

## What is knowing the cause of Laminitis so important?

Knowing the cause is essential in order to avoid the events causing laminitis and also to prevent future episodes of laminitis. Also, the different causes of laminitis may need different types of care.

Overload laminitis cases will need to be treated by supporting the limbs aiming to correct the cause of the overload. Inflammatory causes will be treated by intensive medical care, but metabolic cases will need diagnosis and treatment of often quite longstanding endocrine conditions. *Therefore, it is important to seek advice from a vet in order to work out the best treatment and care plan.*

## How do I know which type of laminitis my horse/pony has?

Fortunately the inflammatory and overload forms of laminitis are pretty obvious – if your horse has a fever, is very ill, has an abnormal white cell count on a blood test and/or had severe watery diarrhoea, you can be pretty confident that the laminitis is inflammatory.

If your horse has been unable to put any weight on one leg – then think overload laminitis.

BUT, much more commonly, if your horse is otherwise looking fine and turned up lame then think metabolic or endocrine laminitis - **this is by far the most common form of laminitis!**

If metabolic laminitis is most likely, the best thing to do is to get your vet to test for PPID and EMS so you know which of these is involved - [treatment of PPID and EMS is very different!](#)



## How do I care for my Laminitic horse / pony?

### During an acute episode of Laminitis

If you notice your horse has laminitis, contact your vet immediately for medical therapy and advice and testing for possible causes.

- **PAINKILLERS** Laminitis is a severely painful condition and your vet is likely to prescribe these. Always follow the instructions carefully as there could be a potential for side effects from prolonged use or high doses of pain killers.
- **REST** To reduce the pain most vets will advise moderate to severe cases to be box rested. As described previously, weakened lamellae can break with continued exercise. This can result in founder which can be life threatening so this is important.

- **SOLE (FOOT) SUPPORT** Make sure the bedding is deep, allowing the horse to dig in to the bedding and relieve its pain. Some people prefer sand over shavings, but it has to be dry and loose enough to allow the horse to dig its feet in. Pay attention to bare areas and make sure they are all well-padded e.g. in front of the stable door or by the feed or water. Your vet and farrier may provide more direct forms of sole support – there are several methods of doing this from Styrofoam pads through to specifically designed sole support pads..



### Box rest boredom busters

If your horse needs to be confined as part of treatment for laminitis, but becomes easily bored and fractious when box rested, there may be some things that you could try to provide some additional interest for them. Options could include playballs, allowing them access to a box with windows so they can see, mirrors within the box or alternatively, if there is a small area that you could fence off with shelter, e.g. on a bare paddock or in sand turnout / woodchip yard - this could provide restriction of

movement and control of diet, while being able to see other horses / be outside. Providing hay in a double / triple hay net or in a horse ball will slow down feeding and provide some activity for them.



### The Chronic Laminitis case

A major part of the management of the chronic laminitis case is remedial farriery and it is important that your vet and farrier are working together as a team to provide you with the best care.

But as well as treating the feet it is essential to treat the underlying cause if still present – if the laminitis is caused by EMS or PPID, then it certainly will be.

You vet will undertake diagnostic tests to tell if one or both of these is occurring and treatment will be recommended based on this.

### Management of EMS

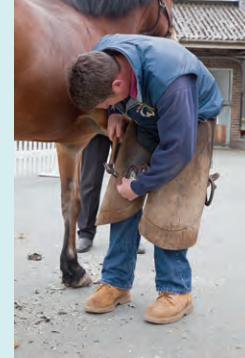
If your vet suspects or has confirmed your horse has EMS, then they may advise starting a diet to encourage long term weight loss. If your horse has EMS, then treatment is primarily diet and exercise so you may not need any medication at all!

More information about diet and exercise is on our hospital laminitis page (see back page of leaflet).



### Treatment of PPID

If your vet has diagnosed your horse with PPID (or Cushing's disease) it will require lifelong treatment. Your vet will offer medical treatment (Pergolide, licensed in the UK as Prascend) for your horse which is a daily treatment for the rest of its life. Most cases (around 80%) show a significant improvement after starting treatment. We have noticed that often older horses have many clinical signs that were simply put down to 'old age' such as lethargy, poor exercise tolerance, poor topline that reverse with treatment meaning in many cases your horse can return to a good quality of life or even performance again!



## How do I prevent Laminitis?

To prevent laminitis, you need to avoid potential causes of laminitis.

### Inflammatory and overload laminitis

For most cases of inflammatory laminitis, there is little you can do except keeping the feed room door well secured, making sure any mare who has foaled and retained her afterbirth is seen promptly by a vet as is any horse showing signs of severe illness. To reduce the risk of colic, make sure your horse / pony has an appropriate diet and is turned out / exercised regularly, make any changes in diet and turnout gradually over 2-3 weeks, keep gut worm burdens low (speak to your vet about worm control) and make sure they have good, regular dental care.

For overload laminitis prevention is aimed at supporting the limb that is bearing more weight. Sadly, most causes of non-weight bearing lameness are accidents and we cannot prevent these.

### Laminitis in horses and ponies with PPID

We all age and horses do too, so sadly PPID is not preventable. PPID is a degenerative disorder of old age, much like Parkinson's disease in humans. It is common, affecting around 1 in 5 horses aged 15 years and older, and also increases in prevalence for every year of age over 15 – so a 30 year old horse/pony is much more likely to have PPID than the a 15 year old. It is, however, treatable (discuss with your vet or look at <http://www.talkaboutlaminitis.co.uk/>)

### Laminitis in horses and ponies with EMS

Knowing if your horse or pony has EMS or not is the most accurate way to determine its risk. If they are a native breed or a 'natural good doer' (prone to gaining weight easily) they may be genetically predisposed to EMS. More serious alarm bells should ring if your horse or pony develops bulging areas above his eyes (instead of the hollow that normal horses and ponies have) or develops hoof changes such as laminitic rings, dropped soles or separation at the white line.

If you suspect EMS in your horse, your vet can perform an in-feed or intravenous glucose test to determine if your horse can tolerate carbohydrates without produce excessively high insulin concentrations that will cause laminitis. If your horse does have EMS and does not yet have laminitis, then your main strategy to prevent laminitis is to keep your horse fit and healthy without allowing it to accumulate too much bodyweight.

# UNDERSTANDING LAMINITIS...



What is laminitis?

How is it managed?

How can it be prevented?



## What is Laminitis?

Laminitis is a serious form of lameness in horses characterised by a hot, painful hoof, with bounding pulses that can be felt in the digital arteries down the back of the fetlock and pastern region.

Laminitis has a number of possible causes but the outcome is damage and weakening of the lamellae (or laminae [US spelling]). These are the attachments that provide support between the hoof wall and the pedal bone.

The main problem, in Laminitis cases, is damage to the lamellae causing the lamellae to weaken and elongate. Ultimately and in severe cases, these weakened lamellae can actually break, the pedal bone is no longer supported in the hoof capsule.

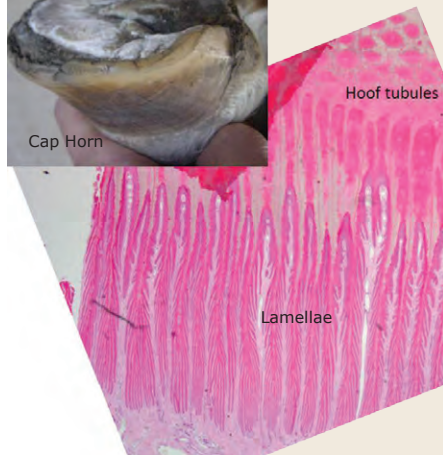
Loss of strength within the lamellae allows the pedal bone to shift within the hoof capsule and it can either rotate away from the hoof wall (so the tip of the bone points downwards or even penetrates the sole), or sink, or both. This is called founder and can be excruciating painful, and in some cases would require euthanasia of the horse for humane reasons.



Radiographic and cross sectional view of a horse with rotation of the pedal bone resulting in founder. The horse was suffering and was euthanased.



Cap Horn



Lamellae

Hoof tubules

## How do I know if my horse / pony has Laminitis?



Laminitic rings are classically wider at the heel than the toe. These may occur in horses with metabolic laminitis before a painful episode occurs and must always be considered significant – if these are present get your horses tests by your vet for metabolic disease.

Below: Microscopic image of the lamellae of a pony with laminitis. Note the elongation of the lamellae. The hoof wall end shows a 'ghosting of lamellae' where they have been replaced at that end with abnormal keratin – this will grow out of the hoof and be seen at the sole as 'cap horn' and widening or separation of the white line (see insert)

The main clinical sign of laminitis is **pain** and **lameness**. However, some horses have episodes of laminitis that cause deformity of the hoof wall in the form of laminitic rings, without pain.

These are very important to pick up early as they may indicate your horse has metabolic disease. Getting a diagnosis from

your vet could allow you to prevent painful laminitis and founder from ever occurring! Laminitic rings are classically wider at the heel than the toe. They may be accompanied by a flat or even convex sole (dropped sole) and wider white line/cap horn.

Lameness is usually in all 4 limbs, but usually (not always) appears worse in the forelimbs. The pain may be so bad that the horse won't move at all, but in many cases it's a little milder, causing a shuffling short stepping gait, worse on hard surfaces, and usually with an obvious head nod on turning. In overload laminitis just a single limb can be affected.

Other signs of laminitis can be a hot, painful hoof, with bounding pulses felt in the digital arteries down the back of the fetlock and pastern region). Your vet may look at the response to hoof testers to also help confirm laminitis. It is worth bearing in mind that heat, pain and pulses can also be caused by other conditions in the foot, so always seek advice from your vet.

## What causes Laminitis?

This is a VITAL question which needs to be asked in every case of laminitis.

There are many factors that could cause laminitis. Despite the name, only certain types of laminitis are truly 'inflammatory' and in fact, the most common type of laminitis developing from metabolic disease is not really inflammatory at all.

In the past laminitis was treated as a disease process and treatment only focussed on the clinical signs of laminitis. We now know that most cases of laminitis are a clinical sign of disease elsewhere – either severe systemic **inflammatory** disease or a **metabolic** condition.

**There are 3 main causes of laminitis; Overload, Inflammatory and Metabolic.**

### Overload Laminitis

This is a less common cause of laminitis and is typically associated with non-weight bearing conditions in one leg thereby overloading the opposite leg. The most famous example of this was the American racehorse Barbaro who had a bone fracture in one hind leg which was successfully fixed, but he unfortunately developed laminitis in the other hind leg, ultimately resulting in him being euthanased.

### Inflammatory Laminitis

One example of this is grain overload such as when a horse / pony breaks into a feed shed and eats a large amount of hard feed in one go. When this happens, the grain is only partly digested, builds up in the hind gut where rapid fermentation causes massive changes in the gut, ultimately resulting in gut damage, absorption of toxins and severe diarrhoea and illness. Other causes include colic cases where the gut is severely damaged, colitis (diarrhoea), severe infection of the lungs (pleuropneumonia) and retained placenta (afterbirth) in mares after foaling.

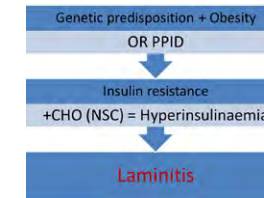
In each of these situations severe illness in the horse results in toxins being absorbed into the blood which ultimately cause severe damage to the lamellae of the hoof.



Severe diarrhoea in horses (colitis) may result in laminitis.

### Metabolic Laminitis

This is the most common cause of laminitis in the UK. Metabolic causes include pituitary pars intermedia dysfunction (PPID; Cushing's disease) and equine metabolic syndrome (EMS) – these are two diseases where horses have abnormal control of their carbohydrate metabolism and as a result have abnormally high levels of the hormone **insulin**. The abnormal processing of dietary carbohydrates in both of these conditions, involves an excessive insulin response to starches (main carbohydrate in grains) or sugars (main carbohydrates in grasses and hay) in horse feed.



PPID and EMS are not the same though!



Horse with PPID – note clinical signs including laminitis (note also the many rings on the hooves), wasting (loss of topline), sweating, bulging above the eyes and a long haircoat that has not shed properly (hypertrichosis).

### PPID

PPID is a disease of ageing, where the control of pituitary gland hormone secretion is lost, leading to excessive secretion from a certain part of the gland (the pars intermedia, as in PPID). If a horse has this condition, there may be a variety of the clinical signs which may include, a long hair coat due to delayed shedding, sweating, loss of muscle mass, development of a pot belly and drinking excessively. Some of the

hormones produced from the pituitary also affect carbohydrate metabolism and can predispose to laminitis. Many PPID horses/ponies may have been originally fat, so when they lose muscle their fat often looks strange and lumpy, **but PPID is not caused by obesity.**

### EMS

EMS (or equine metabolic syndrome) tends to occur in genetically predisposed breeds (especially native ponies), and is worsened by obesity). This does not mean that all obese horses or ponies have EMS, but, if the horse or pony has EMS, then obesity will worsen the carbohydrate metabolism and predispose to laminitis.



We are grateful to the Animal Welfare Foundation for funding a study conducted by the University of Liverpool investigating 'Horse owners' understanding of laminitis' and for providing the funding to produce this information leaflet. More information about their work can be found at [www.bva-awf.org.uk](http://www.bva-awf.org.uk)



Philip Leverhulme Equine Hospital, The University of Liverpool, Leahurst Campus, Chester High Road, Neston, Cheshire CH64 7TE

Tel: 0151 794 6041  
Email: [Equinereception@liverpool.ac.uk](mailto:Equinereception@liverpool.ac.uk)  
Web: [www.liverpool.ac.uk/equine/common-conditions/laminitis/](http://www.liverpool.ac.uk/equine/common-conditions/laminitis/)  
[f philipeverhulmeequinehospital](https://www.facebook.com/philipeverhulmeequinehospital)