



# Victorian Farmers Federation Livestock Group

## Livestock Factsheet

» Clostridial diseases

### What are clostridial diseases?

Clostridial diseases are a group of diseases caused by the bacteria, Clostridium. These diseases affect cattle and sheep however, goats are also susceptible to disease. If a preventative program is not in place, individual properties can suffer considerable losses as the diseases usually end in death.

The causative bacterium is highly resistant being able to live in the environment for long periods of time, normally found in the soil or faeces. The bacterial spores may also occur naturally in the gastrointestinal tract or in the tissue of healthy animals. The bacteria may live in the animal with no consequences, are then excreted in the manure and able to infect the surrounding environment. The bacteria in the gut will only cause problems when factors within the animal are suitable. The bacterium in the environment relies on broken skin (cuts and abrasions) or ingestion to enter the body, where favourable conditions in the animal's body allow for the bacteria to multiply and produce fatal toxins. The bacterium causes diseases such as:

- Black disease
- Blackleg
- Botulism
- Malignant oedema
- Pulpy kidney (enterotoxaemia)
- Tetanus

### Types of disease

#### Black disease (*C. novyi*)

Black disease affects sheep more frequently than cattle however, the disease in both animals is fatal. The disease is associated with liver fluke and is caused by the damage from young flukes migrating through the liver tissue. Sudden death in sheep is common with a mass of dead yellow tissue in the liver usually found when autopsied.

#### Blackleg (*C. chauvoei*)

Blackleg can affect both sheep and cattle. The disease usually affects young cattle around the age of 6 months through to 2 years old. Disease development is usually accelerated when animals are on a high level of nutrition and body growth is rapid. The disease occurs following trauma to muscles such as bruising, causing the bacterial spores to multiply and produce a toxin, leading to gangrene. In sheep, the onset of disease generally occurs following injury such as at vaccination, shearing, castration and mulesing. The animal may appear lame but still in good condition until the toxin is absorbed in the bloodstream, where rapid deterioration of the animal occurs firstly through fever, weakness and

then death. The carcass of the animal should be disposed of as it can be a source of infection for other animals in the mob.

#### Botulism (*C. botulinum*)

Botulism occurs when an animal ingests toxins from decaying material from infected animal carcasses or plant material. Animal feed contaminated with dead animals such as rodents and birds or phosphorus deficient cattle chewing on bones are common sources of disease. Botulism is generally characterised by hindquarter paralysis which then advances into the forequarters, neck and head. Paralysis of the tongue may occur with the tongue hanging from the mouth. Death from starvation may occur due to the animal's inability to chew or swallow. Death from respiratory failure can also happen due to paralysis of the respiratory muscles.

#### Malignant oedema (*C. septicum*)

Malignant oedema mainly affects sheep however cattle and goats may also be susceptible. The disease develops from infected soil entering via deep wounds such as injuries from castration, calving or dog bites. Toxins produced at the entry site cause swelling, excretion of bloody or clear fluid followed by gangrene. Fever, trembling and death generally occur after 1-2 days of initial infection and swelling. If diagnosed early, treatment can be administered through the use of antibiotics in conjunction with cleaning of any wounds, however, success rates vary.

#### Pulpy kidney (*C. perfringens* type D)

Pulpy kidney affects cattle, sheep and goats. Young animals are particularly susceptible to the disease. Pulpy kidney is generally brought on by a change in the animal's diet. A sudden increase in high levels of starchy food in the diet causes a disruption in digestion, allowing bacteria living in the intestine to multiply. The bacterium, *C. perfringens* type D, produces a toxin which damages blood vessels and the nervous system. Common signs of pulpy kidney include diarrhoea, dullness, blindness and convulsions. Most of the time animals will just be found dead as death is rapid, occurring in as little as 2-3 hours in young animals and up to 24 hours in older stock. Decomposition occurs rapidly in these cases, so examination of brain tissue under the microscope is the best diagnostic aid.

#### Tetanus

Tetanus arises from deep wounds which can be caused by injuries associated with castration, dog bites, dehorning and calving. The causative bacterium gains entry into the body through these wounds and produces a toxin that affects the nervous system. Signs of tetanus include stiff appearance, tail held out, head and neck stretched out, third eyelid covering the eye, flared nostrils, bloat and as the disease intensifies 'lockjaw' can develop. The animal will eventually be unable to stand, suffer convulsions and then die due to respiratory failure.

### Prevention

Treatment of clostridial diseases is generally not economically viable. High treatment costs associated with the large amount of antibiotics required, rapid onset of disease and the low recovery rate offers little value. Therefore, it is important to have an effective prevention strategy in place to protect your herd or flock.

Prevention is achieved through immunity, developed through vaccination. There are a number of commercially available 5 in 1 vaccines that offer good protection against these clostridial diseases except botulism. The 5 in 1 vaccine contains antigens of the bacteria that cause tetanus, blackleg, black disease, malignant oedema and pulpy kidney.



Animals generally develop a level of immunity 10 days after their second dose of vaccine. Factors to consider when vaccinating include:

- Handle and store vaccine according to label directions.
- Ensure needles and vaccination equipment is clean.
- Vaccination is to be given subcutaneously.
- Calves should be vaccinated from 6 weeks of age and given a booster 4-6 weeks later to ensure sufficient immunity.
- Stock that have not been vaccinated previously or vaccination history is unknown should be given two doses 4 to 6 weeks apart.
- An annual booster should be given to animals to ensure continued immunity.
- Annual boosters should be administered 4 weeks prior to calving or lambing to ensure that immunity is passed onto the new born calf via colostrum.
- Immunity against pulpy kidney only lasts up to 3 months. Young animals, up to 2 years of age may need to be revaccinated.
- The requirement of boosters for pulpy kidney can depend on seasonal conditions and if there is likely to be a change in diet such as a grain feeding. Boosters should be given before feed lotting lambs.
- Consultation with your local vet or product advisor is recommended before commencing a vaccination program.

To aid in the efficacy of the vaccine, hygienic practices should be used when castrating and dehorning by ensuring equipment used is clean and yard conditions prevent mud or faecal material contaminating the fresh wounds. Wound dressings such as antiseptic sprays will help prevent infection.

## Preventing botulism

Botulism can be prevented by a few practices such as:

- Ensuring contaminated feed is not fed to animals. Botulism occurs when feed contaminated with dead rodent or bird carcasses is fed. If you think feed is contaminated, do not feed it.
- Vaccination should be subcutaneously injected high on the neck. It is common for localised swelling to occur at the injection site.
- There are two types of botulism vaccines available. There is a single-dose vaccine and a vaccine that requires a booster 4-6 weeks after the initial vaccination to ensure adequate immunity.
- For both types of vaccines, an annual booster is required as immunity against botulism generally last for 12 months.

Consultation with your local vet or product advisor is recommended before commencing a vaccination program.

## Further Links

### Department of Primary Industries Victoria

<http://www.dpi.vic.gov.au/agriculture/pests-diseases-and-weeds/animal-diseases/beef-and-dairy-cows/clostridial-diseases-of-livestock>

### Department of Primary Industries New South Wales

[http://www.dpi.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0013/111163/clostridial-diseases-in-cattle.pdf](http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0013/111163/clostridial-diseases-in-cattle.pdf)

[http://www.dpi.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0016/111175/blackleg-in-cattle.pdf](http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0016/111175/blackleg-in-cattle.pdf)

### Pfizer Animal Health

<https://www.pfizeranimalhealth.com.au/diseases/208/botulism.aspx>

<https://www.pfizeranimalhealth.com.au/products/262/ultravacreg-5in1---.aspx>

Original Author, Jacinta Pretty (VFF Livestock Project Officer), Original Version Published in February 2013.

## Take Home Messages

- Clostridial diseases are a group of diseases caused by the bacteria, Clostridium, which is highly resistant being able to live in the environment for long periods of time.
- If a preventative program is not in place, individual properties can suffer considerable losses as the diseases usually end in death.
- There are a number of commercially available vaccines that offer good protection against clostridial diseases.

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**Victorian Farmers**  
Federation

**Victorian Farmers Federation**  
Farrer House, Level 5, 24 Collins St  
Melbourne, Victoria, 3000  
Telephone: 1300 882 833  
Fax: 03 9207 5500  
VFF@VFF.org.au  
[www.VFF.org.au](http://www.VFF.org.au)