

# BOTULISM

Condensed Version

**Classic case:** **LIMP**, flaccid, weak, down animal

Recent change in feedstuffs (presence of animal and bird carcasses in food)

Dead livestock

Abrupt onset flaccid tetraparesis, dysphagia, tremors

Clinical signs occur within 24-48 hours of ingestion

## Presentation:

**Horses and cattle** are very **susceptible**

**Dogs, cats and pigs** are fairly **resistant**

All species

- Short-strided gait
- Progressive symmetric tetraparesis/tetraplegia
- Flaccid tetraparesis
- **Poor to absent reflexes** (including palpebral)
- Normal sensation
- Respiratory paralysis is possible

Dog

- Ophthalmoplegia, dysphagia, megaesophagus, dysphonia

## “Shaker foals”

- 1-3 month old foals
- Repeated episodes of trembling
- Liquid appears at nares after sucking or drinking

Adult horses

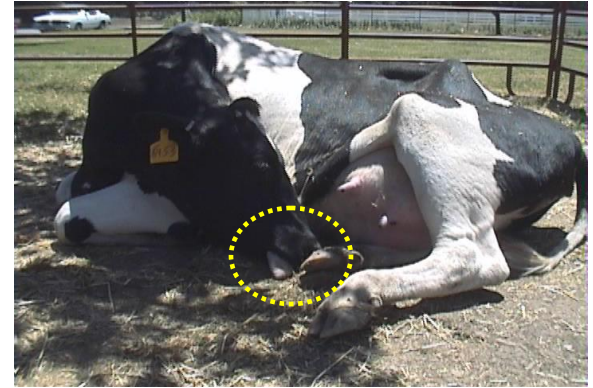
- May suddenly become less active and want to lie down
- Trembling due to weakness
- **If sternal recumbency, rests chin on ground for support**
- Mydriasis, urine retention, ileus
- Wet, paretic tongue, easily pulled from mouth
- Silent chewing action

Cattle

- **Sternal recumbency with neck flexed to one side and head resting on thorax**
- Silent chewing action
- Very **wet, paretic tongue, easily pulled from mouth**

Chickens, waterfowl

- “Limberneck”
- Flaccid paralysis of the legs, wings, neck, and eyelids
- In affected waterfowl, neck paralysis can lead to drowning



Holstein with botulism

Note the resemblance to milk fever  
ie: down, flaccid, staring at hinds

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## DDX:

### Dog

- Polyradiculoneuritis
- Acute fulminating myasthenia gravis
- Tick paralysis
- Polymyositis
- Snake envenomation (coral snake)
- Organophosphate toxicity

### Horse

- Equine degenerative myelopathy
- Colic
- Rhabdomyolysis

### Cattle

- Milk fever (hypocalcemia)
- Hypokalemic myopathy

### Poultry/waterfowl

- Marek's disease (poultry)
- Fowl cholera (waterfowl)
- Lead toxicity
- Chemical toxicity



Holstein with botulism  
Note limp tongue

## Test of choice:

### Definitive diagnosis is difficult

Antibody detection by ELISA (useful to monitor outbreaks, usually not individual cases) serum, feces, or vomit

Isolation of *Clostridium botulinum* in grain, silage, patient's feces

Electromyography may be of benefit but is not definitive

## Rx of choice:

Polyvalent antiserum – **expensive!**

Antibiotics for wound botulism is controversial -may release more toxin from killed bacteria

- Crystalline penicillin
- Metronidazole is alternative
- Avoid procaine penicillin, tetracyclines, aminoglycosides (will exacerbate effects on neuromuscular blockade)

### Nursing care

- Hydration, **Alimentation** (stomach tube)
- Body waste elimination
- Comfort
- Avoid decubital ulcers
- O<sub>2</sub> supplementation and assisted ventilation in severe cases

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## Prognosis:

**Varies:** Poor to very good

Large animals that remain recumbent for more than 24 hours usually do not survive

In dogs, weakness can last 3-4 weeks before improvement occurs

## Prevention:

In areas where shaker foal syndrome is common:

*Clostridium botulinum* type B toxoid given to mares in the last trimester

## Pearls:

Usually herd outbreaks in cattle, but more often individual cases in horses, dogs and cats

### 3 forms of toxicity

- Ingested toxin
  - Preformed toxin in food
    - Contaminated decaying carcasses, vegetable matter
    - Maggots on contaminated carcasses, eaten by scavenging chickens
  - Massive waterfowl die-offs occur from flocks eating dead invertebrates in water containing decaying vegetation
- **Toxicoinfectious** botulism
  - **Shaker foal**
  - *Clostridium botulinum* produces toxin in foal's small intestine
- Wound botulism
  - *Clostridium botulinum* grows and produces toxin from within a wound

Eight types of botulinum toxin

- Dogs and cats usually affected by botulinum toxin C
- Horses usually affected by botulinum toxins B and C
- Cattle usually affected by botulinum toxins C and D
- Poultry and waterfowl usually type C (infrequently A and E)



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## Images worth a look

[Clostridial disease images in cattle](#), including botulism, National Animal Disease Information Service (UK)

Six pictures of the [flaccid paralysis of botulism \(mink, ducks, cattle\)](#) , from the [Center for Food Security and Public Health](#) website

[Duck with classic “limberneck”](#), flaccid paralysis, Merck Veterinary Manual

**Video clip** of a [horse with botulism](#): from, [Veterinary Neuroanatomy & Clinical Neurology](#), de Lahunta & Glass, Cornell University

**Refs:** A Practical Guide to Canine and Feline Neurology, Dewey, 2<sup>nd</sup> ed. p 541-542, Veterinary Neuroanatomy and Clinical Neurology, de Lahunta and Glass, 3rd ed. p 92, 102, 161, Small Animal Neurology, Jaggy. p 404-406, Large Animal Neurology, Mayhew, 2<sup>nd</sup> ed. p343-345 and Merck Manual, 10<sup>th</sup> ed (online): [Botulism in mammals](#), [Botulism in poultry and waterfowl](#), Images courtesy, Dr. Lisle George

**My Notes:**