

Botulism: Understanding This Rare, but Deadly Disease

Botulism is caused by toxins produced by the bacterium *Clostridium botulinum*. This life-threatening disease is caused by a neurotoxin that affects nerve functions in the horse. Often clinical signs progress rapidly, and the narrow window for successful treatment has passed before initial signs of infection are noticed.

Horses can contract Botulism in three different ways.

- Forage poisoning results from a horse consuming feed containing *Clostridium botulinum* toxins.
- Wound botulism occurs when bacterial spores infect a wound. As the wound closes, a perfect environment is created to produce the deadly toxins.
- Shaker Foal Syndrome occurs in foals that consume feed contaminated with bacteria, resulting in toxins being produced in their intestinal tract.



Botulinum bacteria are found in soil and water worldwide, but horses most commonly contract Botulism when ingesting contaminated feed, hay, or haylage. After the contaminated feed is eaten, the horse's circulatory system draws the toxin from the intestine and distributes it through the body, interrupting nerve transmissions to muscles.

Although any muscles can be affected by weakness and eventually paralysis, symptoms generally start near the face. One of the first signs that an attentive horse owner may notice is the horse's reluctance to eat or finish feed due to difficulty swallowing. Other signs of infection include overall muscle weakness, which can lead to recumbency (frequent lying down) and respiratory difficulty. Symptoms typically appear in one to two days following exposure. Once infected, time is of the essence since a horse's prognosis for recovery can significantly decrease once they become unable to stand without assistance. Although treatments can vary, the first-line treatment includes the administration of antitoxin.

The incidence of *Clostridium botulinum* infection in horses is not as common in comparison to other diseases. However, the highest number of cases occurs in the mid-Atlantic region of the United States. As Megan Marchitello, Clinical Instructor at the Marion duPont Scott Equine Medical Center, explains, "Although we only see a handful of botulism cases at the hospital each year, they are tough on the horse, the owner, and us vets. As a horse owner, I would do as much as possible to prevent it, starting with vaccination."

In recent years, the introduction of stringent protocols for the four core vaccines - West Nile Virus, Equine Encephalomyelitis (EEE/WEE), Rabies, and Tetanus - has significantly reduced incidences of these infections. So why do we not routinely vaccinate against a deadly disease such as Botulism?

Vaccinating against Botulism involves an initial series of three doses at one-month intervals, with a once-a-year booster in subsequent years. Although the vaccine does not protect against all strains of Botulism, it is helpful for the most common strain seen in the mid-Atlantic region. Before deciding if a horse should be vaccinated, veterinarians consider your horse's risk factors, which include the area of the country where the horse typically is housed, whether they travel for competition, and the type of feed they are offered. Mares in breeding programs should always be vaccinated to ensure their foals are protected from infection.

To mitigate the risk of your horse contracting botulism, care should be taken when offering feed and forage to limit the chance of accidental exposure. Rodent carcasses can be inadvertently raked into bales during the hay-making process. Feeding hay from small, square bales allows you to inspect the flakes before feeding, whereas the contamination in round bales often goes unnoticed. Storing pellets in rodent-proof containers and cleaning feed and water buckets after each use will help to prevent exposure to botulism spores. Lastly, to prevent wound botulism, deep wounds should always be inspected by a veterinarian.

Due to vaccination protocols for horses, many life-threatening diseases have declined in prevalence in the United States. West Nile Virus, rabies, tetanus, and Eastern and Western Equine Encephalomyelitis (EEE/WEE) are the four core vaccinations routinely given to horses. Additional vaccinations should be considered if your horse regularly travels to different regions and if the geographic area where your horse is typically housed is known to be a 'hot spot' for a particular disease, among other considerations.

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