

# Botulism

## Definition

Disease caused by toxins produced by *Clostridium botulinum* an anaerobic, spore forming bacteria ubiquitous in soil. Toxin proliferates under vegetative conditions.

Botulism is a rapid and progressive neurologic disease with high mortality (100% in untreated animals). Horses can ingest either bacteria which then proliferate in the gastrointestinal tract and secrete toxin (toxicoinfectious) or ingest pre-formed toxin.

## Clinical Signs

- Severe muscle weakness
- Flaccid paralysis with normal mentation
- Inability to swallow (foals will reflux milk from nostrils)
- Poor tail, tongue and eyelid tone
- Hypoventilation, respiratory arrest
- Paresis/inability to stand for extended periods
- Limb paralysis
- Progression to muscular weakness and recumbency

## Incubation

- 12-24 hours post-ingestion of toxins
- Toxicoinfectious and wound botulism have a variable onset based on proliferation of bacteria and toxin. Once elaborated, effects due to toxin occur within 24 hours as with ingestion of preformed toxin.

## Transmission

- Ingestion of pre-formed toxin in contaminated feed
- Toxicoinfectious—Shaker Foal Syndrome
  - Large amount of bacteria overgrows in gut then elaborates toxin
- Direct contact—wound contamination or via umbilicus in foals

## Diagnostic Testing

- Clinical signs
- Confirmatory testing is difficult and expensive:
  - Definitive diagnosis is achieved by identification of toxin in plasma, liver, or gastrointestinal tract.
  - Tentative diagnosis is based on identification of *C. botulinum* spores in gastrointestinal contents or wounds.
  - Animals that recover from the disease do have antibody present but commercially available testing is limited

## Shedding Time of Organism Past Resolution of Clinical Signs

There is no demonstrable shedding of *C. botulinum* once clinical signs occur, particularly if the source of infection is that of a wound or umbilicus.

**Environmental persistence (toxins)**

Toxins are susceptible to sunlight, 1-3 hours

**Specific Control Measures**Environmental management

Bleach is effective disinfectant (after thorough removal of organic material) for toxins and/or vegetative cells.

Clostridial spores are resistant to most environmental conditions and disinfectants.

Vaccination

Prevention of botulism in foals is approached through vaccination of broodmares. Understanding of regional variation in prevailing antigenic type is helpful in determining vaccine selection.

**Release of Animals from Isolation**

There are no isolation requirements for horses with this disease.

**Biosecurity Issues for Receiving Animals**

There are no biosecurity issues for housing and/or handling of these animals.

**Zoonotic Potential**

None.