

Flock Health Planning

Clostridial Diseases



Clostridia are a group of spore-forming organisms found in the soil and environment, which cause rapidly fatal disease by producing toxins. Blackleg, braxy, black disease, tetanus, malignant oedema and the enterotoxaemias, including lamb dysentery, struck and pulpy kidney, are all caused by clostridia.

Clostridial bacteria produce spores, a very resistant form, which can survive for very long periods in soil. These spores are frequently found in the soil, faeces and intestinal contents of normal animals. As a result, some pastures can have high levels of spores and present a particularly high risk of clostridial disease for sheep. The germination of spores followed by rapid multiplication and toxin production result in fatal infection. Clostridial infections progress rapidly and many sheep may be found either dead or dying. Intensive treatment with antibiotics is rarely effective.

Diseases caused by Clostridia

Pulpy kidney is a common and usually fatal disease caused by *Clostridium perfringens* type D. It is usually seen in growing lambs of 4 to 10 weeks of age and in finishing lambs of 6 months of age and above. The disease is very acute and the majority of cases are found dead. Trigger factors include abrupt changes in feed, such as sudden introduction to silage aftermath, brassicas or high levels of concentrates. It is often the best and fittest of a group of animals that develop the disease. **Lamb dysentery** caused by *Cl. perfringens* type

B is generally seen in stronger lambs under 14 days of age typically towards the end of the lambing period. Lambs are usually found dead. **Struck** caused by *Cl. perfringens* type C is the rarest of the enterotoxaemias.

Blackleg caused by *Cl. chauvoei* usually follows trauma during shearing, docking, assisted lambing or castration but occasionally causes high losses in hoggets wintering on root crops. Soil-contaminated wounds are responsible for the vast majority of cases of disease. **Black disease**, caused by *Cl. novyi* is frequently associated with liver fluke which create the conditions in the liver suitable for clostridial multiplication and toxin production.

In the early stages of **tetanus** (*Cl. tetani*) the lamb or sheep becomes still and unwilling to move. More severe general stiffness and recumbency follow leading to tetanic spasms and ultimately death. The route of infection for the spores of *Cl. tetani* is often through a wound eg castration, tailing or shearing; or via the navel.

Braxy, caused by *Cl. septicum*, occurs in autumn and winter, usually in lambs born the previous spring. **Malignant oedema** is an acute, rapidly fatal wound infection caused by various combinations of clostridial organisms. ***Cl. sordellii*** has been identified as a cause of acute abomasitis in lambs and also causes losses in ewes around lambing time. Changes in diet or management may be precipitating factors.



Treatment and prevention of Clostridial disease

Vaccines are readily available and ensure effective protection against most forms of clostridial disease encountered in the UK. Sheep that have never been vaccinated against clostridia need TWO injections at least 4-6 weeks apart for protection. Vaccinated animals, including adults, require booster injections every 12 months.

Breeding ewes should be vaccinated 4 weeks before lambing to ensure their colostrum contains high levels of antibodies to protect the newborn lamb. Failure to vaccinate against clostridial disease or forgetting to do so could result in the high levels of losses seen up until the early part of the 20th century.

Ewes provide high levels of antibodies in colostrum. Lambs that get enough colostrum from adequately fed vaccinated ewes receive sufficient maternal antitoxins to protect them for about 12 weeks. This maternal protection is essential to prevent lamb dysentery, tetanus and pulpy kidney.



Lambs from fully vaccinated ewes can start their primary course from 8 weeks of age. Colostrum derived antitoxin does not appear to interfere with response to the vaccine. The choice of vaccine to be used depends on the ultimate fate of the lamb. Those to be retained for breeding require full protection. Those for early slaughter may only require protection against pulpy kidney disease and tetanus, while lambs aimed at the store market or autumn finishing require a wider range of antigens to give additional protection against braxy, blackleg and malignant oedema.

Control of an outbreak of clostridial disease involves management and therapy. It is usually too late to treat individual cases by the time they are identified. Vaccination in the face of an outbreak of enterotoxaemia can be effective. Alternatively, particularly for lamb dysentery and tetanus, antisera can be administered. Management measures for some of the clostridial conditions include the removal of the remainder of the flock from a particular pasture or a reduction in concentrate feeding. The

reduction of stress factors, as well as the gradual introduction of any new feeds or feeding regimes, also reduces the likelihood of disease. Pay attention to hygiene at castration, tailing, shearing and lambing to reduce the risk of clostridial spores gaining entry.



Managing the risk of clostridial disease in sheep

Lowest risk



1. All ewes vaccinated and given booster vaccine dose four weeks before lambing.
2. Ewes vaccinated but forget to give booster doses 4 weeks before lambing
3. Ewes vaccinated but forget to vaccinate replacement stock and give booster doses
4. Not vaccinating against clostridial diseases

Highest risk

Flock health planning – clostridial disease decisions

Is there a problem?

Date: _____

Condition	Cases – this year	Previous 5 years	Target for next year
Pulpy Kidney			
Lamb Dysentery			
Braxy			
Blackleg			
Black Disease			
Struck			
Other enterotoxaemias			

Is any action planned? Yes/No

Planned action	Product	Target groups	Dates
Vaccination		Previously vaccinated ewes	
Vaccination		Replacements not previously vaccinated	1. 2.
Vaccination		Lambs	1. 2.

Other decisions

Treat lambs from unvaccinated ewes with antiserum?

Yes/No

Replacement policy

Find out vaccination status of any replacements bought.

Flock health planning clostridial disease review date: _____