In this essay, I’m going to go over the five most common pathologies in the equine foot, their symptoms, treatment, and prevention. I will also discuss traditional vs natural treatments and trims for each.

**Laminitis:** Research suggests that Laminitis is a disease characterized by a decrease blood flow through the capillaries within the laminae, a passage of blood directly from arteries to veins bypassing the capillary network and resulting in death of the laminae, and pain. It can also affect the circulatory and hormonal systems, the kidneys, the blood-clotting mechanism, and the horses overall acid base balance. The acute phase begins at the onset of lameness and lasts for variable periods of time depending on when or if rotation of the coffin bone occurs. All four feet can be involved, but most often it is the front feet. Signs of extreme pain, pounding digital pulse, and warm feet are most common. The chronic phase begins when the signs of lameness are present for more than 48 hours, or if there is evidence of rotation of the coffin bone. This phase could last for a period of weeks or could continue for the rest of the horses life.

**Causes:** Ingestion of toxic amounts of grain, Ingestion of large amounts of cold water, Concussion (road founder), Endometritis or severe systemic infections, Obesity and ingestion of lush green pasture or miscellaneous causes.

Horse with severe laminitis in both front feet showing typical laminitis gait. The hind feet are placed as far forward as possible before the horse attempts painful shuffling steps in front.
Sagittal section of a horse’s foot with severe chronic laminitis. The distal phalanx has separated from its connection to the inner hoof wall and has descended into the hoof capsule causing the sole to bulge downward. Note the hemorrhage and bruising in the corium at the coronet and sole (arrows).

**Treatment:** Treatment is aimed at prevention of rotation of coffin bone because early signs of rotation can be observed on X-Rays within a 48 hour period. If you suspect laminitis you should call your vet immediately, remove all feed from your horses stall or pen or take it off pasture, and make the horse as comfortable and clam as possible in a stall with soft footing. Also you should restrict exercise, no hand walking. Traditional treatment would suggest a type of shoe for support such as an egg bar, or heart bar. I have even seen a shoe placed in a reverse fashion. Often nerve blocking will have to be used for shoe placement. Shoeing is repeated at 4 to 6 week intervals. Surgical treatments are aimed at reducing the tension of the DDFT and opening the hoof wall or sole to allow drainage. Also severing the carpal check ligament and / or DDFT.

WHAT ARE WE THINKING!!!!!

Natural treatment would be the best option for these reasons. First let me explain to you that laminitis is no where to be found in the wild horse. It is wide spread among domestic horses. Man has taken the perfect animal and tried to improve it by making it what he thinks it should be. What a slap in the face to God who created all things.

OK, First things first. Call your vet. Get a pain medication. Remove the shoes, if there are shoes on, and provide a natural trim. If it is too painful for the horse to offer up his feet. Wait for pain meds to kick in and soak his feet in cool water for a day or so. Some people have a portable sling to use for trimming. The horse is lifted by a series of pulleys until the front feet barely touch the ground to reduce the weight bearing forces while the horse is being trimmed.

If the heels are high, so the bottom of the coffin bone is not ground parallel, lower the heels to the widest point of the frog. This will stop any further rotation. Also back up the toe to the white line. Restrict the diet, allowing no grain. An assortment of organic vegetables is good. Encourage as much movement as possible. Re-trim horse every 2
weeks and gradually space out trims to longer intervals. Basically know your horse and he will let you know when to change his program.

**Navicular Syndrome:** This is a tough one to describe since there has been so much written about it and no one seems to have come up with an answer to what it actually is. Here is one description of the syndrome that I found. “A chronic, progressive disease that affects the navicular bone, navicular bursa, and flexor tendons”. That really does not tell me much!!!

**Causes:** Horses with navicular syndrome usually have a history of progressive, chronic, unilateral, or bilateral forelimb lameness, which may have had subtle or masked onset. Various abnormalities of the hoof can be associated with navicular syndrome. The heels may be low and under-slung with a broken back hoof / pastern axis. This conformation tends to exaggerate deep flexor tendon tension and puts pressure on the navicular bone. One forefoot may also be smaller and more upright than the other, and the heels in one or both feet may be contracted. The horse may land on the toe when walking or trotting to avoid loading on the heel region. He may have occasional stumbling. A stiff, shuffling gait with shortened, choppy stride, a marked lameness after a sharp turn, sensitivity to hoof testers with compression on the one-third of the frog, these are all signs of navicular syndrome.

![Diagram of horse hoof with labels for Navicular bone, Deep flexor tendon, and Coffin bone.]

**Traditional Treatment:** Shoeing, your vet or farrier will most likely recommend egg bar shoes or pads to protect the rear part of the horses feet. Isoxsuprine: This medication is banned by the AHSA. It has an overall success rate of 60% and is available at a low cost. The drug is known to increase circulation to the horse’s feet. Corticoteroids: These drugs reduce pain and inflammation, but only supply temporary relief and are not a cure all. Some nonsteriodal anti-inflammatory drugs reduce blood clotting. These drugs only mask the problems and do not fix it. Palmar Digital Neurectomy: This is a surgery where the palmer digital nerves are severed. This is done in such a way that the horse can still feel his toe. The results from this surgery will last about one year, since the nerves will usually re-grow. Desmotomy: This surgery involves cutting the suspensory navicular ligaments. It is done on horses with “club foot”, To enable the deep digital flexor muscle to stretch.
Chemical Neurectomy: Involves injecting the palmar digital nerve with ammonium chloride or an alcohol extract, blocking pain. This was designed for the same reason Palmar digital neurectomy was: it blocks pain to the horse's foot, allowing the horse to use his foot normally. This way, the mechanics of his foot can work correctly again.

**Natural Treatment:** De-shoe your horse. Provide a natural trim at 4 week intervals. Let your horse move about at liberty barefoot. When he stops limping, start working on some ground work such as lunging, and check his progress. Have your horse fitted with hoof boots for riding and for the transitional move to being barefoot. This will help him adapt to his new hoof environment.

**Natural Trim:**

1) **Prepare the hoof:**

   Clean out the bottom of the hoof so you can see it clearly. Dirt packed in the clefts on either side of the frog can be left there -- it helps support the structures in the back of the foot; but packed-in manure should be cleaned out several times a week as manure weakens the hoof tissues. Be sure to get sand and grit out of the white line and the back corners of the sole. Grains of sand will dull your tools.

   If the tip of the frog has grown forward across the sole, trim it back until you can see where the frog actually meets the sole -- you can see the different colors of the frog and sole materials. If the frog is overgrown enough to lean over to one side, trim off the leaned-over part.

   In the back 1/3 of the frog, don't trim where it grows out over the clefts; this lip helps to hold the supportive dirt pack into the clefts. If there is fungus, trim away the layers of fungus-y frog until you get to the bottom of the blackened parts. You need a sharp hoof knife to do this, otherwise you can slip and hurt the horse. The fungus-y tissue is dead and the horses don't seem to feel such a deep knife stroke, if you're careful.

   Especially in soft-ground hooves, the frog helps to support the foot, and should not be shortened unless it is more than 1/8 inch (3 mm.) longer than the heels. The back of the frog has important sensors that tell the horse when the hoof has touched the ground. A slightly long frog will squash down within several days after the "first trim." A very few horses (such as some Haflingers) tend to grow so much frog that the frog corium gets bruised, making them very heel-sore -- it's OK to trim the frogs on these few horses.

   In a newly de-shod hoof, if there is a chalky or crackled layer of exfoliating sole, you can scrape it off with a hoofpick or the hook-end of your hoof knife, until you find the "hard" or "live" sole, which feels harder, looks...
waxy, and has more color. In a barefoot hoof, the sole will exfoliate (wear off) naturally, if the horse lives outdoors.

The most important place to scrape out chalk is the back corners of the sole (seat-of-corn), because the sole there is your guide for trimming the heel length. If the heels are very long or underslung, you can trim away the excess bar with your hoof knife, so you have room to scrape way back into the corner.

If there is no chalky layer, leave the hard sole alone! The sole in a horse that gets enough movement is extremely hard and protects the foot from rocks.

2) Back up the toe.

Most hooves that have been shod, or have been trimmed by a farrier, are too short at the toe (on the bottom) -- unless the wall has grown longer than the sole. The wild-horse barefoot trim avoids shortening the toe and thinning the sole. Instead we allow the toe and sole to grow longer and thicker; this is part of how we increase the concavity of the foot. (The other part is by tightening up the white line so the coffin bone is suspended above the sole, not pressing down onto it.)

Working on the bottom of the foot, use the rasp at about 45 degrees to the bottom. Rasp through the entire wall, including the "water line" which looks white.
-- Where the white line is stretched (it’s black with dirt, or is wide, or makes a little ditch between the sole and wall) continue through the white line to the edge of the sole.

-- Where the white line is not stretched (it’s narrow, clean, and yellowish) stop at the outer edge of the white line.

-- Make this 45 degree cut around the entire toe and along the quarters, to a little beyond the widest part of the hoof (to about the front end of the bars if you can see them clearly).

3) Remove flare on the outer wall surface.

Working on a hoof stand, or with the foot resting on your bent knee as if on a hoofstand; or kneeling with the foot on very soft ground that you can rasp into:

-- Round off the corner where your 45 degree cut meets the outer surface of the wall. Continue rounding-in, upwards on the outer wall, until the flare has been removed and the wall is straight from the hairline (coronet).

-- If the flare begins high up on the wall, stop at about 1/3 up from the ground; removing a higher flare will weaken the wall. You can finish removing a high flare in later trims, as the wall grows down.

4) Trim the heels.

Dr. Robert Bowker has discovered that the digital cushion -- a fatty area above the frog -- loses its toughness and cushioning quality when a hoof is shod. It will gain toughness when the foot lands heel-first (see Breakover page) but the newly-barefoot heel must be slightly long for protection, otherwise the horse will purposely land toe-first to protect the weakened heel. Therefore Pete Ramey suggests that the heels in a transitioning horse should be left 1/8 to as much as 1/4 inch (3-5 mm) longer than the sole. Exactly how long, you will have to decide based on what length allows the horse to land heel-first on hard ground.

Working on the bottom of the foot:

-- Shorten the heels to 1/8 inch (3mm) longer than the hard sole in the seat-of-corn. Don’t try to rasp both heels at the same time, it’s hard to get them level that way. Trim one heel, then the other to match it.

-- Sight across the heels towards the toe to make sure they are the same height. You have to tip the foot so that the heels are in line with the toe --
it’s like looking across a drinking glass, held so the near and far sides of the rim match. If one heel is longer, it will stick up slightly above the toe.

-- Estimate the concavity: lay the rasp across the foot at the point of frog. Using your finger or a short ruler, measure the depth of the foot from the rasp, just in front of the point of frog. If the concavity is less than 3/4 inch (18 mm),

-- Slope the heels. Leave the thick part of the heel buttress (where the heel and bars join) as the highest part. With the rasp resting on the back corner of the heel, tilt it to a point 3/4 inch (18 mm) above the sole just in front of the point of frog, and rasp the back part of the heel at that angle.

-- Most front feet that have been shod are too short at the toe (not deep enough). When the toe grows to its correct depth, giving the foot more concavity, the heel surface will line up with the toe and will not need to be sloped off.

On a hoof with too little concavity, the heel can be sloped to match the eventual depth of the toe:

Blue arrow points at the deepest part of the sole at the point of frog. Blue bracket measures 3/4 inch (18 mm) above this point. You can use your finger or thumb under the rasp, to estimate this distance.

Pink arrow points at the thickest part of the heel buttress, where the heel and bars join. This should become the highest spot on the
-- If the heels are contracted, do not try to force them apart with heel-trimming methods (e.g. "opening cuts"). Heels contract due to a forward-flared toe, which pulls the entire hoof capsule forward and pulls the heels together. Heels will spread apart within just a few trims when the toe is backed up as I have described above.

5) Trim the bars.

If you shortened the heels enough so that part of the bars is now flat on the ground, trim off the flat part till it's a little shorter than the outer wall. This detail can make a big difference to the horse's comfort.

Looking now at the entire bar:

-- If there is a thin dirt line between bar and sole: trim back the bar, starting along its farthest edge, until there is no more dirt line.

-- If the bars have overgrown to make a layer across the sole, use your hoof knife to shave off the farthest edge of the bar, a little at a time, until it is no longer laying on top of the sole. Do your best not to cut any sole as you trim back the bar. Stop when there is no more dirt line between the bar and the sole.

On a hoof with too little concavity, there can be an area of raised sole that looks like a continuation of the bars, beside the front part of the frog.
Some people call this "bar pools.) Do not trim this away -- the hoof needs it for support. Later, when the foot gains concavity, it will go away by itself.

Curved bars (from contracted or underslung heels) can not be straightened by over-shortening the bars or making an "opening cut" in the heels. They will straighten as the foot re-shapes due to removing the toe flare. However, if you live in a wet climate and there is a fungus infection in the frog, you need to treat the fungus so the frog can grow. A wide, healthy frog helps to spread contracted heels apart. Please see "Fungus" section on the More Topics page.

In the barefoot horse, the bars will generally self-trim to a sharp edge that sticks up just beyond the sole. This gives the horse good traction. Most of the time you won't need to trim the bars except for the back part where trimming the heel has put them in contact with the ground.

I used this entire article to show how a barefoot trim is done step by step and would like to give credit of the article to the Barefoot for soundness web page.

**Hoof Contraction:** A contracted hoof is simply a hoof that has become too small. It could be to narrow from side to side or not long enough from front to back, or both. The only real way to find out if your horses hoofs are contracted is to take off his shoes, measure his feet from time to time during his natural hoof care program and when his feet stop spreading, they are no longer contracted.

**Traditional treatment:** Orthopedic shoeing, aggressive trimming such as ablating the bars and heel buttresses.
Healthy hoof

Very contracted hoof

**Natural Treatment:** Contraction is the easiest hoof problem to treat. Remove the shoes, provide a natural trim and wait patiently for Nature to spread the hoofs.

**Sidebone:** On each side of the pedal bone is a large, rounded piece of cartilage called the lateral cartilage. These two cartilages support and protect the soft tissue at the back of
the foot. They also support the hoof wall in that area. Sidebone is a condition in which the lateral cartilages become calcified.

**Causes:** These tissues probably calcify because of chronic, repeated concussion, such as frequently exercising on hard surfaces. Although sidebone is seen in horses with normally shaped feet, it is more common in horses with narrow upright feet. It is also common in horses with unbalanced feet, especially those that toe in or toe out. In most cases, the change is in the forefeet. In severe cases sidebone can be diagnosed with palpation: the normally flexible cartilages just above, and to the outside of the heel bulbs become thickened and hard. However most cases are diagnosed while radiographing the foot for another reason.
**Treatment:** There is no treatment, because there is nothing to treat. Trim your horse naturally, ride him naturally, and forget about it.
**White Line Disease:** Separation between the hoof wall and the sole at the white line. The separated area can spread vertically up the hoof wall, as well as horizontally toward the heel or toe. It may involve any part of the wall from the toe to the heel. At first, separation of the wall does not cause lameness because it involves only the insensitive tissues. But lameness can occur if the dirt and other material that pack into the crevice results in a hoof wall abscess. Lameness can also occur when the ground forces cause the separated wall to splay out. This can tear the sensitive tissues.

**Causes:** Hoof wall conformation that causes flaring of the wall.
Irregular shoeing or trimming intervals
Imbalance of hoof moisture
Laminitis
Hoof wall abscess
Direct trauma to the hoof wall.

**Traditional treatment:** Completely remove the separated wall and open up any tracts or fissures in the wall above or around the separated area. This procedure is necessary to prevent any further separation, and resolve the infection that inevitably develops beneath the wall. The problem cannot be resolved by simply cleaning out the defect: the separated wall must be removed.
A topical antifungal medication or disinfectant may be recommended.

**Natural treatment:** Get your horse into natural hoof care immediately. Follow the same healing plan laid out for laminitis. If the horse has severe white line disease, then turn his hoof care over to a professional natural hoof care practitioner who can aggressively remove infected horn, balance the feet and aid you in applying palliative measures such as; hoof soaks, and tincture of liquid bee propolis and fungicides if deemed necessary. Movement is also important to healing. Put boots on your horse and ride.

Photo at the beginning of resection
Thrush: Thrush is bacterial infection of the frog. The infection is usually identified when the owner or farrier is picking out the horses feet. The feet have an offensive oder, and the surface of the frog is white and crumbly. When the infection invades the sensitive tissues of the frog, it can lead to lameness.

Causes: The bacteria that causes thrush is normally found in the horses environment. They grow very well in wet, unsanitary conditions such as a dirty stall or muddy paddock. These bacteria prefer a low-oxygen environment, such as is found in the clefts of the frog. Thrush is often seen in horses with contracted or narrow heels because this situation results in a shrunken frog with deep clefts, but thrush can occur in any horse.

Traditional treatment: When a farrier or vet finds thrush, he/she trims the frog to remove any loose tags of horn and expose the infected areas. Routine treatment recommended is:
- Thoroughly picking out the feet
- Vigorously cleansing the feet, especially the clefts, with warm water and disinfectant.
- Painting the frog with an iodine solution or commercial thrush lotion.
- Medications containing formalin should not be used if the frog is tender when cleaned out. It is often helpful to pack iodine soaked cotton balls into the clefts.
- The feet should be cleaned and painted with thrush medication twice a day and the horse kept in a clean dry environment.

Natural treatment: Follow a natural hoof care and lifestyle and thrush will eventually yield. Alter your horse’s diet and living conditions to resemble that of the wild horse. Thrush does not occur in wild horse hoofs. To expedite healing use a tincture of bee propolis

Another way to “diagnose” thrush is to stand behind the horse and examine the normal conformation of the heels where they join the central sulcus of the frog. If this is elongated, like in the picture that is shown, (easily shown on the white foot), this horse has thrush. When this crevice is further probed with the hoof pick, the observations as noted above, will be seen.