
THE HORSE'S HEALTH

THE NORMAL HORSE

It is important to know what the normal appearance and habits of a horse are so that you can tell if something is not right. Each horse is different, so you need to be aware of what is normal for your horse. Many illnesses begin with very subtle symptoms. The better you know your horse, the faster you will notice any changes and be able to tell when something is wrong. Get in the habit of checking your horse every day. Watch it when it comes into the barn. Watch it eat for a few minutes. Groom daily. All these will help you to spot trouble early.

Also, practice taking your horse's vital signs—temperature, pulse, and respiration (TPR)—so that you can do this quickly and accurately when needed. Be sure you know your horse's normal TPR. To establish a baseline, take readings twice a day for a week (preferably at the same times each day) and calculate the average. Then, if your horse shows signs of a problem, you will quickly be able to determine if a vital sign is abnormal.

The following are signs of a normal, healthy horse.

- **Contentment**—Looks unworried when resting
- **Alertness**—Has a bright-eyed attitude and perks up its ears for the slightest reason
- **Good appetite**—Is eager and demanding while feed is being rationed, and eats readily
- **Sleek coat**—Hair is shiny and smooth, with a healthy “bloom.” Skin is pliable and elastic, not dry and tight (hidebound). Pinch a fold of skin on the neck; it should take only 1 or 2 seconds to flatten.
- **Bright eyes**—Eyes are clear with pink membranes under the lower lid. Fluid is clear.
- **Normal feces and urine**—Consistency of feces (manure) varies with the diet but usually is firm, not dry. Both feces and urine should be passed without effort and contain no blood, mucus, or pus. A horse should produce multiple piles of stool and one or two puddles of urine daily.
- **Intestinal sounds**—Gurgles, squeaks, and rumbles are signs that the stomach is moving food normally.
- **Normal temperature**—Ranges from 99 to 101°F. To take a horse's temperature, use an animal thermometer with a string tied to the end. Shake the mercury down (or use a digital thermometer, which is faster). Lubricate the thermometer with lubricating jelly. Stand alongside the hip facing to the rear of the horse, gently pull the tail toward you, and insert the thermometer into the rectum; hold for at least 3 minutes. Remove it gently and quickly wipe it clean without touching the bulb end. Read the temperature. If the temperature is 102°F or above when the horse is at rest, the horse is probably ill and may need a veterinarian.
- **Normal pulse**—Ranges from 32 to 48 beats per minute. Find the artery at the jawbone where it winds around from the inner side, and feel the pulse with the tips of your index and middle fingers. Using a watch's second hand, count the beats for 15 seconds and then multiply by four. If the pulse rate is above 50, the horse may be in distress or suffering from overexertion or abdominal pain (colic). Keep in mind that pulse rates are somewhat higher on young, small, or nervous animals. Rates are also higher when the horse is excited or is being exercised.
- **Normal respiration**—Rate can range from 8 to 20 breaths per minute at rest. Place your hand on the horse's flank and count the rise and fall rate for 15 seconds, then multiply by four. A horse in good health will pause as though it is holding its breath, but a sick animal may breathe at 30 or more respirations per minute. Exercise, excitement, or hot weather may increase the rate. Breath should smell sweet. Mucous membranes in the nostrils and gums should be a normal pink color and moist.

To avoid horse health problems, start with a management program to prevent illness, parasites, injury, and accidents. Work with one veterinarian so he or she can become familiar with your horse and its health history. Ask your veterinarian to recommend an immunization and deworming schedule.

FIRST AID AND WHEN TO CALL THE VETERINARIAN

FIRST AID

An equine first-aid kit is a necessity for all barns. Keep it in a dry, clean place and check it frequently to make sure it contains complete, fresh supplies. Post the veterinarian's phone number by the phone.

All first-aid kits should contain the following:

- Veterinary thermometer and lubricating jelly
- Antiseptic ointment
- Antiseptic spray
- Scissors
- Sterile, nonstick dressings
- Roll of cotton
- Bandages or vet wrap
- Sponges
- Latex gloves

Other useful items to have on hand include:

- Iodine
- Alcohol
- Butazolidin tablets or paste
- Epsom salts
- Eye wash or ointment
- Twitch
- Medicine boot
- Stethoscope
- Hydrogen peroxide
- Syringes and needles (disposable)
- Tweezers
- Watch with second hand

CALLING THE VETERINARIAN

The decision whether to call a veterinarian when a horse is ill or injured depends on each individual's level of experience and knowledge of first aid treatment. Learn which situations require a veterinarian's care, and know what you can do before a veterinarian arrives. You can treat minor injuries and some illnesses, but contact a veterinarian immediately if you have

any doubts or questions. Prompt and proper treatment can mean the difference between a minor incident and a disaster.

Following are examples of times to call a veterinarian:

- The horse's temperature is 102°F or higher.
- The horse appears to be in shock (symptoms of shock are on page 28).
- A pressure bandage on a wound does not stop the bleeding.
- The horse is very lame.
- A wound is a deep puncture.
- A wound is deeper than the skin and is near the eyes, mouth, joints, or tendon sheaths.
- Infection appears in any wound.
- The horse shows signs of colic.
- The horse's appetite decreases or it is off its feed for 12 to 24 hours.
- The horse has a cough that steadily worsens, is wheezy, or seems painful.
- You suspect a broken bone.
- The horse is choking with excessive salivation.
- The horse has persistent diarrhea.
- A mare is having difficulty foaling.

While waiting for the veterinarian to arrive, do not put any medication on wounds, do not feed or water the horse unless you have been instructed to do so, restrain the horse from injuring itself, and **keep calm**.

When the veterinarian arrives, have the following information ready, if you can:

- Detailed medical history, including normal TPR and vaccination schedule
- Horse's temperature
- Horse's heart rate (especially if you suspect colic)
- Duration of the illness/problem
- Changes in routine or environment
- Changes in feed or feeding habits

While the veterinarian is working on the horse, help by holding the horse firmly by the halter. Stand on the same side as the doctor. Remain quiet while the doctor uses the stethoscope to check the stomach and respiration.

Control the horse with as little restraint as possible. It is better not to tie it up. Begin by

scratching the withers or forehead and giving the command “Whoa.” Try a light, steady tap on the forehead with a finger. When a leg is being treated, hold up another foot to help keep the horse from stamping. If the horse won’t keep still, try using a chain lead shank over the nose.

Holding a fold of skin on the neck firmly just above the shoulder can also be effective. A firm hold and slight twist of the ear also can control the horse, but be careful not to damage cartilage.

A **twitch** is a common device used to control a horse. It can be a loop of rope or a chain attached to a stick, or a clamp-type “humane” twitch. To apply the twitch, reach through the loop or clamp with your hand and grasp the horse’s upper lip. Fold the lip edges together, slip the loop over the lip, and quickly twist or tighten it. Do not tighten it more than is necessary to keep it from slipping, and release it as soon as possible.

If all other methods fail, a veterinarian may use a tranquilizer to quiet the horse.

Write down all instructions for the horse’s care, and follow them exactly. Never stop prescribed treatment just because the horse seems better.

WOUNDS

Gently clean abrasions to remove all debris from the wound. Use a cold water hose. Pat dry and apply antiseptic. Large wounds may require stitching.

For severe bleeding, apply a pressure bandage, not a tourniquet. Be sure the pressure is applied evenly on and around the wound. Do not panic if the blood loss seems great. The average horse can lose up to 4 gallons of blood without severe stress. After 15 to 30 minutes, remove the bandage. Call the veterinarian if the bleeding does not stop.

A common aftermath of wounds is **proud flesh**, a red lumpy mound filling the wound. Healthy new tissue should be pink and velvety. Proud flesh may develop in areas of high motion or over joints if the wound was not cleaned thoroughly; irritating, harsh soap or medications were used; or the bandage was too tight. Proud flesh prevents normal tissue from forming and must be stopped early. If you suspect proud flesh is developing, or the wound in any other way looks unhealthy, contact a veterinarian.

PUNCTURES

Punctures are deep wounds with small openings that tend to close quickly. These easily become infected if they are not cleaned

thoroughly and treated. The key is to keep the puncture open so that it can drain.

Punctures to the sole of the foot are common and often lead to abscesses. Skin punctures may be caused by fence wire or wood splinters.

Tetanus bacteria in a puncture wound is a serious concern. Be sure your horse is current with its vaccination. If its last booster was more than 5 to 6 months ago, give it another one.

ROPE BURNS

Tying a horse on a long line to graze or tying it with too long a lead rope often results in rope burns, especially on the rear pasterns. The wound may have cut to the bone or merely scraped off the hair, but all rope burns should be treated depending on severity (see wounds) to avoid lameness and a slow-healing injury.

WATERY EYES

Weeping and squinting may be caused by a cut or scrape of the eyeball, an allergy, a bruise, a bit of dirt or seed under the eyelid, or irritation by flies. Other irritants may be dusty feed, ash, pollen, or other material in the environment. A simple eye wash may clear this up. If the watery eyes persist longer than 24 hours, contact a veterinarian.

BRUISES AND SWELLING

Bleeding under the skin causes a bruise. Immediately apply an ice pack or cold water directly from a hose to help stop the swelling. Continue treatment for at least 20 minutes and repeat in an hour. If the swelling persists or increases, call a veterinarian.

When normally active horses are kept stalled without exercise, they may develop swelling in the legs. This is known as **stocking-up** and is most common in the hind legs. Exercise and proper wrapping of the legs help reduce the swelling.

SHOCK

Shock is the result of extreme stress from disease or injury. Call the veterinarian immediately. Signs of shock include depression, rapid breathing, pale gums, low temperature, cold lower legs, and shallow and/or rapid pulse.

While waiting for the veterinarian, keep the horse warm and quiet. Noise can cause more stress. Handle the horse gently and calmly.

COLIC

Colic is a general term for any abdominal pain in a horse. Due to its extremely sensitive, unique digestive system, the horse is quite susceptible to colic; and colic can be fatal. There are several types of colic, ranging from mild to severe. Because the signs are similar, it is hard to tell whether a horse has a mild case or whether the situation is life-threatening. Call a veterinarian immediately when you suspect colic.

Signs of colic may include any of the following:

- Looking at the abdomen
- Nipping or kicking at belly
- Rolling violently
- Getting up and down frequently
- Sweating
- Abdomen abnormally quiet
- Pawing and/or grunting
- Increased pulse rate (over 60 beats per minute)
- Abdominal distention
- Depression
- Off feed

While waiting for the veterinarian to arrive, do not give the horse any food or water. Also, do not give the horse any medication, as this may mask pain and other signs that could aid the veterinarian in determining the type of colic and treatment needed. It is rare for rolling to cause an intestine to twist, but if the horse tries to roll excessively, walk it slowly. Otherwise, it is best to let the horse stand or lie quietly; overwalking will tire it and may cause it to go into shock.

Many things can cause colic, and some horses are more susceptible than others. Any of the following may be factors that lead to colic:

- Parasites
- Sudden changes in diet
- Not chewing food properly (bolting food)
- Eating too much at one time
- Poor quality feed (too coarse or moldy)
- Irregular feeding
- Lack of water, or too much icy water when the horse is hot
- Working on a full stomach
- Poor dental health
- Ingesting sand
- Stress
- Gas

The type of colic determines the method of treatment. Types of colic include spasmodic colic, impaction colic, displacement colic, and excessive fermentation.

Spasmodic colic is the most common type. It usually is not life-threatening. Muscular

spasms of the intestinal tract cause mild to moderate pain. Sudden changes in diet and overexcitement are common causes. An anti-inflammatory drug or other pain relief medication is usually enough to relieve the horse.

Impaction colic occurs when there is a blockage in the intestine, and the contents of the intestines stop moving. This happens most often in the large colon. The blockage can be caused by poorly digested food, sand, an enterolith (a hard lump produced by the concretion of mineral salts), or swallowed foreign matter. It is sometimes possible to use fluids or stool softeners to lubricate the blockage and move it along. Other times, surgery is necessary.

In **displacement colic**, a part of the intestine is twisted or becomes trapped in other abdominal structures. This is extremely serious, and surgery usually is required to save the horse's life. It must be done promptly, or the affected section of intestine may die.

Excessive fermentation (or **tympanitic colic**) occurs when the contents of the stomach ferment more rapidly than they can be eliminated, forming a large quantity of gas. This often happens when a horse eats too much grain. Chemical changes decrease the flow of blood to the hooves, which can cause founder and even death. This type of colic is difficult to treat. Medicine may not relieve the gas pressure, and surgery is not always successful.

PREVENTION

There are several things you can do to help prevent colic. Deworm your horse regularly, as parasites are the leading cause of colic. Make sure clean, fresh water is always available. Provide regular dental care to make sure your horse can chew its food properly. Make any changes in routine or environment gradually to save the horse from stress.

Proper feeding is crucial in preventing colic. Feed high-quality foods, and feed often in small amounts. Make feed changes gradually over the course of about 2 weeks. Feed in a manger rather than on the ground, as the horse can ingest sand and/or parasites. Horses that are kept on pasture all the time seldom have colic.

LAMENESS

Most lameness occurs in the front legs, because they carry two-thirds of the horse's weight. Also, most lameness problems occur from the knee or hock down—almost 90 percent of all lameness is caused by a problem in the feet.

If a horse becomes lame, check its legs for wounds and carefully inspect the hooves for imbedded rocks or nails, puncture wounds, or loose shoes. If the lameness is worse on rough ground, suspect a problem in the hoof.

Learn to tell which leg is lame. Have someone trot the horse, and watch its head movement from the side. At a normal trot, the head has very little up-and-down motion. But if the horse limps or favors a front leg, the head will drop as it puts extra weight on the sound leg. Trotting in a circle on the longe line puts more strain on the inside legs. If the lameness doesn't show in one direction, reverse.

If the horse seems to be lame in a rear leg, have someone trot it directly away from you and watch the hips. The hip on the sound leg will dip, but the hip on the lame side will stay higher and seem to bounce upward. In severe cases, you may see some head movement as well.

After you have identified the lame leg, test each part to find the sore spot. Encircle the leg with your hands, and squeeze each area very firmly until the horse reacts. Feel for swelling and heat. Test the opposite leg for comparison. Be very careful with the hind legs to avoid being kicked. Try bending each joint and holding it for 30 seconds, then release it and have the horse trotted away. Again, do each side for comparison.

Treatment depends on what has caused the lameness. Some lameness can be treated easily with cold water or time off; some requires a veterinarian's care.

ALTERNATIVE THERAPIES

Many people are using alternative methods of treatment for their horses, especially when the horse is not responding to traditional care. These therapies should not replace standard veterinary medicine, but can be used with traditional treatments in an integrated approach to healing the horse. Your veterinarian should still be your first contact for an equine health issue. Always consult your veterinarian before you begin an alternative treatment, and get a recommendation for a licensed and reputable practitioner.

One of the most common alternative therapies is **chiropractic treatment**. A chiropractor manipulates the horse's spine to correct misalignments and restore the spine to its normal position. This reduces back pain, improves flexibility, and increases the range of motion. Be sure you use a licensed practitioner, because the spine can be damaged if the treatment is not done properly.

Massage is also a popular alternative therapy. Massage manipulates the soft tissues by rubbing and kneading with fingers and elbows. Massage can loosen tight muscles, ease spasms, stimulate blood flow, and restore or increase range of motion. Massage is also a good way to relax the horse and relieve stress. One caution: if the horse is very sore, massage may make the condition worse.

Another alternative is **acupuncture**, an ancient Chinese medicine which may relieve a horse's pain, especially arthritis pain. Acupuncture stimulates certain points with needles. The stimulation increases the flow of blood to the area which helps in the healing process. The needles also trigger the release of endorphins, pain-relieving proteins naturally produced by the body. There are usually no side effects to acupuncture, though extremely sensitive horses may develop some inflammation at the needle insertion site.

The use of **magnet therapy** in treating horses is gaining support. Blood contains electrically charged particles, and placing magnets over the sore area is believed to attract more blood to the spot. The increased circulation hastens healing. For best results, the magnets are supposed to stay in place for some time, so they are often found sewn into blankets, boots, or pads.

Homeopathy uses tiny amounts of natural substances to treat horses. While there is not much scientific evidence to support this type of therapy, it does not harm the horse. Nor will it mask signs as drugs often do. You must use care, though, because larger amounts of these substances can actually cause disease.

Other types of alternative therapies include **herbology**, which uses plant material instead of drugs; **electric stimulation**, in which a machine delivers an electrical current to muscles or nerves; and **radiant energy**, which uses light or sound waves to increase the horse's circulation.

DISEASES

PREVENTION

BIOSECURITY

Any time you go to a show or other equine event, there is always a risk of your horse contracting a disease. But, there are many things you can do to minimize that risk. It is usually cheaper to prevent disease than to treat a sick animal. The routines and practices used to help prevent the spread of infectious diseases are known as **biosecurity measures**.

You can help prevent the spread of disease at home and at shows by doing the following:

- Keep your horse's immune system healthy by maintaining its general health. This means making sure it is clean and groomed and has a balanced diet, appropriate vaccinations and deworming, sufficient exercise, and proper foot and teeth care.
- Make sure your horse is current on its vaccinations at least 2 weeks before going to an event. Your horse will not be protected from disease if it is vaccinated the day before you leave. Moreover, your horse may not perform at its best if it is having a reaction to the vaccine.
- Keep the animal's quarters clean. When moving into a facility, make sure the entire stall you use is thoroughly cleaned and disinfected before you put your horse in it. Once your horse is established, do not rotate it from stall to stall.
- Do not loan or borrow any grooming supplies, tack, or equipment. If you must share something, make sure it is cleaned and disinfected. Remove any organic matter, then wash with soap. Rinse with water, allow time to dry, and then apply a disinfectant. (Bleach is a common disinfectant. Use 1 part bleach to 10 parts water.)
- Limit horse-to-horse contact. In particular, don't let your horse touch noses with other horses. Nasal discharge is a common way to spread germs.
- Wash your hands between handling different horses. It's easy for people to spread disease by touching an infected horse and then transferring pathogens (disease-causing agents) when they touch the next horse.
- Never share feed or water buckets. Sanitize buckets periodically, and always after a horse has been ill.

- Don't take your horse to communal water or grazing areas.
- Do not submerge hoses when filling water buckets. Pathogens on the hose are easily spread in water.
- Properly dispose of all manure.
- Good ventilation helps reduce the circulation of pathogens and relieves any stress on the respiratory tract.
- At a show, listen and watch for signs of sick horses around you. Report any problems to the show office immediately.
- Isolate your horse if it becomes sick.
- When you return home, change your clothes and shower before you handle horses that didn't travel to the event.
- If possible, isolate horses returning from a show for a short time.

Remember that animals can carry germs that make people sick, too. Wash your hands with soap and water after handling your horse. Don't eat or drink in the animal areas. Young children, older people, and people with weakened immune systems should be especially careful.

VACCINATION

A vaccination program is extremely important in preventing disease. Vaccination protocols vary depending on your location and individual veterinarian preference. You should talk with your veterinarian about a vaccination schedule for each horse you own, and follow the vaccination program recommended by your veterinarian. This schedule should include which vaccinations to give, when to give them, and what type they are (for example, subcutaneous, intramuscular, or nasal). Your veterinarian also can teach you how to give shots correctly and safely.

For up-to-date vaccination recommendations, you may also consult the AAEP (American Association of Equine Practitioners) schedule of "Guidelines for Vaccination of Horses." You can find this on their website, or ask your veterinarian.

EQUINE ENCEPHALOMYELITIS

Commonly called **sleeping sickness**, equine encephalomyelitis is a viral infection that causes inflammation of the brain. It is contagious to humans. Three strains are commonly recognized: Eastern equine

encephalomyelitis (EEE), Western equine encephalomyelitis (WEE), and Venezuelan equine encephalomyelitis (VEE).

All types are spread by insects. Mosquitoes are the main carrier, but mites, ticks, and lice also may transmit the disease. The insect bites an infected animal, usually a wild bird or rodent, and then bites and feeds on a horse, spreading the disease.

Signs are the same for all three strains and usually appear 7 to 21 days after a bite from an infected mosquito. The first signs are fever, depression, and loss of appetite. The horse may grind its teeth and have trouble swallowing. Later, problems with the central nervous system appear. There may be **ataxia** (poor coordination), and the horse may circle, walk aimlessly, or appear blind. Convulsions or tremors may occur. Eventually, the horse may show paralysis or go into a coma.

WEE has the lowest mortality rate, at 20 to 50 percent. VEE has a mortality rate of 40 to 80 percent, while EEE has a mortality rate of 75 to 90 percent. Horses that survive often have lasting neurological effects such as clumsiness or depression.

Vaccination is the best prevention for this disease. Horses need annual boosters in the spring before the mosquito season. Insect control also can help prevent the spread of the disease. Use repellents on your horse, and eliminate any standing, stagnant water where mosquitoes can breed.

EQUINE INFECTIOUS ANEMIA

Equine infectious anemia (EIA) is a viral disease of horses, donkeys, and mules. It is sometimes called **swamp fever**. The disease is spread when blood from an infected horse is transferred to another horse, most commonly by horseflies and deerflies. However, the virus also may be spread by unsterile hypodermic needles or from a pregnant mare to her fetus.

Cases may be acute or chronic. In an acute case, the horse may have a high fever, depression, swelling in the belly and legs, and yellow, inflamed mucous membranes. About one-third of infected horses die within a month.

Horses that recover remain infected all their lives. They show chronic symptoms, such as anemia, weight loss, and exhaustion, and they become carriers of the disease. Stress can trigger an acute attack at any time.

Currently, there is no cure for EIA, nor is there any vaccine to prevent it. The only control is screening for the virus by performing a **Coggins test**. This blood test must be done by a state-approved laboratory. A horse will test positive if there are EIA antibodies in its blood, which means the horse is an infected carrier of

the disease. Most states, countries, horse shows, and race tracks require recent negative Coggins tests before allowing horses to enter. Any horse that tests positive must be reported to state and federal authorities. Such animals usually are euthanized.

EQUINE INFLUENZA

Equine influenza (flu) is a viral respiratory disease. It is one of the most common horse diseases and is extremely contagious, often becoming an epidemic.

The virus is found in a horse's nasal discharge and spreads easily from horse to horse. It can be transmitted by direct contact, by a horse coughing up to 100 feet away, or by the wind carrying droplets up to 4 miles away. Handlers' clothing and skin, grooming supplies, and blankets all can be contaminated and spread the virus. It can also spread by indirect contact (such as with buckets and mangers), as the virus can live in the environment for 2 days.

Most infected horses show symptoms within 1 to 5 days. Typically, the horse has a fever, a dry, hacking cough, and clear nasal discharge. After a few days, the cough becomes moist and the nasal discharge thick and colored. The horse may be lethargic and easily tired. Loss of appetite is also a common symptom.

The main treatment for equine influenza is rest. Do not work the horse for 3 weeks, so the lining of the respiratory tract can heal. With rest and good nursing care, most horses recover completely within a few weeks.

Vaccinations are effective in preventing this disease, but the vaccine's protection only lasts 3 to 4 months. High-risk horses, such as those that travel to many shows or that are in contact with many other horses, may need to be vaccinated two to four times per year. Horses that have very little chance of exposure to the virus may only require a yearly booster.

EQUINE PROTOZOAL MYELOENCEPHALITIS (EPM)

EPM is a degenerative disease of the central nervous system. It is the primary cause of serious, permanent neurological problems in a horse. EPM has been reported in almost all parts of the country, and it is estimated that over 50 percent of horses in the United States have been exposed.

EPM is caused by the protozoal organism *Sarcocystis neurona* found in opossums. The horse is infected when it eats feed or drinks water that has been contaminated by opossum feces. As with West Nile virus, horses are "dead-

end” hosts and cannot transmit the disease to others.

Signs of EPM vary widely in severity and depend on where the damage to the nervous system has occurred. They are almost always asymmetrical (not the same on both sides of the body). Signs include ataxia, weakness, muscle loss or atrophy, difficulty swallowing, and paralysis of the eye, face, or mouth muscles.

The way a horse responds to infection also varies. Some horses seem to have an effective immune response and fend off the disease. Some carry the infection for years before developing symptoms, while others succumb rapidly, especially if under stress. Three factors appear to affect the progression of the disease: the number of organisms the horse ingested, the amount of time the horse was infected before treatment began, and the location in the brain or spinal cord where the damage occurs.

EPM is difficult to diagnose because the signs are similar to many other diseases. A Western Blot analysis on blood or cerebrospinal fluid is used to diagnose EPM, but this only tells you if the horse has been exposed to *S. neurona* and has developed antibodies. It does not tell you if the horse has or will develop the disease.

Early diagnosis and treatment give a horse the best chance for recovery from EPM, and 60 to 70 percent of horses do recover fully. Treatment may include broad-spectrum antimicrobials, NSAIDs (nonsteroidal anti-inflammatory drugs), and antiprotozoal medications. These medications may rid the horse of the protozoa, but they cannot repair damage to the nervous system that was done before treatment began.

You can help prevent EPM by limiting the horse’s exposure to opossum feces. Keep opossums out of hay storage areas, and keep grain bins tightly sealed. Use feeders that minimize spills, and keep water tanks clean. Maintaining your horse’s health and fitness will help it fend off infection.

EQUINE RHINOPNEUMONITIS

Equine rhinopneumonitis is caused by the equine herpes virus (EHV). There are two distinct types.

EHV-4 (**snots**) is common in young horses, particularly foals and yearlings. Signs include fever, depression, loss of appetite, gold-color nasal discharge, and swollen lymph glands. The horse may be sick for several weeks, but the death rate is quite low. Mature horses usually develop an immunity to this type.

EHV-1 is the more serious type, causing abortion in pregnant mares. It can also cause respiratory disease and paralysis. Horses do not develop immunity to this form of the disease.

Rhino vaccines provide only short-term immunity. Pregnant mares should be vaccinated in their 5th, 7th, and 9th months of pregnancy. Foals and young horses often are vaccinated at 2- to 3-month intervals. Older horses should be vaccinated every 2 to 12 months depending on the risk.

PIGEON FEVER

Pigeon fever is the common term for an infection with *Corynebacterium pseudotuberculosis*. It is called pigeon fever because the abscesses it forms cause swellings on the chest that look like a pigeon’s breast. Abscesses can also form along the bottom of the barrel of the horse. The horse can have a fever and will be sore where the abscesses are. A more severe form of the disease occurs if the abscesses are located internally. A veterinarian can drain the abscesses, but the horse must be isolated while the abscesses heal to prevent transmitting the disease to other horses.

The organism lives in dry soil and manure and enters the horse through open wounds or insect bites. It occurs most often in late summer and fall during hot, dry weather. Insect control can help prevent the spread of this disease.

POTOMAC HORSE FEVER

Potomac horse fever (PHF) is a disease caused by the parasite *Ehrlichia risticii*. This disease is most common in the eastern United States, but it does occur elsewhere. (Recently, a disease known as the “Shasta River Crud” in California was found to be caused by the same organism.) PHF is a seasonal disease, and the majority of cases occur in the summer.

It had been thought that PHF was spread by ticks, but current research indicates that freshwater snails might be the carriers. If this is true, keeping horses away from water where the snails live would prevent the disease.

The signs of PHF are fever, severe diarrhea, mild colic, loss of appetite, and depression. Laminitis can be a serious complication. Antibiotics are used in treatment, but the success rate varies.

Vaccinate horses that live in or are traveling to areas where this disease has been confirmed.

RABIES

Rabies affects all warm-blooded animals. Horses rarely get rabies, but when they do, it is 100 percent fatal. It can also be spread to humans, so call the veterinarian as soon as possible.

Signs of rabies vary greatly, but the number one symptom of rabies in horses is excessive salivation. Horses may get extremely agitated and become unmanageable. Behavior may be bizarre, changing from depression to aggression. Colic, lameness, and muscle spasms are also common. Death usually occurs in 4 to 5 days.

Vaccinate horses kept in areas where rabies is found, especially those exposed to wildlife.

STRANGLES

Strangles is an upper respiratory disease caused by the bacterium *Streptococcus equi*. It is very contagious, and the bacteria may survive in a barn or paddock for up to 2 months.

Discharges from the nose and burst abscesses spread the disease. This can happen through direct contact or through contamination of equipment such as water buckets, brushes, or tack.

The most common sign of strangles is swollen lymph glands under the jaw or at the throatlatch. Severe swelling restricts the air passages, causing the horse to have difficulty breathing and creating a “strangled” sound. Abscesses may form, which usually break and drain pus in 10 to 14 days. Fever, loss of appetite, listlessness, and nasal discharge are other signs of strangles.

Isolate affected horses immediately. Disinfect all feed and water containers, stall walls, grooming supplies, and tack. Abscesses may need to be lanced and drained. Rest is the most important treatment. Most horses recover from strangles, but they should stay isolated and rest for up to 3 months.

Whether or not to vaccinate for strangles remains controversial. Current vaccines do not completely protect a horse from getting strangles, and many problems are reported with reactions to the vaccine. Therefore, many adult horses are not vaccinated for this disease unless they are in a high-risk environment. Consider vaccinating young horses or any horse that is going to a site where strangles has recently occurred.

TETANUS

Tetanus is a serious disease caused by the bacterium *Clostridium tetanus*, which is found in soil. The bacteria usually enter the horse’s body through a puncture wound. They multiply and produce a powerful toxin that affects the horse’s nervous system.

Signs include lameness, a stiff-legged gait, muscle spasms, and a stiff, held-out tail. The third eyelid may cover the front of the eye. Swallowing becomes difficult and the horse is unable to eat (which gives this disease its common name, **lockjaw**).

The horse is the most susceptible animal to tetanus. Treatment is difficult, expensive, and not often successful; tetanus is fatal in more than 80 percent of cases. For this reason, vaccinations are important to prevent this disease. Annual boosters are recommended. Horses also must receive a booster following lacerations or puncture wounds if their last booster was more than 5 to 6 months previous.

WEST NILE VIRUS

This mosquito-borne virus causes encephalitis (inflammation of the brain). It was first detected in the United States in 1999, in New York. It has since spread to almost every state. Horses are affected more than any other domestic animal. Most horses usually recover fully from the disease, but one-third of infected horses die.

Horses are incidental or “dead-end” hosts to the virus. This means that infected animals do not pass the disease on to other animals. There is no horse-to-horse or horse-to-human transmission. Mosquitoes get the virus from infected birds (crows and jays are common carriers), then transmit the virus when they feed on a horse.

In horses, signs of the virus appear 5 to 15 days after infection. These signs include ataxia, depression, weakness of limbs, partial paralysis, muscle twitching or tremors, wandering or circling, altered gait, convulsions, and loss of appetite. There is usually no fever.

There is no specific treatment for West Nile virus, only the standard veterinary care used for any viral infection. Horses are euthanized when the infection is so severe that the horse is not able to recover.

All horses should be vaccinated against this disease. The initial vaccine is given in a series of two injections that must be 3 weeks apart. Yearly boosters then are required, which should be given before peak mosquito season.

Practice mosquito control. Eliminate standing water where mosquitoes can breed, and clean water troughs weekly. Keep horses inside during dawn and dusk, as this is when mosquitoes tend to be the most active. You can also treat your horse with a mosquito repellent.

PARASITES

The word **parasite** refers to animals that live in or on the bodies of other animals, called **hosts**. Parasites may be internal or external. Control of parasites is a vital part of any horse health care program.

INTERNAL PARASITES

Internal parasites are a major threat to a horse's health. It is estimated that 50 percent of deaths in horses may be related to internal parasites. Young horses suffer the greatest damage, usually in the first 2 years of their lives.

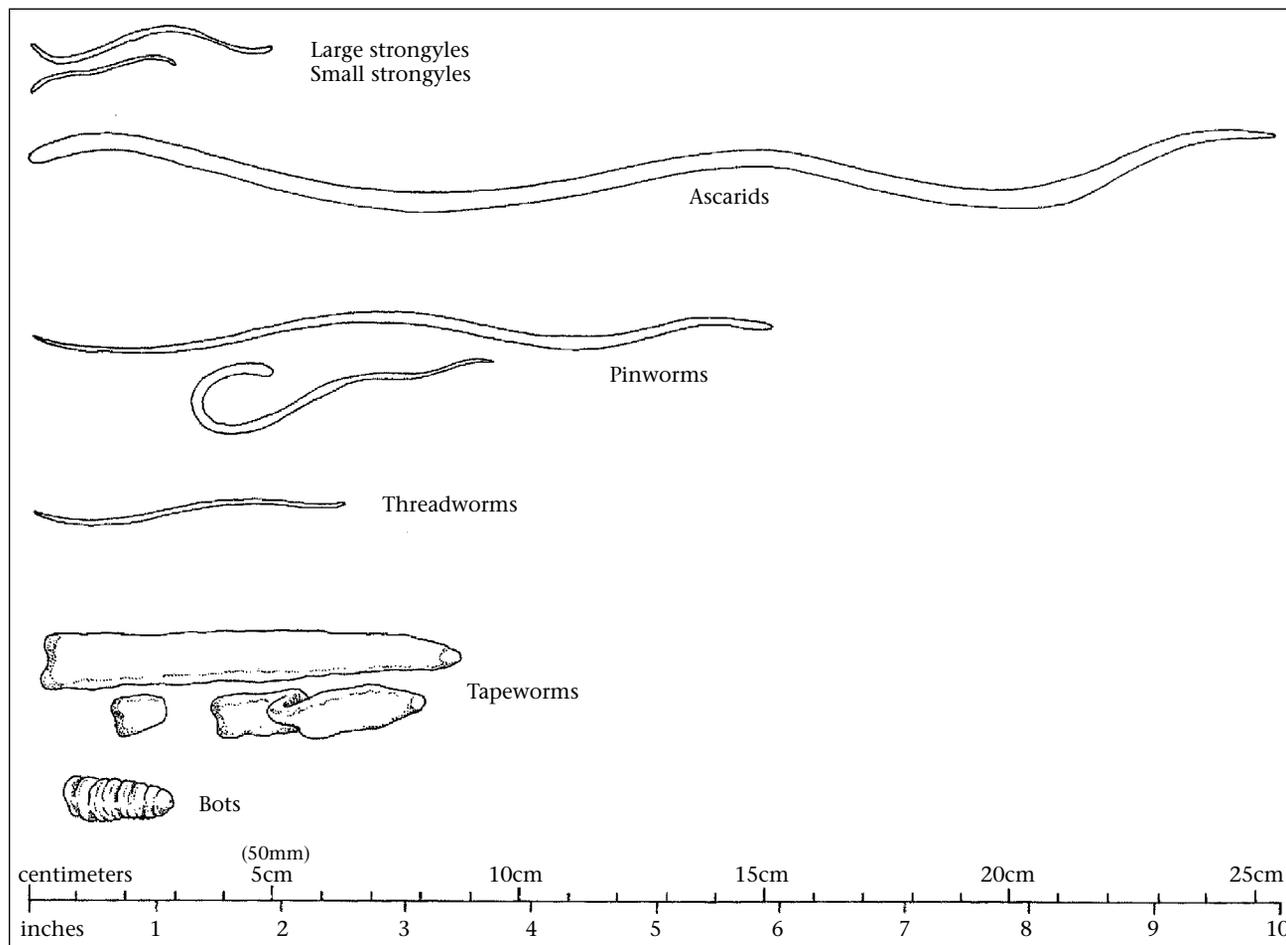
Internal parasites can affect the growth, reproduction, performance, and overall health of a horse. Many respiratory and digestive

problems are caused by parasites, and they are the greatest single cause of colic. Diarrhea, weight loss, chronic cough, and anemia are all signs of parasitic infection.

The amount of damage a horse suffers depends on several factors: the type and number of parasites involved, the horse's age and resistance, and the length of time the horse has been infected. Most of the damage is done during the migratory phase of the parasite's life cycle.

Internal parasites may live in practically every tissue and cavity of the horse's body, but most of them are in the digestive system, lungs, or bloodstream. More than 150 types of internal parasites can infect horses. The five main ones are large strongyles, small strongyles, ascarids, pinworms, and bots. Threadworms and tapeworms also are common.

INTERNAL PARASITES



LARGE STRONGYLES (BLOODWORMS)

Large strongyles are the most common internal parasite and are also the most harmful. While the adults remain in the large intestine, the larvae migrate extensively through many of the horse's organs, and severe tissue damage can result.

The adults are long, fat worms, reddish in color (because they feed on their host's blood). They bite off pieces of the large intestine and actively suck blood. This causes anemia in the horse, as well as weakness, diarrhea, and weight loss.

The life cycle of large strongyles begins when the horse swallows eggs in its feed. The larvae migrate through various organs, ending up as adults in the large intestine. The adults lay thousands of eggs daily which are expelled in feces and contaminate the feed.

There are three significant species of large strongyles: *Strongylus vulgaris*, *Strongylus edentatus*, and *Strongylus equinus*. *S. vulgaris* is by far the most dangerous. Causing up to 90 percent of all colic cases, this parasite is sometimes known as "the Killer." The larvae penetrate the walls of arteries that provide blood to the intestines. This disruption of blood flow in the digestive tract causes colic. *S. edentatus* and *S. equinus* are not as dangerous as *S. vulgaris*. Their larvae migrate only within the liver before returning to the large intestine to mature.

SMALL STRONGYLES

The damage done by small strongyles is much less severe than that done by large strongyles. They do not migrate beyond the lining of the intestine, they are only loosely attached to the intestinal wall, and usually they do not suck blood.

An infestation of small strongyles may cause colic, and diarrhea is common. Weight loss and ulcers in the colon also may occur. Signs include anemia, dark or black feces, and soft feces with a foul odor.

The life cycle of small strongyles begins when horses feed on grass contaminated with larvae. After they are ingested, the larvae migrate to the large intestine, where they mature into adults and begin laying eggs. The eggs of adult small strongyles are expelled in feces. Larvae develop and contaminate grass, and the cycle begins again.

ASCARIDS (ROUNDWORMS)

Ascarids (*Parascaris equorum*) are the largest of the five main internal parasites. They look

like large, white earthworms, up to 22 inches long and ½ inch wide.

Ascarids mainly affect foals and young horses. Mature horses that have been exposed to roundworms over time usually develop an immunity and are not affected.

During larval migration, the liver and lungs can become inflamed and scarred. Adult worms can cause intestinal blockage, which leads to colic. The main danger of an ascarid infestation is rupture of the small intestine. A rupture may cause peritonitis, which can be fatal.

Signs of a horse with ascarids are a pot belly, rough coat, slow growth, diarrhea, nasal discharge, and cough.

The life cycle of ascarids takes about 3 months to complete. The horse swallows eggs found on feed or in water. The eggs hatch in the small intestine, and the larvae burrow into the intestinal wall. There they enter the bloodstream, migrate through the liver and heart, and finally reach the lungs. In the lungs, they move to the respiratory passages, where they are coughed up and reswallowed. They return to the small intestine where they mature and lay eggs.

An adult roundworm can produce 200,000 eggs per day. The thick-shelled eggs are extremely resistant to freezing or drying. In a pasture or stall, they can remain infective for years. Because the eggs are almost always present, roundworms are very common. It is important to deworm foals every 2 months through their first year.

PINWORMS

Pinworms (*Oxyuris equi*) are the least harmful of the common internal parasites. Mainly, they irritate the area around the tail. The horse rubs this area to get relief, and can suffer hair loss and wounds as a result.

Adult pinworms are thin and usually 3 to 6 inches long. They are common in foals but are seldom found in mature horses.

A pinworm's life cycle has no migratory phase. The eggs are ingested and develop in the colon. The adults live in the colon and rectum. Eggs are laid around the anus, where they cause irritation. The eggs drop off and contaminate the feeding area. The entire life cycle takes about 5 months.

BOTS

Bots refers to the larvae of the bot fly, which looks like a honey bee. In summer and early fall, the fly lays yellow eggs on the horse's hair, especially on the legs. As the horse licks the eggs, they hatch, and the small larvae attach to the tongue and burrow in the

mouth. In about 3 weeks, a second larval stage is swallowed and attaches to the lining of the stomach. After another 9 months, the larvae are expelled in the manure, where they pupate into flies.

The entire cycle takes 1 year. The larvae winter in the horse's stomach, are expelled in the spring, and develop into adult flies in the summer. Therefore, the time to deworm for bots is mid- to late summer and after a killing frost.

Bots affect horses of all ages. They usually cause little damage, but a large infestation can damage the stomach wall, even causing a rupture.

The best prevention is to remove all bot eggs from the horse's hair. Do this where the horse does not graze, so eggs do not contaminate the feed.

THREADWORMS

Threadworms (*Strongyloides westeri*) mainly affect young foals. The foal usually gets the larvae in the dam's milk, although larvae in the bedding may also penetrate its skin. The larvae migrate through the lungs and the small intestine. The entire life cycle of the threadworm takes less than 2 weeks.

The main complication of a threadworm infection is diarrhea, which can be severe enough to cause dehydration. Foals quickly develop an immunity, and threadworms generally disappear by the time the foal is 6 months old.

TAPEWORMS

Tapeworms affect horses of all ages. Tapeworms are not found in all areas, because they require an intermediate host: the oribatid mite. A horse swallows the mite, and the tapeworm matures 2 to 4 months later.

There are two common species of tapeworm. *Anoplocephala perfoliata* is the most common. It is the smaller of the two and is found in the cecum see "The Digestive System," page 60). *Anoplocephala magna* is larger and is found in the small intestine.

Tapeworms can cause digestive problems, including intestinal blockage and colic. They can also cause ulcers.

CONTROLLING INTERNAL PARASITES

All horses have parasites. You can never completely get rid of them, but you can keep them under control through proper management techniques. The key is to interrupt the life cycle of the worms. There are several methods to do this; manure cleanup,

pasture rotation, and deworming are the main ones.

MANURE CLEANUP

Parasites are spread mainly through manure. Therefore, if you dispose of manure properly, you can greatly decrease the number of worms.

Clean stalls regularly, removing all manure and wet bedding.

It is best to feed in a manger and disinfect it periodically. This prevents manure from coming into contact with the horse's feed. Also, be sure to keep manure out of any water source.

Do not spread fresh manure on pastures. Instead, compost the manure, making sure it gets hot enough to destroy parasite eggs.

Pick manure out of small paddocks or corrals every few days. Drag pastures during hot, dry weather. This breaks up the droppings and exposes eggs to the sun's ultraviolet rays.

PASTURE ROTATION

Rotate pastures every 2 months. Avoid overgrazing, because there are more parasites on the lower parts of the grass. Also, do not overcrowd pastures. The more horses on a pasture, the more eggs deposited.

Most internal parasites live in only one species of animal. Therefore, rotating species on pastures can help break the worms' life cycles. For example, alternate sheep or cows with horses on a pasture. It is important to note that grazing different animals together at the same time does not help to reduce parasites; they must alternate time on the pasture.

DEWORMING

The purpose of deworming is to kill mature parasites before they lay eggs. No single schedule of deworming fits all horses. The horse's age, the season, climate, and the number of horses in the area all make a difference in how often deworming is needed. Most veterinarians agree, though, that horses should be dewormed at least four times per year. Current research shows that deworming treatments need not be evenly spaced. It is more effective to deworm more frequently in autumn through spring and not necessary to deworm in the summer.

The most common type of dewormer is paste, but sometimes powders and stomach tubes are used. Daily dewormers are also available and are becoming more popular.

Whatever type of dewormer you choose, it is important to know what its **active ingredient** is. Different drugs are effective on different parasites, so you need to choose the proper drug for the type of worm your horse may have. Also, parasites can become resistant to drugs, so it is important to rotate the type

you use. Be sure to look at the **chemical family** of the dewormer's active ingredient listed on the package, not just the brand name. New drugs are developed constantly, so check with your veterinarian for the latest deworming advice.

While deworming is an integral part of parasite control, the use of drugs alone cannot solve parasite problems. You must use all of the management techniques to keep parasites at bay.

EXTERNAL PARASITES

There are many **external parasites** that affect horses. They can cause considerable irritation to the horse, and they can transmit serious diseases. In addition, they can cause a dull coat, anemia, weight loss, and a generally unthrifty condition.

Most external parasites (flies and mosquitoes, for example) are more of a problem in the summer, because they need higher temperatures to hatch and reproduce. Some, like lice, are more common in winter when horses spend more time inside.

There is a variety of ways to protect your horse from external parasites. Some of these methods work better on certain parasites than on others (see chart). It is usually necessary to use a combination of methods.

EXTERNAL PARASITES

PARASITE	DESCRIPTION	CHARACTERISTICS	CONTROL
Horn fly	Very small (about ¼ inch long). Gray with two stripes on thorax. Has piercing proboscis.	A biting fly found where cattle are present. Tends to swarm. The proboscis pierces skin, and the flies suck blood. Crust around wound attracts more flies. Sores can get infected. Feeds hanging downward. Often found on the horse's belly.	Insecticides, sprays, dusts. Spray horse and barn area. Separate from cattle.
Housefly	Small; about ⅜ inch long. Four dark stripes on back.	Nonbiting fly. Larvae develop in manure. Carrier of both bacterial and viral diseases. Can transmit stomach worms. Associated with summer sores.	Good sanitation. Cover or dispose of manure. Sprays and baits are effective.
Stable fly	Small, grayish-black fly. Looks similar to house fly but doesn't have stripes on back. Has proboscis.	Has painful bite. Feeds on animal's blood. Prefers to feed on horse's legs and lower body. Breeds in wasted, damp hay and decaying vegetation. Often rests on sunny walls or fences. Intermediate host for stomach worms. Associated with summer sores.	Eliminate development sites. Use repellents on horse. Premise sprays can help.
Face fly	Small black fly. Looks like house fly but larger and darker. Males have orange to yellow abdomen.	Nonbiting but annoying fly. Found where cattle are present, as eggs are laid in cow manure. Feeds on secretions from the horse's eyes and mouth. Tends to be found in large numbers.	
Deer fly	¼ to ⅜ inch long, usually yellow to orange. Wings have dark markings and brilliant green or golden eyes with zigzag stripes.	Has painful bite. Only females feed on animals. Most active on warm, sunny days with no wind. Usually only out for 4 to 5 weeks in June or July. Attracted to moving and/or dark objects. Lays eggs in damp areas.	No satisfactory way to eliminate flies. Minimize breeding areas and use repellents.
Horsefly	Often confused with deer flies, but much larger (¾ to over 1 inch long). Has a heavy body with a large head. Brown, black, or gray with clear wings.	Very painful bite. Only females feed on animals. Most active on warm, sunny days with no wind. Short season is usually 3 to 4 weeks in August. Attracted to shiny surfaces and warmth. Lays eggs in damp areas.	Some traps are successful in small areas. Reduce breeding areas and use repellents. Keep horse in stall during peak activity.
Bot fly	Looks like a bumble bee.	Doesn't sting or bite. Lays eggs on horse that horse ingests. (See "Bots," page 36.)	Remove eggs from horse. Deworm in fall with drug specific for bots.
Mosquito	Slender body, long legs, and long proboscis. Usually around ½ inch in length.	Females are biting, blood-sucking insects. Most active at dusk and early evening. Can cause significant blood loss. Transmits many diseases, including West Nile, EIA, and sleeping sickness. Larvae grow in standing water.	Eliminate standing water to reduce larvae habitat. Specific mosquito repellents are available. Place safe dunks in tanks or ponds.

EXTERNAL PARASITES (CONTINUED)

PARASITE	DESCRIPTION	CHARACTERISTICS	CONTROL
Lice	Tiny, flat, white wingless insects. Tiny eggs. Adults move through hair; eggs and nits attach to hair.	Feed on dandruff, hair, and skin. Cause severe itching, bare patches, and scabs. More common in winter when horse's hair is long. Most often found on horse's head, neck, mane, and tail. Spread by contact. Not transferable to humans.	Routine grooming. If found, use insecticide on horse, equipment, and barn. Follow-up treatment required in 10 to 14 days.
Mite	Microscopic, burrowing arthropod. Round with four pairs of segmented legs. Hind legs are long.	Fairly uncommon in horses. More prevalent in horses in poor condition. Feed on skin and tissue fluid causing itchy, scabby condition known as mange. Horse will often get secondary infections. Spread by contact with infected animal or contaminated equipment such as saddles, pads, or brushes.	Do not share equipment. Use insecticide on horse, equipment, and barn as directed. Quarantine infected animals.
Tick	Close relative of mites, but larger (can be seen with the naked eye). Small, hard, and flat before feeding, the engorged tick can be ½ inch long and looks inflated. There are many species of ticks.	Sucks blood. Heavy tick infestation can lead to anemia, weakness, and poor condition that leaves horse susceptible to disease. Can spread diseases to other animals or humans, including Lyme disease.	To find ticks, ruffle back horse's hair to expose the skin. Remove carefully by hand or with tweezers, or swab the tick with alcohol.
Blow fly	Fly's body metallic in appearance, usually blue, green, or black. Larvae are soft, wormlike, pale insects.	Eggs are laid on dead, decaying animals or in wounds on living animals. Maggots infest wounds and feed on skin surface. Animals rapidly become weak and feverish and lose weight.	Thoroughly clean and treat fresh wounds. Dust infected wounds with insecticide. Burn or bury dead animals. Use fly traps, baits, or repellents.
Warbles (grubs)	Larvae of flies. Appear as firm bump under the skin.	Flies may lay eggs in small sacs under the horse's skin, causing bumps. The larvae develop under the skin and emerge as flies. Usually located on the horse's back. Most common in the spring and early summer.	Use repellents. Individual warbles may be removed either surgically or by pressing them out of the skin during the winter. If they are under the saddle area, they should be removed to prevent irritation and infection.

MANURE CLEANUP

There is no substitute for good sanitation. Cleaning up manure is the most important thing you can do to cut down on external parasites (especially flies). In fact, without manure cleanup, none of the other methods of protection will be very effective. Clean stalls daily, knock manure piles apart in paddocks and pastures, and compost your manure pile.

REPELLENTS

Repellents discourage flies or other pests from landing on a horse. The most common kinds are sprays or wipes, but they also come as dusting powders, lotions, or roll-ons. They can be oil-, water-, or alcohol-based. Oil-based last longer, but they attract dirt. Alcohol-based dry quickly, but also dry out the skin and coat. Water-based repellents do not attract dirt and they don't dry the coat, but they need to be reapplied often. Read the label and follow the directions carefully.

VEGETATION CONTROL

Many parasite species breed in vegetation or use it for shaded resting places during the day. Mow areas where growth is high. Eliminate brush to help control ticks.

PROTECTIVE FLYWEAR

Sheets and face masks can help protect your horse from flies and mosquitoes. Make sure they fit properly. Remove them once a day to check for any problems, such as sores or hair loss from rubbing. Clean them regularly to prevent skin diseases and eye damage. Remove masks at night.

PREMISE SPRAYS

These chemical insecticides are sprayed over the entire facility. They kill adult flies for up to 2 weeks. You must take care that no water or feed supply is contaminated, and you must remove horses before spraying. Use insecticides with extreme caution, as they can harm

horses, humans, and the environment. Insect resistance is also becoming more of a problem.

TRAPS AND BAITS

These come in a wide variety of types. All use some method to attract and kill adult flies. Some are disposable, and some need to be emptied and restocked. They can be smelly and unsightly.

PARASITIC WASPS (FLY PREDATORS)

These small, nonstinging wasps are harmless to horses and humans, but they can help control fly populations. They lay their eggs in fly pupae, killing them before they can hatch. Release these predators early in the fly season and then approximately every 2 weeks throughout the summer. It may take a long time before you see results.

DAILY FEED-THROUGH FLY CONTROL

Feed-throughs prevent flies from developing in the horse's manure. While these can be effective, the chemicals in them may also kill beneficial microorganisms, such as those that decompose manure.

ELIMINATE STANDING WATER AND CONTROL MOISTURE

To reduce breeding areas, keep feed areas clean of wasted hay or grass that retains moisture. Make sure there is no water standing in tires, barrels, puddles, or ditches. Empty water tanks once a week. Repair leaky faucets, clean rain gutters, and make sure all areas have good drainage.

TURNOUT TIMES

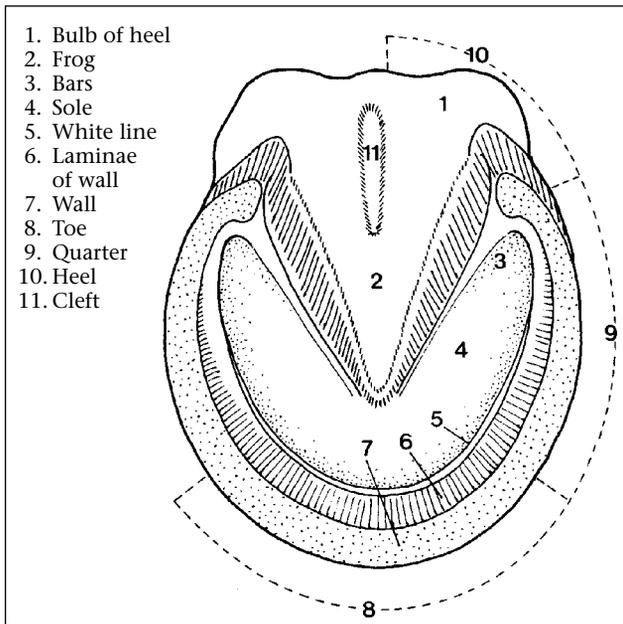
Certain parasites are more active at certain times of the day. For example, mosquitoes are most active at dusk and in the early evening. Adjust your horse's turnout time according to which parasite is the most troublesome.

THE EQUINE HOOF

A well-known saying among horsemen is “no foot, no horse.” Since the majority of lameness problems arise from something wrong in the feet, taking care of your horse’s hooves is critical. Your farrier can help you set a hoof care schedule.

PARTS OF THE HOOF

You should know the names of the various parts of the foot so that you can talk



1. Bulb of heel
2. Frog
3. Bars
4. Sole
5. White line
6. Laminae of wall
7. Wall
8. Toe
9. Quarter
10. Heel
11. Cleft

knowledgeably with your farrier and veterinarian. Also, learning the function of the different parts helps you understand the problems that can occur.

The **coronet** is the band around the top of the hoof. The hoof **wall** grows downward from this band and is the hard exterior of the hoof. The wall is divided into the **toe**, the **quarters**, and the **heel**. It bears the weight of the horse and is thicker at the toe than at the quarters. The wall is not sensitive, but it can crack or crumble if it is too wet or too dry. The **white line** is where the hoof wall joins the sole.

The underside of the hoof is called the **sole**. Its primary function is to protect the inside of the hoof. The sole is susceptible to stone bruises and punctures which can cause abscesses. The **frog** is the triangular, spongy area in the sole of the hoof that acts as a shock absorber. It is quite sensitive.

COMMON FOOT PROBLEMS

Foot problems often cause lameness, leaving your horse unable to work. You should be able to identify the more common ailments and know what causes them.

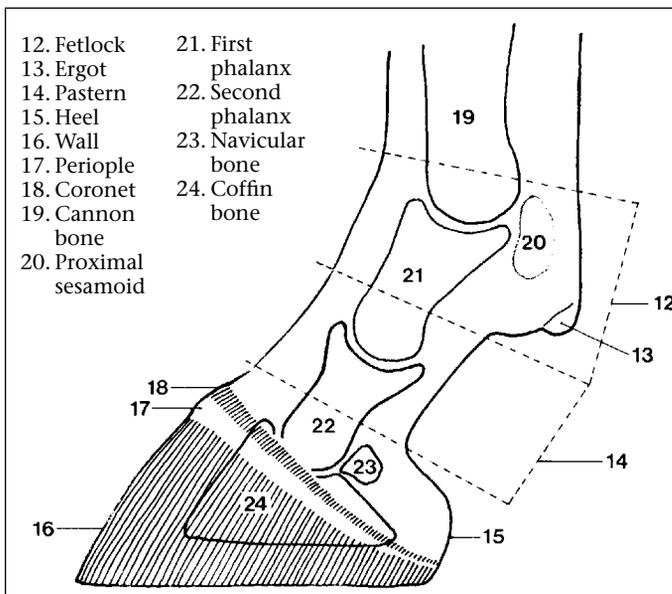
THRUSH

Thrush occurs when anaerobic bacteria break down tissue in the frog and cleft. It has a very strong odor. Thrush is usually found in horses with untrimmed hooves that have been kept in dirty stalls.

Treatment includes trimming away all dead tissue, applying antiseptics, and moving the horse to clean, dry quarters. Thrush is not generally a serious problem, and it can be prevented by keeping the horse’s feet and stall clean and by trimming the feet regularly.

ABSCESSSES

Abscesses may appear as a nonweight-bearing lameness.



12. Fetlock
13. Ergot
14. Pastern
15. Heel
16. Wall
17. Periople
18. Coronet
19. Cannon bone
20. Proximal sesamoid
21. First phalanx
22. Second phalanx
23. Navicular bone
24. Coffin bone

They can be caused by puncture wounds, sole bruises, thrush, or laminitis. Bacteria enter through an opening, causing an infection which forms a pocket of pus.

The abscess must be opened to allow the pus to drain out and the area to dry up. Soaking the foot in Epsom salts often helps this process.

WHITE LINE DISEASE

White line disease is caused by a fungus that digests the hoof wall. It is more commonly found in humid regions. It is treated with a strong fungicide, and all of the infected wall must be removed. To avoid this disease, don't let your horse stand in water for long periods of time and don't wash the hoof too often.

SAND CRACKS

A **sand crack** is a vertical crack in the hoof wall. The deeper the crack, the more severe the problem. Depending on where on the wall the cracks occur, they are often called toe or quarter cracks. Many things can cause sand cracks: dry conditions, irregular hoof growth, untrimmed hooves, and wire cuts.

NAVICULAR DISEASE

Navicular disease (or **syndrome**) is an inflammation in the area of the navicular bone. Most horses that get navicular disease have a conformation fault that makes them susceptible, such as feet that are too small for their body size. Working a horse too hard when it is not in proper condition also can cause navicular disease. A horse with navicular disease often stands with the sore toe pointed and the heel off the ground. A bar shoe with a rocker toe can be used to relieve pressure on the heel, making the condition less painful.

LAMINITIS

Laminitis (also called **founder**) is an inflammation of the laminae under the hoof wall. It is one of the most severe foot problems.

Laminitis can be either acute or chronic. In acute laminitis, the onset is very fast and painful. The horny laminae of the wall separate from the sensitive laminae of the coffin bone, and the horse's weight causes the bone to rotate. If not treated, the bone may eventually break through the bottom of the sole. Acute laminitis can be caused by many things, including rapid changes in feed, eating too much grain, lush grass (especially in the spring), and sudden weather changes.

Horses suffering from acute laminitis have a characteristic stance: their front feet are

extended forward and their hind feet are drawn up under them so they can rock back. The feet are hot, and there is a strong digital pulse.

It takes a long time for a horse to recover from laminitis, and many horses never recover at all. Farriers and veterinarians both are part of the treatment. Various drugs can be given to reduce pain and increase blood circulation to the foot. Heart bar shoes often are used to support the frog.

Horses with chronic laminitis are continually lame. Signs of chronic laminitis are a wide white line at the toe and rings on the hoof wall that are wider at the heel. If a horse with chronic laminitis becomes stressed, acute laminitis may develop.

CARE OF THE HOOF

Because healthy hooves are so important, it is critical that you learn to take care of them properly. Care includes keeping the feet clean, preventing the hooves from becoming too dry or too moist, scheduling regular farrier visits, and providing a diet that promotes healthy hoof growth.

CLEANING THE FEET

Cleaning the feet regularly is the single most important aspect of hoof care. Pick out your horse's feet daily, and clean them before and after each ride. (See "Grooming," page 69, for how to clean the feet.)

MOISTURE CONTENT

The amount of moisture in a hoof has a large impact on its quality. When hooves have too much moisture, they become extremely soft. Overly soft feet bruise easily and have trouble holding a shoe.

When hooves become too dry, they are brittle and crack easily. The frogs shrink, causing contracted heels, and they no longer serve as shock absorbers. During the dry summer months, keep the ground around the water trough muddy. You may apply moisturizing hoof dressings to the coronary bands, bulbs of the heels, and frogs. You must be cautious, however, because if you apply hoof dressings too often, the hooves may become too soft.

TRIMMING/SHOEING

Regular farrier visits are a necessity. Six to 8 weeks is the average interval. However, many factors affect the rate of hoof growth, and each

horse is different. Therefore, you will need to schedule farrier visits according to the needs of each individual horse.

Whether you put shoes on your horse or leave it barefoot depends on what you are using the horse for and the quality of the hooves. A horse that has foot problems or is ridden daily or on hard surfaces should probably wear shoes. A horse with good feet that is taken on trails on the weekend may be fine going barefoot. When possible, it is a good idea to let the horse go barefoot for at least a few months each year. This allows the heels to spread naturally and strengthens the frog.

DIET

Vitamin A, found in green feeds, is necessary for hoof growth. A horse that is deficient in vitamin A often has weak hoof walls that crack and crumble. Good quality hay or pasture usually supplies a horse with an adequate amount of vitamin A.

A biotin supplement is sometimes used to aid hoof growth. The effects of biotin have not been proven scientifically, but some horses do appear to benefit. Hooves grow slowly, so you must use a supplement for 6 months to a year before expecting to see any difference.

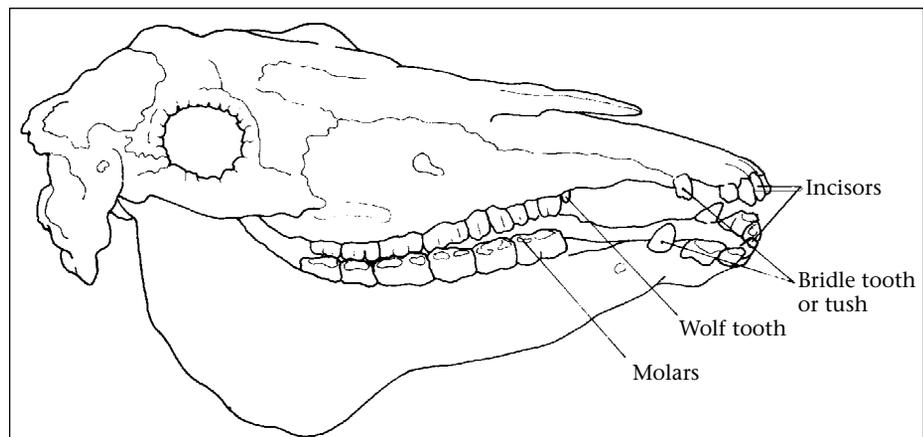
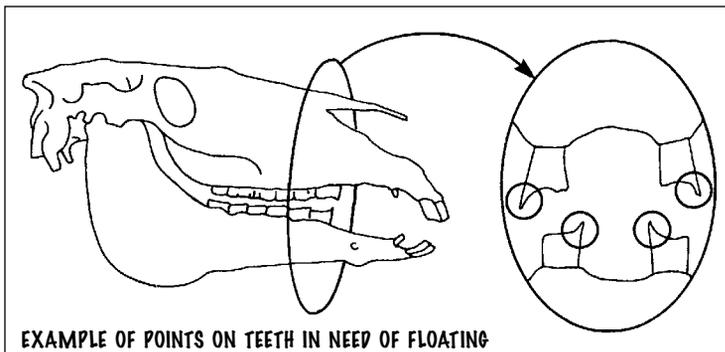
Consistent exercise may do more to promote hoof growth than supplements, as exercise increases the blood circulation to your horse's hooves.

EQUINE TEETH

Good teeth are important to your horse's well being. The grass and hay a horse eats must be broken up so the bacteria in the colon can digest it. If feed is not well-chewed, the horse cannot get much nutrition from it. Lack of good teeth is one of the main reasons horses in the wild don't live longer.

Routine dental care is necessary to extend the life of your horse. Ask your veterinarian to recommend a dental care schedule. Good teeth allow your horse to be healthier and happier, which can lead to better performance. Teeth should be checked at least once a year, often twice a year for older horses. When necessary, the teeth should be **float**ed (rasping off the rough edges). Sharp edges form because the horse's upper jaw is wider than the lower jaw, and the lateral chewing makes the teeth wear at a slant. The edges form on the outside of the upper molars and the inside of the lower molars. They can be sharp enough to cut the horse's tongue and cheek.

Signs that your horse may have a dental problem include fussing with the bit, slobbering unchewed food, weight loss, foul mouth odor, not eating, and throwing its head when being ridden.



TYPES OF TEETH

Horses have two sets of teeth during their lives, one temporary and one permanent. The 24 temporary teeth (also called baby teeth, milk teeth, or deciduous teeth) are replaced gradually by permanent teeth. By the age of 5, a horse usually has all of its permanent teeth.

Incisors are the teeth in the front of the mouth. They are used to cut grass when the horse grazes. There are six incisors on the top and six on the bottom. The top and bottom incisors must meet properly to cut efficiently.

A horse has six **premolars** and six **molars** on the top and bottom (24 in all). These teeth chew the food. They are large relative to the horse's size, in order to chew efficiently.

Behind the incisors on each side, top and bottom, male horses have a **canine tooth** (also called a **bridle tooth** or **tush**). These teeth serve no known function. They are very seldom found in mares.

Wolf teeth are very small with short roots. They grow just in front of the first upper premolar. They are rarely seen in the lower jaw. Not all horses get wolf teeth, and they are seldom seen in mares. If a horse does have wolf teeth, you might want to have them extracted, because they can cause trouble with the bit.

Adult male horses have 40 to 42 permanent teeth, depending on whether or not they have wolf teeth. Adult mares have 36 to 40 permanent teeth.

DETERMINING AGE

Looking at a horse's teeth can help you determine its age. Up to 5 years old, you can figure a horse's age quite accurately. From 5 to 12 years old, you can usually get a good approximation of age. After age 12, it is hard to determine age accurately, and the older the horse becomes, the harder it gets.

Foals have their first four temporary incisors by 10 days of age. The four second incisors appear between 4 and 6 weeks, and the four third incisors between 6 and 9 months. These temporary teeth are smaller than permanent teeth. They are also much whiter and have a distinct neck at the gumline.

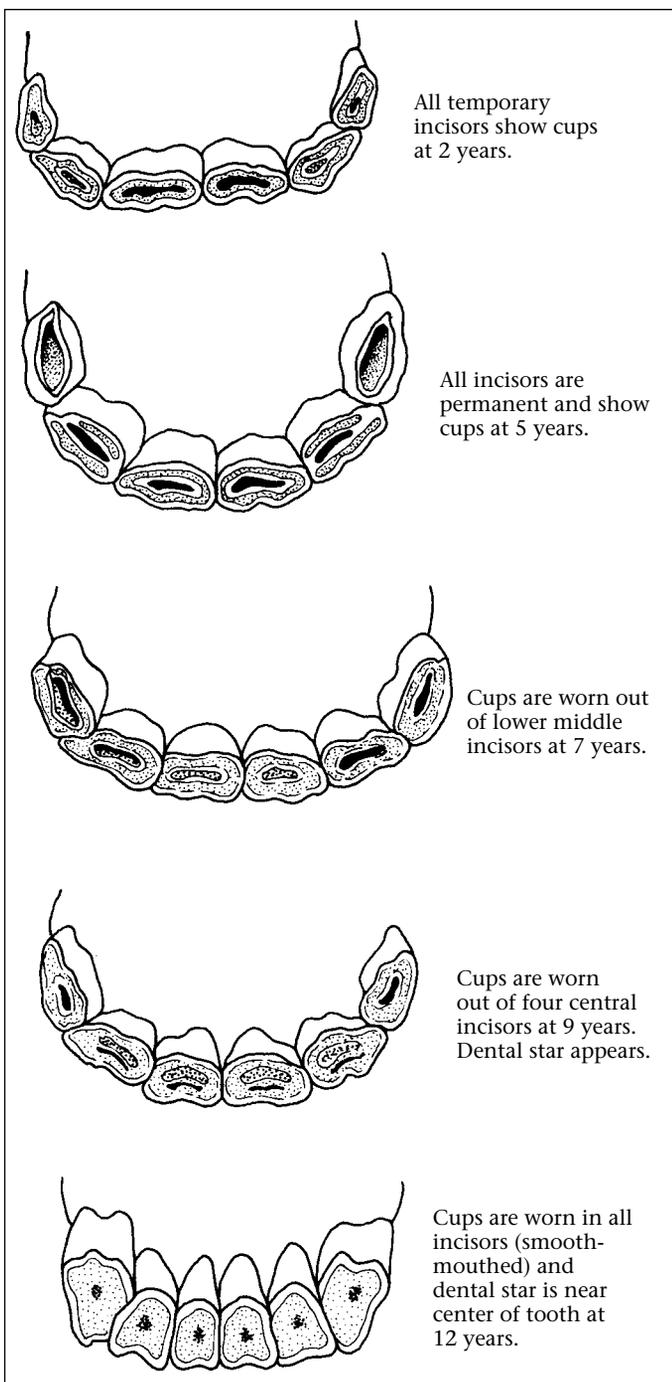
The permanent first incisors come in at 2½ years, the second incisors at 3½ years, and the third incisors at 4½ years.

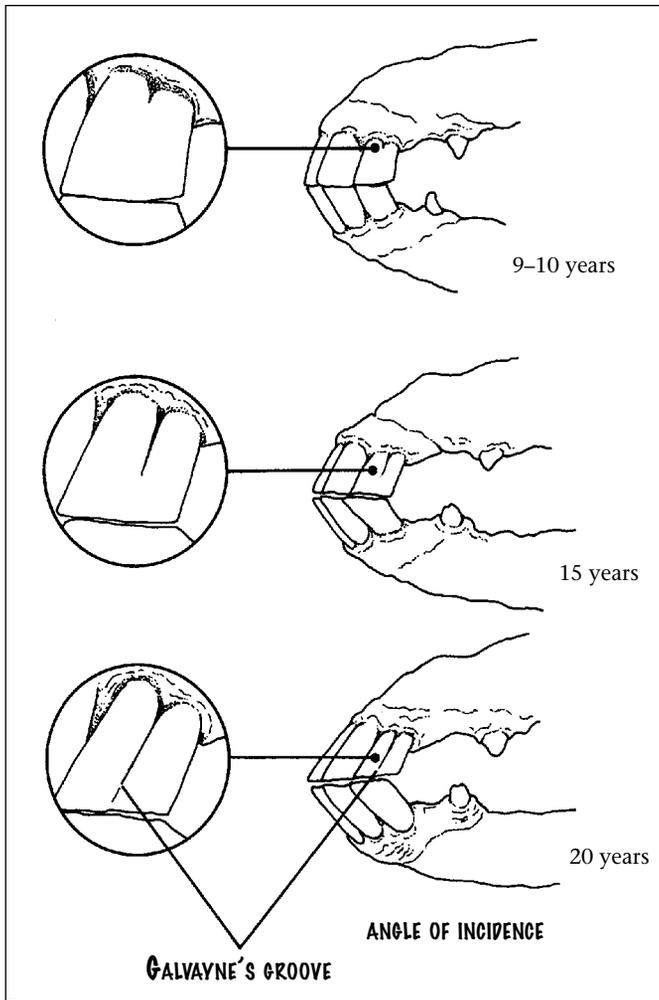
Young permanent incisors have **cups** (pits) in the center of the surface. Over time, the surface wears and the cups disappear. For most horses, the cups become smooth at the following ages: lower center at age 6, lower middle at age 7, lower corner at age 8, upper center at age 9, upper middle at age 10, and upper corner at age 11.

As the cup disappears, a **dental star** appears. At first it looks like a narrow, yellow line between where the cup was and the front of the tooth. It progresses to dark circles near the center of the tooth.

WHAT TO LOOK FOR WHEN AGING TEETH

Birth–2 years	Number and wear of temporary incisors
3–5 years	Number of permanent incisors
6–8 years	Wear of lower incisors
9–11 years	Wear of upper incisors
12 years	Smooth surface (no cups)
10–20 years	Galvayne's groove
Over 12 years	Shape of surface; angle of incidence





For horses over 10 years old, use Galvayne's groove to help determine age. The groove appears at the gumline at 10 years, advances to halfway down the tooth at age 15, and reaches the wearing surface at age 20. The groove is then said to recede and disappear at age 30.

Two other changes occur in teeth that can help determine the age of older horses: the shape of the surface of the teeth and the angle of incidence. From 8 to 12 years of age, a horse's teeth are basically oval in shape. After age 12, their shape starts to change gradually to triangular. A young horse's teeth can be twice as deep as wide. A horse over 20 may have teeth twice as deep as wide.

The **angle of incidence** is formed where the upper and lower incisors meet. The older the horse, the more the incisors slant forward, and the less the angle. A young horse may have a 160- to 180-degree angle of incidence, while the angle may be less than 90 degrees in an older horse.

