

Vibriosis of cattle

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Introduction

Bovine vibriosis (also known as Bovine Venereal Campylobacteriosis, or BVC), is one of the most important infectious venereal diseases of cattle in Australia. The disease is a major cause of infertility and abortion. The condition is widespread in New South Wales, with the latest investigations, conducted from 1992–94, revealing that 46% of beef cattle with infertility had vibriosis. As reproductive efficiency is one of the most important economic factors in beef enterprises, calf losses due to vibriosis can mean the difference between success and failure. This risk, however, can be eliminated by regular vaccination of bulls against the disease.

What causes vibriosis

Vibriosis is caused by the bacterium *Campylobacter fetus* and is spread by infected bulls when they mate susceptible cows and heifers. Immunity against vibriosis in bulls is not developed easily and they can be infected for a long time without showing any signs of illness. The bulls become infected by serving infected cows or heifers. Bulls are the main source of infection, and vibriosis is most commonly introduced to a clean herd by an infected bull.

When introduced to a herd, the disease spreads rapidly, as cows and heifers in such herds have no immunity. Conception rates can then drop to around 40%. As immunity develops, the disease rate drops, but reinfection often occurs because immunity normally wanes about a year after the initial infection.

Conception rates in these chronically infected herds are usually between 65% and 75%, with replacement heifers typically the most severely affected. Infertility normally occurs from an infection in the uterus after the heifer has mated with an infected bull. This infection can prevent the

implantation of a fertilised egg, or more commonly results in the loss of the developing embryo in the uterus. When this happens, the animal usually returns to oestrus, but often with prolonged and irregular cycles.

By this time, immunity against the disease has normally developed, and re-mating can result in pregnancy. When the joining period is restricted, there may be insufficient time for re-joining, with females remaining empty. Occasionally the disease results in permanent infertility.

Economic loss

Vibriosis causes significant reproductive wastage in infected beef and dairy herds and represents a large economic loss for producers, particularly in the first year of infection. Gross margins can be reduced by as much as 65% in the first year of infection in beef herds. When the disease becomes established in a herd, gross margins are usually 36% below those of non-infected herds.

Recognising vibriosis

Identifying vibriosis is difficult because of the absence of clinical signs. The disease is insidious and often remains unrecognised in herds, causing continuing production losses.

- Vibriosis may be suspected at, or shortly after, the end of joining if large numbers of females return to oestrus as a result of early embryonic loss.
- It is more commonly suspected when poor conception rates are observed at pregnancy testing, or by a poor calving rate.
- Occasionally abortions are observed, usually around 6 months of pregnancy.
- A spread-out calving is common as a result of infected females returning to service towards the end of joining.

The disease is confirmed by measuring antibodies in the vaginal mucus of infected cows and heifers. The sample is collected by a veterinarian and tested in a laboratory. Bulls can also be tested for



the presence of infection, though this is not very reliable. A diagnosis may also be made by isolating the organism from aborted fetuses.

Controlling vibriosis

Vibriosis is best controlled by vaccination, which renders animals highly resistant to infection. Vaccination involves two injections, 4–6 weeks apart in the first year, and a single dose of vaccine each year. Vaccination should be completed 4 weeks before joining.

Prevention

Prevention is the cheapest and most effective way of controlling vibriosis. Vaccinating bulls annually against the disease is the best way to maintain vibriosis-free herds. Vaccinations should be given 4 weeks before joining.

Eradication

Eradication of the disease can usually be achieved in infected herds in a cost-effective manner. It has been shown that most infected bulls and cows can be cleared of vibriosis after vaccination.

There are a number of ways to eradicate vibriosis from an infected herd. The most comprehensive program involves the vaccination of all breeding animals, including bulls, cows, and heifers.

- Two doses of vaccine are given 4 weeks apart.
- Antibiotic treatment of infected bulls at the time of the second vaccination is recommended because vaccination may not be curative in all cases.
- The following year, bulls and replacement heifers are vaccinated.
- From the third year, bulls are vaccinated annually.

In many instances vaccinating and treating only the bulls can break the transmission cycle, with the disease gradually dying out in the herd. One survey showed that although there was a dramatic improvement in the reproductive performance of the infected herds after vaccination, production parameters were inferior to those of a non-infected control herd. For this reason preventive vaccination of bulls should be adopted as a routine management practice in all herds where natural breeding is practised.

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