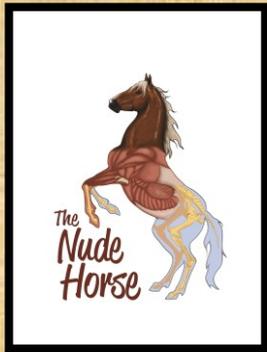


# Equine Metabolic Syndrome (and Laminitis)



**By The Nude Horse  
(Equine Epidemiologist)**

EMS disorders include Insulin Resistance (IR) and Hyperinsulinemia commonly resulting in laminitis. Almost 90% of laminitis cases are now recognised to be caused by endocrine (hormonal) disease – high blood levels of insulin (hyperinsulinaemic laminitis).

The latest research now explains how this process occurs: During the digestive process, both sugars and starches are turned into the sugars (**often from a diet high in grains, pellets and high NSC grasses & hays**) Horses have a limited capacity to digest substantial amounts of sugar and starch in the stomach and small intestine. The excess supply of sugar and starch travels through the small intestines and on into the hindgut where the trouble begins. An increase of sugar fermentation creates lactic acid. Lactic acid lowers the pH causing an acidic environment, this in turn kills off the good microbes. The dead microbes give off endotoxins that now enter the blood stream, this chain reaction often culminates in poor gut health, ill thrift (or obesity) and potentially laminitis.

## How do I know if my horse has laminitis?

Source: <http://www.debenvalleyvet.co.uk/Event.aspx?informationid=5>

- Shifting weight from foot to foot, often quite slowly and subtly.
- Wanting to walk on the soft, avoiding gravel etc. May not want to walk or trot.
- Warm/hot feet.
- Pronounced digital pulses – your vet can show you where to feel for these.

Signs of distress may be fast breathing, sweating and laying down more than normal. Noticed perhaps first is the leaning back 'toe-relieving' laminitic stance.

Laminitis can develop for a number of reasons and is currently a hot area of research. However, the single most common cause is:

- Too much sugar, starch & fructan in their diet

Other predisposing factors and triggers include:

- Insulin resistance (especially fat ponies)
- PPID (formerly known as Cushing's)
- Poor shoeing, especially with too much fast work on hard ground / roads (also known as 'road founder').
- Carbohydrate overload/gorging grain
- Toxaemia or other disease (e.g. liver)
- Large doses of steroids, or stress
- Reduction in workload, but not feed volume

It is now strongly suspected that **if a pregnant mare has poorly balanced nutrition** – causing obesity - or a **lack of vital vitamins and minerals** her foal will be predisposed to insulin resistance and be at higher risk of developing laminitis for its whole life.

## Management and feeding:

Do NOT severely reduce the volume of feed, horses are naturally trickle feeders. Extended periods without food can result in gastric ulcers and further imbalance the microbiome population in the gut to increase symptoms. A healthy microbial population helps break down the sugars.

## High risk grazing:

- Lush grass
- Long, dead-looking old grass
- Frozen grass (Frost affected)

## Feeding tips:

Change the type of feed your horse consumes to low NSC such as *soaked* cracked lupins, *soaked* beet pulp, *soaked* copra and lucerne chaff & lucerne hay. These feeds contain the very beneficial high fibrous polysaccharide carbohydrates rather than starch & fructan sugars. Extend feeding time by using a slow graze feed bag (2cm diameter holes is ideal) to hold the hay.

Mow fields in the summer if they are not used for grazing or hay to prevent them going to seed. Turn out onto an area which is small enough to be kept grazed short. Suitable grass looks ½ mud and ½ grass.

Don't be fooled into thinking there's no grass – usually there's only no grass because the horse is eating it as fast as it can grow! If you are mowing your lawn then the grass is growing – if the field looks bare but you are mowing your lawn twice a week then the horses are eating a lot of grass!

Make sure the diet contains a **mineral and vitamin** supplement containing Chromium, Methionine & Biotin for carbohydrate metabolism, especially whilst feeding lots of low-calorie fibre, make available "Himalayan **rock salt**, feed a quality **pre & pro-biotic** (to re-establish gut flora) with a **toxin binder**". Flowers Gold and Gut Centric are excellent feed supplements.

**Exercise** helps reduce insulin resistance, try to ensure your horse gets a minimum of 30 minutes active walking every day."

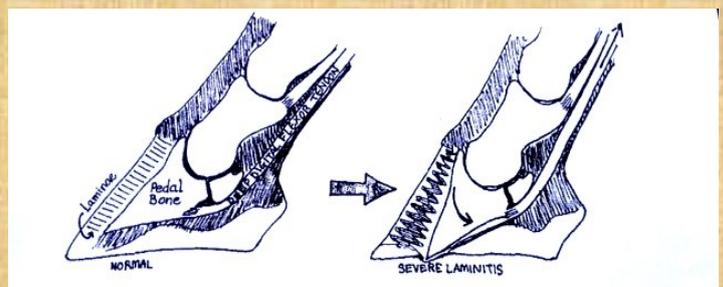


Image by Deben Valley Equine Veterinary Clinic

See: <http://www.debenvalleyvet.co.uk/Event.aspx?informationid=5>

Source: <http://www.thelaminitissite.org/articles/equine-metabolic-syndrome-and-insulin-dysregulation>

"A common suggestion is to **feed a horse 1.7% of its ideal or current bodyweight** (based on soaked hay with added minerals). Do not reduce to less than 1.5% of the horse's bodyweight. Severe calorie restriction can worsen insulin resistance."

Source: [http://www.safergrass.org/pdf/sugar\\_in\\_hay.pdf](http://www.safergrass.org/pdf/sugar_in_hay.pdf)

"**Soak hay** for at least 60 minutes in cold water, or 30 minutes in hot water, drain and feed before mould has a chance to grow. Use fresh water every time, as sugar will build in the water."

Whilst 'Bute' plays a very important role in the early stages of a laminitic episode, it is only needed for a matter of days, not weeks and definitely not months. **Nutritional supplementation** is vital to support the body's efforts at recovery.

A combination of supplements useful during the healing process include concentrating on the ulcerated stomach with a **potent probiotic supplement** and a top-quality **nutritional supplement with balanced minerals** – preferably both chelated and organic where possible.

Facilitate healing through **correct trimming**. It's vitally important to remove all weight from the 'broken' laminae. That is the only way it can begin healing at the coronet. See pictures A, B & C.



Rehab includes soaking in concentrated salt water, cleaning and wrapping in bandages or baby nappies to prevent infection.

A return to soundness comes routinely at three to four months, when the new lamellar attachment reaches ground level at the heels."

#### Food Allowed:

Free-choice soaked quality lucerne hay with **fully balanced mineral and vitamin supplement** & **Pre & Probiotics** in a small amount of soaked: cracked lupins, beet-pulp & copra mixed with pre-soaked lucerne chaff.

Once the hooves have regained a sound shape, a small amount of grass is allowed daily (1 hour of grazing with a muzzle on)

#### Treatment Summary:

- A natural **trim every week** for 8 weeks, then every fortnight for the next 6 weeks & then every 3 weeks.
- Initial bandaging of the front hoof wounds to keep honey in and dirt out until the wounds were healed (3 months).

- Painkillers to keep spirits up and encourage some movement (gradually phased out after 4 weeks).
- Confinement away from grass in a large stock yard on soft footing (sawdust & straw then some pea sized gravel was added in wet areas)."



Visible Pedal Bone Penetration



Visible blood in the white line



Bath frequently and bandage to protect from further infection

Source: <http://holistichorse.com/health-care/feeding-the-horse-with-winter-laminitis/>

#### Chinese Food Therapy

Omega-3 fatty acids are very important in the treatment of laminitis. Hemp seed moistens the intestines to promote bowel movement and is sweet and neutral. Flax and Chia seeds have similar effects. All of these have anti-inflammatory properties and help correct insulin and glucose usage.

#### Minerals

One of the most important aspects of any nutritional program for horses is the use of free choice minerals and salt fed separately. Many laminitis horses will eat **large quantities of minerals** for extended periods. Sulfur may be an important nutrient for these horses and can be fed free choice or with a MSM supplement.

#### Other Nutrients:

Antioxidants: Vitamin C is an excellent antioxidant and supports the immune system healing. Coenzyme Q10 seems to one of the best antioxidants for use in horses, especially in cases of laminitis.

#### Chromium:

Chromium has been found to be beneficial in diabetic experimental animals and in conditions resulting from insulin sensitivity and defects in glucose transportation (Liu et al., 2010)

Source:

[https://dspace.library.colostate.edu/bitstream/handle/10217/65346/OtabachianSmith\\_colostate\\_0053N\\_11108.pdf?sequence=1&isAllowed=y](https://dspace.library.colostate.edu/bitstream/handle/10217/65346/OtabachianSmith_colostate_0053N_11108.pdf?sequence=1&isAllowed=y)