

NADIS Health Bulletin



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Health Quiz

Scald and Footrot

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Most outbreaks of lameness in sheep are caused by scald (interdigital dermatitis) or footrot. Scald and footrot share the same primary cause, the bacterium *Fusobacterium necrophorum* which cause damage to the superficial layer of the skin between the claws and enables the establishment of other bacteria, including *Dichelobacter nodosus*, which causes footrot. The important risk factors for foot lameness are damage to the interdigital skin by constant exposure to moisture and mechanical trauma.

SCALD

Scald (fig 1) is the most common cause of lameness in sheep occurring whenever underfoot conditions underfoot are wet. At grass, the incidence is generally greater in lambs than in ewes, but scald can become problematic in housed ewes, where straw bedding becomes wet and warm. In mild cases the interdigital skin is red and swollen and covered by a thin layer of white necrotic material. There is no under-running of the hoof wall or sole and no foul smell.

Management and control

Pasture around feed troughs and gateways can become trampled, muddy and heavily contaminated with faeces therefore regular movement of troughs and avoidance of these areas can significantly reduce the incidence of foot diseases.

Individual cases of scald can be treated topically using oxytetracycline aerosol sprays. When several animals are affected, walking sheep through a 10% zinc sulphate solution or 3% formalin in a footbath usually provides effective control. It is usually necessary to repeat the footbathing at weekly intervals throughout the risk period. Afterwards foot bathing sheep must stand in a dry area so that the formalin or zinc sulphate can dry on the feet. At concentrations greater than 5%, formalin can cause severe irritation of the interdigital skin. The practice of regularly replenishing footbaths with a few splashes of concentrated solution should be avoided.

FOOTROT

Footrot is an extremely painful disease of sheep of all ages. Affected animals can lose weight rapidly, and have reduced wool quality and yield. Lameness affecting rams



Fig 1: Swelling and necrosis of the superficial layer of the interdigital skin due to scald



Fig 2: Early footrot with inflammation of the interdigital skin with slight under-running of the axial margins of the sole

during the breeding season can result in failure to serve ewes. The severity of footrot depends partly on the strain of *D. nodosus* present. Mild *D. nodosus* strains result only in separation of the hoof horn at the heels and back of the sole (benign footrot), while virulent strains can result in complete separation of the horn of the hoof wall and sole.

Clinical signs



Fig 3: Footrot with under-running of the sole and axial hoof wall



Fig 4: Virulent footrot lesions - under-running and severe inflammation extending to the abaxial hoof walls



Fig 5: Virulent footrot lesions with complete under-running of the sole and hoof wall and overgrowth of the toes



Fig 6: Blowfly strike in a case of virulent footrot

The first sign of footrot is swelling and moistening of the interdigital skin (fig2). A break occurs at the skin horn junction from where infection spreads under the horn tissue so that the wall of the hoof becomes separated and the sole under-run (fig3). There is a characteristic unpleasant smelling discharge. In longstanding cases, the hoof walls and toes become overgrown and misshapen, trapping dirt and inflammatory exudate between the inflamed, granulating soft tissues of the sole and overgrown horn. Animals with virulent footrot (figs4-6) are extremely lame, remain recumbent for long periods and may carry the affected leg. When both forelimbs are affected, animals may walk on their knees. Severely affected feet often become flystruck (fig6).

Footrot control

Various methods can be employed for the control of footrot -

- **foot bathing**
- **foot trimming**
- **antibiotic injections**
- **vaccination**
- **selection for resistance**
- **eradication**

In practice, footrot control is based on a combination of the above.

It is important to distinguish between those methods which are useful for treating severely affected sheep, such as trimming and parenteral antibiotics, and those which will help control disease when used correctly, such as foot-bathing and vaccination.

Footrot control utilises whole-flock control strategies such as foot-bathing and vaccination from the start of the high risk periods for disease transmission (fig7), rather than



Fig 7: Footrot control should be instigated early during the transmission period, when infection is limited to the interdigital skin and there is no under-running of hoof



Fig 8: Footbathing is most effective for the control of footrot when performed before under-running occurs



Fig 9: The main role of hoof trimming is for the treatment of severe footrot lesions, rather than flock control



Fig 10: Parenteral antibiotic injections can be useful for the treatment of advanced footrot lesions

individual handling of each affected animal in order to treat advanced cases.

Footbathing: Application of antibacterial solutions in a foot bath (fig8) is most effective for the control of footrot when practiced during the early stages of the disease, when infection in previously unaffected sheep is limited to the interdigital skin and does not involve the hoof wall (see foot bathing method above described for scald). Foot bathing usually needs to be repeated at fortnightly intervals during warm and wet weather when the risk of transmission is high, but when weather conditions are dry such treatment may achieve a 90 – 100% cure rate. Foot bathing alone is not particularly effective for the treatment of advanced footrot lesions.

Foot trimming: Traditionally routine annual foot trimming has been recommended for the control of footrot. However, foot trimming has no role in preventing infection and should not be considered as a preventive method when planning control programmes (fig9). Hoof trimming is only useful to limit the effect of the disease and assist in

the resolution of the lesion after the infection has under-run the sole and hoof wall in uncontrolled cases of virulent footrot.

Antibiotic injections: The injection of high doses of penicillin can be useful for the treatment of advanced cases of virulent footrot where there is severe under-running of hoof horn (fig10).

Vaccination: Vaccination can be a useful adjunct for both control and treatment of footrot. Vaccination provides protection against infection for about 4 - 6 months. In some cases a single dose of vaccine administered in the face of an outbreak can be used to reduce the severity of the disease. The net effect of vaccination can be to reduce both the prevalence and severity of footrot in the flock. However, whole flock vaccination alone does not eradicate footrot and can prove expensive. In many flocks, vaccination is targeted at specific high-risk groups of animals, such as rams before mating.

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