

Laminitis Attack: The First Line of Defense

By Dr. Don Walsh, DVM and Kathryn Watts

When we discover our horse can barely walk, has hot feet, and shifts its weight onto its hindquarter, air raid sirens go off in our head. We scramble to call our veterinarian and hoof care provider to find the cause and prevent rotation of the coffin bone. Once the cause has been determined, we shift strategy to developing appropriate defensive maneuvers. When the initial attack is over and our horse is starting to walk normally again, tactics shift to rehabilitation and prevention of a relapse. Even the most successful practitioners may fail to offer relief. Far too often, the first attack is so devastating the war is over quickly, and laminitis has won again. Laminitis can also wage a long, drawn out cold war, engaging in hidden guerilla tactics, undermining our horse's soundness with a slow but relentless onslaught on internal structures.

In spite of recent advances in our knowledge about laminitis, many questions have yet to be answered. When science lags behind the need, miracle cures quickly fill the void. Marketing replaces scientifically conducted clinical trials. If your horse is still in constant pain, after your regular horse care experts have done all they can, you may find yourself searching for a second opinion or alternative therapies. Even the skeptics among us may be tempted to try some scientifically unproven treatment as a last ditch effort. Internet gurus may override the advice of your formerly trusted local veterinarian or hoof care provider. Whom should we trust? How do we tell if our advisor is up to date on new scientific breakthroughs, or operating under old fashioned protocols? How can we navigate the quagmire of conflicting theories and untested products to make better choices for our laminitic horses?

Determining Defensive Strategy

Laminitis is a symptom with many causes. They include high insulin levels, excessive concussion, excessive weight bearing due to injury on other limbs, carbohydrate overload (binge eating), retained placenta, colic, any systemic illness, bedding with black walnut shavings, ingestion of toxic plants, and excessive use of steroids. The treatment that is most successful for an individual case requires removal of the cause.

Once a horse has had more than one attack of laminitis they are considered 'chronic' and more susceptible. Damaged laminae are more vulnerable to triggers for future episodes. They may experience hoof pain from being overdue for a trim that puts mechanical stress on damaged tissue. Cold weather may make a previously foundered horse sore due to pain from previously damaged nerves or impairment of blood flow. If the coffin bone has descended, the resulting thin soles offer less protection on hard or rocky ground. Once a horse has had laminitis, there is no going back. Post laminitis management may be very different for the rest of the horse's life. If you are committed and have the right resources at hand, your horse may recover and have a useful, comfortable life even after a serious bout of laminitis with significant rotation. Changes in routine are difficult at first for both horse and owner, but they will not seem disruptive once the new plan becomes routine.

Team Approach Required

The owner, veterinarian and hoofcare provider must work as a team. Finding the best plan often requires an investigative phase, and all team members can provide valuable clues. Direct interaction between the attending veterinarian and hoofcare provider is imperative for successful management of a horse with laminitis. The resources of the owner in regard to available facilities, finances and time constraints for nursing and rehabilitation are important considerations in determining a viable treatment program. Frequent, ongoing communication should be encouraged by all team members.

Experiment, Observe, Adjust

Most people do not have the time or background to study every laminitis treatment out there. We have to rely on experts, but their opinion should not be the 'end all, be all' in the decision process for which a course of treatments to follow. Every case of laminitis is slightly different. Your horse may respond differently. Your horse's reaction to any treatment should have priority over any expert opinion. If someone says 'feed him this' and the next day he is much worse, question the suitability of the feed or supplement. This is not the time for blind faith. An observant caretaker who knows the animal intimately and sees him several times a day is far more capable of assessing a reaction to treatment. Keep your vet informed, but don't expect him to make every little decision for practical management and nursing.

For horses with reoccurring, chronic laminitis keeping a journal is very useful. Make notes about any changes in diet such as a new batch of hay, bagged feed or new supplement. Make notes on hoof appearance and care, exercise, vaccinations, significant changes in weather, changes in general demeanor. Sometimes a pattern will develop that will allow you to discover a previously unrecognized trigger. Perhaps it's the cold weather that triggers higher sugar levels in your pasture. Or the variable amount of sugar in your bagged feed. Something you may not think is important may have an effect two weeks from now. A journal may help you unravel mysterious causes when a pattern develops over time. This may help you prevent future episodes.

When a researcher studies the effect of a variable, it is important to change only one thing at a time to isolate that affect. That's what we call 'controlled experiments'. Control of every aspect that might affect laminitis is difficult if not impossible, but we have to try when searching for triggers. When our horse gets sore feet in mid-winter, is it a direct effect of cold temperatures on compromised vasculature? Is he due for a trim and the angles of the feet have changed dramatically? Or is it the fact that his exercise has been limited because it's too cold to ride, which has caused an increase in insulin? Or hard, frozen footing? That new batch of hay? The addition or removal of a supplement? Shorter day length effect on hormones? We just can't know which of these factors is most important. Possibly it was the combined effect of all of them. That's where our journal is useful. When multiple factors confound a change in your horse, repeating tests for blood insulin level, and hay analysis may show that you need to focus more on finding a more appropriate diet. Or, you might try the on-off-on-off test. If you consistently see a good affect when you 'do' something, and it goes away if you stop, keep doing it. Any time you do two new things at once, you cannot know which was most helpful. If your schedule has limited your horse's exercise program, and his cresty neck is getting big and hard, but you also just got a new batch of hay, start soaking the excess sugar out of the hay. If all

other factors stay the same, but the lower sugar level is helpful, then you know that that batch of hay is not appropriate. Make notes in your journal to help you determine if it really is helping. Of course if your horse improves with half a dozen different products, a new trimmer, and a different medication source, you may be so relieved you won't want to change a thing. That's OK if you can afford it, but if money is tight, you may want to try eliminating one thing at a time to determine which products are really useful.

Establishing Priorities

Priorities may seem like a moving target from day to day, but it is important to step back, look at the big picture and try to stay with a master plan. We have outlined what we believe to be the most cost effective and efficient program for diagnosis, treatment and prevention of laminitis. We have categorized our recommendations as either 'Vital', 'Can't hurt, might help', and 'long shots in times of desperation'. Those listed as 'vital' are most apt to help most horses. 'Can't hurt, might help' are those things we have found to help some horses and might be worth experimenting with. 'Long shots' are those things we don't have much faith in, but realize some owners may try in order to make themselves feel they are not giving up and still trying to 'do something'.

Priority Level Vital- First Line of Defense:

Get Expert Help

Many new diagnostic and treatment options have become available in the last 5 years. The most important new research on laminitis is not in text books yet. Laminitis treatment is particularly challenging and frustrating for veterinarians and farriers. Not all have the time or inclination to seek out current information by attending conferences and reading the newest literature. Others may have dedicated the time and effort to learn as much as possible, and are 'battle ready' and armed with the most sophisticated defensive weapons when laminitis attacks. Ask your professional caregiver if they are comfortable taking on your case. Let them know if you are willing and able to treat aggressively and seek out the best, up to date, expert care available. They may choose to refer you to a specialist who is more interested and experienced in treatment of laminitis.

Use of Pain medication

Routine use of medications such as bute (phenylbutazone) or banamine to relieve pain is controversial. Pain medication does not stop laminitis; it only masks the symptoms. While pain causes stress to both the horse and the owner, it is important to acknowledge that pain has an important function. It prevents a horse with laminitis from moving around too much during a period when its feet are in jeopardy, causing rotation of the coffin bone. Pain is not the enemy- *gravity* is the enemy. The best position for a horse with acute laminitis is lying down; off its feet. Removing pain medication may be the best thing to encourage your horse to get the 'bed rest' he needs. Bed deeply, and keep a horse friend close to help your horse feel comfortable and secure. Straw can sometimes be too high in sugar, so if your horse likes eating his bed, get it tested for sugar content. Even if your veterinarian chooses to prescribe short term medication in an attempt to limit inflammation, always confine a horse while on pain killing drugs so moving around does not cause more damage.

Find the cause

We cannot prevent future episodes of laminitis without determining the cause of the current episode. If the horse ate a bag of grain, or got loose and ran down a paved road in a panic, the cause is self evident. But many cases of laminitis may appear out of nowhere, with no apparent cause. That's when we have to play detective. Blood work to determine hormonal status is the best place to start.

We feel that the diagnostic investigation of every case of laminitis with 'mysterious' causation should include an endocrine panel to determine levels of insulin, glucose, ACTH and thyroid. Hyperinsulinemia can trigger laminitis. New studies have shown that not all IR horses or ponies get fat, even on pasture, yet the metabolic profile that predisposes them to laminitis can be determined by appropriate blood tests. These tests are inexpensive, readily available and do not require special handling. Grain or high sugar hay may affect insulin levels, therefore we recommend pulling blood at least 3 hours after the last meal. A horse with laminitis should already be off all grain, and on soaked hay, or hay tested and known to be low in sugar, until insulin resistance is ruled out. A baseline ACTH or Domperidone stimulation test should be included to rule out PPID (aka Cushing's). The dexamethasone suppression test has been previously described as the 'gold standard', but recent studies have shown that dexamethasone can cause a dramatic rise in insulin in ponies. It may be prudent to avoid this testing method until insulin and glucose tests have ruled out insulin resistance. Tests for PPID do require special handling, and are not completely reliable from August through October due to seasonal variation of ACTH in even normal, healthy horses. If testing during this period, cases with borderline test results may be put on 1 mg of pergolide temporarily. Then after November, wean off pergolide for 2 weeks and retest. Pergolide can be very effective at stopping laminitis in horses with PPID, and administration should not be postponed if PPID is suspected. Not all PPID horses are hairy, and laminitis is sometimes the only symptom presented. Not all PPID horses are insulin resistant, and not all insulin resistant individuals have PPID. It is two separate conditions that may overlap.

<http://diaglab.vet.cornell.edu/> is our lab of choice. Their website provides instructions for sample preparation, shipping and interpretation for those unfamiliar with endocrine testing.

Abscessing is common after a laminitis attack, and is frequently misinterpreted as a relapse. It frequently presents in only one foot, comes on suddenly, and can make a horse three-legged lame. There may be a bulge or soft spot in the coronary band or sole or localized heat. Call your vet. If the abscess can be found and drained, reduction in pain is immediate, and everybody heaves a huge sigh of relief.

Diet

If insulin resistance is ruled out by blood tests, chances are a previously laminitic horse can resume with the same diet as before after complete recovery, with the following caveat: Previous laminitis from any cause may weaken the structures in the foot and predispose a horse to future episodes. This means we should exercise more caution to assure the horse has no more grain than necessary to maintain a lean body condition. A more gradual introduction to pasture than required previously is advised.

For laminitic horses known to be insulin resistant or not yet tested for insulin, all grain and feed containing grain products should be eliminated immediately from the diet. Hay should be soaked under water for a couple of hours to dissolve and leach out excess sugar. A positive response within a week to hay soaking is a good indication of insulin resistance, and a clue that the hay is not appropriate. Sample 10-15 bales with a hay corer and send to www.equi-analytical.com Try and find hay that is below of 10 % Water Soluble Carbs + starch on a dry matter basis. Some horses may be more sensitive, and some may be more tolerant especially if currently sound and in a regular exercise program.

Hoofcare

If you think your horse has laminitis, you should immediately support the boney column to limit rotation and sinking. This can be done by applying blue construction Styrofoam with duct tape. See instructions at:

http://www.hopeforsoundness.com/miscfiles/sty_inst.pdf

Everyone with a horse that is high risk for laminitis should have this ready in their first aid kit.

Barefoot vs shoes

This debate often takes on the fervor of religious conviction, but again, let your horse tell you what he needs. We feel that if you can provide footing that cushions and supports the boney column and enables your horse to move about more comfortably, barefoot is a useful option, especially if you are willing and able to utilize boots and pads as needed to keep your horse comfortable. Sand, pea gravel or soft, loamy soil may provide adequate support, depending on the degree of hoof pathology. Therapeutic shoeing packages may be necessary in situations where footing is not optimum, or the horse does not improve after a proper trim by a hoof care practitioner with previous success in rehabilitating laminitic horses.

Successful hoof care treatments include support of the boney column, providing cushioning, setting break-over further back to reduce mechanical stress in the toe region, and encouraging weight bearing in the back portion of the hoof. There are many products and techniques to choose from. Only your horse can tell you which is best. Your hoof care provider should have experience and success in the rehabilitation of foundered horses. This is a specialty. If your horse is not responding with improved soundness after their administrations, ask them or your vet for a referral to a specialist.

Exercise during rehabilitation

When insulin resistance is associated with laminitis, we feel that the practice of keeping horses in a stall long term is contradicted. Movement and exercise improves circulation and insulin sensitivity. As soon as the horse is walking about, **on no pain medication**, he should be allowed and even encouraged. We like the 'open door policy'. Leave the stall door open, and let him decide when he feels like moving about. Provide soft, supportive

footing such as sand, mud or sod, therapeutic shoes, boots and pads or taped on frog support. To decide when hand walking might be productive, walk the horse 30 steps. If soundness improves, as indicated by longer, quicker, and less tentative strides, go ahead and try 5 minutes. Don't go too far away, and stop anytime they worsen. If they are no worse the next day, continue adding 5 minutes per day. Continued improvement within each session, or day by day is an indication that exercise is beneficial. When the horse begins to trot or canter at liberty, work under saddle at walk on good footing can begin. Let the horse tell you what he can handle, but be cautious, observant and try not to 'over do'. Once your horse is fully sound again, regular exercise is another vital practice for prevention of laminitis in insulin resistant horses and ponies.

Priority Level: Can't hurt, might help

Sore when cold

If a horse with chronic laminitis gets sore when cold weather sets in, keeping the legs and feet warm might be helpful. Recent studies show that laminitic horses can suffer from neuropathic pain from damaged nerves. This might be like someone with frostbite, who becomes more sensitive to cold. Previous episodes of laminitis may have damaged the blood vessels, so the mechanism by which horses shunt blood in the feet to regulate temperature may be impaired. Try shipping boots or polo wraps on the legs, and glue some fuzzy fake fur into an oversized pair of bell boots. Give affected horses shelter, and some deep, dry bedding to snuggle into.

Massage and chiropractic

Horses that have laminitis stand and move with their backs hunched up trying to keep weight off their front feet. This may cause sore muscles in the loin and hindquarters. Massage or chiropractic care may be useful and encourage more spontaneous movement in horses whose feet have recovered but are still stiff after an episode is over.

Supplements

While no scientific studies have been conducted, anecdotal evidence from owners of horses with Metabolic Syndrome suggests that supplementation with magnesium and chromium may be useful. 5 grams of magnesium and 5 mg of chromium for a 1000 lb horse is a good starting dose. They are very safe, with no known side effects. You can purchase magnesium and chromium separately to see if they are effective in helping your horse lose the fatty deposits. www.balancedequinenutrition.com has very good prices for straight products that will have to be added to a carrier. A palatable, pelleted, but more costly form is Quiescence from www.foxdenequine.com

Expensive does not mean better. Unfortunately we can't know if a high price truly reflects cost of research and production, or if it is part of a marketing strategy to make products appear more valuable to a gullible consumer. Our society seems focused on finding the perfect pill to solve our health problems, but there are currently no proven medications or supplements known to stop or prevent laminitis. Lack of regulation in the horse supplement industry provides the perfect opportunity to make money on laminitis. Supplement manufacturers can formulate a broad spectrum vitamin and mineral supplement, add some theoretically beneficial herbs, and double their money when they add 'laminitis' to their promotional material. Legally, they may not make claims about efficacy in treating disease, but they are allowed to use vague language like "support of

systems that may be involved in laminitis”. That could mean anything, therefore it means nothing! Might one of the many ingredients end up being proven to be beneficial? Possibly. Or they could be found to make laminitis worse. We encourage you to focus on the most cost effective products. You must make that judgment by your horse’s increased health and soundness for the least money spent, not by the hype in the advertising. While the broad spectrum, specialty ‘metabolic’ supplements have other ingredients that may be necessary or useful to the overall health of your horse, it may be possible to accomplish the same affect with a common ration balancer or vitamin/mineral supplement with added magnesium and chromium at lesser cost. If you are diligent and good with math, you can figure out the amount of active ingredient on a cost per day basis and save considerable money over time compared to the specialty supplements. If you want to experiment with herbal treatments, a safer approach may be to try one ingredient at a time for a couple weeks. Don’t do anything else differently, and observe the affect on your horse. Read the literature provided by the supplement company, and apply critical thinking. Is it all hype, hope, theory, testimonials and no data? Or, does the manufacturer cite clinical studies done on laminitic horses to prove their claims? Make sure you have exhausted the most successful treatments first (expert hoof care and veterinary services and a low carb diet) before you possibly waste time and money on expensive supplements.

If you don’t have the background to understand the literature provided by the supplement company, ask your veterinarian or nutritionist, or perhaps a skeptical friend with a scientific background, to help you decipher the label and ask their opinion before you waste precious limited resources. Sometimes we get so sucked into buying ‘stuff’ that we may be tempted to skimp on the most important aspects of caring for a laminitic horse: veterinary care, hoofcare and controlling the diet. Remember priorities and keep to a master plan.

Priority Level: Long shots

When all the above suggestions have been tried and a horse is still sore, many will try anything as a last ditch effort. We can’t blame you for trying, and you may stumble onto something truly useful. Just don’t stop doing the things that have proven useful in the past. Your horse’s condition may worsen

Red Flags-Reason for Concern

First: Do no harm. Never continue with a product or practice that makes your horse worse. Beware if the supplier of the product says ‘the horse may worsen before it gets better’. Exceptions may be application of therapeutic shoeing packages that require nailing. This may cause temporary worsening of pain which should be gone within a day. Remove any shoe that makes your horse worse after 24 hours.

De-Tox This is a meaningless word when applied to products that work systemically. While it may be possible to prevent laminitis from accidental grain overload with things like activated charcoal or certain types of clay that absorb toxins in the gut before they enter the blood stream, no science supports the concept of ‘de-toxifying’ the bloodstream once laminitis has manifested. Scientists are not even sure what toxic substances are involved in laminitis, much less how they may be deactivated once in the bloodstream.

No ingredients list. If a supplement manufacturer will not list the ingredients; pass. Herbs can act just like drugs and may be contradicted depending on the cause of your horse’s laminitis. Even trace minerals may be toxic at high levels, so it is necessary for you to consider all sources being supplied.

over time. You may be tempted to throw up your hands and do EVERYTHING differently. There are plenty of people selling expensive miracle cures who will try to convince you to do exactly this. When conventional treatments fail, 'alternative' practitioners may try and convince you that they are right and everyone else is wrong. These marketing ploys promising cures often hit us when we are emotionally drained, desperate and vulnerable. If this happens, don't assume that previously useful practices are now worthless and you should disregard them. Just do them better. There are no cures for laminitis that come in a pill or supplement. Don't buy on impulse unless you have disposable income and can afford to throw away money. Sleep on it. Try to make decisions when you are feeling less stressed and more rational. Ask your veterinarian's advice, or spend some time doing background research.

While we put the most value on evidenced based, scientifically sound products and practices, we try to keep an open mind. We cannot comment on every one of the many alternative therapies out there. For the purposes of this article, anything we have not previously mentioned is in our opinion something you should only try if you have done everything else and you still want to keep experimenting.

About the authors:

Dr. Don Walsh, DVM is the owner of Homestead Veterinary Hospital in Pacific, MO. He has been especially intrigued with and frustrated by laminitis over 40 years of practice focusing on equines. In 1984, he formed the Animal Health Foundation and started raising money to fund research on laminitis. www.animalhealthfoundation.com

Kathryn Watts, BS is a private contract agricultural field researcher and consultant. She began her study and research on carbohydrate content of grass after her ponies foundered on hay in mid-winter. Her findings are offered on www.safergrass.org , thanks to funding by Animal Health Foundation.