



# Equine Research Centre • Onderstepoort

Faculty of Veterinary Science

Issue 7 – August/September 2014



## EQUINE RESEARCH ... what you need to know

**Brought to you by the Equine Research Centre, University of Pretoria**

Welcome to issue 7 of the Equine Research Centre Newsletter. Please remember to forward to all your horse loving friends (who can e-mail Nora-Jean (N-J) Freeman on [nfreeman@witshealth.co.za](mailto:nfreeman@witshealth.co.za) to be added to the mailing list). In this issue we cover the exciting news of the imminent end of CEM, plus start to prepare you for the next AHS Season. Please feel free to contact N-J Freeman should you have any questions, or suggestions, or requests for topics to be covered in this newsletter. We will be covering West Nile Virus in the next issue.

### C.E.M. – THE END IN SIGHT!

As per the official letter from the Department of Agriculture, Forestry and Fisheries (DAFF) below, we are happy to advise that the Contagious Equine Metritis (CEM) 2011 outbreak is in the process of being declared closed. This follows extensive trace-backs involving testing of more than 4 500 horses (1 500 per year since 2011) when the outbreak first manifest itself. There were four horses in the initial outbreak investigation, following which, through the State mandated screening of stallions a further nine cases were identified. With leads received from these cases, a trace-back was conducted wherein a further 26 animals were found to be infected, bringing the total number of cases to 39.

All the affected animals have been successfully treated and confirmed to be negative at least one year after treatment. A declaration from DAFF of the outbreak being over is imminent, following which South Africa will work towards declaring the country free of CEM. The Equine Research Centre is proud to have been part of the joint venture with DAFF and industry, which sees us well on our way to eliminating CEM from South Africa. This partnership is also responsible for the elimination of equine arteritis in 1998 and equine influenza in 2004.



**LETTER FROM DEPARTMENT OF AGRICULTURE, FORESTRY & FISHERIES RE CEM**



**agriculture,  
forestry & fisheries**

Department:  
Agriculture, Forestry and Fisheries  
REPUBLIC OF SOUTH AFRICA

Directorate Animal Health, Department of Agriculture, Forestry and Fisheries  
Private Bag X138, Pretoria 0001

Enquiries: Dr. Mpho Maja • Tel: +27 12 319 7456 • Fax: +27 12 329 7218 • E-mail: Mpho.Maja@daff.gov.za

Reference: 12/1/8/8/1

To: All individual horse owners  
Breed Societies  
Artificial Insemination and Breeding Centres  
Press and Media  
SAVA  
SAVC  
SAEVA  
SANEF  
SAHRA

**RE: UPDATE ON CONTAGIOUS EQUINE METRITIS IN SOUTH AFRICA**

Since the 2012/2013 breeding season, the equine industry in South Africa has been required to adhere to the testing regime required for Contagious Equine Metritis (CEM) screening. The purpose of this screening programme was to substantiate the theory that the CEM outbreak identified in 2011 was not widespread and to provide some of the information that will be required to ultimately re-establish South Africa's CEM-free status.

Trace-forward and trace-back investigations identified a total of 39 cases, all of which have been treated successfully. Typing of the causative bacterium demonstrates that it is highly likely that there was a point introduction of the disease into the country and only horses in contact with the positive horses at the index property, an equine artificial breeding centre, were exposed to CEM. Thanks to the excellent co-operation by the equine industry, the evidence gathered from the nationwide screening programme shows that the CEM status in South Africa is currently stable, with no new cases being identified. As a result of the above, the Directorate: Animal Health (DAH) at DAFF is finalizing its records in order to close off all of the CEM cases on the international OIE (World Organization for Animal Health) reporting system, which will signal the end of the 2011 CEM outbreak..

Once the 2011 CEM outbreak has been closed, the DAH will tackle the next step, namely to try and officially declare South Africa free of CEM via the OIE system according to internationally accepted standards. In order to make such a

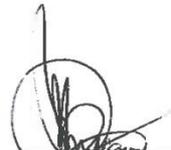


declaration, South Africa will have to demonstrate ongoing surveillance for CEM – even after the declared end of the 2011 outbreak. However, as the risk profile has decreased considerably, it has been decided that only a single set of swabs will be required for each stallion during the next testing season. (July 1 – June 30). This will replace the currently-stipulated requirement of two sets of tests per stallion and breeding season.

The reduced single CEM test requirement will continue to apply to all stallions used for breeding, either by natural mating or artificial insemination. A clearance certificate will be issued by the Equine Research Centre laboratory subject to negative results from this single test and only foals born to stallions in possession of a CEM-clearance certificate valid for that year will be allowed to be registered.

**KIND REGARDS,**

  
 \_\_\_\_\_  
**Dr Mpho Maja**  
**DIRECTOR: ANIMAL HEALTH**

  
 \_\_\_\_\_  
**The Registrar**  
**ANIMAL IMPROVEMENT ACT**

**Date:** 2014-08-11



## BE PREPARED FOR THE NEXT AHS SEASON

As per the Onderstepoort Biological Products statement, a copy of which is on Page 5 of this Newsletter, there has been a problem with production of vaccines, which, according to this statement, will now only be available in October 2014. Our advice to all horse owners and veterinarians is to establish contingency plans for being able to vaccinate all horses as soon as possible after the vaccines are made available. Please bear in mind that for movements to the Western Cape AHS Controlled Area and for all sport and race horses, all AHS vaccinations must be done by and certified by a registered veterinarian. We also advise that the second vaccinations be completed before 1 December 2014. OBP has back orders from veterinarians and will supply via their distribution channels as the vaccines become available.



There has been a confirmed case of AHS Serotype 9 from the Peddie area in E Cape in mid-August this year. Other cases of AHS serotype 9 were identified in this region during the summer. Horse owners in the province should be extra vigilant in case of AHS appearing early in the season and are encouraged to collect samples for submission for testing.

### Practical precautions against African horse sickness:

1. Ensure that your horse's vaccination status, with a registered vaccine against African horse sickness, is up to date.
2. To reduce contact with biting midges infected with African horse sickness virus, stable horses at night from 2 hours before sunset to 2 hours after sunrise.
3. Provide additional protection to stables to reduce midges entering by using 70% shade cloth (e.g. Alnet) to cover all stable openings (e.g. door and window openings) at night.
4. Spray stable walls and protective mesh with an insecticide effective against biting midges, e.g. Fendona 6 containing alphacypermethrin.
5. Apply insecticides registered for use on horses in the late afternoon and early morning, focussing on preferred midge biting sites such as the head, neck, back and belly, e.g. fly sprays containing cypermethrin or permethrin.
6. Apply insect repellent to horses in the late afternoon and early morning, focussing on preferred midge biting sites such as the head, neck, back and belly. (Note the only effective repellent, DEET, is not registered for use on horses although it is generally well tolerated. Nevertheless, as with all products that are used "off label", horses should be monitored for adverse skin reactions.)
7. Move horses away from midge breeding sites such as vleis and muddy areas.
8. Repair leaking water pipes and troughs to reduce midge breeding sites.



Onderstepoort Biological Products SOC Ltd  
 Co Reg No. 2000/022686/06  
 Private Bag X07, Onderstepoort, 0111  
 Tel: +27 (0) 12 522 1500  
 Fax: +27 (0) 12 522 1591  
[www.obpvaccines.co.za](http://www.obpvaccines.co.za)

### Vaccine availability

OBP is currently undergoing recapitalization with the objective of obtaining current Good Manufacturing Practice (cGMP) in the not too distant future. National Treasury provided funding for three years for this project, which started in 2012/13.

The project consists of three components:

1. Upgrade and modernization of the infrastructure and equipment;
2. Improving production processes; and
3. Training of staff.

This is a major undertaking, which will improve OBP's ability to serve the local and international markets but will inevitably cause disruptions in production. It is similar to fixing a vehicle whilst the engine is still running.

Replacing old equipment with new ones is almost complete and the company is now reviewing and improving production processes to increase vaccine yields. Changing from old to new processes has its own inherent risks and requires loads of troubleshooting to tweak the system for optimal functioning. The availability of African horsesickness, Bluetongue, B-Phemeral, Brucella S19 and Rift Valley Fever (inact) are accordingly affected. Indications thus far are that some of the major issues have been resolved and that the products mentioned will again be available from October 2014.

OBP is committed to producing quality vaccines efficiently and we are of the opinion that this investment will benefit all stakeholders. Our sincere apologies for any inconvenience caused and should you need further clarification please do not hesitate to contact Dr Jacob Modumo @ 0125221518 or 0825741115.

Sincerely

Dr Steven T Cornelius  
 CHIEF EXECUTIVE OFFICER  
 ONDERSTEEPOORT BIOLOGICAL PRODUCTS



## SUMMARISED PUBLICATIONS

### A COMPETITIVE *ELISA* FOR THE DETECTION OF GROUP-SPECIFIC ANTIBODY TO EQUINE ENCEPHALOSIS VIRUS

Equine encephalosis virus (EEV) is a *culicoides* borne viral infection in horses, with symptoms ranging from fever to abortion and death. Other clinical signs that have been observed less frequently include swelling of the eyelids, the depression above the eye and even the whole face, an inability to co-ordinate voluntary muscles, reluctance to walk and stiffness, a wild expression in the eyes and changes to temperament and/or convulsions. Respiratory distress sometimes accompanied by a frothy, clear or slightly blood tinged nasal discharge, a tiny red/purple spot on the eye and signs of acute heart failure have also been reported. Many of these signs can be confused with the clinical signs caused by the African horse sickness virus (AHSV).

In collaboration with the Department of Veterinary Tropical Diseases, University of Pretoria, and Institute for Animal Health, United Kingdom, Prof Alan Guthrie and his team at the Equine Research Centre tested the effectiveness of a group-specific indirect competitive enzyme linked immunosorbent assay (C-ELISA) for the precise detection of EEV. Negative sera from horses in the United Kingdom were used to establish the benchmark for a negative population. Negative and positive populations of South African horses were tested subsequently. The results showed the EEV C-ELISA to be sensitive, specific and reliable, and used in conjunction with ELISAs available for African horse sickness virus, a differential diagnosis between EEV and AHSV could be achieved.

This result is a breakthrough for the correct diagnosis of these two diseases, and therefore the treatment thereof.

*Publication* : *Journal of Virological Methods* 174 (2011) 60-64

#### Research Team

J E Crafford, M van Vuuren – Dept of Veterinary Tropical Diseases, University of Pretoria

A J Guthrie, P G Howell – Equine Research Centre

P P C Mertens, J N Burroughs, C A Batten, C Hamblin – Institute for Animal Health, Pirbright, Surrey, United Kingdom

### A FAST DIAGNOSTIC TEST DISTINGUISHES BETWEEN EQUINE ENCEPHALOSIS VIRUS AND AFRICAN HORSE SICKNESS VIRUS

Equine encephalosis virus (EEV) is the cause of equine encephalosis. The disease manifests itself similarly to mild forms of African horse sickness (AHS) and the two disease are easily confused. The viral isolation tests previously used are time consuming and therefore a more rapid diagnostic test for EEV that can distinguish it from AHS was developed.

Equine encephalosis was first described by Sir Arnold Theiler, who described a fever in horses that simulated AHS. Theiler differentiated the disease from AHS on clinical signs (incubation period and temperature characteristics) and transmission experiments. EEV was isolated in 1967 from a mare in the Kimberley district of South Africa. Clinical signs of the affected horse included listlessness, tightening of the muscles of the face, a high temperature and an



elevated pulse rate about 24 hours before death. EEV is endemic to southern Africa, and EEV infection in horses has been reported recently in Israel, Ethiopia, Ghana and The Gambia.

Like AHS, EEV is transmitted between equid hosts by the bites of *Culicoides* midges, specifically *C. imicola*. *C. imicola* is the most abundant vector of the species associated with livestock in the summer rainfall region of southern Africa.

Most EEV infections are subclinical in nature and mild forms are confused easily with mild forms of AHS as both infections exhibit similar clinical signs. This makes diagnosis difficult and laboratory tests are needed to differentiate the diseases. There are various laboratory methods, but the disadvantages of these methods are that they are time-consuming and only provide a retrospective diagnosis. Furthermore, EEV is not a World Organisation for Animal Health (OIE) listed disease, whereas AHS is. As both EEV and AHS present similar clinical signs it is imperative to distinguish between them, as the control measures and consequences differ vastly.

At the time of this study, no reverse transcription polymerase chain reaction (RT-PCR) based test for the detection of EEV nucleic acid had been described. Real-time RT-PCR provides several advantages over the use of conventional PCR and ELISA, including rapid turn-around with high analytical specificity, sensitivity and a reduced risk for contamination. As the clinical signs of AHSV and EEV infections in equines may be difficult to distinguish a rapid and reliable diagnostic real-time RT-PCR test for EEV is needed for rapid diagnosis of this infection.

The RT-PCR test developed for detection of EEV nucleic acid is specific and quick to perform. The test can be used to detect rapidly and reliably any of the EEV strains that were tested in cell or tissue culture and to distinguish EEV from AHSV. It will be useful in endemic countries where both viruses are circulating to ensure that correct control strategies are used.

Publication: *Journal of Virological Methods* 195 (2014) 205-210

Research Team:

Department of Veterinary Tropical Diseases, Faculty of Veterinary Science, University of Pretoria: N M Rathogwa, M Quan, M van Vuuren  
 Division of Molecular Biosciences, Imperial College London, London, United Kingdom: J Q Smit  
 Equine Research Centre, Faculty of Veterinary Science, University of Pretoria: C Lourens, A J Guthrie

## **CONTROL AND TRANSMISSION OF AFRICAN HORSE SICKNESS IN ZIMBABWE**

In a study of the prevalence of African horse sickness (AHS) in horses in Zimbabwe, researchers selected a sample of two private veterinary surgeries in Harare, based on their reliable record keeping and large equine caseload (representing over 50% of the 16 987 horses in the area). Cases were taken for the years 1998-2004.

Diagnosis by these two practices was based on clinical signs and post-mortem lesions recognised by the vet or during lab diagnosis, which was based on the antigen-capture enzyme linked immunosorbent assay (ELISA).

Researchers looked at data from each case record, including date of diagnosis, age, sex, vaccination status and disease outcome of each affected horse.



Across the years under study the highest numbers of AHS cases were recorded from March to June with peak numbers reached in April and May. The number of cases decreased dramatically from July. Foals and yearlings (<2) recorded a higher prevalence of AHS compared with horses older than 2 years. 85% of the horses with AHS had previously been vaccinated against AHS.

The average annual number of fatalities due to AHS was 9.6 with the highest case fatality rates recorded in 1998 and 1999, and the lowest in 2004, with foals or yearlings recording the highest overall case fatality rate. Unvaccinated horses recorded a higher fatality rate than vaccinated horses.

It was also noted that the prevalence of AHS was higher in years that experienced early rains followed by a dry spell. It has also been suggested that there is a strong link between major outbreaks of AHS in southern Africa and the El Niño-Southern Oscillation (ENSO). The results of this study supports this suggestion with the highest prevalence occurring in 2003 when there was a large ENSO, and the lowest prevalence being recorded in 1998 when the ENSO was weak and moderate.

In conclusion, the age of the horse was found to be associated with AHS, with foals and yearlings being more susceptible to the disease. The vaccination status was also found to be an important risk factor, with vaccinated horses less likely to die of AHS than unvaccinated horses. This reinforces the importance of adequately protecting horses, and particularly foals and yearlings, against AHS through vaccination.

*Publication: Onderstepoort Journal of Veterinary Research*

Research Team:

*Institute of Veterinary, Animal and Biomedical Sciences, Massey University, New Zealand: Stuart Gordon, Charlotte Bolwell, Chris Rogers*

*Faculty of Veterinary Science, University of Pretoria: Alan Guthrie*

*Faculty of Veterinary Science, University of Zimbabwe, Zimbabwe: Forgivemore Magunda, Petronella Hove*