusion testing with a remote likelihood of disease to exotic/emerging disease diagnosis with a high suspicion of disease.

Biosecurity SA may also pay for other VETLAB fees associated with a disease investigation where Hendra virus is being excluded. However, authorisation of payment is required before submitting samples to the laboratory, by phoning a Biosecurity SA Veterinary Officer or the **Emergency Animal Disease Watch Hotline** on 1800 675 888 (24 hours).

Health testing

Health tests are used as a screening process to provide additional assurance that a clinically normal animal is unlikely to have a certain disease.

Some equine businesses have started to routinely request HeV health testing, including some New South Wales studs that require HeV health testing before mares can be transported to them for foaling or breeding.

Health testing has also been undertaken on horses before they are admitted to a veterinary hospital for certain procedures (i.e. surgery, endoscopy).

Some other clinical observations that have been noted include the following.

Respiratory signs, including:

- pulmonary oedema and congestion
- respiratory distress—increased respiratory rates
- terminal nasal discharge—can be initially clear progressing to stable white froth and/or stable blood stained froth
- pulmonary involvement leading to terminal weakness, ataxia and collapse.

Neurological signs, including:

- ‘wobbly gait’ progressing to ataxia
- altered consciousness—apparent loss of vision in one or both eyes, aimless walking in a dazed state
- head tilting, circling
- muscle twitching—myoclonic spasms have been seen in acutely ill and recovered horses
- urinary incontinence
- recumbency with inability to rise.

A range of other observations have also been recorded in individual horses infected with HeV. The guidelines have more detail if required.

Differential diagnoses

Acute death:

- plant poisonings (Crofton weed, avocado)
- chemical poisonings—paraquat, lead, fluoroacetate, ionophores (such as monensin)
- colic
- intoxications (botulism)
- acute bacterial diseases (anthrax).

Respiratory or neurological disease:

- inhalation pneumonia or purulent bronchopneumonia
- equine herpes virus (neurological strain)
- Murray Valley encephalitis
- exotic disease viruses—African horse sickness, equine influenza, Japanese encephalitis, West Nile virus, encephalitides (eastern, western, Venezuelan), hantavirus pulmonary syndrome

- acute septicaemia
- purpura haemorrhagica
- snake bite envenomation.

Sampling

Collecting samples to test for HeV should only be performed if the risk to personal safety is adequately managed and suitable personal protective equipment (PPE) is worn.

Note: If sampling opportunity is limited, the most valuable samples in either a live or dead horse are a nasal swab and whole blood in EDTA and/or lithium heparin.

Taking samples from multiple sites from each horse will increase the diagnostic sensitivity of the sampling procedure as a whole.

Types of samples recommended for HeV in live or dead horses:

- blood sample (1 x 10 ml of whole blood in a plain tube, 1 x 10 ml of blood in EDTA and 1 x 10 ml of blood in lithium heparin). We recommend using anti-drip vacutainer needles for blood collection
- nasal swab
- oral swab (taken from the surface of the tongue)
- rectal mucosal swab (not faecal swab)
- urine swab (taken from the ground immediately post-urination).

It is preferable to transport swabs in virus transport medium (VTM) if available. A small amount of saline can be used if VTM is not available. Samples should be submitted to the laboratory in the shortest time possible. It is important to notify VETLAB to advise them of the submission.

Where there is high suspicion of disease or significant human exposure, quicker turn around times for laboratory results can be achieved by using special courier services and weekend laboratory testing. It is important to advise Biosecurity SA and VETLAB of the higher urgency of the laboratory results.

Keep samples refrigerated, **NOT** frozen.

Dead horses can be sampled adequately for HeV testing without conducting a complete necropsy.

Australian Animal Health Laboratory (AAHL) have recommended the following tissue samples from dead horses may be useful but only where collection risks can be managed, including any release of free blood during the procedure, and where it is safe to do so. Collection of these samples will raise the overall test sensitivity for HeV when combined with swabs. This may be of particular value where the carcass is being held pending a full necropsy for insurance purposes.

- submandibular lymph node
- blood clot obtained by cutting down onto the jugular vein.

Consider taking duplicate samples to allow further diagnostic work if the samples are HeV negative.

Sampling of vaccinated horses

Although vaccinated horses in trials did not become infected, show clinical signs or shed virus, there is no guarantee of protection. Personal Protective Equipment (PPE) should be worn whenever a case of Hendra virus is suspected. All suspect cases of Hendra virus infection should be treated as potentially infected regardless of the vaccination status of the horse.

Testing for HeV

Types of tests

1. Polymerase chain reaction (PCR) test

- Detects the direct presence of virus (live or dead) in a sample.
- Most useful early in clinical course of disease.
- Conducted at AAHL in Geelong.
- Results usually reported within 2–3 working days once received at laboratory.

2. Enzyme linked immunosorbent assay (ELISA)

- Detects the presence of HeV antibodies in a sample.
- Conducted at AAHL in Geelong.
- Regarded as *screening* test. Negative results are a reliable indicator that the horse does not have antibodies however, some negative horses will return false positive results.
- Results usually reported within 2–3 working days once received at laboratory.