

Digital dermatitis – the three-pronged approach



Figure 1. Hoof infected with Digital dermatitis

Digital dermatitis (DD) is a skin infection found near the bulb of the heel that affects dairy cattle worldwide.

- DD costs on average approx £82 per case
- Currently, no single effective treatment or preventive measure for DD exists

Cause of Digital Dermatitis:

- Bacteria called Treponemes are found in all DD lesions and are thought to be the cause of DD
- Treponemes are, typically, found in the gut of cows and do not normally cause disease in the gut
- Some Treponemes have the potential to feed on secretions from the mucous membrane of the gut which can be passed out in cattle faeces
- The DD Treponemes are the same family as those in the gut but are slightly different in type
- Three different types of Treponeme that cause DD have been identified
- There is evidence that DD is spread in slurry but other transmission routes require investigation

Digital Dermatitis is very common and tricky to control in many herds but the three pronged approach will help to reduce incidences and limit its impact within the herd.

The three pronged approach is:

1. **Keep it out**
2. **Don't let it spread**
3. **Build resilience (healthy skin)**

No single element is likely to work on its own.

For example, some farmers expect foot bathing alone to solve the problem. It won't.

We are learning more and more about the disease and the bacteria responsible but there are still things we don't know for certain, such as:

- Why are some cows in a herd more susceptible than others?
- Do treated cows always remain carriers?
- Can DD bacteria be carried by symptomless carriers?
- What is the perfect disinfectant for footbaths?
- Is it possible to eliminate DD from an infected herd?

The three-pronged approach comes from what we do know, such as:

- DD is caused by a bacteria called treponemes and there are several different strains
- The bacteria live on skin of infected cows, often quite deep in the skin layers
- Infected cows are the most important reservoir of infection within a herd
- **Blitz treatment*** of all individual cows affected (with a lesion) has the best impact on reducing DD in herds
- For DD infection to cause lesions, the skin must first be damaged, usually by wetting it. This is how slurry makes DD a bigger problem in some herds
- Infection is worse when cows' immunity is low and when the skin around the feet is in poor health

* Blitz treatment: this means lifting the feet of cows with DD lesions. The lesion is cleaned thoroughly using dry cotton wool and then a licensed treatment is applied (e.g. tetracycline antibiotic spray; thiamphenicol antibiotic spray, or licensed chelated copper product). Bandaging is not necessary. Repeat the applications as directed on the product use instructions.

1. Keep it out – Biosecurity



Figure 2. Hoof trimming knife being disinfected before use (left) and being used to trim a cows hoof (right)

(a) Avoid introduction by animals

- Even if you already have DD on your farm, there are several different strains of DD bacteria. Some seem to be more aggressive than others. Therefore, you want to avoid bringing new strains into your herd
- If you don't already have DD in the herd, keep it out, preferably by maintaining a closed herd
- If you must buy in cattle, buy from as limited a number of herds as possible, with known DD history showing low prevalence. Inspect all four feet of bought-in cattle and treat any lesions; look out for very mild lesions
- Sheep also carry DD bacteria; avoid co-grazing

(b) Avoid introduction by equipment and people

- Cattle that are carriers of the DD bacteria are the biggest risk, but the bacteria can be carried on objects too. Avoid sharing equipment
- Ensure external hoof trimmers use equipment sanitised by a Defra-approved disinfectant
- Providing boots and other protective clothing that is limited to your farm is preferable to expecting visitors to disinfect on arrival

Consider the frequency of disinfection for hoof trimming knives

- Between hooves
- Between cows
- Between farms

2. Don't let it spread – Biocontainment



Figure 3. Using a topical spray on lesions can reduce the risk of transmission between cows

(a) Avoid transmission between cows and between groups

- Cows with lesions are the main reservoir of infection; these can be segregated until they have healed
- Disinfect or replace gloves between treating cows. Clean and disinfect trimming equipment between feet, cows and farms
- Reduce movements of animals, people and manure between groups

(b) Reduce your reservoir of infection

- Cows with DD are the main source of infection to other cows in the herd
- The sooner you treat cows with lesions, the quicker they will recover. This is good for them, and also for other cows in the herd because they are then less likely to become infected too. **Blitz treatment*** all clinical cases to have a big impact initially

- Some cows develop regularly recurring chronic cases: either segregate them or consider culling from the herd

(c) Have an early detection system

- Early cases are rarely very lame. Use at least one of the following methods:
 - i. Regular (e.g. 2-weekly) mobility scoring by a trained operator to detect mildly lame cows with new lesions
 - ii. A reliable automatic lameness detection device (e.g. sophisticated pedometer data recorder)
 - iii. Inspect feet carefully with a small mirror while cows are being milked or standing at a feed barrier
- If you do not use any of the above methods, you **will** be missing early cases. Using more than one of these methods will improve your early detection rate

(d) Treat promptly and effectively

- Don't wait – treat immediately
- Use only trained and qualified external hoof trimmers (either NACFT or CHCSB standard)
- Be trained in DD treatment
- Use only approved **licensed** treatments
- Follow up initial treatments to ensure complete recovery

(e) Use footbaths effectively

- If done badly, footbathing can make DD infection **worse**. This is because the skin can be damaged by chemicals or wetting, and/or the footbath becomes grossly contaminated and helps spread the DD bacteria from cow to cow
- When done well, hoof disinfection can reduce spread of infection and limit the severity of lesions
- Use the AHDB Healthy Feet resource, **Designing your footbath**
- Dirty feet do not disinfect easily: wash feet before disinfecting, if necessary
- Use an approved disinfectant (**not** antibiotic) and check the dilution carefully. When you are sure your footbath is correct, adjust the frequency of use, depending on challenge and infection level

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3. Build resilience – Healthy skin



Figure 4. Healthy hoof

(a) Promote healthy skin

- Slurry and moisture damage the skin above the hooves; this is the main effect of slurry in the spread of DD bacteria
- Keeping feet **clean** and **dry** promotes healthier skin with better defences against infection
- Clean, dry feet are more likely with: good cow comfort (longer time lying down, out of the slurry); low standing times (e.g. during milking); wide passages and no overcrowding; good manure handling, such as with slatted floors; regular scraping and no broken concrete; good ventilation; dry bedding
- Keeping skin around the hooves clean and dry is generally a greater challenge with housed cows

(b) Build resistance through genetics

- Some individuals are more prone to DD; do not breed from these cows
- Use the AHDB Lameness Advantage to select sires with Predicted Transmitting Ability (PTA) to reduce the incidence of lameness

(c) Build resistance through strong immunity

- There is no DD vaccine, and details about individual cow immunity are complex
- Reduce stress (e.g. concurrent diseases, or being fresh calved, which increases prevalence of DD lesions)

- Reduce stress by focusing on good transition cow management, avoiding overcrowding and reducing unnecessary group changes
- Keep a healthy herd by tackling BVD, IBR, Johne's disease and other infectious diseases common in dairy herds, which are known to reduce immunity

Be targeted. Be strategic.

Work with a Healthy Feet Programme mobility mentor. They have the expertise to help you reduce DD by putting in place the correct measures for your farm.

The Healthy Feet Programme works. Use it.

Further information

For more information on the Healthy Feet Programme please visit dairy.ahdb.org.uk/technical-services/healthy-feet-programme or email, healthyfeet@ahdb.org.uk

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