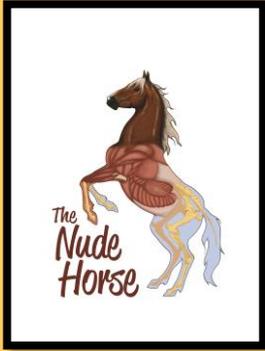


Equine Metabolic Syndrome (and Laminitis)



By The Nude Horse
(Equine Epidemiologist)

EMS is also referred to as Insulin Resistance (IR) and Hyperinsulinemia. The condition is often triggered by chronic obesity. Overfeeding of Non-Structural Carbohydrates (NSC), simple sugars and fructans result in increased uptake of glucose by muscles and adipose tissues. If this happens in chronic levels, these excess sugars will exceed the fat tissues ability to use and store glucose. This will result in the muscle and adipose (fat) tissues to improperly respond to insulin. Hyperinsulinemia will result (the body reacts to compensate for the reduced insulin sensitivity and increase its insulin levels even more). Theory suggests high insulin levels alter blood flow and endothelial cell function causing vasoconstriction to the blood vessels and ultimately to the laminae (in the feet). High insulin may alter the colonic bacteria increase endotoxins causing inflammatory.

See <http://www.durangoequine.com/articles/equine-metabolic-syndrome/>

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 many calories!

Other predisposing factors and triggers include:

- Insulin resistance (especially fat ponies)
- Cushing's Syndrome
- 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:

Severely restricting the volume of food a horse can eat is not ideal because horses are naturally trickle feeders. Long periods without food can result in gastric ulcers.

High risk grazing:

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

Feeding tips:

Limit the amount of grazing available by increasing the number of horses, reducing the size of the field or using a grazing muzzle. 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 is **balanced for vitamins and minerals**, especially whilst feeding lots of low calorie fibre, make available "himalayan rock salt, feed a quality **pre & pro-biotic** (to re-establish gut flora) and feed a **toxin binder**". (<http://www.hoofnz.org.nz/html/laminitis.html>)

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

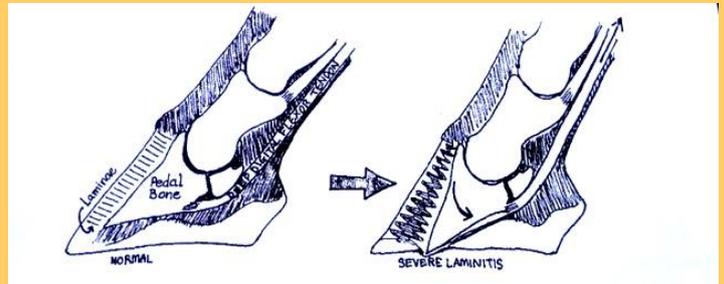


Image by Deben Valley Equine Veterinary Clinic

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 1.5% of its ideal or current bodyweight** (based on soaked hay with added minerals). Do not reduce to less than 1.2% of the horse's bodyweight. Severe calorie restriction can worsen insulin resistance."

Source: 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."

Source:

<http://www.barehoofcare.com/AB%20articles/Laminitis%20Recovery.pdf>

"Whilst 'bute' plays a very important role in the early stages of a laminitic episode, it is really 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** and damaged digestive system and then **liver cleansing**.

Facilitate healing through **correct trimming**. It's vitally important to remove all weight from the 'broken' laminae. That is the only way it is able to 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."

Source: <http://naturalhorseworld.com/newsite/laminitis-recovery/>

Food Allowed:

"Free choice average quality grass hay plus oaten chaff with **quality mineral and vitamin supplements** and a small amount of pellets (Hygain Ice recommended) and a few vegetables for variety.

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 & now 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 in an 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 also 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