

# Learn about laminitis

## Chapter 2 – What are the potential clinical signs of laminitis?

Laminitis can be categorised into two clinical phases – the acute and the chronic phase. The acute phase of laminitis begins when clinical signs of pain are first noticed, brought on by already triggered changes within the lamellar region. In the acute phase, although the onset of clinical signs can be quick and serious, there are no permanent changes in the position of the pedal bone within the hoof capsule. However, **a case of acute laminitis should be treated as a medical emergency** because damage to the lamellar interface has already started and the sooner acute laminitis is recognised, the sooner treatment can be initiated. Depending on the severity of damage within the foot, animals may recover from the clinical signs of pain associated with the acute episode without lasting damage. However, if lamellar damage is severe, progress into the chronic phase of the disease, characterised by permanent changes in the position of the pedal bone inside the hoof, occurs. As the chronic stage involves permanent anatomical changes within the foot, from which the animal never truly recovers, chronic laminitis remain highly susceptible to further lamellar damage, and recurrent active episodes of laminitis.

### Clinical signs of laminitis associated with the acute phase

Recognising the early signs of laminitis is key to preventing irreversible changes within the horse’s foot. However, it is important to remember that a horse with acute laminitis may present only some of the commonly-observed early signs of laminitis listed below, not necessarily all of them.

Detectable signs	Changes in stance	Changes in gait
An abnormally strong pulse in the digital artery (a blood vessel found at the back of the fetlock) - usually in healthy feet this pulse is difficult to detect ( <i>Fig. 2</i> )	Changes in stance will depend on which feet are most severely affected - Fore feet: forelegs will be placed in front of the body in an effort to take the weight off the toes and onto the heels ( <i>Fig. 4</i> )	Lameness in one or more legs – laminitis is usually most common in both front feet but does less commonly occur in all four feet, the hind feet or in one foot only
Abnormal heat at the hoof wall or the coronet ( <i>Fig. 3</i> )	- Hind feet: the forelegs are placed underneath the body and weight is transferred forwards and away from the hind feet	Short, stiff steps in walk and trot (sometimes described as ‘pottery’ or ‘stilted’)
Pain and discomfort when minimal pressure is applied to hoof wall or sole directly in front of the frog (your farrier/trimmer may notice this)	- All four feet: in severe cases the animal will refuse to move and may lie down on its side with legs extended	Difficulty making tight turns
	Leg trembling and weight shifting from foot to foot	Reluctance or refusal to move forward unless forced
	Refusal for foot to be lifted	Recumbency (lying down) when pain is extreme



**Fig. 2** Feeling for a digital pulse at the back of the fetlock.



**Fig. 3** Feeling for heat in the hoof and coronet

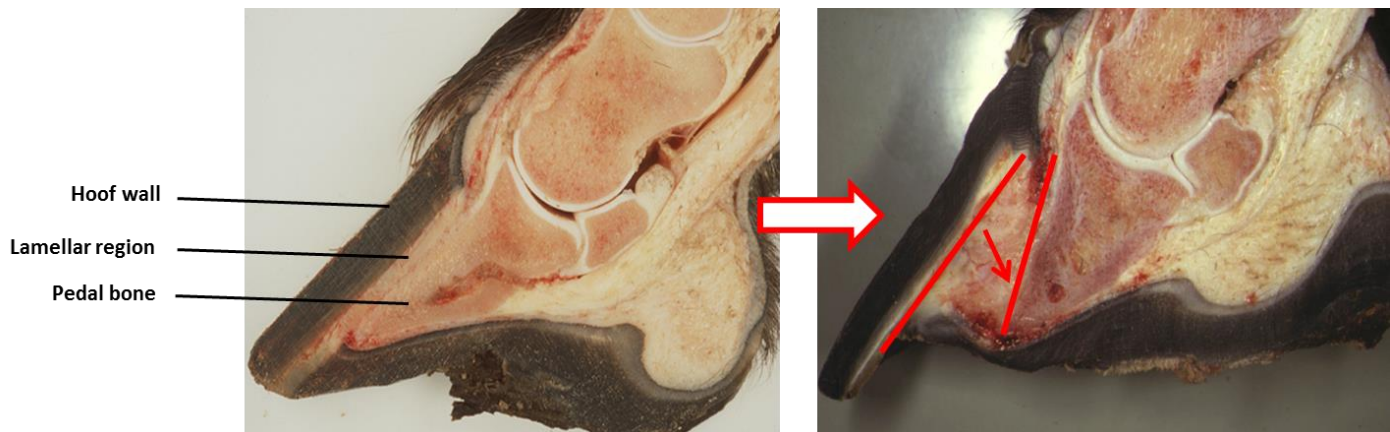


**Fig. 4** Changes in stance, such as the typical laminitic stance of placing the forelegs in front of the body, can range from moderate (left) to extreme (right) depending on the pain being experienced.

**Becoming familiar with your horse or pony's normal temperament, gait, hoof temperature and digital pulse will help you notice any abnormal changes. Be aware that the above clinical signs, though being common, don't always occur in every case so also keep an eye out for general discomfort and foot lameness.**

### **Clinical signs of laminitis associated with the chronic phase**

The acute phase of laminitis progresses to the chronic phase when there is either pedal bone sinking (downwards motion) and/or rotation (*Fig. 5*).



**Fig. 5** Example of a foot showing the normal position of the pedal bone (parallel to the hoof wall) and pedal bone rotation in a severe chronic laminitis case. You can see that the lamellar region has degenerated and the tip of the pedal bone has caused the sole to distort and bulge outwards.

The best way to definitively diagnose a foot which has undergone chronic laminitic change is to confirm pedal bone sinking or rotation by X-ray. Other tell-tale signs of long-term chronic laminitis in the foot are listed below. An animal with chronic laminitic changes may not show signs of obvious lameness when not undergoing an active episode of laminitis, however, the animal remains permanently susceptible to further damage and recurrent laminitic episodes. Once again, it is important to remember that a horse with chronic laminitis may present only some of the commonly-observed clinical signs listed below, not necessarily all of them.

<b>Chronic laminitic foot</b>	<b>Chronic laminitic foot with active laminitic episode</b>
May or may not show lameness e.g. pasture sound but lame when undertaking athletic work	Clinical signs associated with the chronic laminitic foot (left)
Marked depression at the coronet where the pedal bone has been displaced	Detectable signs and changes in stance and gait associated with the acute phase of laminitis
Divergent growth rings on the hoof wall (spacing between growth rings is wider at the heel than at the toe) ( <i>Fig. 6</i> )	Separation of the hoof wall at the coronet ( <i>Fig. 10</i> )
Changes in the angle of the hoof wall ( <i>Fig. 7</i> )	In very severe cases, prolapse of the pedal bone through the bottom of the sole ( <i>Fig. 11</i> )
A very wide and stretched white line ( <i>Fig. 8</i> )	
Changes in the usual shape of the sole – becoming either flat or convex (bulging outwards)	
Crescent shaped bruising on the sole just in front of the frog ( <i>Fig. 9</i> )	



**Fig. 6** Divergent growth rings in a hoof.



**Fig. 7** Changes in the angle of a hoof wall.



**Fig. 8** A very wide and stretched white line (especially at the toe area) shown after a fresh trim. Note also the bruising on the sole indicating trauma inside the foot.



**Fig. 9** Crescent shaped bruising on the sole



**Fig. 10** Hoof wall separation at the coronet (image courtesy of Dr L. Wells-Smith)



**Fig. 11** A prolapsed sole in a very severe chronic laminitis case.

### Recent research on clinical signs of laminitis

A research paper was published in 2013 which estimated the frequency of laminitis in a group of veterinary-attended horses in Britain and described the clinical signs of both acute and chronic laminitis in 577 cases by gathering information from vets over a two year period. Although there were no individual clinical signs that were present in every case, the most common clinical signs were found to be:

- increased digital pulses
- difficulty in turning
- short, stilted gait in walk

These results indicate that the most common signs of laminitis may also be the most subtle and could easily be confused with other conditions, such as stiffness due to suspected arthritis. The visibly obvious signs that may be more widely known – such as the typical laminitic stance with the forelegs placed in front of the body, were found in less than half the animals; while visible divergent growth rings were found in only 24% of animals. The low percentage of animals with divergent growth rings may reflect the possibility that there were less cases of chronic laminitis compared to acute laminitis in this study population but does emphasise a need for increased vigilance for the more subtle signs.

Laminitis was found to occur in all four feet, but both front feet were most commonly and also most severely affected. Table 1 shows the number (prevalence) and percentage (%) of feet which were most severely affected in 381 cases that provided this information.

**TABLE 1: The most severely affected foot/feet as described by reporting veterinary practitioners from data collected in an epidemiological investigation of equine laminitis conducted in Great Britain 2009–2011, ranked in descending order of prevalence**

Most severely affected foot/feet	Prevalence	
	(n)	(%)
Right fore and left fore	200	52.5
Right fore	74	19.4
Left fore	59	15.5
Right hind and left hind	16	4.2
All 4 feet	10	2.6
Left hind	9	2.4
Right hind	8	2.1
Right fore and right hind	2	0.5
Left fore and left hind	2	0.5
Left fore and right hind	1	0.3

(Table from Wylie *et al.*, 2013)

**If you suspect that your horse or pony may have laminitis, please contact your vet. Treatment and management of a laminitic animal is very case-specific and should be a collaborative effort between the owner, vet and farrier/trimmer.**

If you would like to take a look at the full research paper mentioned in this section, follow the link – [A cohort study of equine laminitis in Great Britain 2009 – 2011: estimation of disease frequency and description of clinical signs in 577 cases.](#)

Next time we will take a closer look at the anatomy of a healthy equine foot, and what happens as a result of laminitis.