

## Equine Information Sheet

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### Equine Infectious Anemia

Equine infectious anemia (EIA) is a transmissible infectious disease of horses caused by an RNA virus in the *Lentivirus* genus, family Retroviridae. Infected horses remain infected for life, there is no preventive vaccine and no curative treatment. EIA is a reportable disease regulated by the United States Department of Agriculture (USDA) and state animal health regulatory agencies.

#### Transmission:

In nature equine infectious anemia virus (EIAV) is a vector transmitted disease. Blood-feeding insects transfer virus-infective blood between horses. Horse flies, deer flies, and stable flies are the most common vectors. Transmission of EIAV is directly related to blood retained on or in the mouthparts of an insect after feeding on an infected host – a horse. The virus does not replicate in the insect vector and must be physically transferred to a susceptible host. Typically, the blood feeding fly must be interrupted during their blood meal and begin feeding on another horse in close proximity and in a short period of time. Additionally, EIAV infected mares may transfer virus across the placenta to unborn foals or foals may become infected after ingestion of virus infected colostrum or milk. Venereal transmission is possible but rare. Equine infectious anemia virus can also be transmitted unintentionally by mechanical means or 'iatrogenically' by transfusion of infective blood or blood-contaminated instruments.

#### Pathogenesis (the biological mechanism of disease)

Equine infectious anemia virus causes life-long infection and ultimately fatal disease. Once a horse is exposed, the virus infects white blood cells and replicates in internal organs including the spleen, kidney, liver and bone marrow. Anemia (low red blood cell count) results from decreased production and immune mediated red blood cell destruction. EIAV-infected horses may die from the direct effects of the virus on blood cells and organs or from secondary infections, however, horses typically only exhibit mild to moderate episodic symptoms and many show little to no signs.

#### Clinical Symptoms:

The symptoms and course of disease are variable and based on the susceptibility of the horse, virus load and virulence of the virus strain. Three basic stages of EIA - acute, inapparent and chronic - are commonly described. *Acute* disease occurs 1 to 4 weeks post exposure. Pronounced viral replication and circulation result in fever, cell and organ damage, lethargy and inappetence. Some horses may develop severe and fatal symptoms but most exhibit mild clinical signs. Concluding the initial acute episode, most EIAV infected horses experience recurrent episodes of acute clinical disease, however, some horses enter an *inapparent* disease state. *Inapparent* carrier horses appear normal but are infectious to other horses. Recurrent episodes of clinical disease are typically short-lived (3-6 days), the frequency of episodes is variable (weeks to months), and infected horses appear normal in between relapses. *Chronic* disease develops if the infected horse survives the acute phase and recurrent episodes become severe and frequent. The classic clinical symptoms of chronic EIA are fever, depression, weight loss, anemia, dependent edema (swelling of the ventral abdomen and thorax and the limbs) petechiae (small spots of hemorrhage on the mucous membranes), icterus, epistaxis (nose bleeding) and pale mucous membranes.

Some horses infected with EIAV never exhibit noticeable symptoms but are lifelong inapparent carriers and reservoir for the virus. For most EIA infected horses the frequency of recurrent episodes and severity of clinical symptoms subside within one year of initial infection. These horses also become inapparent carriers of the virus and reservoir for the disease. Although the risk of transmission is greater during acute disease and recurrent episodes than from inapparent carriers, EIAV infection poses a major risk to the equine industry in any form. Surveillance through routine diagnostic testing is the mainstay of prevention.

**Diagnosis:**

Definitive diagnosis of EIA is made by identifying antibodies in a blood sample. Two types of diagnostic tests are approved by the United States Department of Agriculture (USDA) for diagnosis of EIAV, the agar gel immunodiffusion (AGID) test and several enzyme-linked immunosorbent assay (ELISA) tests. The ELISA tests are popular for simplicity and rapid results. The ELISA tests are more sensitive than the AGID but may occasionally yield false-positive results. The AGID test, commonly known as the Coggins test, is the most widely used tool for diagnosing equine infectious anemia. The Coggins test is highly specific and 95% accurate but may yield an occasional false-negative result. All ELISA positive tests must be confirmed with an AGID test. When used together, the Coggins and ELISA tests provide the highest level of accuracy. The Western blot test is a specialized diagnostic tool which may be used to clarify conflicting results. Diagnostic samples for EIAV testing may only be submitted by a state or federal animal health official or accredited veterinarian.

**Federal and state regulations:**

The USDA Equine Infectious Anemia Uniform Methods and Rules (UM&R) provides standards for detecting, controlling, and preventing equine infectious anemia (EIA). The USDA requires all imported horses from foreign countries to have a negative AGID EIAV test. Within the United States a negative AGID or ELISA within the previous 12 months is required by all states on any horse being moved interstate, changing ownership, entered into exhibitions or competition, or being sold at auction or sales markets. Each state has the authority to mandate specific requirements based on the USDA EIA Uniform Methods and Rules recommendations.

**Montana Requirements and Recommendations:**

A Coggins test is required when a horse is imported into Montana, or exported out of Montana to another state. The Montana Department of Livestock recommends regular EIA testing as part of a good equine health management program, especially for those equines regularly in contact with other equines of unknown EIA status. In addition, having horses tested prior to purchase is highly recommended.

**Resources:**

United State Department of Agriculture Animal and Plant Inspection Service Equine Infectious Anemia Uniform Methods and Rules:

[http://www.aphis.usda.gov/vs/nahss/equine/eia/eia\\_umr\\_jan\\_10\\_2007.pdf](http://www.aphis.usda.gov/vs/nahss/equine/eia/eia_umr_jan_10_2007.pdf)

Montana Department of Livestock Equine Infectious Anemia (EIA):

<http://liv.mt.gov/Animal-Health/Diseases/Equine-Infectious-Anemia>