Backcountry First Aid for Horses and Mules

Injuries and illnesses that occur when trail riding or traveling in the backcountry are events that can often be successfully treated or managed until the animal can be transported for veterinary care. This assumes the problem is correctly assessed and proper first aid is administered. Assessment skills should be developed and an appropriate first aid kit readily available. As part of trip planning before you hit the trail, locate and get contact info for the equine veterinarian nearest the trailhead.

For the sake of this discussion, the problems that commonly occur on the trail are categorized as Physical Ailments and Metabolic Ailments

Physical Ailments

1. **Foot Problems**

A) Foreign Bodies/Sole Bruises/ Coffin Bone Fractures:
Rocks or sticks that wedge between the bars of shoes or in the sulci of the sole, or merely traveling on uneven, rocky footing in steep terrain, can result in point pressure on the sole sufficient to produce a bruise in the sensitive tissues of the sole. If sufficient damage occurs or the insult persists, it can result in a sole abscess that may take weeks to come to a head.

When a lameness is suspected, the first priority is to determine the affected limb(s), then isolate the pain to the particular part of the limb. Most any painful insult to the foot will produce an exaggerated digital pulse. Further localization of pain in the foot requires hoof testers, but the use of fingers or other device that can apply a focal pressure may identify the site of pain. As a rule, to diagnose the cause of lameness we always start with an examination of the foot and proceed up the limb until the location of pain is determined.

In the case of an uncomplicated sole foreign body, removal produces immediate relief. If the sole has been bruised, some lameness may persist and is best addressed with anti-inflammatory medication, cold therapy (standing in cold water), and protection of the foot with a boot or foot wrap.

The most damaging insult of rocky terrain is a Coffin Bone fracture which will produce an acute non-weight-bearing lameness. Since the fracture is within the hoof capsule, the typical external disfigurement of a fracture will not be evident. A sole abscess can produce a similar presentation, and radiographs are sometimes necessary to distinguish between the two. With any lameness of this magnitude, professional help should be sought ASAP. First aid is as above.

B) Penetrating Foreign Bodies:
Any object that penetrates the sole, particularly when blood is noted upon removal, is potentially a very serious problem. The location, direction, and depth of penetration should be determined and treatment administered in an aggressive manner.

Using a hoof knife, the penetrating tract should be opened in a cone-shape with the point ending at the depth of penetration. Clean the sole thoroughly with an antiseptic solution, then apply antiseptic into the defect and pack the defect with cotton or gauze saturated with antiseptic. Cover the foot with a boot or foot wrap and administer an anti-inflammatory medication. Seek professional care ASAP.

Even superficial penetrations may produce enough point force to result in a sole bruise, so should be addressed promptly. Sole penetrations in certain areas like the caudal frog can introduce infection into the deep structures of the foot that can be career-ending or life-threatening. Any foot puncture to the depth of sensitive tissue should be evaluated by a veterinarian ASAP. Current vaccination for Tetanus should be confirmed, and any animal vaccinated more than six months prior to injury should receive Tetanus Antitoxin.

C) Thrown Shoe:
Occasionally horses or mules that are shod will lose a shoe, resulting in damage to the hoof wall or a sole bruise. This may or may not produce an obvious lameness, so examining the feet prior to hitting the trail for loose, slipped or thin shoes is prudent. An occasional glance while on the trail, particularly after a stumble or in rough, rocky footing, could avert further damage.

This is where packing an EZ Boot or similar product pays off. If a shoe has slipped (become mal-positioned relative to the hoof wall) it should be corrected or removed. A shoe that is not correctly positioned on the hoof wall is likely to result in further injury or damage to the hoof wall.

D) “Road Founder”:
Laminitis can result from repetitive concussion of the foot on hard surfaces and is referred to as “road founder”. Many other causes of laminitis exist, but clinical signs of laminitis look the same regardless of the cause. In the case of road founder, an excessive concussive stress has resulted in painful inflammation within the foot. The possibility of other inciting causes should be entertained if this problem appears on the trail when travel conditions do not seem extreme.

The typical stance of a laminitic horse is to shift weight off the front limbs onto the hind limbs, thereby assuming a “back-on-the-haunches” position. It is possible that laminitis can affect both front and hind feet, so a stiff, “walking-on-eggshells” gait may be noted. Increased digital pulses in the affected limb and pain when pressure is applied to the point of the frog is diagnostic for laminitis.

Anti-inflammatory medication and cold therapy (standing in cold water) is very helpful with this condition. A concerted effort to determine the underlying cause of the laminitis should be a high priority, and professional evaluation should be sought.

2. Tendon Injuries:
Strains, sprains and tears of lower limb flexor tendons are common injuries, particularly in deep, soft footing, and when toes are excessively long. These

injuries present either as an acute lameness after a stumble, or as a progressive lameness that becomes most noticeable after stopping and rest.
The superficial digital flexor, deep digital flexor and suspensory ligament are stacked on top of one another over the back of the cannon bones of both front and hind limbs. Injury is detected by isolating and gently squeezing each tendon from just below the knee (front limb) or the hock (hind limb) down the limb to the fetlock. If pain and/or swelling is detected you've localized the problem. The degree of lameness will give you a hint as to the severity if the injury, but even mild injuries have the potential to become much worse if prompt attention is not provided. Rest, limited activity, cold therapy and anti-inflammatory medication are indicated, and a well padded support wrap is essential. Mild strains may resolve quickly but it is best to evaluate the injury with ultrasound to determine the extent of damage and when to return to work.

3. Lacerations/Abrasions/Rope Burns:

Cuts and scrapes come in all shapes and sizes, and their severity often has more to do with their location on the body than anything else. ***Small wounds involving joints, eyelids or coronary bands have potentially more severe consequences than large flesh wounds. Keep in mind that there could be more damage underlying a small wound than meets the eye.***

First aid measures are common to most lacerations: stop bleeding, clean out foreign debris and cover to keep clean. If a wound is amenable to bandaging, medicate it with topical antibiotic and apply a bandage. Large skin flaps over flesh wounds can be temporarily closed with skin staples, safety pins or fishing line until you can get the animal to the vet. A through exploration of the wound is essential to determine if deeper vital structures have been involved. Foreign bodies such as wood fragments may break off deep in a wound and be very difficult to detect.

Rope burns are common in the pastern area and for first aid should be topically medicated with an antibiotic ointment then covered with a padded pressure wrap. Further management depends upon the severity of the wound(s) and should be directed by your vet.

4. Blunt Trauma: Kicks, Collisions

Blunt force of sufficient force can cause a hematoma or seroma, large fluid filled defects bulging out from the body or limbs. These are often painful to touch initially, then become firm as the blood clots and consolidates. With time most of these will resolve uneventfully with topical treatment, but those on the limbs may enlarge down the limb as the fluid is pulled with gravity. The important first aid point is to NOT succumb to the temptation to open and drain these on your own. The fluid or clot contained within these is a very rich media in which to grow bacteria and anything less than surgical sterility can result in an abscess. Topical DMSO as a 10% solution applied twice daily will encourage resolution.

5. Eye Trauma

Abrasions, lacerations, topical and penetrating foreign bodies, blunt trauma and infection can all affect the eyes with mild to severe consequences. The eyes and surrounding tissues respond dramatically to any insult and getting a good look to

assess the problem could require sedation. Swelling, squinting, drainage and pain are common signs of injury but not specific to the cause. Cloudiness or visible defects of the cornea, redness of the sclera are also common signs of injury or disease. The primary first aid measure is to cover and protect the eye and surrounding area. One way of doing this is with a cold, wet towel placed over the eye and held in place with a halter or headstall. Application of ice as cold therapy, in addition to an anti-inflammatory, can be used to alleviate pain.

Any substantial eye injury or disease should be treated as an emergency and seen by a vet ASAP.

6. Fractures:

Fractures can affect any bone of the skeleton and range in severity from recoverable to fatal. The fractures of interest in this discussion are those that occur on the trail as a result of trauma such as a fall or kick from another horse. Invariably, fractures are painful and commonly, but not always, are seen as a deformity in the affected bone. Skull, vertebral, rib, pelvic and limb fractures should all be considered after a substantial fall. Foot or limb fractures will produce an acute, non-weight bearing lameness. Stabilization and immobilization of the injured foot or limb with a heavily padded splint is the primary first aid measure, as well as protection of any open tissue that is associated with the injury. Sadly, open fractures of the long bones or other catastrophic injuries that render the horse immobile are nearly always fatal if they occur in the backcountry, so euthanasia must be considered.

Metabolic Ailments

1. Dehydration:

As horses work they loose water through the evaporative cooling of sweat and also with respiration. Along with water, sweat contains electrolytes such as sodium, potassium, chloride, calcium and magnesium which is lost from the body. Replacement of water and electrolytes is essential to supporting metabolic activity, and if this does not occur dehydration results. Ambient temperature, humidity, altitude, and work load the horse is subjected to (pack/passenger weight, steep terrain, deep or rocky footing, ect.) can all influence the hydration status.

Hydration problems should be anticipated in light of hot, dry conditions, steep, rocky or sandy terrain, altitude, and heavy packs or passengers. Every opportunity to rest and hydrate should be taken under these conditions. Oral electrolytes may also be administered to avoid electrolyte depletion.

The hydration status of a horse is estimated by observing the recoil of skin that is pinched and pulled away from the body at the point of the shoulder. When hydration is good, the skin recoils immediately whereas if a horse is dehydrated, the skin remains “tented” for some period of time. Mucus membrane color and moisture and jugular refill may also reflect hydration status. Rest, cooling and water/food/electrolyte consumption are all needed to correct dehydration.

2. Exhaustion:

The extreme result of water/electrolyte/energy depletion is exhaustion. These horses are unsteady on their feet or down and unable/unwilling to rise, indifferent to their surroundings or to stimulation, unwilling to eat or drink, have a glazed appearance to their eyes and a very dull attitude. Heart rate is rapid, mucus membranes are pale or injected and dry, gut sounds are usually quiet and the horse exhibits general weakness and distress. Exhaustion is a life-threatening condition that requires aggressive critical care measures for the horse to survive.

Preventive measures as discussed above for dehydration, as well as knowing your horse well enough to recognize early signs of distress are needed to avoid this problem. Some horses, though, will perform well above their physiologic capability (running on adrenalin), not showing any sign of exhaustion until they relax, then crash. The only way to prevent this is knowledge of the horse, moderating activity to the prevailing conditions and assurance of food and water consumption appropriate to the activity level.

3. "Tying-up", Exertional Rhabdomyositis:

Vigorous muscular activity, such as sprinting or climbing steep slopes, or electrolyte depletion can precipitate muscle damage at the cellular level. Grossly this is seen as muscle cramping and dark brown urine. Any muscle of the body can be affected, but it is mostly the hamstring muscles of the back of the thigh that are affected on the trail. A stiff hind limb gait and muscles that are hard and painful to palpation is commonly observed, often most pronounced once the horse has had time to stop and rest. Brown urine is a result of muscle cell death that releases myoglobin from the cell; in severe cases myoglobin accumulates and obstructs the flow of blood through the kidneys resulting in secondary kidney failure.

Any horse showing these signs should be stopped, rested, fed and watered, and given oral electrolytes. Vitamin E and Selenium is therapeutic, and anti-inflammatory medications are administered once adequate hydration can be assured. Activity should be resumed only after the urine has had time to become clear and the cramping has subsided.

4. "Thumps", Synchronous Diaphragmatic Flutter

This problem is also a result of vigorous activity and electrolyte abnormalities, and can occur in any horse, but some horses are predisposed. It is commonly observed after the horse stops to rest and, true to its name, an audible thumping sound can be heard from several feet away. The "synchronous" part of the name refers to the fact that the diaphragm's muscular contraction rate is the same as the heart rate.

Rest, food and water, cooling and oral electrolytes are usually effective in resolving this problem. Immediate attention should be given to avoid having the problem progress to a more sever form. For horses that have recurring episodes, an electrolyte/dextrose preparation designed for treating "milk fever"

in cattle, Dextrose/Calcium/Magnesium/Phosphorous (DCMP) or Calcium Gluconate is very effective.

5. Choke:

"Choke" in a horse refers to blockage of the esophagus somewhere between back of the throat and the stomach. The blockage can be coarse dry feed, pellets, cubes, large pieces of apple or carrot or other object a horse is foolish enough to swallow. Some horses are predisposed to choke, but any horse can be affected. Two common elements of choke are: 1). rapid consumption with limited chewing (bolting) and 2). inadequate water consumption. Esophageal defects and muscle disease can also result in choke.

On the trail, horses with decreased hydration or a dry throat can choke if they bolt dry feed before they have had a chance to drink. Nervous haulers or horses hauled under hot, dry conditions without access to water can choke if they bolt dry hay, pellets or cubes in their feed manger.

Affected horses are very distressed and hang their head with green (or whatever color of feed that is obstructing), slimy discharge from both nostrils. The horse may cough, gag or appear to be retching. The primary danger to the horse is aspiration of water or food material into the lungs.

First aid measures: 1) immediately eliminate all access to feed and water, 2) massage the left side of the neck over the esophagus from the throatlatch to the thoracic inlet encouraging movement of esophageal contents from the throat to the stomach. Obstructions at the back of the throat may resolve with coughing, and esophageal obstructions may resolve with time and massage. Food and water should be withheld until clinical signs resolve, usually within 24 hours.

6. Colic:

Colic is a term that refers to pain originating in the belly regardless of cause. Intestinal impactions or other obstructions, infections, irritants (eg. sand), poor blood flow due to parasites, intestinal entrapment or torsion, and many other abdominal problems can cause colic. Non-intestinal problems such as ovulation in mares can manifest as colic.

An early/mild colic, early/mild laminitis and an early/mild tie-up can all look the same. Distinguishing between them requires astute assessment of vital signs, intestinal motility, muscle tone, digital pulses, and sensitivity/pain localization in the soles of the feet.

The severity of colic pain is directly proportional to the seriousness of the problem, but factors such as the personality of the horse should be considered when estimating pain levels. Heart rate is a reliable estimator of pain that can be measured and monitored. As pain increases, so does heart rate, and when heart rate lowers toward normal, comfort can be inferred. Stoic horses exhibiting minimal outward signs of pain may be judged to be in serious trouble with high resting heart rate (>60 bpm) whereas young or flighty horses demonstrating exaggerated signs of pain may be judged as overly dramatic if resting heart rate is near normal.

Horses with colic are usually not interested in eating or drinking, will look or kick at their belly, and will have an elevated heart and respiratory rate and effort. The horse may sweat and produce audible moans and groans. Gut sounds will either be exaggerated (hypermotile) or quiet (hypomotile). Severe pain will cause the animal to throw themselves to the ground and roll, often remaining on their back in an attempt to find comfort. Less severe pain will cause them to stretch out, wander aimlessly, or lie down quietly.

First aid measures in backcountry situations is limited to assessment, walking or trotting the horse if appropriate, and judicious use of pain medication such as Flunixin Meglumine (Banamine). Water consumption should be encouraged but not forced. Attending to thermal comfort can be helpful: Keeping a horse warm under cool conditions and providing shade and cooling under hot conditions. Banamine is so effective at relieving pain that it may mask a serious problem that can ultimately prove fatal, so becoming familiar with when to use it, and at what dose, is critical. It requires a prescription from a vet to obtain, so be sure to get specific instructions at that time.

Good signs to look for are willingness to eat and drink, passing gas and manure, and urinating a good volume of clear urine. Bad signs are unwillingness to eat and drink, straining unproductively to defecate, a lack of urine production, and persistence or rapid reoccurrance of pain*. It bears repeating that the seriousness of colic is directly proportional to the level of pain exhibited.* If a serious problem is suspected and you are fortunate enough to manage the pain, get the horse out of the backcountry and to a vet ASAP.