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Foot and Health Care of Horses

by W. W. Albert

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THE SMART HORSE OWNER will protect his horse's health by following good feeding and management practices and by taking every precaution to prevent diseases and injury.

Barnlots and paddocks should be well drained since boggy, stagnant water pools can be sources of flies, insects, and diseases. Horses are too easily injured to allow loose boards, wire, trash, or parked machinery in their paddocks or pastures. Fences should be kept in good repair. Lead-containing paint should not be used on barns and fences, since licking or ingestion can cause death from poisoning. Insect sprays, disinfectants, and paints should not be stored in the barn area.

All horses should be checked daily. An observing owner or groom will note when a horse is off feed or when he appears sluggish and not quite normal. The healthy horse will usually have a good hair coat and will be alert and active. Normal respiration can be noted by observing the rhythmic in and out movement of the rear flank. Unusually fast, short, and jerky flank movements may suggest difficulty. Runny eyes and thick mucous discharges from the nostrils should also be viewed with suspicion. If illness is suspected, an animal thermometer should be inserted into the rectum and left for several minutes. The normal body temperature of a horse ranges between 99° and 100.5°F.

A horse's feet should receive regular care so that he can perform at his best. Teeth, too, sometimes need attention.

CARE OF FEET

"No feet and legs, no horse" is a common expression of horsemen. The basic things a good horseman or judge will look for include (1) a shapely hoof large enough to support the body, (2) a dense, tough hoof that is not dry, brittle, or cracked, (3) wide deep heels that can absorb shock, and (4) a level sole with good slope of pastern.

Abundant exercise, particularly in grassy areas, will aid in the growth of healthy feet. Beyond that, hoof care is much like care of one's fingernails. Hooves should be cleaned frequently. When horses are stabled, it is desirable to pick up their feet every day and clean out the debris from around the bars and soles of the feet. Hooves should also be regularly trimmed to the correct length.

STRUCTURE OF THE FOOT

To trim a foot properly, one should have a basic knowledge of its structure. The conformation areas, the bones and major tendons, and the underside of the hoof are shown in Figure 1.

The hoof wall grows downward from the coronet, turning under at the heels and forming an incomplete circle. At either side of the break

(A) Conformation areas, (B) bones and major tendons, (C) underside of hoof. (Fig. 1)

in the circle, the wall turns toward the center of the hoof to form the bars. The wall is thickest at the toe to absorb wear, since in stride the toe generally leaves the ground last. At the heels, the hoof wall is thinner, permitting the heels to spread and absorb concussion from the descent of the striding foot.

The sole of the foot is a concave, horny layer that protects sensitive blood vessels and nerves above and inside the foot. A soft mass of spongy tissue in the wedge-shaped area between the bars is known as the frog. It absorbs shock and transmits impulses to the nerves of the foot. The frog should always touch the ground and only the ragged edges should be trimmed occasionally.

The correct slope of the pastern (Fig. 1) generally corresponds to the slope of the shoulder. The toe and pastern should also have the same direction (Fig. 2). A 45-degree angle of slope is desirable in the front pasterns for most western pleasure horses, while a 50-degree angle is often desired in the front pasterns of gaited show horses. Too long toes or too low heels will modify the pastern slope and tend to put undue stress on the bones and tendons of the foot.

TRIMMING THE HOOVES

Trimming the hooves should start with the foal. It is easier to correct foot problems in foals and young horses than in mature animals. Even before trimming is necessary, it is desirable to handle the foal's

(A) Correctly trimmed front feet — round, even, toeing straight ahead.
 (B) Correct rear feet — level soles with wide, deep heels. (Fig. 2)

feet several times while he is still nursing his mother. This will make him accept foot care more easily when he is older.

A foal's foot will have a definite shape by the time he is 2 months old. Start inspecting his feet then, and trim periodically as necessary.

Hoof growth will vary with horses, but generally a normal foot will grow about $\frac{1}{3}$ inch per month. This usually calls for trimming every 4 to 6 weeks. Until one has gained quite a bit of experience, however, it is better to trim a small amount at more frequent intervals. Careless excessive trimming can do more harm than good. The important thing is to have patience.

Before trimming the feet, it is advisable to have the horse stand normally on a hard level surface and observe his legs and feet. Observe him also at the walk and trot. With any trimming, it is important that the horse (1) stand squarely, (2) toe straight ahead, and (3) have a balanced foot with a wide, deep heel so that the body weight is evenly distributed over the foot (Fig. 2).

It is generally safe to trim the hoof wall even with the sole. If the edges of the hoof are allowed to grow too long, the hoof will often split and break easily.

When the hoof wall is very long, it may be necessary to trim it with a pair of nippers or a hoof knife. However, if the hoof of a colt has worn normally and he stands correctly, rounding the edge of the wall and rasping it smooth may be all that is necessary.

Rounding a foot can often be done simply by standing a horse on a hard surface and shaping the edge of the foot with a chisel. The edges of flat feet should be rounded off more than those of good upright feet. The average person does not generally round the hoof off enough and this accounts for many ragged, uneven feet. Take care to rasp the ragged edges of the hoof wall after rounding them (Fig. 3).

To trim long hoof walls, hoof nippers (A) or a hoof knife (B) may sometimes be needed. A rasp (C) is used to smooth rough edges. Sharp edges on the underside of the hoof should be rasped toward the heel. (D) A trimmed foot with correct toe and heel length and level sole. (Fig. 3)

(A) Pigeon-toed—trim inner half of foot; (B) correct stance; (C) splay-footed—trim outer half of foot. (D) Back at ankles—trim toe; (E) correct pastern angle; (F) cocked ankles—lower the heels. (Fig. 4)

Do not rasp the outer wall surface since this removes the periople varnish that prevents moisture evaporation. Never cut away or sever the union of the bars with the hoof wall. Excessive paring out of the sole is also bad practice.

Some faulty hoof and leg placements may need corrective trimming. Among the most common defects are a splay foot (toeing out in front), pigeon toes (toeing in), contracted heels, and cocked ankles (ankles that turn over).

A splay-footed horse will usually wing in with his front feet when he's trotting (Fig. 4). To correct, simply trim the outer half of the hoof wall. Pigeon-toed horses usually wing out or paddle at the trot. Correct by trimming more of the inner half of the foot.

Horses with narrow, close, or contracted heels may give a rough ride because the heels will not expand well to cushion shock. Lowering the heels will put more pressure on the frog and tend to spread the heels. Horses with cocked ankles can also be helped by lowering the heels. If hooves grow too long in front, the horse will often be "back at the ankle" (oblique in pastern slope). This condition can be corrected by trimming the toes (Fig. 4).

SHOEING

Hard surfaces sometimes wear the hoof wall away faster than it can grow. Shoes may be put on the feet to protect against this excessive wear. Shoes will also increase traction, correct faulty action, and balance and improve gaits. Extra weight in the toe tends to lengthen the stride while added weight in the heels may aid in bending and flexing the knees. Many show horses are shod to improve their appearance, as well as to aid their action.

Horse shoeing is an art and should advisably be done by an experienced farrier. The shoe should be shaped to fit the foot—not the foot to fit the shoe. Do not leave the shoes on too long. Otherwise, they may become thin, bend, and shift on the feet, causing injury. Also, feet may grow out of balance and proportion when shoes remain on too long, and this may result in poor action. Shoes usually need resetting every 4 to 6 weeks.

MOISTURE AND DRESSINGS

A normal hoof is about 25 percent moisture, which helps to keep it tough and elastic. Pasture grasses and water spillage at the tank are good sources of moisture for hooves. When horses are stabled for long periods or when the weather is hot and dry, their feet may dry out and become brittle. Dry hooves can result in contracted heels or cracked walls that may cause lameness. Dry feet can be wrapped with moist burlap sacks and then a hoof dressing such as sweet oil or linseed oil can be applied to prevent further moisture evaporation.

Hooves are often given dressing applications when horses are to be shown. Many prepared hoof dressings are available. Before these were on the market, horsemen simply applied melted pork fat or tallow to the hoof head, horn wall, and heels to stimulate horn growth. If you do this, be sure that the fats are not rancid and do not contain salt that will draw moisture from the foot.

(A) Corn — bruise on sole; (B) thrush — infected frog; (C) contracted heels; (D) clamp above hoof crack; (E) foundered foot. (Fig. 5)

AILMENTS OF THE FEET

Corns are bruises or sores on the sole of the foot (Fig. 5). Sometimes corns result from stepping on rocks or hard sharp objects; other times they may be due to poor shoeing. Mattery, ulcerated corns may require medication and draining. Sometimes it is best to rest the horse and place protective leather pads on the feet.

Thrush and grease heel are bacterial diseases of the foot. These diseases are often associated with dirty, wet stalls and paddocks.

Thrush affects the frog and is characterized by a foul discharge. For treatment, first cleanse the frog with warm soap and water. Have an experienced person trim away the loose diseased tissue and then apply a good drying medication or disinfectant such as sulfa powder, copper sulfate (blue stone), or tincture of iodine.

Grease heel is an inflammation of the back of the fetlock joint. Watery, mattery blisters usually occur and irritate the skin. Treatment should include cleaning, drying, and disinfecting the sore areas.

Cracks (resulting from dryness, irregular long hooves, or hard concussion) sometimes occur at the toes or quarter of the hoof. Most cracks start at the bottom and work up toward the coronary band. Occasionally a clamp placed above the crack will keep it from extending further. Deep cracks that penetrate the wall into the sensitive lamina, often causing lameness, demand the attention of a good farrier.

Contracted heels can come from tight-fitting shoes or from very dry hooves. Sometimes lowering the heels or corrective shoeing is effective.

Founder or laminitis is usually an ailment of the front feet, but serious cases can also involve the rear feet. The ailment is caused by fever or toxins due to overeating, overwork, drinking cold water when too warm, or other stresses. The lamina of the hoof wall often separates from the inner sensitive lamina of the foot, causing a long curved toe and a flat sole. The gait of a foundered horse will usually be short and stiff since the hooves are shuffled forward and the heels are set down first on the ground.

It is often difficult and sometimes impossible to correct foundered feet. In trimming, use the outer circumference of the sole as a guide. The thick long toe may be removed with a nipper and rasped smooth. The sole should usually be left alone, but the quarters or sides of the hoof can be lowered to improve the setting of the foot on the ground. It would seem ideal to grow a new hoof entirely, and some veterinarians suggest grooving the wall and sole to relieve pressure and thus aid growth. Experienced farriers may help a horse's gait by fitting it with a bar shoe to support and raise the heels, along with a rocker toe to aid in breaking over of the toe.

PARASITES AND SKIN DISEASES

Internal and external parasites can markedly sap the strength, stamina, and energy of a horse. It is smart management to develop a systematic program for treating your horse for parasites.

INTERNAL PARASITES

Colic and indigestion, as well as an unthrifty appearance, may result from internal parasites. Sometimes the blood vessels may even be damaged and clogged.

Horses of all ages are affected by two common internal parasites: bots, which invade the stomach, and blood worms or strongyles, which infest the intestines. A third parasite, the ascarid or large roundworm, commonly affects young horses under three years of age. It may invade the intestines of foals when they are only a few months old.

Bots. These are the whitish-pink, grublike larvae of the common botfly or gadfly (Fig. 6). They attach themselves to the walls of the stomach from fall to late spring. In the spring, they are passed from the body in the pupal stage. The pupae hatch into botflies in midsummer.

Botflies are about the size of bees and are covered with black and yellow hairs. The flies are active from midsummer until frost. They do not bite, but their droning, buzzing noise does annoy the horses, causing them to kick, toss their heads, and bunch up for protection. An adult fly will lay several hundred eggs. These eggs, or nits, which are yellow and about the size of a pinhead, become glued to the horse's legs, belly, throat, and mouth. When the horse noses these areas, the warm moisture causes the bots to hatch from the eggs. The bots enter the mouth, attaching themselves to the tongue and mouth linings, and eventually migrate to the stomach to repeat the cycle.

An effective treatment is to administer carbon disulfide by a stomach tube a month after the first hard frost. Some other compounds, such as parvex, mixed in the feed or given in bolus form are also effective.

Some horse owners periodically scrape off the nits with a razor. Other owners use a warm damp cloth saturated with kerosene. The

warmth hatches the eggs and the kerosene destroys the larvae. Removal of nits is especially important when horses are treated for bots.

Strongyles. Several large and small species of strongyles (sometimes called blood worms, red worms, or palisade worms) can infect horses. The results may be bad cases of colic, lameness, anemia, and even death.

The worms are ingested with grass in the spring while they are in the early larval stage, and migrate in the bloodstream to various body organs. Occasionally some migrate through the intestinal wall into the mesentary blood vessels, where they may form an infective aneurism which can break loose as a thrombosis and clog or occlude normal circulation. Eggs are passed with the feces in the spring. After 7 to 8 days, they develop into larvae that crawl up on the upper portions of grass, ready to renew the infection.

Effective anthelmintics (drugs that destroy intestinal worms) include phenothiazine, thiabendazole, and an organic phosphate, dichlorvos. They may be included in the feed or administered as a bolus or drench.

Some common internal parasites of horses.

(Fig. 6)

Summary Schedule for Worming Horses

Parasite	Affected organ	Age of horses affected	Time and frequency of treatment	Effective vermifuge
Bots	Stomach	All ages	Fall, 1 month after first hard freeze	Carbon disulfide, parvex
Strongyles and pinworms	Intestine	All ages	At least 2 times a year, before and after grass ^a	Phenothiazine, thiabendazole, dichlorvos
Ascarids	Intestine	Foals and yearlings	Every 3 or 4 months	Carbon disulfide, piperazine, thiabendazole, dichlorvos

^a Farms with large concentrated populations or with show and racing horses sometimes treat every 60 to 90 days for strongyles.

It is advisable to treat pleasure horses at least twice a year — in the spring before they go on grass and in the fall after they come off grass. Large farms with concentrated populations of horses may routinely treat their horses every 2 or 3 months. For stabled horses, some owners feed a low level of phenothiazine (1 teaspoon daily) in the grain mix for 3 weeks. Then they skip a week and repeat the treatment.

Ascarids. These long, pencil-size parasites often invade the intestines of foals and yearlings. Adult horses are not commonly affected. Ascarid eggs are ingested into the mouth with contaminated forage and enter the intestines, where they are hatched into larvae. Often the larvae pass through the intestinal wall, circulating to the liver, heart, and lungs. From the lungs they are coughed up into the mouth, are swallowed, and pass back into the intestine. The adult worms attach themselves to the intestinal wall and suck blood, often causing the young horse to appear pot-bellied and unthrifty. Large numbers of eggs are passed in the early spring with the feces and can remain viable in the soil for long periods. Effective anthelmintics mixed in the feed or administered by bolus or drench include carbon disulfide, piperazine, thiabendazole, and dichlorvos.

Pinworms. These very small worms invade the colon of the horse. The female worm lays her eggs in the area of the anus and this irritation causes the horse to rub his buttocks and tail to relieve the itching. Treatment recommended for strongyles is also effective for pinworms.

EXTERNAL PARASITES

The two most common external parasites on horses are lice and mites (Fig. 7). Both present the greatest problem in the fall and winter, when

Three external parasites: (A) biting or sucking louse; (B) mange mite; (C) horse tick. (Fig. 7)

the horses have a heavy hair coat. In some areas ticks may be found on horses.

Lice. Some lice feed on the external layers of the skin; others puncture the skin and suck blood. At times the lice move about on the body and annoy the horse, causing him to rub and bite. Lice populations are generally found on the neck and mane, and about the buttocks, croup, and tail. However, with heavy infestations, lice may be found all over the body. When the infestation becomes heavy, the hair coat roughens, and often there are hairless patches due to excessive rubbing.

One can often detect lice by pulling out tufts of hair, holding them to the light, and looking for the small parasite eggs or nits.

Mites. These very tiny parasites cannot usually be seen with the unaided eye. They cause a contagious, itchy, hairless crust on the skin referred to as scab, scabies, or mange. One type of mite, called sarcoptic, burrows under the skin, often secreting a poisonous substance that causes reddish, irritated, itchy areas. A second mite, called psoroptic, pierces the skin and sucks blood.

Control. One can rid a horse of lice, mites, and ticks by spraying its entire body. Most owners who have had trouble do this routinely in early fall.

It takes about 2 gallons of spray to thoroughly wet a mature, 1100-pound horse. Two sprayings 2 or 3 weeks apart are necessary because one spraying will not destroy the eggs attached to the hair. There are several effective sprays. Those recommended by University of Illinois entomologists in 1974 are ciodrin and malathion. Alternative sprays are lindane and toxaphene. These sprays can usually be purchased as wettable powders or as liquid emulsion concentrates. The powder or liquid should be mixed with water as directed on the containers. In very cold weather daily grooming along with the application of a good dusting powder, can be effective against lice.

Since mange is contagious, the use of common combs and blankets should be avoided when the first sign of mite infestation appears.

The first symptoms of ringworm—a circle of watery blisters causing loss of hair—are usually noticed in late winter and spring. (Fig. 8)

SKIN DISEASES

Ringworm, usually a stable disease, is caused by a fungus and is transmissible to man. It is noticed on the horse usually in late winter and spring. The first symptom is a circle of watery blisters that cause loss of hair (Fig. 8); later the blisters become gray crusts.

To control ringworm, remove the scabs with sandpaper, or wash the affected areas with soap, preferably a hexachlorophene soap; then paint them daily with tincture of iodine. (Tincture of iodine is the dilute form of a 7- to 10-percent solution.)

Horses often suffer from other eczema or sebaceous skin diseases. Hexachlorophene soaps are sometimes effective, but stubborn skin cases should be diagnosed and treated by veterinarians. Combs and blankets used for infected horses should not be used for other animals.

DISEASES OF NERVOUS AND RESPIRATORY SYSTEMS

Horses can be afflicted with numerous nervous and respiratory diseases caused by bacteria or viruses. Vaccines are available to guard against some, but not all, of these diseases.

TETANUS (LOCKJAW)

Tetanus or lockjaw affects the nervous system. It is caused by the bacterium *Clostridium tetani*, which is commonly found on horse farms in feces and in the soil. The spores of the organism enter the horse's body through a wound or break in the skin. These spores produce a poisonous toxin that migrates toward the brain and overstimulates many nerves. This overstimulation causes stiffness and muscle spasms. Later the horse may go down and his jaw muscles close tightly.

Prevention is important because the disease is often fatal. Many horse owners follow a routine vaccination procedure for tetanus. A common method is to vaccinate all young horses with two tetanus toxoid injections a week apart. Thereafter an annual booster shot insures good immunity. Without a record of permanent immunization, some veterinarians, for precautionary measure, will use a tetanus antitoxin before a

horse is castrated or undergoes surgery, or when a horse is wire-cut or injured. This antitoxin, however, provides only a few weeks of immunity.

SLEEPING SICKNESS (EQUINE ENCEPHALOMYELITIS)

Sleeping sickness is a virus disease that affects the nervous system. It commonly occurs in summer and fall and is usually transmitted to man and horses by blood-sucking insects, such as mosquitoes, lice, and mites. Three strains of sleeping sickness have been identified in the United States: the eastern, the western, and, very recently, the Venezuelan type. The disease makes the horse feverish, very dull, and depressed. Paralysis may result and may end in death. Most horse owners vaccinate against the disease in the spring to have protection during the insect season. Immunity lasts only a year, so an annual vaccination is necessary.

RESPIRATORY DISEASES

A wide spectrum of respiratory diseases affects horses, causing symptoms much like those of a cold, flu, or pneumonia.

Distemper (strangles). One of the most common respiratory diseases, distemper is caused by the bacterium *Serectococcus equi*. Young horses are more susceptible than old ones. Affected horses have a high fever and usually have a thick mucous discharge from the nostrils. The lymph glands of the neck often swell and later break open as a draining sore on the neck.

A bacterin vaccine is available. People with show horses sometimes vaccinate as a precautionary measure. Other people, however, do not vaccinate unless the disease has been a farm problem.

Viral respiratory diseases. A large number of respiratory diseases are caused by viruses. These include influenza, equine viral arteritis (EVA), and equine viral rhinopneumonitis (EVR). EVR and EVA will often cause pregnant mares to abort their foals. Because of the diversity of these viral infections, vaccinations are not one hundred percent effective. Some degree of success has been reported from the use of a composite vaccine for the various respiratory diseases. The best approach is to work out a preventive program with a good veterinarian.

CARE OF TEETH

A good horseman will check his horse's teeth once a year or oftener. It's especially important to examine the teeth when the horse keeps turning his head, slobbering, or tugging at the bit, as these may all indicate teeth problems.

The molar teeth, especially of old horses, often wear irregularly, leaving sharp or jagged edges which can cause pain and poor chewing of feed. These jagged points should be removed with a float (guarded rasp).

Sometimes milk teeth remain in the mouth as caps when the permanent incisors come through; these milk teeth should be removed lest they cause crooked permanent teeth. At times horses have infected teeth that also need removal.

It is sometimes advisable to remove any canine and wolf teeth that appear. Canine teeth may show up at about 5 years of age in male horses (occasionally in mares) in the bar area between the incisor and premolar teeth. Wolf teeth sometimes appear on the upper jaws just in front of the premolar teeth.

An inexperienced horse owner should ask a veterinarian to look at the teeth when the horse is being treated for other ailments.

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