

# Tetanus

## Introduction

Tetanus is an acute disease of mammals characterised by muscular spasms and increased sensitivity to stimuli. Tetanus also occurs in humans and in all domestic animals except cats. In the Northern Territory, the disease has been recorded in horses, cattle, sheep, pigs and dogs. Horses are the most susceptible species. Tetanus is a common cause of death in unvaccinated weaners after castration and dehorning. An alternative name for tetanus is 'lockjaw', which reflects a common symptom of the disease.

Figure 1: A dead weaner showing the typical stretched out and stiff body position associated with death from tetanus.



## Cause

A toxin produced by the bacterium *Clostridium tetani* causes tetanus. *C.tetani* is an anaerobic organism that thrives in low oxygen environments, such as wounds, that have a reduced blood supply and, therefore, low tissue oxygen. Spores of this organism are common in soil and in the faeces of most animals and can survive for many years in the environment. For this reason, people who have contact with soil and animal faeces are at greater risk of contracting this disease. Spores can enter an animal's body through traumatic open wounds, during parturition (birth) or following management procedures.

Castration, dehorning and the use of rubber ligatures for tail docking can all provide suitable sites for the bacterium. Deep, penetrating wounds caused by foreign bodies, such as standing on a nail or a stake wound, also create ideal wound environments for *C.tetani* spores to multiply and produce the toxin that causes the clinical signs of tetanus. Young dogs and foals sometimes acquire the organism from the soil when new teeth create tiny wounds as they erupt through the gums.

## Clinical signs

Signs of tetanus include body stiffness, a 'goose-stepping' gait with rigid, extended front legs, muscular spasms, 'locking' of the jaw caused by rigidity of the face muscles, inability to eat and drink, and difficulty breathing and swallowing. There is also a high sensitivity to noise or touch. Protrusion of the third eyelid across the surface of the eyeball from the inner corner of the eye is common. Immediately before death, convulsions occur, respiration is laboured and body temperature rises.

In affected dogs, there is a characteristic elevation of the ears, wrinkling of the forehead and protrusion of the third eyelid. The technical name for this appearance is 'risus sardonicus', which means a 'fixed grin'.

Figure 2: Dog with 'risus sardonicus' showing clenched tightly facial muscles



Affected horses initially appear stiff, reluctant to move and have difficulty opening their mouths (lockjaw) and consequently cannot eat. The head is stretched out and the tail may be slightly elevated. As the disease progresses, they drool saliva, are unable to swallow and cannot drink. The third eyelid protrudes, initially in spasms, and later permanently. Horses become hypersensitive to sound, develop rigid spasms when disturbed and may appear to have convulsions or fits. Eventually, the respiratory muscles are paralysed, making breathing difficult. The horse becomes progressively exhausted, collapses and dies.

## Treatment

Tetanus is easy to prevent but difficult to treat. If the disease is detected prior to severe signs developing, treatment can be successful using antitoxin and antibiotics. Treatment of dogs and small livestock species requires intensive supportive nursing and veterinary care in a dark and quiet place. The disease in larger animals is often too advanced for treatment to be successful. Tetanus carries a grave prognosis in horses and treatment is rarely successful.

## Prevention

### Hygiene

Ensure that any procedure requiring the skin to be broken, such as injections and castration, occurs under hygienic conditions. Instruments used for such procedures, such as needles and knives, must be free from contamination and operators must work with clean hands. Clean the skin at the site of the incision and apply disinfectant at the end of the procedure. Animals are likely to acquire tetanus infection if their wounds are rapidly contaminated with dirt or mud after processing. Keeping young stock in dusty yards for a long period after management procedures, or turning them out into a muddy paddock, increases risk.

## Vaccination

Vaccination is the best way to protect against tetanus. For previously unvaccinated animals, the recommended vaccination program consists of 2 doses of tetanus toxoid administered 4 to 6 weeks apart, with a booster dose given 12 months later. Repeat boosters every 5 years. In cattle and goats, annual boosters given a month before calving or kidding mean that passive immunity is transferred from the dam to the offspring, protecting them in the first vulnerable period of life prior to receiving their first vaccination.

Vaccination of horses is common. Because dogs are not often affected, routine vaccination programs do not exist. However, some properties in the Territory experience higher levels of tetanus infections. Dogs living or working on these properties should receive tetanus vaccinations.

In the case of injury, an immediate tetanus antitoxin injection is advisable. This ensures a greater level of protection for the next 10 to 14 days. Adverse reactions to the antitoxin have been reported in some cases.

## Summary of best practice

- Reduce contamination of surgical instruments by placing them in antiseptic while not in use.
- Adopt best practices for branding, castration and dehorning outlined in the MLA manual, [A Guide to Best Practice Husbandry in Beef Cattle](#), start a '5 in 1' vaccination program at branding, followed by a booster 4 to 6 weeks later, or at the next weaning muster.
- Apply antiseptic to all wounds to reduce infection.
- Wet dusty yards prior to marking and move weaners out of yards as soon as possible.
- Castrate and dehorn calves and weaners just before leaving the yards and not immediately before trucking.
- Consider vaccinating weaners with a '5-in-1' or '7-in-1' followed by a booster shot 4 to 6 weeks later, especially on properties with a history of tetanus. Always vaccinate horses.

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