

GUIDELINES ON
WEST NILE FEVER
(WNF)

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The Disease

West Nile (WN) fever (WNF), also referred to as WN encephalitis, is an infectious, non-contagious disease in horses caused by the flavivirus West Nile virus (WNV). WNV is insect vector-borne by various species of mosquito and there are two strains of the virus, lineage 1 and lineage 2. WNV is naturally maintained in infection cycles between wild birds through mosquitoes but the infection may spill-over into other species, including humans (WNV is zoonotic) and horses when infected mosquitoes feed on them. However, infected horses do not act as a source of sufficient virus for feeding mosquitoes to infect other animals and, as with humans, are considered 'incidental' or 'dead-end' hosts of the virus.

Clinical signs of WNV infection can vary markedly from subclinical (no obvious signs seen) through to severe neurological disease, with a high fatality rate (see Clinical signs below). Although WNF describes the disease seen in humans, fever is not always a feature of the disease in horses. WNV occurs worldwide, with the only report of an equine clinical case in Great Britain being in 2013 in an imported horse that recovered. The pattern of cases in infected countries is seasonal, linked to when mosquito numbers rise in a region, such as in the late summer months (so called vector seasons).

Notification Procedures

In Great Britain (England, Scotland and Wales), WNF is **notifiable by law** under the Infectious Diseases of Horses Order 1987. Under the Order, anyone who owns, manages, inspects or examines a horse or carcass which is affected or is suspected of being affected by the disease must notify the Animal & Plant Health Agency (APHA). Please see Appendix 1 for APHA contact details.

Under the 'testing to exclude' process, APHA now provides testing for WNV as part of a veterinary surgeon's clinical work up of cases with non-specific neurological signs where WNV is very low on the list of differentials. The private vet must first contact APHA (see Annex 1) to discuss the case with an APHA duty vet after these discussions it is decided that the clinical signs are suggestive of WNV, APHA will initiate a field investigation. If the case is not suspected to be WNV, a sample can be submitted to APHA under the 'testing to exclude' process. Further details of this scheme are available at <http://apha.defra.gov.uk/vet-gateway/tte/wnv.htm>.

Clinical signs

As the virus can breach the blood-brain barrier and result in damage to the brain and spinal cord, neurological disease is the predominant presentation among horses showing clinical signs. These can include non-specific signs such as inappetence, some cases may demonstrate a fever and others may commonly be subclinical. Encephalitis ranges in severity from mild depression to head pressing and a state of drowsiness. Additional neurological signs can include behavioural changes, facial twitching, impaired vision, inability to swallow, heightened sensitivity, muscle fasciculations, weakness (paresis) or paralysis of front and/or hind limbs, loss of bodily function (ataxia), aimless wandering, recumbency, coma and death.

Transmission of disease

WNV is a vector-borne disease spread by various species of mosquito and there is no direct spread between horses. Indirect transmission has been reported in humans through blood donations, organ transplants or vertical transmission from mother to child. Wild birds are the natural reservoir of the virus and act as an amplifying host by increasing the amount of virus available for transmission. Mosquitoes are infected when blood feeding on birds and then act as vectors to infect other birds and other animals. When other animals are infected (such as, but not exclusively, humans and horses), they are considered as 'dead-end' or 'incidental' hosts as they cannot transmit the virus due to a low blood viral load compared to birds.

Prevention – Vaccination

If travelling horses abroad to regions where the WNV is active or if in the future WNV emerges in Great Britain, vaccination, with regular boosters may be recommended. There are currently two WNV vaccines available for administering to horses in Great Britain, licensed from 5 or 6 months of age to reduce the number of viraemic horses and the severity and duration of clinical signs. Several years' experience of the use of these vaccines for horses in North America suggests that they are safe to use and, if used correctly, effective in preventing clinical disease. Vaccination does not have the ability to differentiate infected from vaccinated animals (so called DIVA capability) and it may therefore interfere with serological testing.

Consult your veterinary surgeon. See Appendix 8 for vaccine details.

Prevention – Biosecurity

As WNV is vector-borne and non-contagious between horses, biosecurity measures should be directed at:

- a) effectively managing potential mosquito breeding areas, which in particular includes removing and/or treating accumulations of stagnant or standing water
- b) prevention of mosquito biting by use of insecticide treated meshes on horse stabling
- c) application of insect repellent topical treatments directly onto horses
- d) applying physical horse coverings such as blankets with head and neck protection

People who ride horses in WNF areas are recommended to wear long sleeves and trousers and hats and to apply topical insect repellent to exposed areas of skin on hands, heads and necks.

Diagnosis

Suspect WNV cases in Great Britain can be tested by APHA under the 'testing to exclude' process, provided the case has been discussed with an APHA duty vet before any samples are submitted. If after these discussions it is decided that the clinical signs are suggestive of WNV, APHA will initiate a field investigation. If the case is not suspected to be WNV, a sample can be submitted to APHA to exclude WNV under the 'testing to exclude' process.

There are three different serological tests available that are able to detect antibodies against WNV and these are currently only available in UK at the government's APHA laboratory. The plaque reduction neutralisation test (PRNT) is the most specific test available and is often only applied after positive ELISA tests. The mELISA detection test is for the presence of IgM WNV antibodies raised shortly after infection and is advised to be used in conjunction with WNV total antibody detection ELISA (cELISA), which alone cannot differentiate recent IgM from longer lasting or post-vaccination IgG responses.

Highly sensitive virus detection using PCR can be carried out on infected tissues recovered at post mortem examination.

Control of infection

Although WNF is a notifiable disease, as a dead-end host, only the individual affected horse would require euthanasia on humane grounds. Restrictions may be applied to the horse while investigations take place and all other equidae on the premises may be considered for vaccination.

If WNV is identified in Great Britain, the government's response will be driven by the risk to public health due to the virus being zoonotic. This will include increased public health messaging, increased surveillance of horses and wild birds, controlling mosquitoes and (to protect horses) vaccinating horses in regions considered to be at risk.

Treatment

There is no specific treatment for infected horses apart from symptomatic treatment and supportive care. This can be optimised through the early detection of clinical cases.

Confirmation of freedom from disease

Restrictions on the affected horse and contacts may only be lifted after authorisation by the APHA.

Export certification

For official export certification purposes, samples for WNV blood testing must be sent to the APHA Weybridge.

Further information for veterinary surgeons

<https://www.oie.int/en/animal-health-in-the-world/animal-diseases/West-Nile-fever/> <https://www.gov.uk/guidance/west-nile-virus>

<https://www.jdata.co.za/iccviewer/media/dsr20201.pdf> (Focus article on WNV on pages 14-18 of the surveillance report)