

FACT SHEET

CLOSTRIDIAL DISEASES



WHAT ARE CLOSTRIDIAL DISEASES?

Clostridial diseases are a group of diseases that affect cattle, sheep and goats. They are caused by the bacterial genus, Clostridium, which under certain conditions produce highly potent and often fatal toxins.

The bacteria are widespread in the environment and the gut, and cause disease in conditions that enable them to proliferate in the body, either through wounds and lack of oxygen or change of pH in the gut.

The bacterium causes diseases such as:

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

The Clostridial vaccines (5 in 1) are widely used and highly cost effective if used appropriately.

TYPES OF DISEASE

Pulpy kidney (*C. perfringens* type D)

Signs: sudden death with terminal convulsions

Associated with: lush spring pasture, grain feeding and sudden changes in diet

Pulpy kidney affects cattle, sheep and goats, particularly younger, rapidly growing animals. Pulpy kidney is generally a result of a change in the animal's diet, with an increase in high levels of highly soluble carbohydrates causing a proliferation of *C. perfringens* in the gut. The bacterium produces a toxin which damages blood vessels, causing them to leak throughout the body.

Most of the time animals will be found dead, with death occurring in as little as 2-3 hours in young animals and up to 24 hours in older stock. If observed, signs of pulpy kidney include diarrhea, dullness, blindness and terminal convulsions. Decomposition occurs rapidly in these cases, so microscope examination of brain tissue is the best diagnostic aid and evidence of glucose in the urine.

Treatment: during an outbreak, place at risk animals on a higher fibre diet and vaccinate or booster. It is often worth giving a booster vaccine if animals are on a high risk diet, even if they're not due for an annual booster.

Tetanus (*C. tetani*)

Signs: initially see a stiff legged gait with prominent third eyelid, progressing to convulsions which can be triggered by noise or touch, progressing to death from respiratory failure

Associated with: wounds from dog bites, marking, grass seeds and dehorning

The bacterium enters the body through wounds and produces a toxin that affects the nervous system. Signs of tetanus include stiff or saw horse appearance, tail held high, head and neck stretched out, prominent third eyelid, flared nostrils, bloat and, as the disease intensifies, 'lockjaw' can develop. The animal will eventually be unable to stand, suffer convulsions and then die from respiratory failure.

Treatment: can be attempted in high value animals if diagnosed early and consists of debriding the wound (removing dead material and exposing it to oxygen) Tetanus antitoxin, antibiotics and nursing.

Blackleg (*C. chauvoei*)

Signs: marked lameness with swelling of affected leg, the skin over the swelling feels like waxed brown paper covering small gas bubbles, animals are often found dead

Associated with: bruising in young cattle on a high plane of nutrition

Blackleg usually affects young cattle on a high plane of nutrition from 6 months through to 2 years old. The disease occurs following trauma to muscles such as bruising, affecting oxygenation and enabling the bacterial spores to multiply and produce a toxin and gas.

In sheep, the onset of disease generally occurs following injury resulting from vaccination, shearing, castration or mulesing. The animal initially may appear lame followed by rapid deterioration with high fever, weakness and then death. The carcass of the animal should be disposed of as it can be a source of contamination.

Treatment: is usually not successful but debridement of wounds and antibiotic treatment may be attempted in highly valuable animals. In an outbreak situation booster vaccination should be given.

Black disease (*C. novyi*)

Signs: animals are usually found dead but may have a short course of profound depression and gut pain

Associated with: active liver fluke infections

Black disease affects sheep more frequently than cattle and is usually fatal. The disease, also called Infectious Necrotic Hepatitis, is usually associated with damage from immature liver fluke migrating through the liver. The damage allows the proliferation of the bacterial spores in a relatively low oxygen environment. Sudden death in sheep is common with rapid putrefaction of carcass with black discoloration under the skin.

Treatment: is not usually attempted, with prevention based on annual vaccination and control of liver fluke.

Malignant oedema (*C. septicum*)

Signs: animals are depressed, have a high fever with an infected and swollen wound, usually followed by death

Associated with: wounds following marking or birth

Malignant oedema mainly affects sheep however cattle and goats are also susceptible. The disease develops from infected wounds; such as injuries from castration, calving or dog bites. Infected wounds are swollen with foul smelling gas (emphysema). Fever, trembling and death generally occur after 1-2 days of initial infection and swelling.

Treatment: if diagnosed early, treatment can be attempted with antibiotics in conjunction with cleaning and debridement of any wounds.

TAKE HOME MESSAGES:

- ▶ Clostridial diseases are a group of diseases caused by the common environmental bacterial genus *Clostridium*.
- ▶ Routine vaccination is highly cost effective in most situations.
- ▶ Consider booster vaccinations for pulpy kidney before access to high risk feed like grain or lush pasture if vaccine has not been given in the last three months.

PREVENTION

Prevention of clostridial diseases relies largely on vaccination. There are a number of commercially available clostridial vaccines (5 in 1, 6 in 1 and 7 in 1) that offer good protection against the main clostridial diseases.

Vaccination involves an initial course of two vaccinations 4-6 weeks apart followed by an annual booster. Animals generally develop a reliable level of immunity 10 days after their second dose of vaccine.

Annual boosters should be administered 4 weeks prior to calving or lambing to ensure that immunity is passed on to newborns via colostrum.

Immunity against pulpy kidney begins to wane in some animals three months after their last vaccination. Boosters for pulpy kidney should be considered before high risk periods due to seasonal flush in pasture or grain feeding, if vaccination was given more than 3 months previously.

To reduce the risk of wound infections with Clostridial, strict hygiene and correct technique should be used when castrating and dehorning. Ensure equipment is clean and yard conditions prevent mud or faecal material contaminating wounds. Portable yards for lamb marking are an effective way of reducing this risk and stopping buildup of environmental clostridial spores due to contamination of blood and tails.

For more information, please contact Stock Sense on 1300 020 163 or stocksense@vff.org.au

FURTHER LINKS

Zoetis Animal Health

<https://www.zoetis.com.au/product-class/vaccine-products/ultravac-5in1.aspx>

Department of Environment and Primary Industry Victoria

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

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