

Listeria Information Sheet

Of the numerous species of Listeria bacteria, the following two cause problems in sheep and cattle.

L. monocytogenes

This species is widespread in nature but is more prevalent under wet conditions, due to its' ability to proliferate in wet rotting vegetation. This also explains why outbreaks often have a feeding history containing silage. Animal stress during winter is likely to be a factor, probably due to reduced feed availability, inclement weather and environmental factors effecting feed intake and animal health.

Clinical signs

The most common presentation is brain infection where the animal may circle, stumble, and appear disoriented during early stages of disease before becoming recumbent and in most cases death within a week of the first signs being observed. The disease usually only effects around 2% of the mob although on rare occasions we have seen up to 35% of the mob affected. There is a high case fatality rate.

Occasionally causes abortion outbreaks in 2 to 20% of the affected mob. The brain ("circling disease") syndrome and the abortion syndrome rarely occur together in the same outbreaks.

Listeria can cause other disease such as arthritis and mastitis but these are rarely observed.

L. ivanovii

This species is less widespread in the environment compared to *L. monocytogenes*.

Outbreaks in cattle are similar to those caused by *L. monocytogenes*, whereas in sheep, outbreaks manifest with abortion, stillborns and live infected lambs which rarely survive

long enough to walk or suck. Abortion rates have been as high as 30%, but are typically between 5-10% of the mob.

Infection Source

The organism is common in the environment and prevalent in feed hays and grains. These sources have the potential to contain *L. monocytogenes* at low levels, however, in the case of silage which contains more moisture, then multiplication is likely. The organism is isolated from healthy animals but during times of stress (winter, lambing, yarding and transport) the levels excreted appear to increase. Listerial abortion is more common under wet conditions as the bacterium is able to survive for longer periods.

Silage

L. monocytogenes is often found in poorly fermented silage, but it is also found in pockets of aerobic deterioration in otherwise good silage. These areas are indicated by growth of mould at the surface edges. The risk for contamination of silage is greatly increased with the presence of soil.

Transmission

With abortions, *Listeria* is transmitted by ingestion of contaminated material. Transmission of the brain form is considered to be through mouth abrasions caused by harsh feeds allowing the infection access to the brain. It is considered that an outbreak of the brain form of the disease is actually due to infection 3-6 weeks previously (can link to history of feeding high risk *Listeria* and harsh feeds). Abortions typically result 1-2 weeks post ingestion of *Listeria*.

Risk Factors

L. monocytogenes is throughout the farm environment but we only occasionally see outbreaks. This is thought to be due to a lowering in the host's (sheep & cattle) resistance and factors that increase the pressure of the organism within the environment. Risk factors that play a role include the following:

- Poor nutritional state
- Cold and wet periods
- Stress of late pregnancy
- Transport
- Increased stocking rate
- Poor quality silage

Operator health Implications

There are 60 reported cases of human *Listeria* poisoning annually in Australia. *L. monocytogenes* only as *L. ivanovii* thought to be isolated to ruminants only. Guillet et al 2010 documented 3 serious cases in humans albeit immunosuppressed (recent transplant, HIV or heavy illicit drug use) which mean *L. ivanovii* can cause human disease. Most cases are due to ingestion of contaminated foodstuffs, in particular non pasteurised soft cheese or milk, as well as vegetables and meats.

Symptoms in humans include 'flu-like' symptoms that can range in severity and infection in pregnant women can lead to abortions, or the birth of seriously ill babies. Occasionally in severe cases brain infections can occur or even death. Whilst the risk of infection is low the consequence is very serious. It is important to take care handling aborted material for this reason. Must always wear gloves and wash hands thoroughly when handling any aborted material particularly pregnant women.

Animal Treatment

Antibiotics are effective against *Listeria* if used early in the disease, the trouble is that in most cases the disease has progressed significantly and the development of clinical signs associated with brain infection usually results in a poor chance of recovery. In the face of an abortion outbreak due to *Listeria*, antibiotic coverage has led to a dramatic reduction of abortions in some trial work that we have carried out. Animals that abort have increased risk of retaining afterbirth which can lead to secondary infection, blood poisoning and death. Thus aborted animals will benefit from antibiotic therapy.

Prevention

Prevention of this disease is difficult because it is widely distributed in the environment. Reducing the risk factors through management of the stock, particularly in late gestation ewes will reduce infections. It is important to note that we have seen some outbreaks recently where their management history has no evidence of increasing risk factors associated with *Listeria*, apart from having a wet winter and late gestation ewes (very hard to avoid). Any recent stock purchasers are potential carriers and where practical should remain isolated until after the lambing season.

Guillet C, Join-Lambert O, Le Monnier A, Leclercq A, Mechaï F, Mamzer-Bruneë M-F, et al. Human listeriosis caused by *Listeria ivanovii*. Emerg Infect Dis [serial on the Internet]. 2010 Jan [*date cited*]. Available from <http://wwwnc.cdc.gov/eid/article/16/1/09-1155.htm>

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