What is African Horse Sickness?
African Horse Sickness (AHS) is a non-contagious, highly fatal viral disease caused by an Orbivirus that has nine different strains (serotypes). The disease is vector-borne (spread by biting midges) and is classed as one of the most devastating equine diseases.

Does AHS affect all equidae?
Yes, AHS affects horses, donkeys, mules and zebras. Horses are the most susceptible species and up to 90 percent of infected horses die. Mules have a mortality rate of 50-70 percent and donkeys 10 percent. Donkeys are considerably less susceptible and generally show mild to no clinical signs of the disease. Zebra act as a reservoir host for the virus and they do not usually display any signs of the disease.

Why is AHS seen as a potential threat to Great Britain?
AHS is an exotic disease that could have serious potential ramifications for the £7 billion equine industry. Previously AHS was not seen as a great threat to British horses, largely because of the difference in climate between Britain and Africa. However, it is very similar to the Bluetongue virus and the outbreak of Bluetongue that occurred in 2007 has shown that it may be possible for AHS to occur in Britain. Additional factors such as the increase in global travel and climate change, also contribute to concern about the disease.

The 2007 outbreak of Bluetongue in England caused concern due to the Bluetongue virus (BTV) and African Horse Sickness virus (AHSV) being closely related, structurally similar and transmitted by the same species of infected biting midge. The Bluetongue outbreak serves as a warning as the midge and virus were able to survive in the British climate and spread. Therefore, the same could potentially be said for AHS. If an outbreak of AHS occurred in Great Britain (GB), the result could be devastating, as GB horses are a naïve population that have no natural immunity to the virus.

What is Bluetongue?
The BTV also belongs to the Orbivirus group and affects all ruminants, particularly sheep. The BTV is carried and transmitted by particular species of midges from the Culicoides family.

Does Bluetongue affect horses?
No, Bluetongue does not affect horses.

How did the Bluetongue virus arrive in England?
Bluetongue is most frequently associated with Africa, parts of Australia and America. During the summer and autumn of 2006, outbreaks of Bluetongue were reported in the Netherlands, Belgium, Luxembourg, Western Germany and parts of North Eastern France. By 2007, tens of thousands of Bluetongue cases were reported across mainland Europe. The outbreak in England is suspected to have occurred after infected midges were blown into the country by winds from mainland Europe. Studies have shown that if caught in specific meteorological conditions, especially over water, the midge can be carried for more than 200km.

How is AHS spread?
The AHSV, like the BTV, is carried and transmitted by particular species of midges from the Culicoides family. AHS is transmitted to a horse by the bite of an infected female midge.
AHSV can also be transmitted to horses by infected blood products or by poor veterinary hygiene (unlikely to be an issue in Britain) for example, using contaminated hypodermic needles.

Can horses catch AHS directly from each other?
No, the disease is not directly contagious between horses, even when they are kept in close contact. A midge is required to transmit the virus. However, when horses are in close proximity, the likelihood of a midge biting an infected horse and then going on to bite and infect a healthy animal is obviously increased.

Can humans catch AHS?
No, AHS does not affect humans.

Can the disease be spread from infected horses to other species of animals?
No, AHS is not directly contagious to any other species of animal. However, dogs can be infected with AHS after eating infected horsemeat.
Are any other animals affected by AHS?
Antibodies against AHSV have been detected in rhinos and elephants.

Is it correct that Culicoides midges are already present in GB?
Yes, Culicoides are the most common midges in GB and in susceptible horses are responsible for causing the allergic reaction, sweet itch. However, AHS and sweet itch are totally separate and there are no links between the two. In GB there are 50 known species of Culicoides midge and those involved in AHS and sweet itch are completely different.

If there are already midges in GB, why has there not been an outbreak of AHS already?
Although there are Culicoides midges present in GB the AHSV is not present in the country. It requires an infected midge carrying the virus to cause an outbreak. It is assumed that Culicoides midges in GB may be capable of acting as AHS virus vectors.

At what times of the year are midges most active?
The prevalence of AHS is usually seasonal and is significantly influenced by climatic and other conditions which favour the breeding of the Culicoides midges. In GB, midges are likely to be active from April to November (from when it first gets warm until there is a frost). In Africa, the disease is reported to disappear abruptly following the first frost.

In which countries have outbreaks of AHS occurred?
AHS is endemic in eastern and central Africa. The disease can spread north and south which is dependent upon favourable climatic conditions for the breeding of the midges. In endemic areas, different strains of AHS may be in existence at the same time, although one strain is usually dominant throughout a particular season. Over the last 50 years, outbreaks of AHS outside of Africa have occurred in the Middle East, India, Pakistan, Spain (mid-1960's and 1987-90) and Portugal (1989).

How would Culicoides midges infected with AHS arrive in GB?
There are a number of different routes that the AHSV may potentially enter GB. The most likely route is by Culicoides midges infected with AHSV entering via prevailing winds similar to BTV, if there are outbreaks in Europe, or an infected midge entering inadvertently via transportation – for example via planes.

Are there different forms of the disease?
Yes, there are three main different forms of AHS; the lung form (acute form), the heart form (cardiac) and the mixed form (combination of lung and heart form).
Horse sickness fever is a very mild form of AHS and is rarely clinically diagnosed. This form is most often seen in donkeys and zebras, which have resistance to the development of full clinical disease.

Once a horse has been infected with AHS how long does it take for clinical signs to show?
This will vary depending upon the form of disease:

<table>
<thead>
<tr>
<th>Form of disease</th>
<th>Incubation period (number of days)</th>
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<tbody>
<tr>
<td>Acute</td>
<td>3-5</td>
</tr>
<tr>
<td>Cardiac</td>
<td>7-14</td>
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<tr>
<td>Mixed form</td>
<td>5-7</td>
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<tr>
<td>Horse sickness fever</td>
<td>5-14</td>
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What are the clinical signs of AHS?

ACUTE FORM

- High, rapid rise in temperature (up to 41°C)
- Severe difficulty in breathing with mouth open, head hanging and the nostrils dilated
- Respiration rate may exceed 50 breaths per minute
- Excess sweating
- Presence of abdominal heave lines due to forced expiration
- Large amounts of frothy discharge from the nostrils
- Redness of conjunctivae
- Coughing
- Within a week 90 percent of horses will die. Once the horse is showing signs of respiratory distress, death usually occurs within 30 minutes to a few hours

CARDIAC FORM

- Fever (39-41°C)
- Swelling of eyelids, facial tissues, neck and shoulders
- In severe cases the entire head swells
- Loss of ability to swallow
- Respiratory distress shown due to the increased swelling
- Colic symptoms potentially leading to severe colic
- Terminal signs include bleeding in the membranes of the mouth and eyes
- Once the horse shows signs of fever, death usually occurs four-eight days later
- Lower death rate (50 percent)
MIXED FORM
- Symptoms of both the acute and cardiac form – initially mild respiratory signs are exhibited followed by the typical swellings of the cardiac form
- The mortality rate is 70 percent

HORSE SICKNESS FEVER
- Over a period of four-five days the body temperature gradually rises to 40°C, lasting one-six days, followed by a drop to normal temperature and recovery
- Partial loss of appetite
- Accumulation of fluid around the conjunctivae
- Slightly laboured breathing
- Increased heart rate

Can AHS be treated?
There is no effective treatment for AHS.

Is AHS a notifiable disease?
Yes, AHS is listed as notifiable under The African Horse Sickness (England) Regulations 2012, The African Horse Sickness (Scotland) Order 2012 and The African Horse Sickness (Wales) Regulations 2013. Infection with the AHSV is also listed as notifiable by the World Organisation for Animal Health (OIE).

What should I do if I suspect my horse has AHS?
If you suspect your horse has AHS contact your veterinary surgeon immediately. Any horse or carcase suspected to be infected with AHSV will need to be reported immediately to the local Animal Health and Veterinary Laboratories Agency (AHVLA) by your veterinary surgeon.

Will my horse have to be euthanased if it is infected with AHS?
It is highly likely that horses in GB infected with AHS would either die quickly or need to be euthanased on humane grounds. Under the regulations the Government has the authority to instruct compulsory euthanasia of infected horses and those horses showing clinical signs of the disease in the early stages of an outbreak to help prevent the spread of the virus. If the disease continues to spread, the Government, with the approval of the European Commission, can refocus its efforts on midge control, movement restrictions and possible vaccination.

For Scotland only, during an outbreak of AHS elsewhere in GB, horses exhibiting strong clinical signs can be euthanased on the basis of being a suspected case. It is anticipated that this power would be rarely used.

It is important to note that the chances of the horse recovering from AHS are slim and while affected the horse will be suffering enormously. It is therefore likely that any affected horse would need to be euthanased on welfare grounds, quite apart from the legislative requirements.

Will all horses on infected premises have to be euthanased?
Horses that are not infected or showing clinical signs of AHS will not be subject to compulsory euthanasia as the disease is not directly contagious. However, all horses on an infected premises will be closely monitored. It is essential that any suspect horses are immediately reported to a veterinary surgeon.
Will movement restrictions be put in place in the event of an outbreak?
Once a confirmed case of AHS has been reported the authorities will immediately establish:

- The Control Zone which is a minimum radius distance of 20km around the infected premises
- The Protection Zone of a minimum radius distance totalling 100km around the infected premises
- A Surveillance Zone which is an additional 50km beyond the Protection Zone.

The aforementioned Control, Protection and Surveillance zones combined make up the Restricted Zone.
Any area which is not incorporated in the Restricted Zone is classed as the Free Areas.
The Restriction Zone would affect every aspect of the horse industry for example eventing, racing, showing, riding club competitions and leisure riders, due to the strict movement restrictions that would be put into place. Under the legislation horses would not be allowed to move on to, or off, a premises unless a licence was issued by a veterinary officer.

Why are the distances so great for the Restricted Zone?
Research has shown that the midge vectors, in favourable conditions, are able to travel passively on the wind like aerial plankton over many miles. In the case of infected midges the disease therefore has the potential to spread very quickly over large geographical areas.

How long will the Restricted Zone be enforced for?
When it is suspected that the AHSV is no longer present, on behalf of all three administrations for GB, Defra must apply to the EU Standing Committee on the Food Chain and Animal Health (SCoFCAH) to gain permission for the restrictions to be lifted. In the event of vaccinations being used, the zones will have to remain in place for a minimum of 12 months after the date of the last vaccination administered.

What vaccinations are available?
A modified, live vaccine against AHS exists and is used in many parts of Africa to help control this endemic disease.
However, the vaccine is not licensed for use in Europe and is currently not authorised by the Veterinary Medicines Directorate for use in GB. The reason is that as the vaccine is based on a live serotype of the AHSV it therefore carries a risk that it could revert to virulence – so actually causing an outbreak of the disease that it is supposed to prevent.

In the event of an outbreak in Europe, the European Commission has proposed the development of a vaccine bank for use in an emergency situation. Research by Spain and Britain continues to investigate the production of a safe, recombinant vaccine (not live and therefore unable to revert to virulence) for use in Europe. Early trials to-date have so far shown good results.

**Will compensation be paid if horses are subject to compulsory euthanasia?**

No compensation will be paid to the owner if the horse is proven (by laboratory testing) to have AHS at the time it was euthanased.

During an outbreak of AHS, if a horse is euthanased on the basis of showing clinical signs and is subsequently proven not to have had the AHSV by laboratory testing, the relevant Minister will pay compensation. In all circumstances, the compensation paid will not exceed £2,500 regardless of the original market value of the horse.

**Why do horses in Africa not have to be euthanased if they are infected with AHS?**

The control of AHS in Africa is regulated by the Animal Diseases Act (1984) and is classed as a notifiable disease. Mandatory vaccination is enforced and movement restrictions can be implemented. As the disease is endemic in certain areas, there is a degree of natural immunity to the virus.

In GB, where a disease outbreak has not yet occurred, no horses have natural immunity and no vaccination is yet available. An outbreak has the potential to cause an epidemic and in a naïve population the devastation to the equine population could be huge. Therefore, it is recognised as essential to eliminate a source of infection quickly to prevent the disease from spreading.

**If an outbreak of AHS occurred in GB, would horses be able to be exported?**

Should an outbreak occur in GB, it is anticipated that other countries would not allow the import of equidae while the virus is present. There may be negotiations that could be reached with the trading partners if strict conditions were met.

**In the event of an outbreak what preventative measures can be put in place?**

If an outbreak of AHS occurs in GB, horse owners can take steps to minimise the risk to their horse(s). As no vaccine is currently available, the main preventative measure is to reduce the horses’ exposure to midges which although difficult, can be achieved in a number of ways such as:

- Cleaning up areas with stagnant water, for example around leaky taps with damp mud, water trough areas and muck heaps where the Culicoides midge breeds
- Site muck heaps away from stables and/or have the muck removed on a more regular basis
- Stabling horses at peak times of midge activity around sunset and sunrise
- Using sweet itch or fly rugs, which cover the whole body and head of the horse
- Using fly repellents in accordance with the manufacturer’s instructions
- Ensure grazing is well drained and avoid marshy, boggy and heavy clay pastures and areas of rotting vegetation or leaves, which are a haven for the biting midges
Moving horses to areas with lower midge populations for example on high, windy ground. Prior to movement, the owner must check there are no movement restrictions in place and that such a move does not compromise the welfare of the horse.

What is being done to help prevent AHS entering GB?

Strict legislation is in place to control the import of horses. Only horses from countries or zones recognised as AHS-free can be imported to GB. Horses imported from the AHS-free zone in South Africa must be tested for the disease and subject to vector protected isolation before being imported. The risk of the AHSV being introduced via legal trade in horses is considered to be very low by Defra. AHS outbreaks are reviewed by Defra’s International Disease Monitoring team and risk reports produced evaluating the potential risk to the United Kingdom.

Following the outbreak of Bluetongue in 2007, a collaboration of experts, charities and government representatives established an African Horse Sickness Working Group, which the BHS were a member of. As a result, legislation was passed and the African Horse Sickness Control Strategy for Great Britain was produced.

What is the current risk of an AHS outbreak?

Currently, AHS is not present in Europe; therefore it is not considered feasible that infected midges could reach GB via wind as the distances are too great for the midge to travel from where the virus currently exists. If the disease did reach Europe windborne spread could be a factor for its entry into the country.

All horse owners should make themselves aware of AHS and its clinical signs, so that in the event of an outbreak, the disease can be identified quickly and be promptly controlled. Rapid identification is the key to minimising the impact of AHS and could prevent a single case from causing an epidemic.

Where can I find further information on AHS?