



## **Prof ALAN JOHN GUTHRIE**

*Equine Research Centre, University of Pretoria*

Professor Alan Guthrie is Director of the Equine Research Centre, Faculty of Veterinary Science, University of Pretoria, South Africa. He obtained his veterinary degree (BVSc) and master's degree (MMedVet) from the University of Pretoria and his PhD at Louisiana State University in the United States of America.

Alan Guthrie has supervised more than 50 postgraduate students, who have been actively involved in the research activities of the Equine Research Centre. He is an author of more than 140 articles in scientific journals which focus on equine infectious diseases and equine sports medicine. Most of his research has focused on African horse sickness (AHS) and issues related to AHS vaccination. This has resulted in the development and validation of a diagnostic test for African horse sickness which is now internationally accepted for trade purposes.

In association with international collaborators, the Equine Research Centre has also developed a next-generation AHS vaccine candidate. Alan has also served on a number of World Organisation of Animal Health (WOAH) Ad Hoc Working Groups for various topics, including equine influenza, African horse sickness, equine encephalitis, and international movement of competition horses. Prof Guthrie is a South African National Research Foundation rated researcher.

## Climate Change and Equine Infectious Diseases: an International Perspective

Alan Guthrie

Equine Research Centre, Faculty of Veterinary Science, University of Pretoria, Onderstepoort,  
South Africa

The occurrence and distribution of vector transmitted diseases has changed markedly in recent times. The geographic areas infected and the occurrence of infections with dengue, zika and chikungunya viruses in humans have increased markedly. Similarly, bluetongue virus (BTV) of ruminants has become established in Europe with outbreaks being recorded in 2025 in many countries including the UK. Lumpy skin disease was also reported for the first time in Italy and France in 2025. African swine fever is endemic to sub-Saharan Africa and was first reported in the Republic of Georgia in 2007. The distribution of this disease has since expanded to include other Transcaucasian countries, the Baltic States and Russia. Since its detection in China in 2018 it has spread rapidly through Asia including to the Philippines and Papua New Guinea. Climate change has been implicated as playing a key role in the changing distributions of these vector transmitted diseases.

West Nile virus (WNV) was first described in a human patient in the West Nile Province of Uganda in 1937. WNV was subsequently shown to also infect horses. The disease was initially confined to Africa with occasional cases being reported around the Mediterranean basin. In 1999 the first case of WNV was confirmed in New York City. Within the next 3 years, WNV cases were confirmed throughout the USA and in Canada. WNV now has an almost Global distribution with cases being regularly confirmed in humans and horses. There are effective WNV vaccines available for horses.

Eastern equine encephalitis virus (EEEV) infects humans and horses in North, Central and South America particularly in hot humid areas although the geographic distribution of cases has expanded in recent years. Western equine encephalitis virus (WEEV) infections of humans and horses have historically been confined to the western parts of North and Central America but was first reported in Argentina and Uruguay in 2023. There are effective EEEV and WEEV vaccines available for horses. Venezuelan equine encephalitis virus (VEEV) infects humans and horses and is endemic in Central America and the northern parts of South America with occasional outbreaks occurring in the Southern parts of the USA and in other parts of South America. Japanese encephalitis virus (JEV) infects humans, pigs and horses mainly in Asia although the first occurrence of this virus was confirmed in pigs in Australia in 2022. There are effective JEV vaccines available for horses.

Equine infectious anaemia (EIA) infects horses in North and South America, parts of Europe, India, China and Australia. In recent years, most cases have been reported in Europe. Once infected, horses can become life-long carriers of EIA. Natural transmission is by biting flies but iatrogenic transmission by infected blood products has also been reported.

Equine piroplasmosis (infection with *Theileria equi* and *Babesia caballi*) is endemic in South and Central America, Africa, parts of Europe, the Middle East and Asia. Equine piroplasmosis is primarily transmitted by ticks but can also be iatrogenic by infected blood products. A case of equine piroplasmosis was identified in a horse transported to Japan to compete in the 2020 Olympic Games.

African horse sickness virus (AHSV) causes a severe disease in horses and is endemic to sub-Saharan Africa. AHS is the only equine infectious disease for which the World Organisation for Animal Health (WOAH) has provided an official disease status. Import conditions for horses from countries which do not have WOAH AHS Free Status are understandably restrictive. Outbreaks of AHSV have occurred outside of the endemic region sporadically. These include outbreaks in Spain, Portugal and Morocco between 1987 and 1990 and a recent outbreak in Thailand in 2020. AHSV is very closely related to BTV in ruminants and is also transmitted by *Culicoides* midges. The recent spread of BTV in Europe has highlighted the potential for spread of AHSV from the endemic parts of Africa to Europe. There are effective AHSV vaccines available for horses which are used routinely in the endemic parts of Africa and which have been used to assist with outbreaks outside of the endemic regions. Equine encephalosis virus (EEV) causes a mild disease in horses and is also endemic to sub-Saharan Africa. Outbreaks of EEV have been reported in Israel and India.

As the distribution of the insect vectors responsible for the vector transmitted diseases discussed is influenced by climatic factors the changes in distribution of all of these diseases are associated with climate change. Whilst the effect on the distribution of the vector transmitted equine diseases has been limited thus far, the equine industry needs to be aware of the potential threats of changes in the distribution of these diseases in the future.