Case Definition

Surra (*Trypanosoma evansi*)
(Notifiable)

November 2023

1. **Disease Information**
   - **1.1 General Disease and Pathogen Information:** Surra is a protozoal disease, resulting from infection with the protozoal parasite *Trypanosoma evansi* (*T. evansi*), that can infect a variety of large mammals including horses, mules, camels, water buffalo, cattle, swine, and deer. In Africa, Asia, and South America, thousands of animals die from the infection each year. *T. evansi* is spread primarily by mechanical transmission via hematophagous flies, including tabanids and Stomoxys, although infection by the oral route in carnivores and biological transmission by vampire bats have been described. Surra is endemic in North Africa, the Middle East, Asia, and Central and South America.
   - **1.2 Clinical Signs:** In most domestic and wild animals infected with *T. evansi*, the clinical signs include fever, progressive anemia, loss of condition, emaciation, edema of the lower parts of the body, cachexia, urticarial plaques, enlargement of the lymph nodes and spleen, and petechial hemorrhages of the serous membranes. Neurologic signs occur late in the disease. Abortion may occur in late pregnancy. Acutely infected animals die within weeks or months. Chronic infections may continue for several years. In equids, the incubation period varies from 5 to 60 days. In other species, the incubation period is less well known.
2. **Laboratory Criteria**
   - **2.1 Agent Isolation and Identification:** Laboratory methods for identifying the parasite are required, as clinical signs are not pathognomonic for diagnosis. In early infection or acute cases (high parasitemia), examination of wet blood films, stained blood smears, or lymph node (prescapular or subiliac) materials may reveal the parasite. In chronic cases or cases of low parasitemia, examination of thick blood smears, parasite concentration methods, and lab rodent inoculation may be required. For apparently healthy carriers, mouse inoculation typically provides the best results. Polymerase chain reaction can also be utilized but can provide false-negative results when parasitemia is low or if the target genes are too specific to detect all strains of the parasite. This method may yield false positives in the case of target genes shared with other *Trypanozoon* species or sub-species.
   - **2.2 Agent Characterization:** There is currently no validated test able to distinguish *T. evansi* from other *Trypanozoon* species or sub-species.
   - **2.3 Serology:** The most used serologic tests are the IgG enzyme-linked immunosorbent assays (ELISA) and card agglutination test (CATT/T. evansi). IgG ELISA is most likely to correctly classify uninfected animals, thus would be suitable for verifying that animals are free from infection prior to movement or during quarantine.

CATT/T. evansi is more likely to correctly classify truly infected animals and can be used to target individual animals for treatment with trypanocidal drugs. For declaring disease-free status, serial testing with CATT/T. evansi and ELISA followed by re-testing of suspect samples is recommended. In areas where other tsetse-transmitted trypanosomoses occur, cross-reactions may occur with any serological test.

3. **Case Classification**

3.1 Suspect Case: An animal with:

3.1.1 Clinical signs consistent with *T. evansi*; **OR**

3.1.2 An epidemiologic link to *T. evansi*.

3.2 Presumptive Positive Case: A suspect case in which:

3.2.1 Pathologic changes consistent with *T. evansi* are found; **OR**

3.2.2 Antibodies specific to Trypanosoma species have been detected; **OR**

3.2.3 Organisms consistent with *T. evansi* have been found.

3.3 Confirmed Positive Case: Testing performed at National Veterinary Services Laboratories from an animal in which:

3.3.1 The presence of trypanosomes with Trypanozoon morphology has been demonstrated through microscopic observation (direct or through laboratory animal inoculation test) in samples; **AND**

3.3.2 Genetic material specific to *T. evansi* has been detected.

4. **Reporting Criteria:** Surra is a U.S. foreign animal disease (FAD) that is immediately reportable under the APHIS National List of Reportable Animal Diseases (NLRAD).

4.1 NLRAD reporting in accordance with the NLRAD Standards for notifiable diseases; and by APHIS to the World Organisation for Animal Health (WOAH); **AND**

4.2 For FAD or Emerging Disease Incidents also follow standard procedures according to the Policy for the Investigation of Potential Foreign Animal Disease/Emerging Disease Incidents.