

# FACTSHEET

## LAMINITIS

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### RECOGNIZING, TREATING, AND PREVENTING LAMINITIS

**L**aminitis causes crippling lameness associated with intense pain that shortens horses' athletic careers, negatively impacts quality of life, and all-too-frequently prompts euthanasia.

Laminitis — damage and/or inflammation of the lamellae — affects an estimated 7–14% of the world's equine population.<sup>1</sup> The tiny, interwoven lamellae attach a horse's hoof to the underlying coffin bone, singlehandedly supporting the animal's entire weight. Anything diminishing the lamellae's integrity, such as inflammation, weakens their hold, causing the coffin bone to displace (rotate or sink) within the hoof capsule.

#### CAUSES OF LAMINITIS

Veterinarians generally classify cases into one of three major categories, based on the underlying cause:

- ◆ Endocrine-associated, the most common form, which generally affects horses with insulin dysregulation, often due to equine metabolic syndrome (EMS) or pituitary pars intermedia dysfunction (PPID, formerly called equine Cushing's disease). It is exacerbated by excess starch and sugar ingestion via feed or pasture;<sup>2,3</sup>
- ◆ Sepsis-related, due to toxins in the bloodstream of ill horses (e.g., those with diarrhea, colic, retained placenta, or uterine infection);
- ◆ Supporting-limb laminitis, due to excessive weight-bearing on one limb as a result of injury to the opposite limb (e.g., fracture);

Although the exact mechanisms that lead to laminitis development aren't completely clear, vets' understanding is progressing rapidly.

Endocrine-associated laminitis is due to excess insulin's effects on the lamellae, associated with periods of high blood insulin concentrations. Supporting-limb-laminitis appears to be due to decreased blood flow to the lamellae. This occurs when an excessive constant load interferes with the cyclic weight loading and unloading on the limb that normally helps blood flow. Sepsis-related laminitis is more complicated, with multiple factors, including inflammation, acting on the lamellae.

Not every case fits neatly in one of these three boxes. For example, excessive feed intake can involve both endocrine- and sepsis-related elements. Laminitis associated with corticosteroid administration likely occurs because the corticosteroids temporarily reduce insulin sensitivity. And traumatic laminitis is relatively rare and likely due to concussive tissue damage.

Causes might vary but, once laminitis develops, its clinical signs and treatment approach are relatively similar.

#### SIGNS OF LAMINITIS IN HORSES

Clinical signs can be subtle (even absent), particularly with chronic endocrine-associated laminitis. However, horses with acute laminitis or chronically affected horses experiencing a flare-up show signs including:

- ◆ Reluctance or inability to walk/profound lameness;
- ◆ Unwillingness to stand on hard surfaces;
- ◆ Frequent weight-shifting or lifting the feet alternately;
- ◆ Abnormal stance and weight distribution to relieve pressure on the affected limb(s);



- ◆ Increased heart and respiratory rate and sweating;
- ◆ Glazed, pained facial expression;<sup>1</sup>
- ◆ Bounding digital arterial pulses; and
- ◆ Feet that are consistently warmer than usual to the touch.

If the coffin bone has displaced, horses might be reluctant to stand and can have a palpable depression immediately above the coronary band. Blood might ooze from this area.

If you suspect laminitis, call your veterinarian immediately. Don't force the horse to move, and don't feed him while waiting for the vet. If possible, offer deep bedding to provide some relief from weight-bearing, even if this means bringing the bedding to wherever the horse is located.

#### DIAGNOSING LAMINITIS

Usually, clinical signs and physical examination findings make diagnosis relatively straightforward. Hoof radiographs (Xrays) can help vets diagnose milder cases, determine disease severity, and devise a treatment plan. In some cases, venograms (hoof Xray taken with contrast media injected into the veins) can help guide treatment.

#### TREATING LAMINITIC HORSES

Treat cases of acute laminitis or flare-ups as emergencies. The three main treatment goals include:

1. Minimizing mechanical trauma to weakened lamellae. Minimizing trauma via trimming/shoeing is a cornerstone of treatment and ongoing management. In acute cases, soft sole padding or sand can be very useful.
2. Providing pain relief. Non-steroidal anti-inflammatory drugs remain therapeutic mainstays; additional sedation or pain relief might be necessary.
3. Treating the underlying cause of the laminitis. Your veterinarian will try to establish and treat the basic cause—this might involve anything from aggressive treatment of the primary disease (in sepsis-related conditions) to endocrine testing and medication for conditions such as PPID.

Research has shown that cryotherapy (cooling the feet) can help prevent laminitis (e.g., in at-risk sick horses or in cases of known excessive grain intake). It's also an effective first-aid strategy for

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acutely affected horses even after lameness develops.<sup>6,7</sup> Researchers recommend starting cooling as soon as possible in high-risk horses or once acute signs have developed. Keep the lower limbs (below the knees/hocks) completely immersed in a 50% ice/50% water mix, replenishing ice frequently, until 24 hours after clinical signs diminish. This can be very difficult to achieve in the field but is possible in most hospital settings.

### AFTER THE ACUTE EPISODE

Many horses can appear sound again quite quickly. However, horses should not overload the lamellae during this critical recovery period. The lamellae remain weak for a while after pain subsides, so keep the horse on stall rest. An old rule of thumb is one week of confinement for every day the horse was lame.

Horses with chronic laminitis need ongoing veterinary and farrier care, which will likely involve frequent X ray-guided trimming and/or special shoeing. To manage laminitis long-term, follow up with and monitor endocrine function in horses with insulin dysregulation, EMS, or PPID, and treat with appropriate medications.

### PROGNOSIS & PREVENTION

Prognosis is highly variable and dependent on case duration and severity, number of affected feet, and underlying cause. While we can't prevent all cases of laminitis, you can reduce your horse's risk by:

- ◆ Maintaining an appropriate body condition, particularly in easy keepers, horses with a "cresty neck," and insulin-resistant and untreated PPID horses;
- ◆ Restricting rich grass intake (typically in the spring and fall) by using grazing muzzles, drylots, and pasture rotation;

- ◆ Scheduling regular endocrine testing for at-risk horses and ponies;
- ◆ Minimizing or eliminating concentrates from the diet, if possible, with a veterinarian or nutritionist's help;<sup>3</sup>
- ◆ Storing concentrates where horses (even loose ones) can't access them;
- ◆ Avoiding drug use without veterinary approval; and

- ◆ Providing cushioned hoof protection and regular, professional hoof care under veterinary supervision.

In one study researchers reported farriers' key role in helping owners identify at-risk horses and making management suggestions to avoid laminitic episodes.<sup>8</sup>

Once a horse has had laminitis, he might be at higher risk for future episodes.

### Resources

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