Collaboration of knowledge and shared best practice in lameness

Author: Sara Pedersen

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Lameness is one of the biggest welfare concerns affecting dairy cows in the UK, with a study in 2016 reporting an average prevalence of 30% (Oikonomou, personal communication).

Figure 1. Lameness is playing a more prominent role in many milk contracts and many are addressing the issue in farmer workshops.

This represents an enormous challenge to the industry – not only do high levels of lameness impact on the consumer’s image of the industry, but there is the financial impact on farmers. However, far outweighing both is the impact on the cow.

Wide-ranging impact

Lameness affects the whole supply chain, from the cow to the farmer – and his or her team who are both living with or trying to tackle the issue – to the milk processor trying to promote its brand. When it comes to farmers and their teams this does not only include their staff, but the wider advisory team including the vet, nutritionist, consultant and foot trimmer. The key to reducing lameness is through engagement of all stakeholders from the cow up, but also the processor down.
Lameness is taking more of a prominent role in both farm Red Tractor Assurance and individual milk processor contracts. Many direct line contracts stipulate regular mobility is undertaken and lameness is the focus in many of the workshops being run by milk processors nationwide (Figure 1).

The rising profile of lameness in the national herd leaves the industry vulnerable and, for the future success in reduction at a national level, a collaborative approach is essential.

**Role of farm vets**

The farm vet plays a key role in knowledge transfer and overseeing the lameness reduction plan on the farm – bringing together the whole “team”. The Agriculture and Horticulture Development Board Dairy Healthy Feet Programme provides a structured approach to tackling lameness in herds and is a good framework for building long-term plans, and a regular review process, which is so crucial to monitoring progress.

**Communication**

**Vet and the farm team**

Instigating change on farm can be difficult, particularly if it adds time and effort into an already busy daily routine. It is important to engage all staff members dealing with cattle on farm and ensure they understand why changes are required. Staff training sessions can be time well spent and regular dissemination of results with a progress review is important for ongoing motivation.

Where a number of staff are employed on the farm, allocating individuals to particular tasks can ensure a sense of ownership and make it more likely these are carried out. An important part of any lameness reduction plan is the early identification of lame cows, so it is crucial a system is in place on every farm to easily report new cases of lameness and, most importantly, these are followed up. Fortnightly mobility scoring is recommended as best practice and should be carried out either by a member of staff trained in scoring or by an independent scorer.

**Vet and the foot trimmer: sharing knowledge**

One of the key relationships for the vet to develop is that with the foot trimmer (whether internal or external). The importance of vet and trimmer communication is emphasised in the BCVA/The National Association of Cattle Foot Trimmers (NACFT) code of working practices, which was updated in June 2016. The document also outlines recognised best practice when it comes to trimming and treatment, as well as clear guidelines as to what constitutes an act of veterinary surgery when treating lame cows.

Analysing foot trimming records and identifying the most common lesion(s) causing lameness on
farm is essential to focus efforts and investment on the greatest risk factors. For example, if digital dermatitis (DD) is the most commonly found lesion, then reducing infection pressure and effective footbathing will be the most important areas to focus on; however, if sole ulcers are the most common issue then transition cow management and comfort need to be targeted.

As preventive measures are put in place, ongoing communication with the foot trimmer is key to ensuring changes are being seen at the “foot end” and a system needs to be in place whereby any changes in foot health – particularly an increase in lesion prevalence – triggers a follow-on discussion with the farmer.

**Routine preventive trimming**

While there remains a lack of evidence around when and how cows should be trimmed to prevent lameness, a number of common errors are seen when trimming cows that could be causing more harm than good (Panel 1).

**Panel 1. Common trimming errors**

- Inaccurate toe length measurement
- Over-trimming in the toe region
- Removing too much horn from heel of the medial claw
- Removing wall horn from the abaxial and axial walls
- Not removing sufficient loose horn around lesions
- Incorrect treatment of lesions – for example, applying caustic products such as copper sulphate

The vet plays an important role in identifying when this is the case and to explain why these may be detrimental to the function of the cow’s foot. Where professional foot trimmers are employed on the farm, it is preferable to ensure they are a member of an association, such as the NACFT or the recently launched Cattle Hoof Care Standards Board, and undergoing regular assessment to ensure they adhere to the five-step method of trimming.

**Treatment of lesions**

Treating lame cows quickly and effectively is a key component of any lameness reduction
programme, as fortnightly scoring following prompt treatment of new cases of lameness is proven to reduce lameness at herd level (Groenevelt et al, 2014). Every farm should have at least one person trained in “foot first aid” with the ability to treat lame cows as soon as they are identified.

The earlier lame cows are treated, the greater their chance of recovery. However, they must also be treated correctly and the vet plays an important role in knowledge transfer and disseminating research results to farm level and incorporating them into treatment protocols – whether for the external trimmer treating cows or someone “in house”.

- **Claw horn lesions**

![Figure 2](image.png)

**Figure 2.** Cure rates of cows with new or chronic cases of lameness randomly subjected to different treatment methods (Thomas et al, 2015 and 2016). Note the trim plus NSAID group was omitted for the study involving cows lame for more than six weeks.

While the use of blocks in the treatment of lame cows is commonplace, clear evidence shows the benefit of the addition of an NSAID to the treatment protocol for early lameness cases.

A randomised control trial found treatment with a block and three days of ketoprofen (nil milk withhold) resulted in significantly higher cure rates compared to therapeutic trimming, application of a block or ketoprofen alone (Thomas et al, 2015). It should be noted when cows have been lame for six weeks or more prior to treatment the additional benefit of the block/NSAID was not seen (Thomas et al, 2016) and overall cure rates were considerably lower (Figure 2). Therefore, early identification is important to ensure maximum benefit is seen from this treatment protocol.

When treating claw horn lesions the temptation is often to put something on the lesion; however, commonly used topical treatments can be detrimental to healing. A small scale study by Shearer et al (2015) recruited 18 cows with claw horn lesions and randomly divided them into three treatment groups – topical oxytetracycline powder and bandage, copper sulphate and bandage, and a control group with no treatment and a bandage.

Lesions were scored 21 days after treatment for the visual presence of granulation tissue and evidence of re-epithelisation (a sign of healthy healing). Cows that received oxytetracycline or copper sulphate treatment were significantly more likely to have granulation tissue present and less
likely to have evidence of re-epithelisation. As well as potentially delaying wound healing, these topical treatments also resulted in pain, since cows that received these treatments exhibited nearly three times as many pain-related behaviours following treatment compared to cows in the control group. Therefore, careful consideration needs to be given to what is placed on the corium – when it is uninfected the most beneficial action is often to do nothing.

Figure 3. On welfare grounds, severe lesions should be trimmed out under local anaesthesia, which requires a team effort from the vet and trimmer.

Another area where the vet and trimmer can work closer together is when tackling difficult lesions, such as toe necrosis or extensive wall ulcers, where local anaesthesia of the foot is required both on welfare grounds and to aid in paring of the lesion around the infected corium (Figure 3). Systems must be in place to ensure the vet is notified of cases such as these – not only to ensure they can be treated effectively and successfully, but also so preventive measures can be put in place to reduce the risk of future cases.

- **Digital dermatitis**

When it comes to infectious causes of lameness, DD is an ongoing problem on many farms and potentially the lesion that has the largest array of treatments (Figure 4). It may be only one or two lesions are identified at a trimming visit; however, this could be masking a much bigger underlying problem.
Communication between the trimmer, farmer and vet are important to identify when flare-ups are occurring, so reasons for this can be identified and control measures put in place. Since the footbath is only a preventive measure, rather than acting as a treatment, it is important cows are treated individually. However, instead of relying solely on the trimmer to identify and treat these cows during visits, it is important farm staff are vigilant and treat any cases as soon as they see them – both for welfare reasons as well as reducing potential spread to other cows. It is important to note mobility scoring will not identify all cases of active DD (M1 and M2 stages), therefore regular surveillance in the parlour or at the feed barrier is required to identify cases.

A number of considerations need to be taken into account when deciding on the correct treatment protocol for DD lesions on farms: firstly, is the product licensed and, secondly, is it potentially causing pain or unwanted tissue damage? In relation to the first, many unlicensed products are regularly supplied to farmers and used without appropriate statutory milk withholds in place. Many farmers do not appreciate this puts their milk contracts in danger and, at a time when antibiotic use is under scrutiny, it is important vets are responsible when prescribing and do not put themselves, and their clients, at risk.

While bandages are commonly used in treating DD, research carried out by the University of Guelph in Canada focused on treatment success when active DD lesions were treated with or without the use of a bandage. A study by Cutler et al (2013) compared healing rates across 214 cows with active DD lesions. Half of the lesions were treated with topical antibiotic powder under a bandage (removed at 48 hours) and half with a topical antibiotic paste only. When healing rates were compared at 8 to 12 days post-treatment no significant difference in healing was seen between the groups – that is, in the study, bandaging was of no statistical benefit.
Other risks are associated with bandaging. If not removed within the recommended 24 to 48 hours, tightening of the bandage may occur and many reports of damaged tendons exist as a result of this. Chemical burn is also a risk if cows walk through a footbath, since the chemical soaks into the bandage, which is in permanent contact with the skin. Once the product is no longer working, the bandage can potentially create the perfect environment for DD to thrive again, with a low oxygen environment, moisture and warmth. Therefore, if used, appropriate measures must be put in place to prevent them being left on for more than 48 hours.

It is also important to consider why the bandage is needed; what is it holding on the lesion? Licensed treatments for DD are in the form of aerosol sprays and, therefore, do not require bandaging – also allowing for repeated treatments. While products such as copper sulphate have commonly been used in the past, these are no longer recommended, as not only are they painful for the cow and can be damaging to the raw skin, they are also caustic and it is thought they can encourage bacteria to go deeper into the skin and encyst – creating a chronic carrier state (Döpfer, personal communication).

While various antibiotic powders are also used, these are not without risk. All powders are unlicensed and, therefore, carry a statutory seven-day milk withhold. Research carried out by Cramer and Johnson (2015) found when antibiotic powder was applied to lesions within 8 hours,
100% of teats had detectable levels of antibiotic on them, even when only a small amount was applied (2g) and even if they had been bandaged. Of the cows treated, one in four had detectable levels of antibiotics in their milk. Therefore, use of unlicensed antibiotics is a risk for the consumer and a concern for the milk buyer.

**Vet and the nutritionist**

In some instances, the nutritionist is first in the “firing line” when lameness increases – particularly due to the historical emphasis placed on the role of acidosis in the development of sole ulcers. However, this has largely been disregarded due to a lack of scientific evidence and the inability to reproduce this scenario in an experimental situation. That is not to say nutrition does not play a role in lameness, although rather than being a direct cause, its effects are more indirect in nature. For example, organic trace minerals and iodine have been shown to be important in improving skin quality in precalved heifers – reducing the incidence and severity of DD (Gomez et al, 2014).

Another area where nutrition influences lameness is through maintenance of the body condition score (BCS) through the transition period. BCS is linked to the size of the digital cushion and thin cows (less than BCS2), or those that lose BCS around calving, are at an increased risk of lameness in the subsequent lactation (Randall et al, 2015). This is an area that should be focused on as a preventive strategy alongside discussions with the farm’s nutritionist.

**Summary**

Lameness is a multifactorial condition and no single solution exists for every farm. The key to reducing it – both at individual farm level and across the national herd – is through a collaborative approach, sharing best practice and research findings. Involving the whole farm team allows for a greater level of ownership of the issue, more motivation to driving lameness down and greater success for the long term.

**Don’t forget sheep**

When discussing lameness the focus has been predominantly on cattle, but it is also an issue in sheep, with approximately 5% of the national flock lame at any given time – although this has halved since 1999 (Green, 2015). The predominant causes of lameness are footrot and contagious ovine digital dermatitis (C Dodd), which are highly infectious in the right conditions. As with cattle lameness, the vet has an important role in knowledge transfer and ensuring best practice when treating and preventing lameness.

Trimming has long been a common practice in the treatment of footrot; however, research has
shown this can delay the healing rate. In a study comparing different treatment methods, the highest recovery rates (95% within 10 days of treatment) were in sheep treated with a systemic and topical antibiotic treatment (Kaler et al, 2010). In addition, routine trimming of the sheep’s feet has not been found to be beneficial in reducing lameness and, in some instances, can make it worse (Winter et al, 2015). Therefore, routine foot trimming is no longer recommended.

Although CODD was first diagnosed in the UK in 1997, it has been largely unstudied until recently. Involving the same Treponema species involved in bovine DD, it is now present in around 50% of UK flocks, although it is often underdiagnosed or misdiagnosed as footrot.

Due to the difficulties in treating individual lame sheep, and identification of lesions at an early stage, whole flock antibiotic treatment has been an attractive prospect for farmers to eliminate CODD or footrot from the flock. However, a study by Angell et al (2016) found this was not successful and, at a time when antibiotic use in farm animals is coming under increasing scrutiny, is not justifiable.

References

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- Cattle Hoof Care Standards Board, [www.hoofcareregister.co.uk](http://www.hoofcareregister.co.uk)
• The National Association of Cattle Foot Trimmers, www.nacft.co.uk