



## Laminitis Treatment:

### A Natural Medicine Perspective

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**L**AMINITIS IS ONE OF THE MORE FRUSTRATING CONDITIONS TO TREAT IN EQUINE practice. Chronic cases can take a significant amount of time and energy, and the outcome is still not perfect in many instances. However, many cases brought to practitioners of natural medicine can be helped when conventional medicine has failed. This paper will be a practical overview of using natural medicine to treat laminitis.

The three goals in holistic treatment of chronic laminitis are to 1) Provide nutritional support to prevent and reverse damage from circulating free radicals; 2) Prevent further damage to and encourage healthy laminar attachments; and 3) return the horse's metabolism to proper balance. When managed correctly, with patience and attention to detail, most chronic horses can return to reasonable work.

Cure or return to work may not occur with laminitis cases secondary to Cushing's disease or those with severe damage to the coffin bone. These cases, however, can often be managed and kept relatively comfortable without the use of drugs.

The foundation of all health is a good nutritional program, and that statement is especially true with the laminitic horse. Most of our holistic medical treatments will not work without specific

nutritional supplementation.

One key to encouraging laminitic horses to heal is to support intestinal health and repair the basement membrane of the intestinal tract. Dr. Chris Pollitt's landmark presentation at AAEP 1999 discussed the effects of a bacteria (*Streptococcus bovis*) exotoxin on the laminae of the foot. If we can strengthen the basement membrane of the intestinal tract, less exotoxin will be released into the bloodstream.

Another part of treating the chronic laminitic horse is recognizing the role that Cushing's syndrome and related hormonal imbalances may play. These horses can be the toughest individuals to successfully treat.

The important thing to remember when treating laminitis with natural medicine is to approach each case individually. It can be detrimental to any case to use a "shotgun"

approach with multiple supplements or treatment modalities. Because a product is "natural" does not rule out harmful effects or the negative effects of using too many products and overloading the body.

#### Clinical signs

The classic clinical sign of acute laminitis is extreme pain in the feet, especially the front feet. The horse may not be willing to move. Novice horse owners may fail to recognize this warning sign of laminitis.

In the acutely laminitic horse with a known history of grain overload or another specific toxic insult, but who has no other concurrent signs, treatment should focus on the known inciting cause and the pain in the feet.

Many times in the chronic cases there are more slowly

Table 1 CLINICAL WARNING SIGNS FOR LAMINITIS

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| <ul style="list-style-type: none"> <li>•hirsutism</li> <li>•does not shed out in summer</li> <li>•refractory laminitis</li> <li>•winter laminitis</li> <li>•weight problems (over-or underweight)</li> <li>•sluggish thyroid glands</li> <li>•thyroid dysfunction</li> <li>•muscle soreness</li> <li>•diabetes</li> <li>•polyuria/polydipsia (Pu/Pd) (Dybal)</li> <li>•collagen breakdown</li> <li>•poor hair coat</li> </ul> | <ul style="list-style-type: none"> <li>•frequent infections of the skin or other organs</li> <li>•colic</li> <li>•poor teeth</li> <li>•multiple dental abnormalities</li> <li>•lowered immunity to intestinal parasites (Greco, Dybal)</li> <li>•intestinal function laboratory tests</li> <li>•decreased intestinal wall integrity</li> <li>•infertility</li> <li>•muscle wasting</li> </ul> |
|---|---|



Instability of the limbs is a common complication of laminitis's attack on the foot's inner structures. A combination of medical, mechanical, and nutritional programs, administered in conjunction with special management considerations, can be useful in keeping the horse comfortable and avoiding further trauma and injury while stimulating healing.

progressing signs: either a mild to moderate laminitis each year or a mild mysterious lameness that appears each year. In some cases there is no warning, though if you go back into the history, there usually are previous signs of low-level poor health. Sometimes the evidence shows in laminitic rings on the feet, even though the other signs of laminitis are subtle. It is very important to look at the whole animal, not just the feet, to help decide how to treat the case with natural medicine.

When the laminitis begins in the winter with no apparent inciting overload of carbohydrates, investigate Cushing's syndrome; many of the associated clinical signs are listed in Table 1(Harman, 1999).

It is not uncommon to have laminitis in the winter. In Chinese medicine Cushing's syndrome is seen as an imbalance called "Kidney yang deficiency", with the winter being the time of the Kidney. If the winter is the time of the Kidney, it is more likely that there will be problems associated with the Kidney acupuncture meridian at that time of year (Kaptchuck). Many of the symptoms fit the classic signs of Kidney Yang deficiency such as sore back muscles, weakness, lassitude, diarrhea,

increased clear urine, stocking up in the legs and infertility. Some of the most refractory cases of laminitis begin in the winter. Even the summer laminitis that appears to be caused by overeating of grass can be quite refractory to treatment if other clinical signs of Cushing's are present.

**Intestinal permeability**  
Dr. Pollitt's recent presentation at the 1999 AAEP Convention (Pollitt) indicates the possible involvement of the intestinal wall as part of the pathophysiology of carbohydrate overload laminitis. It has been shown that a single dose of endotoxin increases intestinal permeability in humans (O'Dwyer). Much research has been done in human

medicine concerning the involvement of the leaky intestinal tract basement membrane in the pathophysiology of many diseases (Inman, Wells).

Over the years, research has been done regularly on NSAIDs effects and toxicity in the horse as well as in humans (Bjarnason). One recent equine necropsy study showed inflamed small and large intestinal walls within 12 days of phenylbutazone administration (MacAllister). This study also showed the comparative toxicity of several NSAIDs (phenylbutazone, flunixin, and ketoprofen). Phenylbutazone had caused edema in the small intestine and erosions and ulcers in the large intestine. The phenylbutazone toxicity studies

## RECOMMENDED DOSAGES

NOTE: All quantities and dosages of substances listed in this article are the normal amount needed for a typical, recreational-use 1000-pound horse. Horses larger or smaller in size or weight, or horses used for heavy work or showing may require smaller or larger amounts. Draft horses, in particular, may have metabolic variations from smaller horses that are not proportionate to justify multiplications of a dosage based on weight. Some substances or management suggestions may not be appropriate or safe for use in donkeys, asses, pregnant mares, miniature horses, horses undergoing medical therapies for other disorders, or horses in transport or breeding situations. Wherever appropriate, horses should be tested or examined by a qualified professional to determine nutritional status or blood levels before undertaking any treatment. Availability of "baseline" test results for a horse, taken when the horse is in normal health, are useful when evaluating the potential effectiveness of treatments recommended.

The authors recommend that horses be allowed or even encouraged to lay down. Foundered donkey bedded in washed river sand (top) found relief from "bed sores", since the sand is less abrasive and shifts under weight. Bottom photo: horses bedded on shavings require monitoring for sores. New materials being tested may offer affordable relief for bedding or lining pens.



showed hypoproteinemia and some suspected protein-losing enteropathies in a majority of horses in the studies (Lees, Snow, 1981, 1979). There is a high occurrence of gastric ulcers in horses that may be due to the use of phenylbutazone.

Human studies have linked the "leaky bowel" to various diseases including arthritis, which is interesting since NSAIDs are used to treat arthritis in both the human and animal populations. The leaky bowel allows large molecules to pass through into the liver and form immune complexes which are then distributed to the joints and other locations in the body (Inman). Bacteria and bacterial

products are well known to leak through in this way (Wells).

Large quantities of NSAIDs are used to treat many conditions in horses, especially laminitis. In fact, due to the amount of pain laminitic horses are in, high doses of NSAIDs are used. The implications of research are that high doses of NSAIDs could be detrimental to the integrity of the intestinal wall in laminitis cases. Consequently, the use of NSAIDs in treating laminitis should be questioned.

Clinically, in these authors' experience removal of NSAIDs is one of the most important aspects of the success of the holistic treatment. The horses' symptoms are usually worse for

three to five days after removing the NSAIDs, so they lie down more. That can be alarming to the owners and attending veterinarians, however, it is best for the horse, since they take the pressure off the feet and allow the antioxidants to work. When the horses feel better with natural medicine, it is because they *are* better, not because we have masked the pain.

Clinically we have also found that laminitic horses respond best when the intestinal tract is repaired. Human functional medicine, a branch of medicine that uses laboratory testing to define poor organ function, has been treating poor intestinal function successfully for many years. We have been adapting many of the treatments that have been used successfully in humans. These are outlined in the treatment section.

One potential reason for laminitis, especially chronic laminitis, may lie with the integrity of the gut wall. Preliminary results from a well-established human functional medicine testing laboratory support the hypothesis of poor intestinal function in some of the Cushing's and laminitic horses (Harman, unpublished data).

Conventional medical treatment

The standard treatment used for laminitis is the non-steroidal anti-inflammatory drugs (NSAIDs) to relieve pain and decrease inflammation. Other drugs may be used to alter the circulation or reduce swelling, such as DMSO, nitroglycerine patches and isoxsuprine or heparin.

In the treatment of chronic laminitis that may be associated with Cushing's syndrome, the drugs cyproheptadine and pergolide mesylate are used with varying degrees of success.

### Holistic medical treatment

There are many tools in the alternative medicine toolbox to treat the laminitic horse. The joy and the frustration of holistic practice is that each animal is an individual and will respond differently. In treating these complex cases, it is important to proceed one step at a time. Remember, horse owners are often adding their ingredients to the pot, whether we want to admit it or not, so be careful not to overload the horse.

These authors' approach is to look at the severity and chronicity of the clinical signs to determine how much to do at one time. Also, it is important to know what drugs and natural remedies the horse is currently on, or that have already been used, and what effect they had: good, bad or neutral.

A shift of perception about the recumbent horse is important to the natural paradigm of laminitis therapy. Many horseowners are not able to tolerate a horse that is lying down. An education process is needed to reassure them when and if the horse chooses not to stand. Many veterinarians reassure clients that this is to be expected, but horse owners will still encourage the horse to stand.

### Fixing the intestinal tract

The integrity of the gastrointestinal system is important in order to prevent the formation and release of exotoxins into the circulation as discussed above. The gastro-intestinal tract is also responsible for the breakdown and assimilation of nutrients needed to maintain and restore health. The most important first step is to stabilize the intestinal wall and restore the beneficial flora.

Antibiotic use leads to unbalanced intestinal flora that contributes to the leaky bowel



syndrome (Darlington, Schmidt). So, we use probiotics to restore the pH and the gut flora to a healthier environmental level. Beneficial bacteria such as *Enterococcus faecium*, *Lactobacillus acidophilus*, *L. casei*, *Bifidobacterium bifidum*, and *Streptococcus faecim* are natural inhabitants of the horse's digestive system. They help maintain proper pH levels in the system. They also manufacture vitamins such as biotin, digest fiber, and produce natural antibiotics to prevent the overgrowth of pathogenic bacteria.

Healthy bacteria are also important for the absorption of minerals. To replenish healthy bacteria following antibiotics, drugs, or severe stress, use probiotics (Pro-Bi, Advanced Biological Concepts, Osco, IL) to help restore pH, along with high doses of equine specific bacteria (Hilton Restore, Hilton Herbs, Santa Fe, NM, or Somerset, UK) or use concentrated human-grade probiotics (Cell Tech, Klamath Falls, OR) at 2-5 times the human dose for a period of 5-10 days.

After the healthy bacteria are established, they can be maintained with regular daily doses of Fastrack (Conklin, Fort Worth, TX) or Pro-Bi.

Glutamine is an amino acid that is a primary fuel for the enterocytes of the small intestine. Glutamine levels are



Shifting weight between front legs and "dancing" gingerly back and forth is one of the first visible warning signs of laminitis; by that time, however, much of the damage to the inner foot has been done. The authors question the use of anti-inflammatory drugs such as Bute at this stage, since the horse may damage the foot more by moving.

affected by any decrease in feed intake as well as any stress placed on the intestine such as sepsis or endotoxemia (Souba, 1990A). Glutamine has been shown to reduce bacterial translocation across the gut wall (Souba, 1990B). Glutamine (Thorne Research, Dover, ID) should be used in any horse that is not eating correctly, as well as any horse in which intestinal wall integrity may be questionable. Doses range from 10 to 35 gm per day, depending on the size of the horse.

Processed grains and hays lack natural enzymes. Without food enzymes, the body must work harder to produce more digestive enzymes to break down feed. If the body is unable to produce sufficient digestive enzymes, then feed will ferment and putrefy rather than digest.



The EDSS system (top) contains a versatile set of adjustments for the main shoe so that the severity of frog pressure or sole loading can be adjusted without removing the shoe. This means less trauma for the horse. Bottom: temporary frog support.

Damage to the hoof in laminitis cases can usually be kept to a minimum by following a few guidelines.

**1** Do not use drugs to mask the pain. If the pain is masked, the horse will continue to walk on the damaged lamina and cause more damage. Natural antioxidants will allow healing without masking the pain. The best thing a horse with severe laminitis can do is lie down and take weight off the damaged feet.

**2** Provide deep sand bedding if possible, or use Styrofoam taped to the bottom of the feet, such as 2-inch thick

blue builder's Styrofoam (Equine Digit Support System, Inc, Columbia Falls, MT). Washed river sand will shift under the horse allowing him to stand in the most comfortable position. It will also shift under pressure points to keep pressure sores to a minimum. Horses with tight tendons will often stand with the toes buried in the sand and the heels elevated. The way the horse stands in sand is a good way to determine how to shoe him.

**3** Keep the hooves soft and pliable. Horses with laminitis generally have swelling within the hoof capsule and a soft hoof will expand to relieve

pressure. If the hoof gets too hard, a poultice should be applied overnight. Using a rasp to thin the hoof at the toe can also give relief.

**4** Shorten the toe to ease breakover. A long toe will act like a lever and cause more tearing of the hoof lamina. The natural balance approach to trimming the foot in line with the coffin bone, then raising the heels and slowly lowering them to relieve the tendon pull with special shoes (Equine Digit Support System, Inc, Columbia Falls, MT) can be extremely beneficial. Natural balance trimming must be done correctly in order to work. If the farrier does not understand the principles, more damage can result.

**5** Encourage abscesses to drain. Avoid treating abscesses with systemic antibiotics or anti-inflammatory drugs. Drugs will temporarily suppress the maturation of an abscess, allowing it to spread deeper into the foot. Soaking in Epsom salts or poulticing will encourage the abscess to mature and open to the outside of the hoof. Rasing the hoof wall thin at the toe will give the abscess a place to drain.

**6** Avoid shoeing procedures when the feet are extremely sore. Horses with acute episodes will have very sore feet and pulling shoes and hammering will cause extreme pain. If the toes are long, carefully remove the shoes and bed in deep sand. The toes can be rasped back more easily if the hoof has been softened with a poultice. Several pads are available which can be taped on to provide frog support or raise the heels.

This improper digestion creates a very toxic and irritating environment, which leads to inflammation and irritation of the lining of the intestine. If digestive enzymes are deficient, it is good to supplement initially with human-grade, plant-origin digestive enzymes at 2-5 times the human dose for 2-4 weeks (Cell Tech, Klamath Falls, OR; Multizyme, Thorne Research, Dover, ID; Enzymes, Advanced Biological Concepts, Osco, IL).

The Super Blue-Green algae (Cell Tech) strain of blue-green algae is high in chlorophyll and anti-oxidant nutrients such as beta-carotene. It also contains active digestive enzymes so it provides concentrated nutrition to help support healing without placing any additional stress on the digestive tract.

#### Nutrition

Nutritional support is critical in the laminitic horse. Nutrition includes the basics of feed, water and hay as well as specific nutrients for specific problems. As we gain more experience with new products, we may find additional products that are helpful or even critical to the outcome of certain cases. The nutrients discussed here are ones these authors have found clinically useful.

Commonly, grain will be withdrawn from foundered horses in the belief that carbohydrate overload caused the pain, and that the carbohydrate in feed may contribute to symptoms or recurrence of laminitis.

Some obese, inactive horses are fed up to two quarts of grain. This quantity should be reduced to a handful or two. If the founder was caused by grain overload, grain should not be part of the diet for the first few weeks of treatment. After that time, the gut is being repaired and small amounts should be fine.



The roll of fat on this recovering donkey's neck is an indication of how much weight the donkey has lost since foundering. These fatty deposits, often called "crests" on horses and donkeys, are usually hard; once treatment begins to succeed, they soften and can even flop over, as this one has done.

Many veterinarians will remove grain from a horse's diet and there will be an initial weight loss, but these horses may be protein- or calorie-deficient at a time when they are trying to heal. The key should be to support the repair of the gut.

For most horses, grain is not the problem: *Excessive* grain is the problem. A handful of corn, oats, and barley will not contribute to a horse's weight problem. It will, however, give great psychological benefit.

#### Feed

Once the digestive system is supported, high-quality nutrients must be provided. Nutritional requirements for horses with laminitis are higher and often very specific. Horses with laminitis need high-fiber, low-carbohydrate diets.

Wheat bran mashes are good for overweight cases. The small amount of bran needed for these horses may not upset the calcium-to-phosphorus ratio, though the entire diet should be evaluated to keep it balanced.

Blue-green algae can be added to the bran mash to provide amino acids and trace minerals and support hoof growth. Grass or other lower protein hays can be given free choice. The horse can have some alfalfa along with grass hay, especially if more protein is

needed, but generally alfalfa should not be the only hay received.

The feed should be low in sugar if the horse has signs of Cushing's syndrome with altered insulin levels or diabetes. When evaluating the feeding program be sure to look at the treats being given, as apples and carrots are high in sugar when given in quantity. Carrots may be desirable for some horses as a natural source of beta carotene.

Sweet feeds should be avoided. Plain corn (about 25%), barley (about 35%) and oats (about 45%) make a simple, clean mixture without sugar. Some of these grains may not be available or desirable to use in certain parts of the country or in certain years depending on the harvest situations. Some horses may not do as well on oats; if that seems to be the case, just use barley and corn.

Higher levels of protein, up to 14 percent, and calories may be needed in the horses with weight-loss problems. Laminitichorses that are normal weight or underweight often do well on the "senior" feeds, which are high in fat.

Many chronic laminitic horses lose weight due to the stress of walking in pain and actually need increased amounts of feed. Since these horses often did not founder due to grain or carbohydrate overload, it makes

no sense to restrict their calories when they are needing extra calories to heal themselves. Increased calories can be given as fat (vegetable oil or rice bran), which is well-digested by most horses. Animal fat should not be used due to the preservatives used in processing and the fact that horses are vegetarians. Often it may be best to increase calories rather than use high-protein feeds and hays, though some horses do need the higher protein.

#### Antioxidants

Laminitis is a classic example of free-radical damage out of control. High levels of antioxidants are needed until this process is reversed, then lower maintenance levels can be used. Using low doses of antioxidants over time is like trying to put out a forest fire using a garden hose. Over-the-counter, combination antioxidant products rarely have enough of any one ingredient to reverse free-radical pathology.

Excess free radicals can cause tight and stiff muscles. If the large muscles in the horse's forearm go into spasm, this tightness transfers down the tendons, causing extreme tension at the attachment to the back of the coffin bone. This tension contributes to the tearing of the lamina at the toe and rotation of the coffin bone.

Coenzyme Q10 ("Co Q 10") is very valuable in reversing free radical damage. The therapeutic dose is 300-600mg per day for the first week or two, then the dose can be decreased slowly to a maintenance of about 100 mg per day. Co Q 10 clinically seems to be one of the best antioxidants for use in the horse, and in laminitis cases can be so effective that the horses become more comfortable rapidly.

Co Q 10 is most effective in laminitis cases when NSAIDs

are not used. However, in many cases the client is using the NSAIDs because they have the horse at home and the attending veterinarian is involved. Co Q 10 can be used with the NSAIDs but the results are not visible clinically and, as discussed above, the NSAIDs may not be advisable.

Vitamin C is an excellent antioxidant and nutrient for collagen support, as well as organ and immune system healing. Doses can range from 3 to 8 gms per day. Horses tolerate these doses very well with few if any cases of diarrhea or stomach irritation.

MSM is a natural source of the antioxidant mineral, sulfur. It is also a mild diuretic. Sulfur is important as it helps make up the disulfide bonds in the laminae. Disulfide bonds are an important part of the connection in the hoof wall's healthy lamina. Loading dose is 2 tbsp of pure MSM and maintenance is 1-3 tsp per day.

Other antioxidant nutrients that can be useful are Vitamin E, superoxide dismutase (SOD), and dimethylglycine (DMG). These are generally used by these authors in the more refractory cases not showing the results we desire with the other antioxidants.

#### Minerals

One of the most important aspects of any nutritional program for horses is the use of free choice minerals with the salt fed separately (Rush Creek Mineral, Advanced Biological Supply, Osco, IL). Many laminitic horses will eat large quantities of minerals for extended periods of time, possibly indicating their need for minerals. Sulfur may be an important nutrient for these horses and can be fed free choice or in a supplement such as MSM.

If a commercial salt-mineral

block is fed (about 94% salt), horses cannot consume the amount of minerals they need.

#### Vitamins

It is important to supply high quality supplements to help laminitic horses heal. Prepared foods cannot have all the vitamins needed by a sick animal. However, formulated supplements which contain low quality, synthetic vitamins, inorganic minerals, and fillers may actually *cause* the horse's system to become more out of balance. Food-source vitamin mineral supplements include: blue-green algae, kelp, apple cider vinegar, carrots, and oranges. Several companies manufacture additive-free supplements: Advanced Biological Concepts in Osco, IL and Thorne, Dover, ID (sold to veterinarians only).

#### Pituitary support for the Cushing's horse

For the Cushing's syndrome horse, one of the authors has been using a pituitary glandular support along with general glandular support because the pituitary gland is central to the function of the entire hormonal system. Glandulars are a type of nutritional supplements made from actual glandular tissue, often prepared with supporting nutrients. In small-animal and human medicine, glandulars are commonly and successfully used both as replacement therapy for organs functioning suboptimally and as support for organs where there is evidence of inflammatory or degenerative processes.

Since glandulars are produced from animal sources, it is not natural for vegetarian horses to eat them and some horses will refuse to eat them.

However, glandulars can be useful in equine nutrition and should be considered instead of

synthetic hormone replacement, as in thyroid therapy or as support for other organs such as the pituitary gland. Cushing's syndrome is probably the only situation to use glandulars because of the vegetarian nature of the horse. Additional thyroid supplementation may be necessary, but not in most cases.

#### Homeopathy

Constitutional homeopathy is very important to many horses' recovery and affords the most complete "cure", if that is possible, for Cushing's syndrome. If the *pars intermedia* in the anterior pituitary gland is completely destroyed, it is doubtful, though not impossible, to truly cure the case. However, excellent support, probably palliative, can be achieved in many cases.

Homeopathy can also be used to relieve the acute signs, especially of laminitis, to be followed up later with a constitutional treatment. Many owners are not patient enough to work through a case properly with homeopathy, and many will also settle for less than optimum health.

Constitutional homeopathy needs to be prescribed based on the history, clinical signs and "mentals", or personality. It is not possible to cover all the details or remedies here, however the principles of classical homeopathy are followed by this author in prescribing. Quite a few of the remedies used to treat problems associated with vaccination are used successfully, lending support to the theory that overvaccination may be part of the problem.

Acute remedies are also selected based on the clinical signs and may change during the acute phase of the problem. In most cases, standard acute remedies work well, but in some

cases it must be remembered that the acute signs are exacerbations of chronic disease. In some cases, then, one must figure out a constitutional remedy to alleviate the acute symptoms.

#### Chinese medicine

Chinese medicine--including both acupuncture and herbs--can be used to help laminitis horses. It is best to work with a veterinarian experienced in either herbs or acupuncture. The office of the International Veterinary Acupuncture Society has a list of qualified practitioners from around the world.

Acupuncture treatment can be aimed at the Kidney Yang deficiency so the points selected are ones that will help tonify the Kidney. Herbal formulas to help the Kidney can also be used and have been very successful in some cases (Defounder, Thorne Research, Dover ID; custom formulas from Chi Institute, Reddick, FL).

#### Western Herbs

Aloe vera is a nutritional herb, which will support healthy bacterial growth and help heal the damaged intestinal lining. Expect to pay \$10-\$12 per quart for good quality aloe, and feed at a rate of 2-4 ounces each feeding for 2-4 weeks.

Slippery elm bark is another nutritional herb that protects and aids in healing the intestinal wall. It is especially useful with aloe vera to heal the intestinal irritation secondary to the use of non-steroidal anti-inflammatory drugs such as phenylbutazone.

#### Management factors,

conventional and holistic  
The use of cold baths to cool the foot has at times been advocated. In light of Dr. Pollitt's research cold should be used regularly in the first 48



hours, especially in the known grain overload or toxic case situation (Pollitt).

#### Environment

Many Cushing's syndrome horses are kept in high stress situations that contribute to cortisol release and adrenal stimulation. If it is possible to decrease environmental stress, these horses will benefit greatly.

Many older horses may be past their high-stress years, and the current owner may not be showing heavily or keeping the horse in a high-stress environment, yet these horses may be experiencing the long-term effects of previous stress or of over-vaccination and poor nutrition. Cushing's syndrome may be the cumulative result of many years and many factors.

Pasture turn-out time is very important; however many horses cannot be on rich pasture without exacerbating their symptoms. Clients should be encouraged not to fertilize their fields or mow and manage them too carefully. Natural fertilization with trace minerals can be very good but if the grass becomes too rich from good

Abscesses should be encouraged to drain; owners or caretakers will need instruction on soaking and be made to understand that the draining is a healthy sign instead of one to be suppressed.

organic practices, an overweight horse will be the result. A few weeds (herbs) are desirable in a natural pasture. Many horses will need a "fat pen"--a small area outside with minimal grass so they can be out in the sunshine and near their buddies, but not have too much grass.

These authors would recommend either halting or decreasing the vaccination program to the absolute minimum for the Cushing's horses. Many boarding facilities have strict requirements for vaccination. Vaccine titers are

available for most diseases, and most horses tested seem to be maintaining good titers from previous vaccinations. Cushing's is a condition of mature horses, most of whom have been vaccinated heavily or have been exposed to many diseases and may have natural immunity. The client must be comfortable with the vaccination schedule, and most are more than willing to vaccinate less, however many are reluctant to stop completely.

#### Conclusion

Prevention is still the best way to manage laminitis in horses, however, chronic laminitis cases can recover with a multi-faceted, long-term natural treatment plan. Treat each horse as an individual and seek quality referral practitioners to help you. Use as much whole food nutrition as possible, reduce stresses and vaccinations, and support a healthy digestive tract.

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