



Disease Name: Tetanus

Disease definition: A neurological disease caused by the bacterium *Clostridium tetani*. Once established in a wound, *Clostridium tetani* produces a toxin which causes stimulation of the nervous system. While tetanus can affect humans and other domestic animals, the horse is considered particularly sensitive to tetanus neurotoxins.

Transmission: *C. tetani* is present in soil, the gastrointestinal tract, and manure of horses, resulting in ever-present risk of exposure. It enters a wound and proliferates in areas with lack of access to oxygen (anaerobic conditions). This usually occurs from contamination with manure or in any area where infection creates an anaerobic environment. Foals presenting with signs of tetanus should be examined for umbilical infection. Tetanus is not contagious and is not passed from horse to horse or to other animals.

Frequency: Tetanus is rare due to the frequent vaccination of horses.

Incubation period: The incubation period is 1-43 days. The initial site of infection may have healed by the time the horse develops clinical signs of tetanus. The duration of the incubation period depends on the inoculation dose, the severity of the anaerobic environment, and the distance of the site of inoculation to the central nervous system.

Carrier status: None.

Shedding period: There is no shedding of the disease.

Latency: None

Severity: Severity of signs vary from mild to severe and can rapidly progress to death. Tetanus is often severe in unvaccinated horses.

Clinical signs: Signs and symptoms arise from the *C. tetani* neurotoxin's ability to block inhibitory signals in the spinal cord, leading to painful muscle spasms and rigidity and include:

- Stiffness and difficulty ambulating
- Wide-based "saw horse" stance
- Agitation
- Third eyelid protrusion
- Trismus (lock jaw)
- Extended neck
- Elevated tail
- Difficulty swallowing
- Unable or unwilling to eat
- Abnormal (decreased or absent) gut sounds
- Abnormal (decreased or absent) defecation



Diagnoses: A presumptive diagnosis is usually made based on the presence of the classical clinical signs of stiffness, lock jaw, and protrusion of the third eyelid, often in combination with a negative vaccination status and the identification of a wound or other physical entry point. Laboratory techniques can be used to confirm the presence of the bacteria in an infected wound.

Treatment:

- Elimination of *C. tetani* as the source of toxin production – wounds should be cleaned and debrided. Initiate treatment with appropriate antibiotics.
- Neutralization of the circulating, unbound neurotoxin by tetanus antitoxin (TAT). Commercial availability of TAT is variable.
- Muscle relaxation and pain medications – tetanus is a very painful disease due to widespread muscle spasms. Limiting exposure to stimuli by housing horse in a quiet stall can help prevent painful muscle spasms.
- Supportive care to prevent secondary trauma, provide wound care, provide digestive and hydration support for horses unable to eat and drink. Severely affected horses may require additional critical care.

Prognosis: Mortality rate is over 50%.

Prevention: Detailed tetanus vaccination recommendations may be found in the AAEP Tetanus Vaccination Guidelines <https://aaep.org/guidelines/vaccination-guidelines/core-vaccination-guidelines/tetanus>

- The vaccine against tetanus (tetanus toxoid) is a very successful and highly protective vaccine.
- Due to the ever-present risk of exposure, the severity of the disease, and the almost 100% protection following vaccination, tetanus toxoid is considered a core equine vaccine and should be included in equine immunization programs for every horse.
- It is generally accepted that tetanus toxoid administered per manufacturer recommendations is both safe and efficacious. All tetanus toxoid vaccines are labeled for annual (12 month) revaccination.
- Protective responses from vaccination are usually attained within 2 weeks of the second dose.

Biosecurity: Tetanus is not contagious. However, biosecurity guidelines <https://aaep.org/sites/default/files/Documents/BiosecurityGuidelinesFinal2018.pdf> for horses affected by tetanus are related to the contagious nature and zoonotic potential of several differential diagnoses of acute onset of neurologic disease (for example rabies and equine herpesvirus myeloencephalopathy). Until these differentials are ruled out, or tetanus is confirmed through presence of the classical clinical signs in the face of a negative vaccination status and presence of inoculation site, it is strongly advised to act on the side of caution by wearing personal protective equipment (PPE) and isolating the horse.