

BOILS – CASEOUS LYMPHADENITIS (CLA)

The Disease

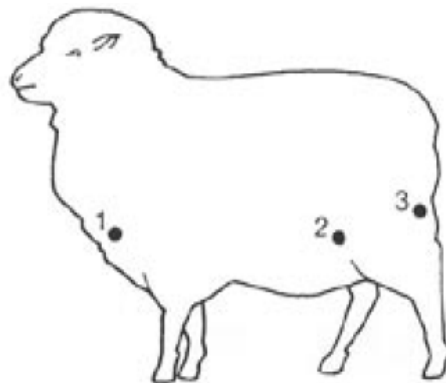
Known as 'boils', 'cheesy gland' and scientifically as caseous lymphadenitis (CLA) (literally: cheesy inflammation of the lymph glands). The causative organism *Corynebacterium pseudotuberculosis* is a bacterium that spreads via the bloodstream to infect the local lymph nodes, often spreading further into the internal tissues and organs, especially the lungs. Unlike organisms such as Clostridia, the boils organism does not exist on the farm as a separate entity, but is brought in with sheep or introduced on equipment such as shearing combs or marking knives. Thereafter it relies on sheep to sheep transmission. This can be direct sheep to sheep transmission (a sheep with a wound is in contact with an open boil on another sheep or the infected sheep coughs infected sputum into the wound), or indirect (an uninfected sheep with a wound rubs against objects contaminated by wounds or coughing from infected sheep). A boil found in the lungs does not necessarily indicate the organism was inhaled, although this is possible. The organism is tough and resistant to drying, being protected by an external fatty membrane. As a result, research indicates that it can survive off the sheep for:

- 8 months in soil;
- 2 months on hay and straw;
- **5 months in shearing sheds on wooden surfaces.**

The abscesses or boils formed are runny when young, firm and layered like an onion when old. The organism prefers to live without oxygen and releases chemicals that kill the defensive white blood cells. This cell death builds a castle of pus around the organisms which further protects them. Boils once acquired are therefore untreatable and remain for the lifetime of the animal.

Some Facts and Figures

- All lambs are born uninfected, but can be infected via the navel and at marking/docking from as early as 6 weeks of age.
- 80% of infections occur at the 2nd and 3rd shearings (as hoggets are normally shorn first in a clean shed with clean equipment).
- The older the sheep, the more likely it is to be infected, so average flock age affects incidence.
- Extensively managed flocks can reach a 30% level of infection, intensive flocks up to 50%. The average through the abattoir is currently 10% of all kills.
- At initial infection the animal runs a fever. This causes a one off 4-7% clean wool loss and a wool break. This is a relatively low cost.
- The usual external sites are the glands at 1. the shoulder, 2. the groin and 3. behind the knee. These glands drain the regions commonly nicked at shearing, neatly demonstrating one of the main causes.



- 50% of these will also have internal abscessation. This hidden level of disease can cause ill thrift, emaciation, higher mortality, poor fleece, reduced fertility and reduced lambing %. This is a much higher but unquantifiable cost.

The Costs of the Disease

Two areas:

(1) On the farm: (a) An average 5% clean wool loss at initial infection currently works out to approx. 1p per sheep per annum assuming a 30% level of flock infection ie: a relatively small cost; (b) Sheep with internal abscessation carry a much higher unquantifiable cost in lost wool and lambs, which is likely to be significant.

(2) At the abattoir: total and partial carcass condemnation, carcass trimming, added inspection and labour costs.

Control Measures:

(1) Vaccination. Vaccination is probably a non-starter in the Falkland Islands from the point of view of sheer cost, except possibly in the worst affected farms with a high incidence of internal abscessation. Vaccines such as Glanvac-3 or -6 reduce the cost by combining the 'boils' vaccine with the clostridial vaccines, however not only do lambs need two injections 4-6 weeks apart, but also annual boosters prior to shearing must be kept up or little effect will be seen. Even with regular boosters it takes at least 4 years to see a fall off in infection. The cost benefit of vaccination depends on the following factors:

- The prevalence of infection in the flock.
- The lamb/adult ratio (because the problem increases with average age of flock).
- The cost of vaccine.
- The value of wool.
- The value of meat (or possibly with stud flocks, the value of the animal).
- The on-farm incidence of clostridial disease.

It may have a role to play in the future and on some farms.

A vaccination trial carried out in the Falklands in the early nineties has left no conclusive results due to the trial seemingly being discontinued.

(2) Farm management. Farm management revolves around (a) hygiene measures; and (b) flock management, and is designed to prevent the spread of boils from infected to uninfected sheep.

Infection can occur at any time sheep are mobbed together, but shearing creates the perfect conditions. Following the bacteria's opportunities as it passes through the shed helps to understand the best management strategies:

The holding pens are a small potential source of spread, especially if the sheep are put in and held overnight to dry, but at this point the animals are still protected by a good depth of fleece. Coughing may be the main source, but wounds as entry points will be few. Nonetheless, some infected sheep have permanently discharging boils which will smear the infective bacteria along the sides of pens and especially races.

The shearing board is when the bacteria's opportunities soar. A nicked boil will contaminate the comb and cutter, the shearer's strides, shoes and even the shearing board itself. Because of the greasy nature of the organism it will persist unless specifically disinfected, and each subsequent sheep will be directly infected by the

handpiece, or from contact with these various surfaces as the animal is handled and shorn. It is no coincidence that the commonest external boils relate to nick sites.

The chute is a confined space where nicked sheep slide against the same contact surfaces. A ruptured boil will smear these surfaces and many subsequent sheep will become infected.

The counting out pens are a major site for further infection. Research indicates that the longer sheep are held in the counting out pens, the more they become infected. The sheep are shorn of their protective fleece, covered in nicks, and press and rub against each other, the perfect scenario for transmission of boils between animals. In addition coughing sheep will also infect the wounds.

Management Strategies:

Following on from the above:

1. Start the season with a clean shed. Muck out and scrub down all the surfaces paying particular attention to contact areas such as races, chutes and boards. Use good detergents as these dissolve fats. If lots of organic material is left on boards and fences it may hinder the action of the disinfectants. Finally spray such surfaces with disinfectant and don't rinse off. Ensure all handpieces, combs and cutters are properly disinfected, and shearers' strides and shoes are fresh. Bleaches are acceptable for scrubbing. Phenol or iodine based disinfectants are best for spraying equipment.
2. Shear the young sheep first so that only the cleanest equipment and facilities are used, and keep them apart from the older sheep after shearing.
3. Be firm with the shearers, but make it easy for them to comply. Have disinfectant solutions and cleaning cloths, perhaps handy sprays or dips, readily and easily available; ask them to routinely clean their gear at smokos and dinner; impress on them that without doing so they are in effect repeatedly injecting a disease that will persist until the animal dies.
4. If a boil is nicked, take action. Clean all infected gear, separate that sheep off and turn it out, spray the chute if it traveled down.
5. Any measures to reduce the holding time and the density of penned sheep will help. This especially applies to the counting out pens. Try to turn out off the shears – it is one measure that gets rid of a major site of infection.
6. Supply small hand pump sprays containing antiseptic solutions for the larger shearing wounds (eg: iodine solution).
7. Regularly throughout the day spray the main contact areas such as boards, chutes, and races with an appropriate non-foaming disinfectant. Showing diligence in front on the shearers will influence their actions. **Tip:** The organism is fatty and waterproof so not all disinfectants work. **Phenol** based disinfectants, which are readily available, are said to work well. The ideal type of sprayer would be a good volume garden rose sprayer with hand pump and adjustable spray nozzle.