



## LISTERIOSIS IN SHEEP

### Introduction

Listeriosis is a zoonotic disease caused by the bacterial species *Listeria monocytogenes*. The bacterium is common and lives in soil, water, plant litter, silage, and digestive tracts of ruminants, birds, insects, and human beings. It can be shed by healthy animals which are carriers.

### Sources

Silage is the most common source of the bacteria to sheep. Bacteria grow in spoiled silage with a pH > 5.0 or in silage exposed to oxygen or soil contamination. Silage will look moldy. Big bale silage is higher risk due to its lower density, poorer fermentation and greater risk of puncture damage to the plastic cover.



Photo: Dr. Van Donkersgoed.

The bacteria is also found in moist preserved feeds e.g. moist brewer's grains, and wet spoiled hay bales. Disease is associated with feeding the bottom of spoiled round bales and rotten vegetation e.g. grass clippings. Listeriosis affects all aged sheep, but is more severe in young animals. Disease risks increase with poor nutrition, overcrowding, wet dirty pen conditions, and other stressors.

***Spoiled silage is the most common source of *Listeria* bacteria.***

### Disease transmission

The bacteria is shed in feces, urine, milk, tears, nasal secretions, uterine fluid of sick and healthy sheep, and aborted fetuses. Bacterial numbers in feces increase at lambing, with environmental stressors i.e., changes in weather from cold to wet, and transport. The disease is more commonly seen in the winter and spring in Canada. The disease can occur sporadically in individual animals or in outbreaks, particularly in feedlot lambs, where it can affect up to 35% of the flock over a 2 month period. Typical disease rates are ~ 2.5%. Clinical disease typically occurs within 10 days of feeding poor quality silage.

### Clinical signs of listeriosis in sheep

Listeriosis most commonly causes nervous disease. Abrasions in the mouth associated with feeding hard feedstuffs or erupting teeth increase infection spread along nerves to the brain. The bacteria can occasionally cause abortions, septicemia in newborn lambs and ewes shortly after lambing, mastitis, intestinal disease (enteritis), navel infections (ophthalmitis), and spinal infection (myelitis).

***Listeriosis most commonly causes nervous signs in sheep.***

### Clinical signs of nervous disease:

- depressed, isolate from rest of flock
- off feed, dehydrated
- hunched back
- disoriented, uncoordinated
- walk into corners and under gates
- lean against fences due to weakness affecting 1 side of the body
- circle in 1 direction, with head tilt to same side

### Clinical signs of nervous disease continued:

- facial paralysis on 1 side, with drooping ear, deviated muzzle, flaccid drooping lip, lowered eyelid, dropped jaw, difficulty eating with food hanging out of the mouth (look like a stroke)
- drool profusely with food stuck inside 1 cheek
- eventually fall and can't get up, with seizures terminally.



Thanks to author Dr. Joyce Van Donkersgoed. Photos from the **Feedlot Lamb Pathology Atlas**, <https://ablamb.ca/images/documents/resources/health/Feedlot-Lamb-Pathology-Atlas-Final-for-Print.pdf> and courtesy of Drs. Paula Menzies and Joyce Van Donkersgoed.

### OTHER DISEASES CAUSED BY LISTERIOSIS

- Abortions occur in the last third of pregnancy. The fetus is rotten and the placenta is leathery. A retained placenta and infection of the uterus (metritis) is common.
- If infection occurs in late gestation, it may cause stillborn or weak lambs instead of abortions.



- Blood poisoning (Septicemia) may occur in newborn lambs that are infected by the teat of their ewe, infected milk, from navel infections, or as a congenital infection. Lambs are depressed, weak, thin, febrile, +/- diarrhea. Outbreaks may occur with a high death rate.
- Rarely listeria may cause intestinal infections in weaned lambs, mastitis, eye infections, or spinal infections.

### HOW IS LISTERIA DIAGNOSED?

A tentative diagnosis of listeriosis can be made based on clinical examination. Contact your veterinarian if you suspect this disease.

- To confirm nervous disease, brain samples, including brainstem, must be sent to a veterinary laboratory by your flock veterinarian.
- To confirm abortions caused by listeria, freeze both fetuses and placenta, and then once you have more than 3 (or > 2% of flock has aborted), contact your veterinarian to send them to the vet lab.

For sudden deaths in newborn lambs, contact your veterinarian for a post-mortem, or they may submit the entire lamb to the vet lab.

## HOW DO I TREAT SHEEP WITH LISTERIOSIS

- Early detection and antimicrobial treatment is critical for successful treatment; else death rates are high.
- Segregate sick animals and treat as per your veterinarian's treatment protocol for listeriosis.
- Depending on whether the lamb has nervous disease, septicemia, enteritis, or it is an abortion storm, your veterinarian may recommend a different antimicrobial and anti-inflammatory drug, including a different route of treatment i.e., individual animal.
- If the animal is dehydrated, provide supportive oral fluids.
- If the animal has a protruding eyelid, discuss with your veterinarian an eye antimicrobial and lubricant drug to keep the surface of the eye protected.
- Provide good bedding and fresh palatable soft foods.
- Keep animals in sitting up, not down on their side; else, they will bloat and die.
- If animal is unable to rise, eat or drink, then humanely euthanize in a timely manner.
- Discontinue feeding any spoiled silage or hay because this is the source of the bacteria.
- Clean water troughs and feed bunks regularly (remove excess, stale leftover feed).
- Elevate feed and water off the ground to avoid manure contamination of feeding areas.
- Remove and dispose of any aborted fetuses and placentas.

This is a zoonotic disease, so ensure that gloves are worn when handling sick sheep and hands are washed well with soap and water after handling sheep.

## NEVER TRANSPORT SHEEP WITH NERVOUS DISEASE. THEY ARE UNFIT FOR TRANSPORT, SLAUGHTER OR CONSUMPTION.

Dispose of carcasses in a timely manner as per provincial regulations.

### PREVENTION:

Control is difficult since the bacteria occurs commonly. Currently there is no licensed vaccine in Canada or effective vaccine anywhere.

- Ensure proper storage and handling of feedstuffs to prevent spoiled feed.
- Discard poor quality, poorly fermented or spoiled silage or hay bales, and do not feed spoiled, moldy feed to sheep.
- Prevent water run-on to silage pits and divert silage run-off so it doesn't spoil feed.
- Cover silage pits as soon as silaging is done, and pack silage pits properly to remove oxygen.
- Consider silage additives to reduce spoilage.
- Prevent fecal contamination of silage.
- If using wrapped silage bales, prevent punctures during wrapping. Seal punctures.
- Prevent wildlife and mice damage to silage bales.
- Isolate aborting ewes and ensure pregnant women do not handle them.

### LISTERIOSIS TAKEAWAYS

- **This bacterial infection most frequently causes nervous signs such as circling, as well as abortion and blood poisoning in young lambs.**
- **The source of the bacterium is usually moldy silage.**
- **This zoonotic disease can cause illness in people, so any animal suspected of being a case of listeria infection should be handled wearing gloves, and pregnant women should not contact these animals.**