

# African Horse Sickness (AHS)

## Disease Profile

AHS is a viral disease with a **major impact on equine populations** which have never experienced the disease. Transmission of AHS virus occurs almost entirely through hematophagous arthropods (*Culicoides* spp.), which act as biological vectors. Mortality rate in horses is 70-95%, in mules it is around 50%, and in donkeys it is limited to 10%. Occasional hosts include elephants, onager, dogs and camels. Zebras and elephants may be infected without showing signs of disease. AHS is endemic in sub-Saharan Africa from where it occasionally spreads to other areas, with outbreaks having occurred in the Near and Middle East, Spain, Portugal and Morocco.

## Risk

The major vector of AHS virus, *C. imicola*, occurs in southern Europe and northern spread is expected as global temperatures increase. As **the distribution of *C. imicola* moves north**, it may bring AHS virus into the range of other *Culicoides* species that are potentially competent vectors and which are commonly found in northern Europe. Once infected via this 'baton effect', these species may be able to spread the virus over much of Europe. Climate change may also increase vector competence.

## What do we have?

**Diagnostics:** ELISA kits and lateral flow assays for AHS antibody detection are available worldwide

The RT-PCR is a sensitive and rapid method for detecting AHS virus nucleic acids during either the incubation period at the start of an AHS epizootic, or for epidemiological investigations in species where clinical signs may not be apparent.

Once the disease has been confirmed, the virus needs further characterization, primarily the serotype identification. To this aim, beside the virus neutralization test, several molecular tests have been published providing a rapid typing method for AHS virus in biological samples.

**Vaccines:** There are **no commercially available inactivated or recombinant vaccines** but there are some locally killed vaccines for use in some countries. There is concern about the safety, efficacy (viral variants) and side effects of the live attenuated vaccines. Attenuated vaccines are considered a risk for use in AHS-free countries due to the risk of transmission, reassortment (i.e. exchange of gene segments between vaccine and field strains) and reversion to virulence. No AHS vaccines are currently licensed in the EU.

## What do we need?

- Improved knowledge on the pathogenesis, host immune responses and epidemiology of AHS. There is a need to model the possible pathways of introduction and dissemination of the AHS virus in naïve areas.
- Validation and harmonization of diagnostic assays.
- More genome sequencing of AHS virus circulating strains to assess the diagnostic capabilities of the molecular test in use and to investigate the potential for vaccine strains circulation and/or reassortment.
- Authorised and safe vaccines along with tests to differentiate vaccinated from infected horses. The development of cross-protective AHS virus vaccines with a long shelf life and that can provide rapid protection and be differentiated from natural infections during outbreaks is a major priority for research.

Read the full chapter [here](#).