

Hoof care field guide



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Introduction

Lame cows cost time and money. They are a problem not only because of potential welfare issues but also because, like any ongoing problem, they can affect staff morale.

Lameness is a term which covers many conditions: some are caused by infection and some by physical and management factors. Early detection and an understanding of which types of lameness are present, coupled with a structured approach to tackle the underlying causes, are required to tackle lameness effectively.

This guide will help you to check your herd's foot health, identify lesions that cause lameness and know how to treat lame cows.

Healthy Feet programme

The AHDB Healthy Feet programme is a structured approach to help dairy farmers make important progress towards diagnosing the problems causing lameness, devising an action plan and developing the skills necessary for long-term lameness control.

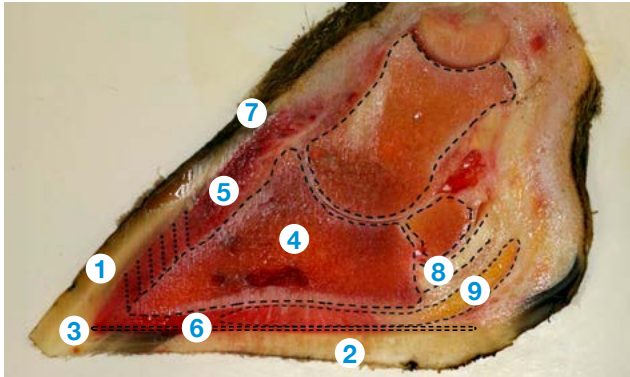
The approach is based around four success factors for healthy feet that reduce lameness:

- Low infection pressure
- A robust foot – good horn quality, hoof shape and nutrition
- Low forces on the feet – good cow comfort and cow flow
- Early detection and prompt, effective treatment of lame cows

Every herd has different lesion patterns. Once you know yours, you can use the four factors to develop a programme to improve herd mobility.

To find out more, visit ahdb.org.uk/healthy-feet

A normal foot: Which bit does what?



It is essential to be able to recognise the different parts of the hoof, particularly when foot trimming.

- 1. Wall horn:** This is equivalent to our fingernails, and it is by far the strongest horn and most important for bearing weight.
- 2. Sole horn:** Equivalent to the foot pad on a dog or cat.
- 3. White line:** The junction between wall horn and sole horn, made up of weaker horn.
- 4. Pedal bone:** Equivalent to the bone at the end of our fingertips, it is the main bone in the hoof (triangular in shape).
- 5. Laminar corium (quick):** Important tissue supporting the pedal bone within the hoof wall (the 'laminae').
- 6. Sole corium:** Responsible for making new sole horn. Prone to damage leading to sole bruising, sole ulcers and white line haemorrhage.

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- 7. Coronary band:** At the hairline at the top of the hoof wall. New wall horn grows down from here, taking about a year to reach the toe end and five months at the heel.
 - 8. Flexor tendon:** Attaches to the pedal bone. Damage following deep infection can lead to toe distortion.
 - 9. Digital cushion:** A dense fat pad under the heel. Along with the heel, it is very important for dissipating force and supporting the pedal bone when the cow walks.

Hoof care tool kit



Having the correct equipment is half the job for good hoof care. See the list of equipment below:

- 1. Licensed treatments:** antibiotic spray, non-steroidal anti-inflammatory drugs (NSAIDs) and injectable antibiotic.
- 2. Licensed disinfectant:** to reduce the cross-contamination of digital dermatitis from hoof trimming equipment.
- 3. PPE, like gloves and wrist protectors:** thick latex gloves are ideal and the neoprene wrist protectors are inexpensive and easy to clean. Eye protection should be worn if using grinders.
- 4. Foot-blocking equipment:** there are many different types of block available, ranging in size and material. Ensure you have a range of blocks so that you can select the most appropriate one for the cow, the environment (e.g. high vs low wear) and the lesions being treated.

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- 5. Grinders and hoof knives:** you will need a left-handed and a right-handed knife, with a single-edged blade. Narrow blades are generally easier to use and sharpen. Old teat liners are useful for protecting the sharpened blade.
 - 6. Hoof nippers:** shorter-handled nippers are easier for front feet and long-handled nippers are better for hard toes.
 - 7. Hoof testers:** an under-used but essential bit of kit which can make life so much easier.
 - 8. Spreading pliers:** important for spotting and treating digital dermatitis in the interdigital space.
 - 9. Measuring tool:** to ensure accurate measurement of toe length and sole thickness.
 - 10. Knife sharpener:** there are different types of sharpening wheel available. This shows rubber and cloth wheels used to sharpen and polish.

Anti-inflammatories (NSAIDs)

In early cases of lameness due to claw horn lesions, research has shown NSAID treatment combined with therapeutic trimming and the application of a block to the sound partner claw has improved recovery rates.

NSAIDs can also benefit cows with digital dermatitis lesions, especially if they are lame and in early lactation.

Research suggests a potential reduction in the risk of lameness when first lactation heifers are given three days of NSAID after calving and at subsequent calvings.

Speak to your vet for advice.

Knife know-how

Purchasing the right knives and maintaining them properly will keep you safer and make your job easier when trimming cattle feet. Make sure you have got all the essential items in your kit to care for your cows' feet and prevent lameness in your herd.

More expensive knives have blades of harder steel: they stay sharper for longer but are harder to sharpen. Both of the knives (pictured below) are lefthanded. The one at the top has a hardened stainless-steel blade.



Most new knives need sharpening before use. A rubber grinding wheel or emery band should be used to make the cutting edge more gradually tapered, like the blade on the right. This will ensure the edge stays sharper for longer and will be much easier to re-sharpen. Often, daily polishing with a green buffer paste is enough to maintain sharpness.

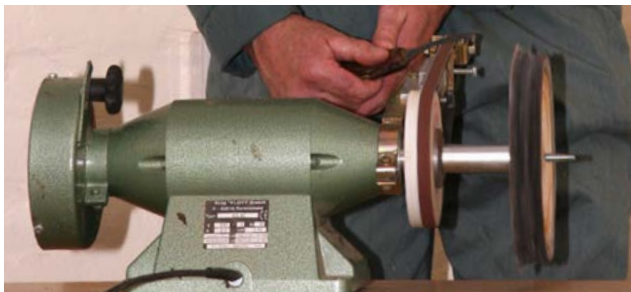


Sharpening a knife

Some important things to remember when sharpening knives:

1. Never sharpen the back side of the knife.
2. Touch the blade up regularly.
3. Keep the blade tapered at about 20°.

A purpose-made knife sharpener has a narrow sanding belt and a cloth polishing wheel. It turns in the opposite direction to bench grinders. Wear goggles and always ensure the sanding belt rotates away from you.



Identifying lameness

Spot – lift – look

Prompt action to spot lameness in cattle is key to success. Use this three-step method to help you to identify any cows that need attention.



Step 1: Spot lame cows early



Step 2: Lift the foot safely



Step 3: Look for the cause of lameness

Step 1: Spot

It is important to spot the cows that have just gone lame. If these cows are dealt with immediately, treatment can be a relatively simple and rewarding job. Chronically lame cows (those who have had a problem for a long time) can be much more difficult to treat effectively, and lameness is more likely to recur.

Regular mobility scoring is the best way to spot newly lame cows. For more information, see the **Mobility scorecard**.

Step 2: Lift

To find out what is causing the lameness and how to treat it effectively, you need to lift the foot. This should be easy, safe and not unpleasant for you or the cow. It should be possible for one person to get one cow in the crush in one minute. See more about lifting a foot on page 13.

Step 3: Look

Sometimes the cause of lameness is easy to spot, while other cases need more skill to detect. Proper training in practical cattle-hoof care will build confidence in correctly finding and dealing with lesions. See page 30 for information on common lesion types.

Applying pressure to different parts of the foot using a pair of hoof testers helps identify where the problem might be, which is much better than digging at black marks.

Don't delay, treat today

Early detection and prompt, effective treatment of claw horn lesions is key to their successful management. Research shows that any delay in the time to treatment of claw horn lesions, regardless of the treatment administered,

is likely to reduce the rate of recovery. Speak to your vet about effective treatment protocols.

Cows with claw horn lesions should have both hind legs inspected, regardless of which leg is identified as lame. Any additional trimming or treatments that are required should be carried out at the same time.

If cows are treated early, you will not necessarily find lesions that look significant. This is great news. Apply a block to the sound claw and treat with an NSAID to maximise recovery (do not be tempted to over-trim).

Lifting a foot: Handy tips

Good-quality hoof trimming is a difficult skill to master, and a poor-quality job can make cows lame.

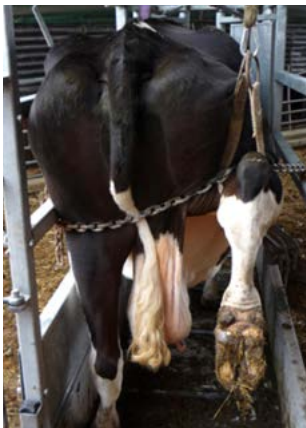
A practical training course is strongly recommended for all new trimmers. Regular refresher courses help to keep you up to date and to improve technique.

Be prepared

- Have a comfortable crush for inspecting feet
- Make sure the crush is always clean and available in an area where you are happy to work: light, dry and airy is best
- Make sure you have good cow flow, using a race
- Avoid cattle slipping by using a rubber mat, sawdust or similar substrates in the crush
- Do not lift the cow's foot too high
- Start with the lame leg first

The back chain

Where the crush does not have a back bar, a chain around the back of the cow allows you to lift a hind foot without the need for tying the leg to the back of the crush or a block, which cows resent and positions the foot at an awkward angle. Many crushes can be simply adapted, as shown in the photo, by threading the back chain through the leg strap.



Your own safety

Have your back to the cow and stand on the outside of the foot you are examining. You can work comfortably in this way. Do not stand where you are likely to be kicked.



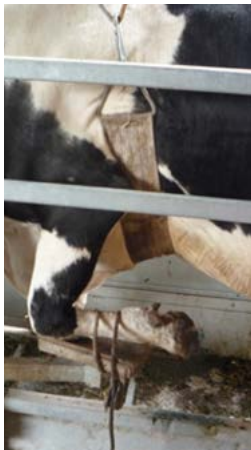
The belly band

This gives the cow more confidence and security while lifting feet, particularly front feet. The band should be wide, forward on the animal and loose fitting.

Take only some of the cow's weight with the belly band, but avoid overtightening – the band is there to support but not to take the cow's weight. You should still be able to fit fingers between the band and the cow.

Front feet

Lifting the opposite back leg may help in some crushes. When examining a front foot, it is usually safer to lift a back foot at the same time to avoid being kicked. Invest in a purpose-built foot support.



If a cow falls forward on the yoke, she can choke or crush the nerves on the point of her shoulder which supply her front leg, causing nerve paralysis.

Trimming cows' feet

Hoof trimming is an important part of lameness prevention and reduction. Find out when it is necessary and how to intervene.

When to trim?

To reduce cases of lameness, it is important to:

- Regularly mobility score cows (at least fortnightly is recommended) to spot lame cows early
- Not wait to treat them
- Record all lesions found; your herd's lesion pattern is important to develop your lameness-reduction plan
- Have routine foot checks around 8–10 weeks before calving; this means cows calve down with good foot shape
- Include heifers 8–10 weeks prior to first calving where they are housed
- Do a second routine check 10 weeks into lactation, when horn disorders are most likely to be present
- Use a licensed hoof trimmer registered with the National Association of Cattle Foot Trimmers (NACFT) (nacft.co.uk) and/or the Cattle Hoof Care Standards Board (CHCSB) (hoofcarestandards.co.uk)

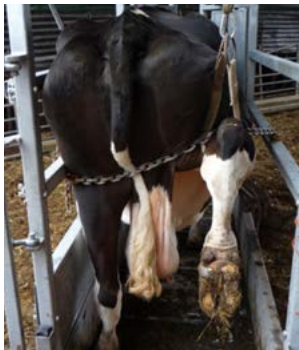
Some cows (for example, extensive grazing herds) never need trimming, as hoof wear matches growth. However, regular hoof checks can still reduce lameness.

Think 'foot check' rather than 'foot trim'.

Trimming: Five-step method

Before you begin

- Lift the foot so the cow is comfortable
- Clean and dry the foot with sawdust
- Work safely – do not stand where you are likely to be kicked
- Avoid over-trimming – always err on the side of caution



Lift the foot so the cow will be comfortable



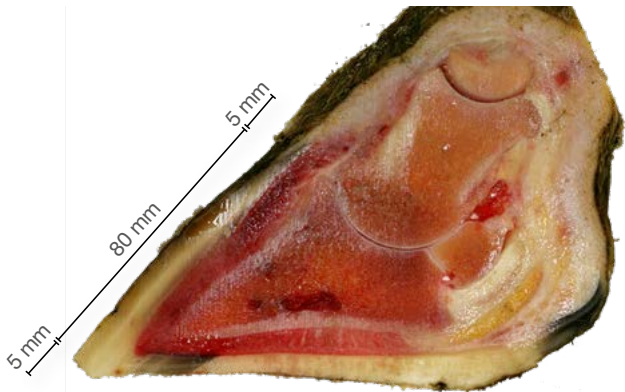
Work safely; stand where you will not be kicked

Steps 1, 2 and 3 are functional trimming steps – these steps are used for all cattle.

Steps 4 and 5 are therapeutic trimming steps – these should be used when there is a problem with the claw.

Step 1: Measuring and trimming the first claw

Start with the inner claw of the hind foot and the outer claw of the front foot. Measure the inner hind claw from where the top of the claw goes hard (about 1 cm below the hairline) to the roll of the toe. There is no easy method for predicting the optimum toe length, which will vary and need to be adjusted for age, breed, environmental conditions and diseased or abnormal hooves. As a guide, a minimum toe length of 8–8.5 cm is suitable for a second lactation Holstein cow.



If a toe's length is about right before trimming, do not trim the sole. When the toe does require shortening to the correct length, excess sole should be trimmed down to a minimum of 6–8 mm step at toe. Avoid trimming the heel to maintain foot angle and tip weight onto the toe.

Research indicates that as sole thickness decreases, risk of lameness increases. Therefore, if unsure, always err on the side of safety and avoid over-trimming.

Step 2: Matching trimming on opposing claw

Repeat for the outer claw, levelling up to the inner claw. If the inside claw was short, then do not match the outside claw to its length. Instead, cut to 8–8.5 cm.

Match the levels across the toes and heels by removing horn from the sole. Be careful not to remove too much. Most heels are already balanced in healthy cows, so judge balance carefully and avoid getting into the habit of routinely removing heels.

Take care not to remove the axial white line, weight-bearing horn which stretches back from the toe a third of the way along the axial wall (inner wall of claw).



Step 1 part 1: Measure inside claw from where horn is palpably hard just below the coronary band



Step 1 part 2: If claw is long, trim to appropriate length and pare excess sole (spare heel)

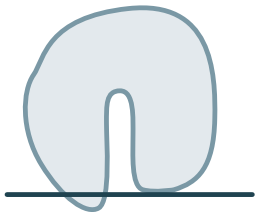


Step 2 part 1: Match outer claw to the inside claw (when required)

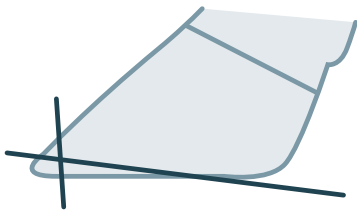


Step 2 part 2: Balance claws (note horn has not been removed from heels to retain heel height)

These diagrams show the main aspects to consider when applying steps 1 and 2 to the claws.



Match to correct toe length: If the inside claw is short, then do not match the outer claw to it and instead trim the outer claw to the appropriate length.



Equal toe depth: If required, carefully shorten the toe and remove sole horn towards the front of the foot (spare the heel). Care must be taken if presented with curled toes.



50:50 weight-bearing: Care must be taken if there is a risk of thin sole.

Step 3: 'Dishing' out the claws

Model (dish) out the inner parts of both claws, behind the wall on the inner claw edge, to allow a flow of muck between the toes and to reduce weight bearing on the typical sole ulcer site – see area circled dark blue.

It is important that the modelling does not extend into the toe triangle (area indicated in white-dotted line), as this results in the removal of the weight-bearing axial wall.

The model on the inside hind claw/outside foreclaw should be steep and narrow. The model on the outside hind claw/inside foreclaw should be wide and deep. In housed cows, this should extend to the white line of the outer wall.



Modelling out using knives



Typical sole ulcer site is circled. Ensure the toe triangle (dotted area) is preserved



Steep and narrow modeling shown on the inside hind claw and wide and deep on the outside hind claw

Step 4: Relieving weight from affected claw

This step aims to create a height difference for a painful claw (one with a claw horn lesion) so injured parts bear less weight and are allowed to recover.

In most cases, a block should be applied to the sound partner claw to create a height difference. For cows with lesions in the outer hind claw/inner fore claw, the back two-thirds should be lowered too. Never remove heel from the inside hind claw or outside foreclaw.

For more information on how to block a foot, see page 47.



Block applied to sound claw to enable the injured claw (with sole ulcer) to bear less weight



Back two-thirds of the outside claw has been lowered to create a greater height difference



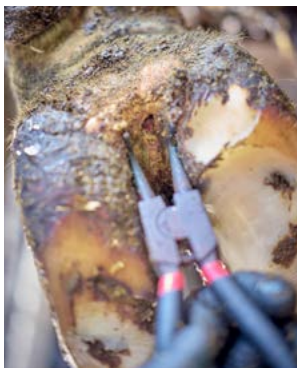
Always conserve horn on the inner claw to bear weight.

Step 5: Removing loose horn

Remove any loose horn from the heel; there will be more in cases of heel horn erosion. Beware of removing too much weight-bearing surface from the bulbs of the heel. Check between the claws and at the heel for digital dermatitis (DD).



Hoof knife used to remove loose heel horn



Spreading pliers used to help visualise early DD lesions in the interdigital space

Remember to disinfect hoof knives between cows to reduce the risk of spreading digital dermatitis from cow to cow.

Trimming: Using a grinder

Grinders are widely used to speed up trimming. In the right hands the use of the grinder can enhance the trimming technique, but without the right training they can pose a significant danger to the trimmer and cow. It is very easy to fall into the trap of over-trimming because the grinder makes it easy to trim the walls and soles. Only use a grinder if trained in trimming and abrasive wheel use.

Safety

The use of rotary power tools is inherently more dangerous than using knives alone. City & Guilds Land Based Services (formerly NPTC) offers a qualification in abrasive wheel operation. Key points:

1. Only use a grinder if competent at cattle hoof trimming and trained in the safe use of the grinder.
2. Ensure the cow and foot are well restrained.
3. Always wear the appropriate personal protective clothing, i.e. level 5 (at least) anti-cut gloves, eye/face protection and wrist guards as a minimum.
4. Always keep both hands on the grinder – one hand on the side-handle and the other on the grinder barrel.
5. Never use a complete set of new blades, as they are invariably too sharp and remove too much horn. Dulling new blades on a piece of timber is recommended.
6. Keep the grinder, blades and cables well maintained. Ideally use battery-operated grinders.

Choice of attachments to grinder

There are a range of attachments available for the grinder, with different uses and benefits. See page 24 for an example of the range of attachments available.

Twisted wire brush (M14 attachment)

Used for cleaning the sole ready for block/glue application.

Abrasive metal disc (Tungsten carbide)

For cleaning and abrading the sole for block/glue application, but also light trimming. They can be noisy and will generate dust.

Rotary cutting blades

The closed disc means only the face of the disc will cut, minimising the risk of injury from the disc edge. The open disc allows trimming with the edge of the disc, but it carries more risk of operator injury.



Twisted wire brush



Abrasive metal disc



Closed rotary cutting blade



Open rotary cutting blade

Five-step method with a grinder

The trimming steps are exactly the same with a grinder as they are for the knives, but the process can appear more seamless.

Step 1

Part one: Toe length cannot be reliably assessed by looking at soles alone. Some trimmers will prefer to cut toe length precisely with nippers. If the trimmer is confident about judging toe length, then the grinder can be rotated to face forward by twisting the arms.



Part two: If excess sole thickness is detected, then sole depth can be removed very carefully with a grinder; however, it is very easy to remove too much. Only remove sole if there is excess sole thickness detected, and move on to the next step if toe length is correct.



Step 2

Many claws will be naturally well balanced. Avoid the temptation to clean the sole with the grinder or lower a claw just in case it is overloaded.

Step 3

Modelling needs to be done with a sharp knife. While it is possible to remove some of the overgrown sole with the edge of an open cutting disc, this requires a high level of skill and experience to avoid going too deep or trimming into the wall, heel or toe. The knife is always required to get the correct depth and shape of model.



Step 4

If a block is to be applied, then the sole can be prepared with a wire brush or abrasive metal wheel, just removing a light skim of sole. The cutting blades should not be used for this as too much sole is removed as a result.

Step 5

Loose horn needs to be carefully removed with a sharp knife. Sometimes if there is a deep lesion, then the abrasive or cutting discs can be used to thin down the surrounding horn to make the final knifework easier.

Sometimes trimmers find that separating the claws with a used glue tip reduces the risk of catching the opposite claw while trimming, but if the grinder technique is right, this is completely unnecessary. If used, glue tips should be disinfected between cows to minimise the risk of cross-infection with digital dermatitis.

Trimming: Avoid common pitfalls

Avoid over-trimming

The most important thing when trimming cows' feet is always to err on the side of caution and not take too much off, especially from the inner claw on hind feet.

- Measure correctly from where the wall is hard/thick (not the hairline)
- Do not guess
- Recognise when a foot does not need trimming
- Check for thin soles

Do not over-trim the wall

- The wall is the most important weight-bearing structure
- Avoid 'shaping' the wall
- Preserve the wall on the inside edge too, which is at the front third of the foot

Avoid chasing black marks

- A trimmed foot does not have to appear white
- Cracks and flakes on the sole are normal – avoid trimming away sole unnecessarily, especially at the toe
- Always preserve horn on the inner claw (or outer for front feet)



An example of a toe that is already short and doesn't need trimming



An example where the wall has been unnecessarily overthinned by shaping with a grinder



The finished foot will normally have black marks present, as shown here

Avoid modelling into the toe triangle

- Model in the back two-thirds of the sole only – that is, above the white line on the inner wall
- Always preserve the inner wall
- The inner wall may look a little untidy, but that is acceptable

Do not remove too much from the heels

- The finished foot should look reasonably upright – the wall at the front being about 50 degrees to the floor
- This means preserving heel height, which should usually be around 5 cm



On this hoof the modelling is too far forwards and some of the inner wall has been removed unnecessarily



An example of good heel height. Preserving heel height is especially important in inside hind claws and outside foreclaws

Common lesion types

Recognising why your cows are lame is important for their treatment, as well as preventing it in the future. An injury or condition of the foot is called a lesion. Several different lesions and problems can be present on a single foot at any one time, and lesion distribution may change with the season.

Sole ulcers, white line disease and digital dermatitis are recognised as ‘the big three’ mobility conditions seen on dairy farms in the UK, but there are several other common problems seen on a regular basis. More severe problems, involving deep joint infections and necrotic toes, for instance, must be dealt with by the vet. See page 51 for information on cases for the vet.

Pictured below are some of the common lesion types. For more lesion types and images, you can look online at: ahdb.org.uk/knowledge-library/lameness-lesions-of-cows-feet

Lesions of the skin

Common lesions affecting the skin are digital dermatitis, foul and interdigital growths. They all result in changes in the skin and are caused by bacterial infections or trauma.



From left to right: digital dermatitis, foul and interdigital growth

-
- Digital dermatitis (see page 32)
 - Foul (see page 34)
 - Interdigital growths (see page 36)

Claw horn lesions

Claw horn lesions are lesions that occur due to disruption of horn growth and cannot spread from cow to cow. It is possible for some of these lesions to become secondary infected if the corium (quick) is exposed to dirt and bacteria.



From left to right: sole bruising, sole ulcer and white line disease

- Sole bruising (see page 38)
- Sole ulcer (see page 40)
- White line disease (see page 41)

Digital dermatitis

Digital dermatitis is an infectious skin lesion, meaning that it can be passed from cow to cow or between the feet of the same cow. Its infectious nature means that early detection and treatment is very important to reduce spread.

Symptoms

- A red ulcerative lesion is usually present at the back of the heels, in between the claws or on the hairline at the front or side of the foot
- Cows with digital dermatitis will not always be visibly lame
- Can also infect lesions where there is exposed corium (quick) or other lesions such as hock sores

Preventing the spread of new infections and the recurrence of dormant lesions is critical to control of digital dermatitis. Regular footbathing, robust biosecurity and good hygiene are all key components of prevention. Treat each cow on an individual basis as described in the steps.

Where a large proportion of the herd is infected, it may be necessary to undertake a 'blitz treatment' where all affected cows are treated at the same time to bring infection levels under control.



Active digital dermatitis lesion on the heel



Toe necrosis with digital dermatitis infection on the exposed corium (quick)

Treatment

Step 1: Remove dead tissue

Digital dermatitis is extremely sensitive to most antibiotics but can be hard to treat because the bacteria hide deep in the skin and are covered by dead skin and sticky ooze. The area to

be sprayed must be cleaned and dried well before applying spray. Remember to be hygienic and disinfect your hands and equipment afterwards.

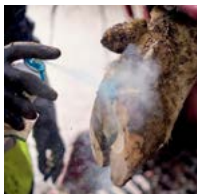
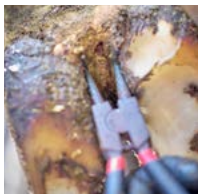


Step 2: Apply antibiotic spray or licensed alternative

A licensed antibiotic spray can be used and works well. Repeat treatments will be necessary for more severe cases. The bacteria prefer an oxygen-free environment, so leaving the area open to the air is recommended. If bandages are used (to hold bactericide in place), they must be removed within two days.

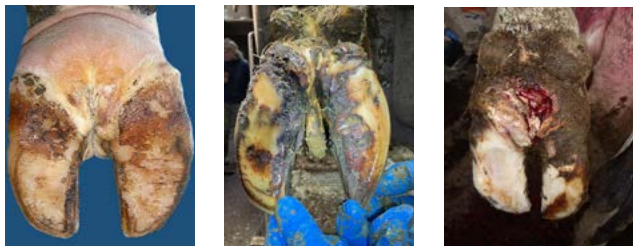
Step 3: Pain relief

Inject with anti-inflammatory pain relief (NSAID) under veterinary guidance.



Foul

Foul is a common infection in dairy cattle and is characterised by painful inflammation of the interdigital space and swelling. Cows with interdigital growths can be prone to foul. Growths can be a result of previous foul (or digital dermatitis) infections.



From left to right: foul, interdigital growth and super foul

Symptoms

- Sudden onset lameness
- Skin between claws is broken
- Symmetrical swelling and heat around the foot
- It smells

Very aggressive forms of foul are called 'super foul'. Digital dermatitis is also sometimes seen on the same foot.

Treatment

Step 1: Clean the foot

Clean out the cracked skin between the claws.

Check for and remove any loose stones or foreign bodies.

Step 2: Apply antibiotic spray or licensed alternative

Spray the relevant area with a topical treatment.

Step 3: Antibiotics

Inject the cow with appropriate antibiotics. Seek advice from your vet about the most appropriate antibiotic to use.

Step 4: Pain relief

Give anti-inflammatory (NSAID) under veterinary guidance.



Clean the foot



Apply antibiotic spray or licensed alternative

Ask your vet to look at animals if there has been no improvement or if there is a need to cut into corium (flesh) as this requires local anaesthesia.

Interdigital growths

Also known as interdigital hyperplasia, tyloma or corn. Most interdigital growths are best left alone, although careful trimming of any rough horn between the claws may reduce rubbing. Some have digital dermatitis or foul which require treatment. Removing growths is an act of veterinary surgery.



Symptoms

- Firm, fibrous mass protruding into the interdigital space
- Commonly infected with digital dermatitis
- Sometimes cause lameness if they are being 'pinched' when the cow walks or are infected
- Usually a sequela to chronic irritation in the interdigital space e.g. foul or digital dermatitis

Treatment

- Most of these are best left alone, although careful trimming of any rough horn between the claws may reduce rubbing
- Treat any concurrent infection e.g. foul or digital dermatitis
- Removing growths is an act of veterinary surgery

Know the boundaries of your expertise; consult your vet if in any doubt.

Sole bruising

Sole bruising is a common condition which affects cattle at many stages of their lives. It is the most common cause of cows receiving a mobility score of 2.

Symptoms

- Red or yellowish areas on the sole, typically in the sole ulcer site
- Sometimes no visible bruising, but there is a positive reaction to hoof testers
- Cow walks with tenderness or stiffly
- Often more than one foot is affected



Cows commonly affected

- Any cows standing on concrete for prolonged periods of time
- Freshly calved heifers which have not been acclimatised to concrete/cubicles are often worst affected
- Stock bulls
- Cows walking a long way on tracks
- Cows with thin soles
- Cows with restricted lying times

Treatment

Go to page 42 to see the treatment for all claw horn lesions.

Aftercare for sole bruising

Keep the cow on a soft surface (pasture or straw yard) until healed.

Extensive grazing herds: switch the cow to once-a-day milking and keep in a paddock close to the parlour while she recovers.

Sole ulcer

Symptoms

- Lameness in the affected leg(s)
- Appears as circumscribed area of exposed corium (quick) in the typical sole ulcer site (rear third of the claw towards the interdigital space) of the outside hind claws or inside front claws
- In more advanced or chronic cases, the corium (quick) can prolapse through the sole

Treatment

Go to page 42 to see the treatment for all claw horn lesions.



White line disease

Symptoms

- Defect in the white line of the claw which is the join between the horn of the sole and the horn of the wall
- Most commonly occurs towards the heel on the outside claws of the hind legs
- Early lesions are seen as bruising or discoloration of the horn
- Infection can lead to pus, underrunning of horn or ulcer formation

Treatment

Go to page 42 to see the treatment for all claw horn lesions.



Treatment of claw horn lesions

Claw horn lesions include sole bruising, sole ulcers and white line disease, but other injuries to the horn can also be seen.

Treatment

Start with hoof trimming

Begin by following steps 1 to 3 of the hoof-trimming method (see pages 16–22).

Always correct the toe length, foot balance and weight distribution before seeing to the problem. Take care not to take too much horn away by unnecessarily following black marks. Use hoof testers to identify where the problem is, if not immediately visible.



Take weight from the injury

Trimming alone (step 4 of the five-step method, see page 21) is often insufficient to create enough height difference to relieve weight bearing on the diseased claws. The proactive use of blocks is recommended when the partner claw is sound (check with hoof testers).



Give pain relief

Under veterinary guidance, administer NSAIDs to reduce inflammation, scarring and pain.

Remove under-run horn

Removing loose horn and thinning the margins around lesions improves recovery by reducing ‘pinching’ of the lesion, allowing drainage when pus is present and preventing gravel or dirt becoming trapped. If under-running is severe, then ask your vet to trim the loose horn under local anaesthesia. This is particularly useful for chronic white line lesions, toe necrosis or axial wall fissures (see Cases for the vet on page 51).



A double sole caused by pus tracking to the toe



A white line abscess bursting out at the top of the wall

A white line abscess may have pus tracking back towards the heel, forwards to the toe or up the wall.

A sole ulcer may have some loose horn around its base. With care, these lesions can be opened up to allow drainage and to get air to the injury. Where there is infection of the corium (quick), a licenced topical antibiotic spray can be applied.

Sole ulcers may have flesh protruding – carefully trim around this to thin the margins and remove the collar of loose horn, but there is no need to cut off any corium (quick).



Avoid bleeding. Bleeding means you have cut into live tissue and you are creating a new injury.

Removing the under-run horn to the point where it is firmly attached to the underlying corium requires care, sharp knives, patience, time and skill. A blunt probe can help guide how much to remove.

Digital dermatitis infection on the corium can occur and is thought to result in delayed healing or failure to cure. Exposing these lesions to air and treating with licenced topical antibiotic spray is important.



How to block a foot

Blocking a cow's foot is an excellent way of changing how physical forces act on a lame foot. Find out the correct way to block a foot and common pitfalls to avoid.

Step 1

Using hoof testers, check that the claw to be blocked is not painful. Do not block a painful claw.



Step 2

Clean the claw thoroughly. Dry with a hairdryer or with the careful use of a flame. Do not scorch the claw. Some synthetic blocks need flaming to remove surface grease.



Step 3

Select a block of appropriate size, shape and material:

- Wooden wedges suit cows with lesions in the back two-thirds of hind claws
- Synthetic blocks suit situations with high wear or chronic lesions, but they need to be rechecked within four weeks to ensure blocks do not remain on too long

Most mature cows require blocks that are 13–14 cm long to get sufficient coverage of the heel to prevent rocking back. This is especially important for cows with toe lesions.

Step 4

Mix glue according to instructions. You can apply the glue to the sole, block or both. Ensure the glue is applied generously to the toe area and kept away from the heel.

Step 5

Apply the block firmly onto the sole of the healthy partner claw. Ensure the block is aligned with the inside wall of the claw and the bottom of the block sits perpendicular to the leg. Hold the block in place firmly until the glue is setting, but do not squeeze too much of the glue out from between the sole and the block, or it will not stick as well.



Step 6

Smooth the glue onto the walls, and keep it away from the soft heel bulb. Let the glue set thoroughly for several minutes before letting the foot down.

Step 7

Check the block regularly and remove if wear is uneven or the block causes discomfort.

Cows with blocks should be rechecked at four weeks after treatment to ensure the lesion is healing and to check the block. If in doubt, remove the block. If the lesion has not healed and the block is badly worn, remove it and apply a new one.

Common pitfalls

- The block does not sit far enough back on the sole, so the cow rocks back on her heels, lifting the toe off the ground
- The foot is not dry enough, so the glue does not stick well
- Insufficient glue is used, so the block is rotates or falls off
- The glue is taking a long time to set due to cold weather: store all blocks and equipment in a warm place
- The block is left on too long: uneven wear at the heel leads to the cow rocking backwards as she walks
- The back of the block rubs the heel of the other claw
- The block slopes backwards
- The glue is applied too far back towards the soft horn of the heel
- Failing to give anti-inflammatory pain relief (NSAID) which has been shown to promote recovery

Cases for the vet

Severe and complex lameness cases should be treated by a vet, so learn the limits of your expertise and consult your vet if in any doubt.

Joint sepsis

Infection in the joint is very painful. Treatment will require surgery (carried out by a veterinary surgeon by law) or immediate culling.

Symptoms:

- Swelling around one claw
- The cow is very lame
- Often begins as a sole ulcer which has become infected
- The toe is 'cocked up' (extended)
- A bead of thick, white pus can be squeezed from centre of ulcer, as circled in the photo below





Typical sole ulcer site is very close to the joint space in the foot



A 'club foot' can develop due to joint sepsis

Necrotic toe ('Rotten toe')

Necrotic toe is often associated with digital dermatitis infection of the corium. It can begin as a toe ulcer which has become infected or from an infection tracking under the wall of the coronary band. Proper treatment requires surgery by a veterinary surgeon and the use of anaesthetic.

Symptoms

- The cow walks back on her heel
- There is usually no swelling of the foot
- The condition is very painful because the infection is in the bone of the foot



Aftercare

Aftercare is an important part of any treatment, and each cow must be monitored during and after her recovery to make sure she is progressing well.

Special attention

Cows that are lame require special attention as they may:

- Be less likely to compete at the feed face
- Find it harder to get up and down and, therefore, are more prone to injury
- Be likely to slip down the 'pecking order' and are less able to assert themselves in the herd

Lame cow groups

Creating lame cow groups can be effective and have advantages for the lame or recovering lame cow due to:

- Small group size, which can be managed to have a short milking time and less competition for feed and water
- Being kept on loose housing or at pasture to allow cows extra room and grip to get up and down
- Speeding up recovery time

Every dairy farm should have a 'special needs' facility for the proper care of lame and injured cows. This should be separate from the calving and fresh cow group.

Further information

AHDB resources

- Mobility scorecard: An encapsulated card to use in field to help score your herd's mobility, along with pictorial examples
- Cow tracks guide
- Mobility webpages (ahdb.org.uk/knowledge-library/mobility-scoring-for-dairy-cows)
- Lameness cost calculator (lamenesscostcalculator.ahdb.org.uk)

Other resources

- The Healthy Feet Website (cattle-lameness.org.uk)
- ICAR Claw Health Atlas (icar.org/ICAR_Claw_Health_Atlas.pdf)

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