



# Bovine Digital Dermatitis (BDD)



**Bovine Digital Dermatitis (BDD) is a common cause of infectious lameness worldwide.**

BDD lesions can be of slow (acute) or gradual (chronic) onset and lameness can range from mild, to severe (most common). The lesions affect a large area of the haired soft tissue portions of the foot, classically above the heel bulbs of the hind feet. Typically BDD lesions are extremely sensitive and readily bleed (acute lesions). It is this sensitivity which causes lameness. Cows are often seen shaking the affected foot once placed.

Severity of the lameness caused, combined with the high herd incidence, make BDD a cattle industry welfare concern. The negative financial impacts of the disease (milk drop, treatment costs, labour costs) and effects on herd health parameters, such as reproduction, make BDD a costly disease to ignore. Conservative estimates of costs range from \$100-\$200 per case of BDD.

## The cause

The precise cause of BDD is uncertain, but spirochete bacteria are the most frequently identified organism from BDD lesions.

Spirochetes are a group of mobile bacteria which includes other animal disease-causing bacteria such as *Leptospira* and *Treponema*. It is thought that the BDD-causing bacteria are able to enter the hairy parts of the foot by penetrating at the weakest points (hair follicles and sebaceous glands). Damage to the surface (caused by constant wetness, stones or gravel, wet muddy contaminated environments etc) make the skin more susceptible to invasion. However, there also appears to be an individual specific 'cow factor' as certain individuals seem far more likely to suffer BDD whereas others within the same environment may never contract the disease.



Once within the soft tissues, these bacteria release enzymes which cause more skin damage, hemorrhage and pain.

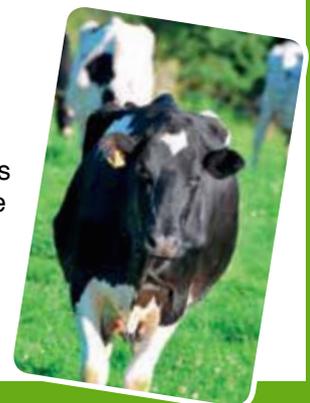
## How are the bacteria (Treponemes) transmitted between individual cows and farms?

Historically it was thought that the causal organism of BDD was found within unhygienic environments and particularly slurry. However, *Treponemes* generally do not survive for long periods of time within slurry. Recent discoveries have shown that BDD-associated *Treponeme* species



have a much greater tolerance of air, and are far more likely to be transmitted directly from cow to cow by contact, and brief spells of survival away from the cow in slurry, muddy patches, puddles and water-only foot baths before being deposited on the next cows' feet.

This means the most likely route of spread between farms is from direct cattle movements and direct contact between cows.





### HOW COMMON IS BDD IN NEW ZEALAND?

Bovine Digital Dermatitis (BDD) is still uncommon in New Zealand with only a handful of confirmed cases reported, however the number of diagnosed cases is increasing. In most incidences, the affected animals have either gone unnoticed, been separated out into the lame mob until natural resolution or been mistakenly treated for foot rot with penicillin-based antibiotics which have then resolved.

Worldwide, BDD is now endemic (spread throughout) in most intensive dairy countries with high economic effects. With more information about the disease being found in these countries, New Zealand has the opportunity to delay (or possibly fully prevent) the long term establishment of the disease in our country.

A BDD Working Group has been set up in NZ to develop strategies for prevention of the disease and one of the key questions requiring an answer is: "How much BDD is already present in New Zealand?" If we can answer this question it may lead to discovering the common factors that have contributed to these few herds being infected and help with prevention strategies.

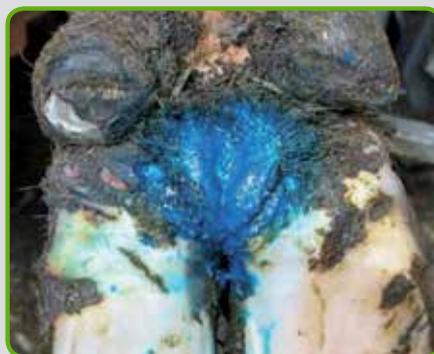
The BDD Working Group strongly encourages any farmer who discovers lesions similar to those in the photos to contact their local XLVets veterinarian for testing and further advice.

### TREATMENT

In other countries, there has been a variety of different treatment options used with variable success, which suggest that the best approach hasn't been found yet. Laboratory studies do show that penicillin based antibiotics are by far the most effective.



### PREVENTION



In New Zealand, early identification on individual farms is necessary to prevent endemic disease in the national herd.

More work is required on understanding the transmission of spread and then ultimately designing strategies to break this cycle. Effective treatment, with perhaps penicillin-based antibiotics, and preventing spread between herds via direct contact between cows may be the best methods at this stage to limit the incidence in New Zealand.

For more information contact your local XLVets practice:

