Notification of Veterinary Advice for Equestrian Events

I) EVA advises event organisers in Queensland and New South Wales to implement a vaccination requirement for all competitors’ horses.

II) EVA advises event organisers in the other States and Territories to implement a vaccination requirement for those competitor’s horses who have travelled from Queensland and New South Wales, within the last 30 days.

Equine Veterinarians Australia (EVA) advises that the risk of HeV infection to horses and people is well documented in Animal Health Australia’s Ausvetplan Hendra virus Response Policy Brief 2013, and in the scientific literature of the relevant State Government lead agencies such as NSW Department of Primary Industries, Biosecurity Queensland, Workplace Health and Safety, and Queensland Health. All have Fact Sheets detailing the risk and means of preventing the fatal disease.

We are informing you that this risk extends to humans and horses at equestrian events. The large numbers of horses intensively gathered at events increase the likelihood of disease transmission between horses. The many people interacting amongst horses increases the likelihood of human exposure to the disease. A Hendra outbreak will also result in the detrimental effects of at least 30 day mandatory Government imposed quarantine periods for all unvaccinated, at-risk horses.

It is accepted that Hendra virus risk exists wherever flying foxes, horses and people coexist. The risk of Hendra Virus in the endemic disease states of Queensland and New South Wales is proven. There is also the potential for infection more extensively throughout Australia, as all 4-mainland species of flying foxes have the potential to infect horses.

Hendra virus infection is a sporadic disease in horses and is a rare disease in humans however the consequence of human infection is devastating, with a 60% mortality rate and potential chronic debilitating illness in those who do not die.

The inescapable facts are that there have been 52 confirmed outbreaks within Queensland and New South Wales resulting in the deaths of around 100 horses. Although Hendra related human fatality is rare, the increased number of 38 outbreaks over the last four years and the resultant increased number of human exposures from horses means that the likelihood of exposure and the risk of fatality is no longer a rare event.

The negative impact on public and member perceptions of equine sport as a result of a Hendra outbreak at an unvaccinated event is impossible to measure. The impact of a Hendra infection at a single private property is devastating, problematic and has a highly adverse impact on those people immediately exposed. An outbreak at an equestrian competition would result in a significant magnification of these risks, impacts, problems and probability of a human death/illness.
Work Health and Safety (WH&S) risk evaluations, classifies risk with a possible/rare likelihood of occurrence but with catastrophic consequences (death), as EXTREME to HIGH RISK and must be managed accordingly. This principle is fundamental to understanding Hendra risk and the associated duty of care expected of event organisers under the WH&S Act.

There is compelling advice from Work Health and Safety that event organisers have a duty of care to minimise risk and ensure safety at events in a reasonably practicable way.

Government agencies such as NSW DPI, Biosecurity Queensland and Workplace Health and Safety state that “Vaccination is the single most effective way to prevent Hendra infection, and provides a public health and workplace health and safety benefit. Vaccinating horses is an important measure to prevent human infection”.

The responsibility to respond accordingly is heightened by the fact that vaccination as a risk prevention measure is extremely effective, accessible and relatively affordable.

The requirement that all horses at events be vaccinated and that unvaccinated horses be excluded is regarded by WH&S as a “higher order” of Hendra risk management in the hierarchy of control spectrum. WH&S advice rates a biosecurity plan as a “lower order” of risk management.

EVA is in complete agreement with these ratings and advises that vaccination is a reasonably practicable risk mitigation strategy by any standard.

EVA advises that Hendra virus risk at equestrian events is extremely difficult to manage and requires vaccination because:

- The large numbers of horses intensively gathered increases the likelihood of disease transmission between horses and the many people interacting amongst horses increases the likelihood of human exposure to the disease;

- There are no classical symptoms that allow a veterinarian to diagnose a horse without the use of specialised tests;

- Hendra cases in horses present with vague and varied symptoms of disease. Many of these are consistent with diagnoses of other more benign conditions. Symptoms associated with confirmed cases have included elevated rectal temperatures and normal rectal temperatures, some have appeared to have respiratory disease, others presented as colic, some have shown neurological symptoms, and others have simply presented dull, depressed and off their feed. Treatment veterinarians at equestrian events are presented with sick horses showing many of these symptoms regularly;

- When an event runs over multiple days a Hendra infected horse could show its first symptoms during that event;
- Horses have been shown to shed Hendra virus prior to showing any symptoms of illness, this has led to one confirmed human infection;

- Exclusion testing at the laboratory is the only definitive way to rule Hendra infection in or out. The tests results can take 24hrs to 48hrs to be reported. During this time veterinarians and event organisers must manage the suspect horse and all in contact horses as an extremely high biosecurity risk;

- A suspect horse must be isolated/quarantined at the event. Any in contact horses must also be identified and isolated/quarantined;

- All people who have had potential contact with the suspect horse or in contact horses must be identified and briefed about managing their exposure risk;

- The biosecurity risk to other competitors, officials, volunteers, and spectators must be managed while waiting for exclusion test results;

- If Hendra virus is confirmed, the unvaccinated horses at the event will be quarantined possibly for more than 30 days. However vaccinated horses would not be quarantined and could leave the event following assessment and external washing if necessary.

**EVA does not believe that biosecurity plans alone (without a requirement for vaccination) can adequately mitigate Hendra virus at events because:**

There is no certainty that a “lower order” risk mitigation strategy like a Biosecurity Plan can be applied adequately, complied with adequately in a practical sense, or can be ever audited adequately to manage HIGH to EXTREME risk.

EVA advises that the ‘Horse Health Declaration’ as a component of a Biosecurity Plan does little and most likely nothing to prevent risk and should not be relied on. It simply asks the competitor to declare that their horse is healthy prior to coming to an event. This is obviously a subjective assessment sought from someone who is frequently not capable of expressing that opinion on the basis of any expertise. Its reliability or accuracy cannot be substantiated or audited. It does not protect against early subtle symptoms of disease, and it fails to identify a horse that begins to show its first symptoms of disease at an event that runs over multiple days.

Other points to consider are:

- Training of officials and event staff in the proper use of PPE is not practical and is difficult to implement, and competitors and spectators have no training whatsoever in the use of PPE. WH&S advocates the use of PPE but regards it as a “lower order” of control compared with vaccination;
By the time that PPE is used it is very likely that there has already been exposure risk to competitors, officials or volunteers;

Hygiene requirements are difficult to comply with at equestrian events. The commonly observed lifestyle of camping, eating and sharing immediate space with horses at horse events is in direct conflict with all best practice biosecurity advice and principles that address disease transmission and the prevention of zoonosis;

The competencies of event volunteers, event participants and officials to understand, design, implement, adhere to and manage the biosecurity essentials during an equestrian event is typically deficient and unreliable in the occurrence of a Hendra biosecurity situation.

EVA urges all event organisers to read the most up to date Fact Sheets in the following RESOURCE KIT, with the website links below, and full documents copied out below the links.

Resource Kit for Event Organisers


2. NSW Department of Primary Industries - Prime Fact Sheet Hendra virus

3. Workplace Health & Safety Queensland - Hendra virus information for horse properties & other horse businesses.

4. Workplace Health & Safety Queensland - Hendra virus information for businesses that dispose of horse carcasses.
Hendra virus
Information for horse owners, handlers, competitors and event organisers

What is Hendra virus?
Hendra virus is a zoonotic disease, which means it can transfer from animals to people. Hendra virus can cause disease in horses but only rarely causes disease in humans.

How Hendra virus is transmitted
Hendra virus can be transmitted from flying fox to horse, horse to horse and horse to human.

The exact route of transmission is not known, but it is thought that horses become infected via contact or droplet transmission of the virus. This may occur by ingesting material contaminated by infected flying fox body fluids and excretions. While Hendra virus is present in flying fox populations periodically, the likelihood of horses becoming infected is low.

Hendra virus can spread from horse to horse through direct contact with infectious body fluids, or through indirect contact via equipment contaminated with infectious body fluids.

The few cases of Hendra virus infection in people occurred following high-level exposure to respiratory secretions (e.g. mucus) and/or blood and other body fluids from an infected horse. Other people have reported having some contact with infected horses but have remained well, and their blood tests have shown no evidence of Hendra virus infection.

There is no evidence of Hendra virus spreading from person to person or from flying foxes to humans.

The scientific information available on the disease is not complete. Research continues so that we can learn more about Hendra virus—particularly about how it is transmitted from flying foxes to horses.

Hendra virus and horses

How to reduce the risk of horses becoming infected

- A Hendra virus vaccine is available for horses. Vaccination is the single most effective way of reducing the risk of Hendra virus infection in horses. Discuss the option of vaccination with your veterinarian. See Vaccination in this brochure for more information.
- Remove horse feed and water containers from under trees. If possible, place feed and water containers under a shelter.
- Remove your horses from paddocks where flowering/fruiting trees may be attracting flying foxes. Return the horses only after the trees have stopped flowering/fruiting and the flying foxes have gone. If the horses cannot be removed from the paddock, consider fencing (temporary or permanent) to restrict access to flowering/fruiting trees. Clean up any fruit debris underneath the trees before returning the horses. If it is not possible to remove your horses from paddocks for long periods, try to temporarily remove your horses during times of peak flying fox activity (usually at dusk and during the night).
- Clean and disinfect gear exposed to any body fluids from horses before using it on another horse. This includes items like halters, lead ropes and twitches. Talk to your veterinarian about which cleaning agents and disinfectants to use.
- When cleaning contaminated equipment, wear gloves, cover any cuts or grazes and wash your hands thoroughly afterwards.
- If your horse becomes sick, isolate it from other horses, other animals and people until a veterinarian’s opinion is obtained.
• Always handle healthy horses before handling sick horses and only handle sick horses after taking appropriate precautions (see How to reduce the risk of people becoming infected and Personal protective equipment in this brochure).
• Practise good biosecurity (animal disease control). Do not travel with, work on or take sick horses to other properties or equestrian events.
• Do not allow visiting horse practitioners (e.g. farriers) to work on sick horses.
• Seek veterinary advice before bringing any sick horse onto your property.

Vaccination—a new tool in the fight against Hendra virus

A vaccine for horses is now available for use under permit by veterinarians. The permit requires vaccinated horses to be microchipped.

Research has shown that the vaccine protects horses from Hendra virus for up to six months following an initial course of two vaccinations. Vaccinated horses demonstrated no clinical signs of Hendra virus disease. Research is continuing to determine the duration of immunity from the vaccine.

The vaccine works by stimulating the production of protective antibodies. If the horse is subsequently exposed to Hendra virus, the antibodies work by binding to the viral particles, preventing them from establishing an active infection in the horse. No live virus is used at any stage during the manufacture of the vaccine and it therefore cannot cause Hendra virus infection.

The vaccine is used as an aid to prevent clinical disease in horses caused by Hendra virus, and also to reduce viral shedding.

Vaccination is the single most effective way of reducing the risk of Hendra virus infection in horses. Human infection and death have occurred following high-level exposure to body fluids from an infected horse. Vaccinating horses is an important measure to prevent this occurring and provides a public health and workplace health and safety benefit.

Vaccination of horses is strongly encouraged and you should discuss this with your veterinarian.

However, do not become complacent after your horses have been vaccinated. Always practise good personal hygiene and biosecurity measures when working with horses, regardless of their vaccination status.

For more information about the Hendra virus vaccine for horses, visit www.health4horses.com.au.

Signs of Hendra virus in horses

Hendra virus can cause a broad range of signs in horses. Hendra virus infection should be considered in any sick horse where the cause of illness is unknown and particularly where there is rapid onset of illness, fever, increased heart rate and rapid deterioration associated with respiratory and/or nervous signs.

The following signs have all been associated with Hendra virus cases, but not all of these signs will be found in any one infected horse:
• rapid onset of illness
• increased body temperature/fever
• increased heart rate
• discomfort/weight shifting between legs
• depression
• rapid deterioration with respiratory and/or nervous signs.

Respiratory signs include:
• respiratory distress
• increased respiratory rate
• nasal discharge at death—can be initially clear, progressing to stable white froth and/or stable blood-stained froth.

Nervous signs include:
• wobbly gait
• apparent loss of vision in one or both eyes
• aimless walking in a dazed state
• head tilting and circling
• muscle twitching
• urinary incontinence
• inability to rise.

Who to contact if you suspect a horse has Hendra virus

Contact a veterinarian immediately. If you are unable to reach a veterinarian, notify a government veterinarian or Biosecurity Queensland officer—there is a legal obligation to do this. Clearly explain that you are calling to report a suspected case of Hendra virus infection. Let the officer know if there has been human exposure to body fluids from the sick horse.

Report suspected cases by contacting:
• Biosecurity Queensland on 13 25 23 (business hours) or the Emergency Animal Disease Watch Hotline on 1800 675 888 (24-hour hotline).

What to do while waiting for Hendra virus test results for horses

If your veterinarian considers your horse may have Hendra virus, they will take samples for testing at a government laboratory.

Initial test results are usually available 1–2 working days after the laboratory receives the samples.

While you are waiting for test results:
• Avoid close contact with the horse under investigation, and other horses that have been in contact with it, until Hendra virus has been ruled out.
• If close contact with a horse under investigation is essential, ensure the number of people having contact with the horse is kept to a minimum and take the precautions outlined under How to reduce the risk of people becoming infected and Personal protective equipment in this brochure. Never let children have contact with a horse under investigation for Hendra virus.
• Move horses that are under investigation away from areas that can be accessed by the public.
• Isolate the horse that is under investigation from other animals if it is safe to do so. Ideally, leave the sick horse where it is and move other animals to a different area of the property.
• If you need to provide feed and water for any horses on the property, keep your distance from them.
• Observe horses from a distance and notify your veterinarian immediately of any change in the health status of any horse on the property.
• If a horse under investigation dies or is euthanased, avoid contact with the carcass. Advise anyone disposing of the carcass that the horse is under investigation for Hendra virus.

If the test result is negative, your veterinarian may wish to take further samples to investigate your horse’s illness. Continue to monitor your horse and notify your veterinarian immediately of any change in the health status of any horse.

**What will happen if a horse on your property tests positive for Hendra virus**

If a test result is positive for Hendra virus, Biosecurity Queensland will work with you and your veterinarian to manage the situation.

The affected property will be placed under quarantine by Biosecurity Queensland and the following steps will be taken:

• Horses will not be allowed to enter or leave the property without permission from a Biosecurity Queensland inspector.

• Horses assessed as being at risk on the property will be tested for Hendra virus and their health status assessed and monitored.

• Any horses that have moved off the property in the last few weeks will be traced and may be tested for Hendra virus.

• Neighbouring properties with horses will also be assessed for the risk of exposure to Hendra virus. Testing and monitoring may be carried out and movement restrictions applied as a result of this assessment.

• As the horse owner, you are responsible for meeting the general husbandry needs of your horses during the quarantine period, including treatment of non-Hendra virus illnesses or injuries.

• Other animals on the property, including pets, may be tested for Hendra virus and have movement restrictions applied to them—see Hendra virus and other animals in this brochure.

Once there is substantial evidence that no animals are infected with Hendra virus, the quarantine on your property will be lifted.

Biosecurity Queensland will notify Queensland Health of the situation. Queensland Health will coordinate risk assessments and appropriate follow-up for people involved.

**Horse events**

Hendra virus is not highly contagious and the horse industry is not subject to movement restrictions for Hendra virus, except for any properties under quarantine.

If you are organising or competing in a horse event, ensure that good biosecurity measures are followed to minimise the risk of spreading any diseases, such as Hendra virus. Event organisers should, as a minimum:

• prepare and implement a biosecurity plan

• collect information on all horses attending the event

• maintain strict biosecurity at the event

• not allow sick horses to attend the event

• consider recommending Hendra virus vaccination for attending horses as a public health and workplace health and safety consideration.

Competitors should always practise good biosecurity and hygiene for themselves and their horses, and should not take sick horses to events.

**Hendra virus and other animals**

Hendra virus antibodies have been identified in a dog, which indicates that the dog had been exposed to the virus. There is no evidence of dogs excreting Hendra virus. Dogs that have either been exposed to Hendra virus naturally or infected with Hendra virus in an experimental setting have not shown any signs of illness.

Biosecurity Queensland’s policy is to test and monitor species known to be susceptible to Hendra virus (e.g. dogs, cats, pigs) on quarantined properties that have had, or are likely to have had, close contact with horses known to be infected with Hendra virus.

If you are not located on a property quarantined for Hendra virus, the risk of animals other than horses contracting the virus is very low.

While animals including cats, guinea pigs, ferrets and pigs have been infected experimentally with Hendra virus, the virus has not been known to occur naturally in these animals. (Note that it is illegal to keep ferrets in Queensland.)

**Hendra virus and people**

**How to reduce the risk of people becoming infected**

• Vaccination of horses can protect horses from infection and subsequently protect humans from infection.

• Ensure sound hygiene and biosecurity measures are routinely adopted for all contact with horses, their blood and body fluids, and associated equipment. This includes:
  – regular hand washing
  – maintaining standards of cleanliness and stable hygiene
  – cleaning and disinfecting equipment that has been in contact with horses’ body fluids.

• If you have a sick horse, isolate it from other horses, other animals and people (e.g. remove companion animals to another area) until you have obtained a veterinary opinion, even if the sick horse and/or the other horses have been vaccinated.

• If you must have close contact with a sick horse where Hendra virus has not been ruled out, always take the following precautions:
  – Cover cuts and abrasions with a water-resistant dressing.
  – Put on all of the wearable personal protective equipment (PPE) in your kit before approaching the horse.
  – After handling the horse, remove and dispose of the PPE carefully, making sure there is no contact with your facial area, particularly your eyes, mouth and nose.
  – Immediately wash your hands with soap and water and dry them or use hand wipes and waterless hand hygiene solution.
  – Carefully remove any clothing contaminated with a sick horse’s body fluids.
• If you have handled a sick horse, follow these steps before having contact with other horses:
  – Wash off any contamination with plenty of soap and water.
  – Shower and wash your hair.
  – Change your clothes and footwear.
• Arrange your activities so that you handle unaffected horses first and have contact with the sick horse last.

Personal protective equipment
Personal protective equipment (PPE) is an important part of personal safety when dealing with sick animals, even if they have been vaccinated against Hendra virus. PPE must be worn if you suspect your horse is sick, or if any invasive work is being performed on the horse. Use PPE correctly and always wash your hands thoroughly after removing PPE.

If you own a horse, you should always have a PPE kit at your property. You can purchase the items for a PPE kit from most hardware stores.

Always have the following in your kit:
• hand cleansers
• soap
• disinfectants
• waste disposal bags
• disposable gloves
• overalls
• rubber boots
• facial shields
• safety glasses
• a P2 respirator (particulate respirator)—this is the minimum level of recommended respiratory protection. Surgical masks do not provide respiratory protection.

If you are assisting your veterinarian in attending to a sick horse, ensure you also wear appropriate PPE.

Signs of Hendra virus in people
The few known cases of human Hendra virus infection have shown the following signs:
• an influenza-like illness (which led to pneumonia in one case) with symptoms such as fever, cough, sore throat, headache and tiredness and/or
• encephalitis (inflammation of the brain) with symptoms such as headache, high fever and drowsiness, which progressed to convulsions and/or coma and death.

The time from a person’s exposure to a sick horse to the start of illness has been between 5 and 21 days.

Who to contact about human health concerns
If you have concerns about a person’s health at any time, seek medical advice. Contact your general practitioner, local hospital emergency department or local public health unit if you have concerns about possible exposure of people to a horse infected with Hendra virus. For general enquiries about Hendra virus infection in humans, call the Queensland Health hotline on 13 HEALTH (13 43 25 84).

Managing the risk in the workplace
Workplace health and safety measures should be implemented at workplaces where there is occupational contact with horses.

Hendra virus requires careful risk management. Develop a plan for responding to a suspected or confirmed case of Hendra virus at your workplace. The plan should include how you will minimise the risk to yourself, any employees and others such as visiting horse practitioners (e.g. farriers). Train your workers in implementing the plan.

Adopt sound hygiene and biosecurity measures as routine work practice for all horse contact.

For more information about managing the risk of Hendra virus in the workplace, contact Workplace Health and Safety Queensland on 1300 369 915 or visit www.worksafe.qld.gov.au.

Hendra virus and flying foxes
Hendra virus occurs naturally in all species of flying foxes in Queensland; however, these animals should not be targeted for culling. Flying foxes are protected species and are critical to our environment as they pollinate our native trees and spread seeds. Without flying foxes, we wouldn’t have our eucalypt forests, rainforests and melaleucas.

Any unauthorised attempts to disturb flying fox colonies are illegal and ineffective for a number of reasons:
• Flying foxes are an important part of our natural environment.
• Flying foxes are widespread in Australia and are highly mobile.
• There are more effective steps people can take to reduce the risk of Hendra virus infection in horses and people.

For more information about flying foxes, contact the Department of Environment and Heritage Protection on 1300 130 372 or visit www.ehp.qld.gov.au.

Flying foxes and trees
Flying foxes prefer to feed on nectar and pollen from eucalypts, melaleucas and banksias; however, they are attracted to a broad range of flowering and fruiting trees, and vegetation.

Some examples of the trees and vegetation on Queensland properties where horses have been infected with Hendra virus are:
• a range of fig trees (including Moreton Bay fig trees)
• melaleucas (including paperbarks)
• eucalypts
• bottlebrushes
• mandarin trees
• climbing asparagus vines
• cocos palms.

Other trees that may attract flying foxes include flowering or fruiting trees with soft fruits and stone fruits (e.g. mangoes, pawpaws), palms, lilly pillies and grevilleas.

Please note this is not an exhaustive list of trees that are attractive to flying foxes. This will vary with the geographical area. Identifying the trees on your property that attract flying foxes will help you manage your horses.
What is Hendra virus?

Hendra virus is a virus carried by flying foxes that inhabit Australia, Papua New Guinea, and surrounding islands. So far, clinical disease due to Hendra virus infection has only been recognised in Australia. Flying foxes appear to be unaffected by the virus.

Rarely, Hendra virus spreads from flying foxes to horses, (spillover events) causing severe disease, and may then spread to people or animals in close contact with infected horses.

What should I do if I suspect Hendra virus in a horse?

If you suspect your horse has Hendra virus keep everyone away from the horse and call your private veterinarian immediately. Hendra virus is a notifiable disease, and the vet will notify the Local Land Services (LLS) or an inspector with Department of Primary Industries (NSW DPI), if they consider the case highly suspect for Hendra.

If your vet is unavailable you can call a District Veterinarian with the LLS or the Emergency Animal Disease Watch Hotline on 1800 675 888.

When and where does it occur?

Hendra virus was first detected in 1994 in the suburb of Hendra, Brisbane. Since then cases have been reported from Cairns in north Qld down to Kempsey on the NSW Mid North Coast. The majority of cases have occurred east of the Great Dividing Range, with only a single outbreak in July 2011 west of the range in Chinchilla, Queensland.

Most incidents have occurred between May and August but cases have occurred in other months and the importance of seasonality is undetermined.

Hendra virus spillover events are possible wherever there are flying foxes. The distribution of the four species of flying fox present in Australia is shown in Figure 1. All four species have been shown to carry the virus.

Figure 1 Distribution of flying foxes in Australia

Hendra virus and flying foxes

Flying foxes are protected species and are critical to the Australian environment. They pollinate native trees and spread seeds to preserve the health of native eucalypt forests and rainforests.
Unauthorised attempts to disturb flying fox colonies are illegal and also ineffective as:

- Flying foxes are widespread in Australia and are highly mobile.
- There are more effective strategies to reduce the risk of Hendra virus infection in animals and people (see below).
- Attempts to cull flying foxes could make the problem worse by further stressing them and causing increased excretion of the Hendra virus.


### Symptoms in horses

Hendra virus can cause a wide range of symptoms in horses; they are not specific and may vary. It should be considered in any sick horse (that has potentially been exposed to Hendra virus) where the cause of illness is unknown, particularly where there is rapid onset and deterioration associated with either respiratory or nervous signs.

The following signs have been associated with Hendra virus cases:

- rapid onset of illness,
- increased body temperature (fever),
- increased heart rate,
- discomfort/weight shifting between legs that may mimic colic,
- depression,
- rolling and sweating with absent gut sounds
- rapid deterioration with either respiratory and/or nervous signs.

Not all of these signs will be found in any one infected horse.

Respiratory signs may include:

- laboured breathing,
- increased respiratory rate,
- nasal discharge (initially clear, progressing to stable white froth and/or stable blood-stained froth).

Additional nervous signs may include:

- wobbly gait,
- loss of vision,
- aimless walking in a dazed state,
- head tilting and circling,
- muscle twitching,
- inability to rise, and
- straining to urinate or dribbling urine,

Disorientated horses may become caught in fences and be mistaken for trauma cases.

Some infected horses have been found dead with no signs observed so Hendra virus infection should be considered when investigating unexplained sudden deaths in horses from areas where flying foxes occur.

In some cases the onset of signs is more gradual, and horses have survived for several days before being euthanased on welfare grounds.

Occasionally a horse will survive the infection. The reported mortality rate in infected horses is greater than 70%.

### Hendra virus in humans

A small number of people have been infected with Hendra virus. These infections resulted from very close contact with infected horses (either sick horses or during autopsies).

There have been no reported cases of human-to-human, bat-to-human, or human-to-horse spread of Hendra virus.

In humans, Hendra virus infection may cause a flu-like illness that can progress to pneumonia, and/or encephalitis (inflammation of the brain). Encephalitis may cause confusion, headache, high fever, and drowsiness, which can progress to convulsions or coma. As August 2013, four of the seven people who are known to have been infected have died.

People who have apparently recovered from Hendra virus infection may relapse, with one person dying from encephalitis that occurred after 13 months. Relapses have also been reported in 7.5% of people infected overseas with the closely related Nipah virus. (Nipah virus has not been found in Australia.)

If you develop any concerning symptoms and your horse has been ill recently, contact your doctor or NSW Health urgently.

### Hendra virus in other animals

As of 6 August 2013, Hendra virus infection has been confirmed in two dogs on properties where horses had been infected with the Hendra virus. Neither dog was showing signs of illness.

Cats, pigs, ferrets, and guinea pigs have been shown to develop clinical disease after experimental infection.
All domestic animals should be kept away from horses and any areas contaminated by their body fluids or wastes e.g. urine or manure.

Research is being conducted to determine the risks posed by other animals in relation to Hendra virus.

**Incubation period**

The incubation period in horses is 5–16 days. In humans the incubation period has ranged from 5-21 days.

**Hendra virus survival**

The Hendra virus is very fragile. It is easily killed by heat, soap or detergents and by desiccation (drying out). It may survive in the environment from several hours to several days depending on environmental conditions. Survival is longer in cool moist conditions where the pH is close to neutral.

**Managing Hendra virus risk in the workplace**

All workplaces where there is occupational contact with horses should implement work health and safety measures for Hendra virus.

Hendra virus requires careful risk management. Workplace managers should develop a written plan for managing suspect or confirmed cases of Hendra virus in their workplace. The plan should outline how to minimise the risk to all who work in or visit the workplace. Workers should be trained in how to implement the plan.

Sound hygiene and biosecurity measures should be adopted as a routine work practice for all horse contact. These should include:

- regular hand washing,
- maintaining standards of cleanliness and stable hygiene, and
- cleaning and disinfecting equipment that has been in contact with horses’ body fluids.

**Vaccination**

A Hendra virus vaccine for horses produced by a commercial manufacturer was released on Thursday 1 November 2012. Vaccination is the single most effective way of reducing the risk of Hendra virus infection in horses. Vaccinating horses is an important measure to prevent human infection due to exposure to infected horses and provides a public health and workplace health and safety benefit.

**Reducing the chance of infection in horses**

Hendra virus vaccination is the single most effective step horse owners can take to reduce the chance of infection. Your veterinary adviser can provide details of the vaccination protocol.

Additional actions to reduce risk include:

- Do not place feed and water under trees.
- Cover feed and water containers with a shelter so they cannot be contaminated from above.
- Do not leave food lying about that could attract flying foxes, such as apples, carrots, or molasses.
- Inspect paddocks regularly and identify trees that are flowering or fruiting,
- Remove horses from paddocks where fruiting or flowering trees have temporarily attracted flying foxes.
- If the horse(s) cannot be removed from the paddock, erect temporary or permanent fencing to keep horses from grazing under trees.
- If these measures are not practical, consider stapling horses, or removing them from the paddock before dusk and overnight, when flying foxes are most active.
- Clean up any fruit debris under the trees before horses are returned to the paddock.

Additional information on minimising Hendra risks can be found in the Queensland Horse Industry Council Guidelines: Property Design and Bats and Trees.
Preventing the spread of Hendra virus

Horses may be infectious before they show any sign of illness. Sound hygiene and biosecurity (animal disease control) measures should be used routinely for all horse contact.

If you have handled a sick horse, before you contact other horses:

- wash off any contamination with plenty of soap and water
- shower and wash your hair
- disinfect your footwear and wash your clothes. To minimise the risk of Hendra virus spreading to people or other animals:
- Implement high work health and safety standards (see Managing Hendra virus risk in the workplace)
- Isolate sick horses or suspect horse carcases from other horses, people and animals until a veterinarian’s opinion is obtained. Generally it is best to move the healthy animals away. Separate by a solid barrier or at least five metres.
- Always handle healthy animals before handling sick animals.
- Practise good hygiene (cover cuts and abrasions, regularly wash your hands with hot soapy water, especially after contacting the horse’s mouth or nose)
- Only handle sick horses after taking appropriate precautions including using Personal Protective Equipment (PPE)
- Make sure all equipment exposed to any body fluids from horses is cleaned and disinfected before it is used on another horse. This includes halters, lead ropes and twitches. Ask your veterinarian about which cleaning agents and disinfectants to use.
- Do not travel with, work on or take sick horses to other properties or equestrian events.
- Do not allow visiting horse practitioners (e.g. farriers) to work on sick horses.
- Seek veterinary advice before bringing any sick horse onto your property.

Follow the procedures outlined in ‘Guidelines for veterinarians handling potential Hendra virus infection in horses’.

Personal protective equipment (PPE)

Everyone handling a sick horse or a horse on which procedures such as dentistry or stomach tubing is being conducted should wear full PPE. PPE must be fitted correctly.

When using PPE:

- Cover cuts and abrasions with a water-resistant dressing.
- Put on PPE before approaching the horse.
- After handling the horse, remove and dispose of PPE carefully into waste bags, making sure there is no contact with your face, particularly your eyes, mouth and nose.
- Carefully remove any clothing contaminated with the horse’s body fluids.
- Wash your hands thoroughly after removing PPE.

Horse owners should always have a PPE kit on hand. Items for a PPE kit can be purchased from most hardware stores.

Your PPE kit should contain:

- hand cleansers/soap
- disinfectants
- waste disposal bags
- disposable gloves
- overalls
- rubber boots
- facial shields or safety glasses
- P2 particulate respirators (Note surgical masks do not provide respiratory protection, and P2 respirators are only effective for clean shaven people).

Your veterinarian can also help you obtain PPE.

Waiting for Hendra virus test results

If your veterinarian considers your horse may have Hendra virus, they will take samples from your horse for testing. See the fact sheet: Waiting for Hendra test results for more information.
Managing confirmed Hendra virus cases

Where Hendra virus has been confirmed as the cause of illness or death in horses, DPI in conjunction with the local LLS and NSW Health will manage the situation. Urgent measures will be taken to minimise the risk to people and other animals, and to track the likely cause and extent of the infection. See the Factsheet: Management of Hendra quarantined properties for further information.

More information


Contact Paul Freeman, Senior Veterinary Officer, Wollongbar on 02 6626 1214 or paul.freeman@dpi.nsw.gov.au.

For updates go to www.dpi.nsw.gov.au/factsheets
Hendra virus – information for horse properties and other horse businesses

Hendra virus is a sporadic disease of horses caused by spillover of virus from flying foxes. Hendra virus infection in humans is rare, but it’s a serious disease, and has occurred following close contact with the blood, tissues and body fluids (e.g. respiratory secretions) of an infected horse. There is no evidence that Hendra virus can spread directly from flying foxes to humans.

Hendra virus can cause a range of clinical signs in horses. It should be considered in any sick horse where the cause of illness is unknown, and particularly where there is a rapid onset of illness, fever, increased heart rate and rapid deterioration associated with respiratory and/or neurological signs.

Risk
The potential seriousness of Hendra virus requires that work health and safety measures are implemented at workplaces where there is occupational contact with horses and their blood, tissues and body fluids.

Prevention
A Hendra virus vaccine for horses is now available for use under permit by veterinarians. The vaccine is the single most effective way of reducing the risk of Hendra virus infection in horses and provides a work health and safety and public health benefit. Vaccination of horses is strongly encouraged and horse owners should discuss this with their veterinarian.

It is important to adopt good personal hygiene and biosecurity (animal disease control) measures as a standard work practice for all contact with horses and their blood, tissues and body fluids, regardless of their vaccination status. The following issues should be considered:

- Wash hands regularly using soap and water followed by hand drying, or use alcohol-based hand rub if no visible soiling. Hands should be washed before eating and drinking, after contact with a horse and its blood, tissues and body fluids, after handling equipment contaminated with a horse’s body fluids, and after removing personal protective equipment (PPE).
- Cover cuts and abrasions with a water-resistant dressing.
- Maintain yards and stables in a clean and hygienic condition.
- Clean and disinfect equipment that has been in contact with a horse’s blood and body fluids.
- Wear PPE appropriate for the level of contact with blood and body fluids.
- Manage accidental contamination with horse blood and body fluids:
  - if blood, body fluids or excreta touches unprotected skin, the area should be washed with soap and water as soon as possible. Where water is not available, wipe the area clean and apply a waterless cleanser such as alcohol based hand rub
  - if the exposure involves a cut or puncture wound, gently encourage bleeding and then wash the area with soap and water.
- if eyes are contaminated, gently but thoroughly rinse open eyes with water or normal saline for at least 30 seconds
- if body fluids get in the mouth, spit the fluid out and then rinse the mouth with water several times.

- Do not allow visiting horse practitioners (e.g. farriers) to work on sick horses.

Take steps to limit interaction between flying foxes and horses on the property, for example:

- Remove horse feed and water containers from under trees, and place these under shelter.
- Identify flowering and fruiting trees on the property, and remove horses from paddocks where flowering or fruiting trees are attracting flying foxes. Horses should be returned only after the trees have stopped flowering or fruiting and the flying foxes are gone.
- If it is not possible to remove horses from these paddocks, consider fencing (temporary or permanent) to restrict access to flowering or fruiting trees, or temporarily remove horses during peak flying fox activity (usually at dusk and during the night). Clear up any fruit debris underneath trees before returning horses.

Develop a plan for responding to a potential case of Hendra virus infection, and train workers in the implementation of the plan. The following issues should be considered:

- Isolate the sick horse from other horses, animals and people, and contact a veterinarian.
- Avoid close contact with the sick horse where possible. If this is unavoidable, consider the horse's blood and body fluids (e.g. respiratory secretions and urine) as potentially infectious and take the following precautions in addition to standard infection control practices:
  - cover cuts and abrasions
  - use PPE to protect clothing, exposed skin and face from contact with the horse's blood and body fluids. This can include, dependent on the level of contact with the horse's blood and body fluids, items such as overalls, disposable gloves, rubber boots, safety goggles or a face shield, and a disposable P2 respirator. Train workers in the correct use of PPE
  - make up a PPE kit and have this, as well as hand cleansers, disinfectant and waste disposal bags, readily available
  - after handling the horse, remove and dispose of PPE carefully to avoid contamination
  - perform hand hygiene immediately after contact with the sick horse and its blood and body fluids, after handling waste and used equipment and after removing PPE
  - arrange activities so that contact with the sick horse is last.
- If the veterinarian suspects Hendra virus, continue to avoid close contact with the sick horse and other in-contact animals while waiting for the test results. If contact is unavoidable, take hygiene and PPE precautions, as discussed above.
- Where possible, move horses that are under investigation for Hendra virus away from areas that can be accessed by the public.
- Follow instructions for biosecurity and personal safety provided by your veterinarian or Biosecurity Queensland.
- If the horse dies or is euthanased, inform the horse carcass disposal contactor of the Hendra virus risk.
- Always consider Hendra virus as a possible cause of illness in horses.
- Notify suspected Hendra virus cases by contacting Biosecurity Queensland on 13 25 23 or the Emergency Animal Disease Watch Hotline on 1800 675 888. There is a legal obligation to notify.
- Seek medical advice or ring Queensland Health 13 HEALTH (13 43 25 84) if you or a worker has had contact with a horse suspected or confirmed as being infected with Hendra virus.

Further information

For more information on Hendra virus and work health and safety, contact Workplace Health and Safety Infoline on 1300 369 915 or visit www.worksafe.qld.gov.au

For more information on Hendra virus and animal health and biosecurity, contact Biosecurity Queensland on 13 25 23 or visit www.biosecurity.qld.gov.au, or talk to your veterinarian.

For more information on Hendra virus and human health, contact Queensland Health on 13HEALTH (13 43 25 84) or visit www.health.qld.gov.au.
For more information on flying foxes, and horse carcass transport and disposal, contact Environment and Heritage Protection on 1300 130 372 or visit www.ehp.qld.gov.au

Download the fact sheets:

- Hendra virus – information for veterinarians
- Hendra virus – information for businesses that dispose of horse carcasses.

Watch the Australian Veterinary Association PPE training video Suit up! Personal protective equipment for veterinarians.
Hendra virus – information for businesses that dispose of horse carcasses

Background
Hendra virus is a sporadic disease of horses caused by spillover of virus from flying foxes. Hendra virus infection in humans is rare, but it is a serious disease, and has occurred following close contact with the blood, tissues and body fluids (e.g. respiratory secretions) of an infected horse. There is no evidence that Hendra virus can spread directly from flying foxes to humans.

The transport and disposal of a horse carcass where Hendra virus is suspected or confirmed falls under the Environmental Protection Act 1994. The Department of Environment and Heritage Protection should be consulted on such matters.

Risk
The potential seriousness of Hendra virus requires that health and safety measures are implemented to prevent human infection at workplaces where a horse carcass is moved, transported and disposed of. Sound hygiene measures should be adopted as a routine work practice for contact with any horse carcass.

Prevention
A Hendra virus vaccine for horses is now available for use under permit by veterinarians. The vaccine is the single most effective way of reducing the risk of Hendra virus infection in horses and provides a work health and safety and public health benefit. Vaccination of horses is strongly encouraged and horse owners should discuss this with their veterinarian. It is important to adopt good personal hygiene and biosecurity (animal disease control) measures as a standard work practice for all contact with horses and their blood, tissues and body fluids, regardless of their vaccination status.

Disposal of horse carcasses where Hendra virus infection is suspected or confirmed requires careful planning using a risk based approach. The plan should include how Hendra virus risks will be minimised for workers and others. Workers should be trained in the implementation of the plan.

The following measures should be considered:

- Ensure safe systems of work for contact with any horse carcass and associated blood, tissues and body fluids.
- Perform hand hygiene using running water and soap followed by hand drying, or use alcohol-based hand rub if no visible soiling:
  - before eating and drinking
  - after contact with a horse carcass and its blood, tissues and body fluids
  - after cleaning equipment or machinery used to move a horse carcass
  - after removing personal protective equipment (PPE).
- Cover cuts and abrasions with a water-resistant dressing.
- Minimise contact with the horse carcass and its blood, tissues and body fluids.
- If contact is unavoidable (e.g. to place chains) wear PPE appropriate for the level of contact with the carcass and its blood, tissues and body fluids. This may include disposable gloves, overalls,
safety goggles or a face shield, rubber boots and a disposable P2 respirator. Train workers in the correct use of PPE.

- Keep PPE and alcohol-based hand rub or wipes readily available at places where the horse carcass is disposed of (e.g. in the work vehicle), to provide protection for any unavoidable contact with a horse’s blood, tissues and body fluids.

- Do not dismember (cut up) the horse carcass for transport and disposal.

- If the horse has been euthanased or undergone a post mortem, be aware of sharp objects like needles or bone.

- If the horse carcass is leaking body fluids, ensure this is contained where practicable prior to movement and transport (e.g. ‘double bag’ the carcass and add absorbent materials).

- Dispose of contaminated soil and items that cannot be decontaminated with the carcass.

- Make sure to transport the horse carcass, contaminated soil and items. in a container made of, or lined with, materials that can be easily cleaned and disinfected.

- Clean any part of equipment or machinery that comes into contact with the horse carcass and its blood, tissues or body fluids. Avoid splashes when cleaning (e.g. do not use a high pressure hose).

- Keep a first aid kit readily available (e.g. in the work vehicle) so that any cuts can be covered before touching a horse carcass and its blood, tissues or body fluids.

- Manage accidental contamination with horse blood and body fluids:
  - if a person’s unprotected skin becomes contaminated with blood, body fluids or excreta, wash off the contamination with running water and soap as soon as possible. Where water is not available, wipe the area clean and apply a waterless cleanser such as alcohol based hand rub
  - if the exposure involves a cut or puncture wound, gently encourage bleeding and then wash the area with soap and water.
  - if eyes are contaminated, gently but thoroughly rinse open eyes with water or normal saline for at least 30 seconds
  - if body fluids get in the mouth, spit the fluid out and then rinse the mouth with water several times

- Seek medical advice or ring Queensland Health 13 HEALTH (1300 43 25 84) if a worker has had unprotected contact with a horse carcass that is suspected or confirmed to be infected with Hendra virus.

- Ensure Biosecurity Queensland and Environment and Heritage Protection requirements are met for moving, transporting and disposing of a horse carcass where Hendra virus is suspected or confirmed.

**Further information**

For more information visit [www.worksafe.qld.gov.au](http://www.worksafe.qld.gov.au) or contact the Workplace Health and Safety Infoline on 1300 369 915.

For more information on Hendra virus and animal health and biosecurity, contact Biosecurity Queensland on 13 25 23 or visit [www.biosecurity.qld.gov.au](http://www.biosecurity.qld.gov.au), or talk to your veterinarian.

For more information on Hendra virus and human health, contact Queensland Health on 13HEALTH (13 43 25 84) or visit [www.health.qld.gov.au](http://www.health.qld.gov.au).

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Watch the Australian Veterinary Association PPE training video [Suit up! Personal protective equipment for veterinarians](http://www.avma.org).