

# TRAINER'S HANDBOOK

Provided by ORC Veterinary Division

**The purpose of this handbook is for you to use as a guide and as a reference for general horse care and information. Some of the information will be used on the Trainer's test examination. Always consider your state veterinarian as a source for answers and information regarding any of your equine health questions and ORC regulations.**

## **BASIC HORSE CARE**

This section contains basic categories of horse care that are included in good horse management. There are many ways to develop a program that best fits your facility's particular needs and situation.

Normal Heart Rate : 30-42 beats per minute resting

Normal Respiration : 12-20 breaths per minute resting

Normal Rectal Temperature : 99.5 to 101.5 F

After a work or race, fit horses will regain normal vital signs within 5 minutes.

### **1. VACCINATIONS:**

Vaccinations are an essential part of a Healthy Horse Program. There are many commonly used vaccination schedules which take into consideration geographic factors, use of the horse and risk of exposure. Veterinarians and horsemen select vaccine types and schedules that will best protect their horses.

Knowledge of the types of viruses and bacteria that we vaccinate for, risk of disease and benefit of prevention will help you to develop a vaccination protocol that best suits your management style. Discussing your farm's particular needs with your veterinarian will be valuable to find the best cost solution while providing high quality care for your horses.

Control of infectious diseases can be as important as vaccination itself. Vaccination is no guarantee that the animal will not contract disease. However, careful and thoughtful use of vaccines can decrease incidence and severity of diseases. Maximizing health, limiting exposure and a good working knowledge of how diseases are spread and the signs that indicate disease are important components of good management practices.

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## **EEE/WEE/VEE**

### **Equine Encephalitis(Sleeping Sickness)-Eastern, Western and Venezuelan types**

Equine Encephalitis is a mosquito-borne viral disease that is transmitted from birds and rodents that are natural reservoirs of the disease via mosquitoes to horses and humans. Horse to horse and people to people transmission from mosquitoes is unlikely because the amount of virus harbored in humans and horses is too low for transmission. EEE is the most devastating type with a 90% mortality rate and WEE has a mortality rate of about 50%. Risk of exposure varies with the mosquito and reservoir population.

EEE virus occurs in the eastern and southeastern parts of the United States. Outbreaks of WEE have mainly been in the West and mid-west and VEE in South and Central America. Because of the high mortality rate, EEE is regarded as one of the most serious mosquito-borne diseases in the United States. Clinical signs include loss of appetite, fever and neurological signs such as head pressing and blindness.

Vaccination with a 3 dose series is recommended starting at 6 months then 1 year and then annually in the spring. Unvaccinated adults should have an initial 2 dose (4-6 weeks apart) series and then annually in the spring. Pregnant mares should be vaccinated 1 month prior to foaling to give the foal the best passive immunity possible.

## **Equine Influenza**

Equine Influenza or better known as “Flu” is one of the most common respiratory diseases of horses. It is found throughout the world. Horse density and movement around the country increases the risk and spread of infection. It has been shown that quarantine of newly arriving animals and the use of vaccination can dramatically reduce the risk of infection. Horses that are between 1 and 5 years are most susceptible to Influenza and it is highly contagious and spreads rapidly through coughing, contaminated buckets and other equipment.

Clinical signs include nasal discharge, fever, lethargy, dehydration, anorexia, cough and soreness. Secondary bacterial pneumonia is possible. The incubation period is 1-3 days and infected horses are contagious for up to 10 days. Immunity from the vaccine is short lived so prevention includes every 2-3 month vaccination. Vaccination can also be used to boost immunity in the face of an outbreak.

As with human “Flu” strains, equine Influenza strains mutate over time causing the vaccination composition to change. The manufactures of vaccines are required to keep up with the viral changes but, development of the new types take time and is very expensive. For this reason, the Influenza vaccinations do not afford the horse optimal protection, so frequent boosters are recommended.

Vaccination of foals is recommended to start no later than 9 months and should be at 3 dose intervals 4-6 weeks apart. Pregnant mares should be vaccinated 4-6 weeks prior to foaling. Young horses, depending on exposure should be vaccinated every 3-6 months.

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## **Tetanus**

Tetanus is an often fatal disease caused by a toxin released by the bacteria, *Clostridium tetani*. These bacteria are present and can live for many years in the environment and in the intestinal tract and feces of horses and other animals including humans. Tetanus is not a contagious disease, it can not be transmitted from animal to animal. The animal develops the disease when a wound, surgery site or exposed tissue is infected with the *Clostridium* bacteria. Tetanus toxin causes rigid paralysis and muscle spasm. Respiratory paralysis and dehydration can lead to death.

All unvaccinated adult horses should be vaccinated against tetanus using the tetanus toxoid in a two dose series 3-6 weeks apart and then annually to induce and maintain immunity. These vaccines are safe and induce long lasting immunity.

Since the passive immunity in colostrum from the mare is unpredictable, mares should receive a booster 1 month prior to foaling. Foals born to vaccinated mares should receive their first dose of tetanus toxoid at 6 months and 2 more doses 4-6 weeks apart and then annually. Foals born to unvaccinated mares should receive one dose (1500 IU) of tetanus antitoxin.

Any animal that has become injured and has not had a booster within 6 months should be administered a booster at the time of the injury.

## **Equine Herpesvirus (Rhinopneumonitis)**

Equine herpesvirus type 1 and 4 (EHV-1 and EHV-4) can each infect the respiratory tract causing signs from mild to severe including fever, lethargy, anorexia, nasal discharge and cough. Infection is common in babies and young horses in training especially when new horses are brought in.

Equine herpesvirus type 1 also causes abortion (last trimester) in infected pregnant mares or the birth of weak nonviable foals. The placenta and all fetal remains and fluids are able to spread infection.

EHV-4 primarily causes respiratory disease in young horses.

Like all other herpesviruses, these viruses can remain latent (infections without causing clinical disease) in the majority of horses, which do not show clinical signs but may later show signs and shed the virus when stressed. For this reason, it is hard to control this disease and outbreaks occur in closed populations of horses.

The use of vaccines is primarily to prevent abortion in mares and the respiratory form in foals and other young horses that are at high risk. Consistent vaccination appears to reduce the frequency and severity of disease. All pregnant mares should be vaccinated at least at 5, 7 and 9 months of gestation and 1 month prior to foaling. Primary vaccination of foals is started at 4-6 months of age and consists of a 3 vaccination series 3-4 weeks apart. Young horses should be vaccinated every 3-4 months.

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## **West Nile Virus (WNV)**

Equine West Nile Virus was isolated in 1999 in the US. It is maintained in reservoir hosts (primarily birds) and transmitted to horses by mosquitoes. WNV occurs mostly in the late spring and summer months. Horses appear to be the dead end hosts meaning they cannot transmit the disease.

Clinical signs include lack of coordination, stumbling, anorexia, muscle twitching, partial paralysis and neurological signs such as head pressing, inability to stand, convulsions and death. Supportive care is the only treatment.

Vaccination is recommended 1 month prior to mosquito season in a 2 dose series 3-6 weeks apart. 2-3 vaccinations per year are recommended. Elimination of standing water and use of insecticides will also help decrease the mosquito population and spread of the disease.

## **Rabies**

Rabies is an infrequently encountered neurological disease which occurs when horses are bitten by an infected wild animal. Although the incidence of Rabies is very low in horses, it is a fatal disease and a public health issue. Wildlife animals are a natural reservoir for the rabies virus which causes a fatal encephalitis. Clinical signs include fever, hyperresponsiveness to touch weakness, incoordination, lameness, inability to swallow, blindness and convulsions. Death typically follows within 3-5 days. Any horse suspected of contracting rabies should be handled with utmost caution; humans can contract rabies through the saliva of the horse.

All horses kept where rabies is endemic in the wildlife population are at risk and should be vaccinated. Foals born to unvaccinated mares can be vaccinated at 3 months and then again at 1 year and then annually. Foals born to vaccinated mares should begin their vaccinations at 6 months.

Adult horses are vaccinated yearly after the initial vaccination.

## **Strangles-Streptococcus Equi**

Strangles also known as Distemper is highly contagious and caused by the bacterium *Streptococcus equi*. It usually affects young horses and is transmitted by direct contact with pus and infected fluid from another horse. It also can be transmitted by tack, water troughs, stalls, trailers etc. It can survive in the environment for at least 3 months. The bacteria can be ingested or inhaled.

The horses infected show a severe inflammatory response to the bacteria which causes upper respiratory discomfort, anorexia, and copious mucopurulent nasal discharge. They

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also have pus filled enlarged lymphnodes that can make breathing difficult. Horses generally have a fever (102 to 106) and are lethargic before the abscesses drain. Most horses recover but some may develop internal abscesses (bastard strangles).

Vaccination appears to reduce severity and incidence by 50% during outbreaks. Reaction at the site of vaccination is common. Intranasal vaccination is available and should be given only after other injectable vaccinations to prevent contamination of the Strangles vaccine into the skin.

Vaccination is not routinely recommended except where horses are at high risk or where there is a persistent Strangles problem. Foals at high risk can be vaccinated starting at 4 months and in a series 3 given 4-6 weeks apart. Adults can be vaccinated with an initial vaccination and 1-2 boosters given 2-4 weeks apart. All vaccinated horses should be revaccinated every 6 months.

Following vaccination or natural exposure, certain individuals can develop purpura hemorrhagica, an acute, non-contagious syndrome caused by immune-mediated, generalized vasculitis. The signs include hives with pitting edema and subcutaneous hemorrhages. Immediate medical attention should be sought for horses suspected of developing purpura hemorrhagica.

## **Potomac Horse Fever-PHF (Equine Monocytic Ehrlichiosis)**

Potomac Horse Fever is caused by *Ehrlichia risticii*, a bacteria that lives in a parasite of freshwater snails and is transmitted by the parasite, not by horse to horse contact. The disease is seasonal during late spring and early fall in temperate areas. The disease is primarily along the waterways in the Northeast but has been found in other areas of the USA and Canada. The clinical signs include fever, lethargy, anorexia, abnormal gut sounds, diarrhea, colic (colitis), dehydration and laminitis.

Vaccinations are recommended in endemic areas or high risk animals. A 2 dose series 3-4 weeks apart and then every 3-4 months is recommended due to the short lived immunity. Foals are at low risk of acquiring the disease and it is recommended to wait until the foal is at least 5 months old to start vaccinating.

Treatment consists of antibiotics and supportive therapy including IV fluids.

Keeping horses away from freshwater streams and ponds can aid in the prevention of PHF.

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## **EPM-Equine Protozoal Myeloencephalitis**

This is a difficult disease to diagnose because the signs mimic other equine diseases and the signs can be mild to severe in nature. More than 50 % of horses have been exposed to the *Sarcocystis neurona* protozoal parasite that causes EPM. It is not a contagious disease, it is spread by the definitive host the opossum which acquires the organism from scavenging carcasses of cats, raccoons, skunks, armadillos, seals and sea otters. Only a small percentage of horses exposed to the protozoa will develop signs. Most horses will mount an immune response and combat the disease before it has a chance to get a foothold. Stressed horses can quickly succumb to the disease while others can harbor the infection only later to develop signs of the disease. The infective stage of the organism, the sporocysts, are passed in the opossum's feces. The horse comes in contact with the infective sporocysts while grazing or eating contaminated feed or water. The sporocysts get into the blood stream and enter the brain where they attack the horse's central nervous system.

Clinical signs depend on the area of the brain that has been affected and include: incoordination, spasticity, abnormal gait or lameness, muscle atrophy, paralysis of facial muscles, difficulty swallowing, abnormal sweating and seizures. Horses may show a worsening of weakness when going up or down slopes or when the head is elevated. They also may show a head tilt or lean against walls for support.

The progression of the disease depends on the number of organisms ingested, how long the horse has had the disease before treatment, where the damage has occurred in the brain and spinal cord and the general stress in the horse's life.

The diagnosis involves a thorough physical exam by your veterinarian, blood and CSF (cerebrospinal fluid) analysis. Treatment is best begun as early as possible. There are several treatment regimens available.

Prevention includes keeping feed in a closed and sealed container, use feeders that minimize spillage or contact wild animal access, feed heat treated feeds, keep waterers clean, maintain optimal health and fitness and schedule regular appointments with your veterinarian.

## **EVA-Equine Viral Arteritis**

EVA is a contagious respiratory and abortion disease of horses. Standardbreds seem not to show clinical signs but act as carriers. Other breeds including Thoroughbreds do not seem to carry the disease but, show fulminant signs when infected. The virus is of special concern because it can cause abortion in pregnant mares, death in young foals and establish a carrier state in stallions. Outbreaks are difficult to diagnose because the signs are similar to clinical signs in other diseases such as Rhinopneumonitis, Influenza and EIA. Fevers, loss of appetite, depression, skin rash, diarrhea and edema are common.

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Aerosolized virus can be transmitted from horse to horse. Carrier stallions can transmit the virus to mares either through natural breeding or artificial insemination.

As with other viral infections, rest, supportive therapy and antibiotics for secondary bacterial infection are the most common treatments.

In the mid 1980's a large outbreak of EVA prompted the development of a modified-live-virus vaccine. Horses must be negative for the virus prior to vaccination. Vaccination of stallions and mares is a safe way to control the disease.

## **EIA-Equine Infectious Anemia (Swamp Fever)**

EIA is a disease that threatens the world's horse, donkey and mule populations. Eventhough there are excellent testing and eradication methods in place more than 500 new cases are identified each year. There is no cure for EIA and most horses show no symptoms yet they remain contagious for life. For this reason the USDA requires euthanasia or strict lifelong quarantine for horses testing positive for EIA.

Equine Infectious Anemia is a potentially fatal viral disease that attacks the immune system. It causes inflammation to vital organs and secondary infections like pneumonia. EIA has 3 forms: Acute seen within 4 weeks of exposure, Chronic horses are those that survive the acute phase and show fever, weight loss, depression, hemorrhages in the mucous membranes with repeated flare-ups and Inapparent which are carriers for life and serve as a source for infection for other horses.

EIA is transmitted by blood or placental transfer. Blood sucking insects such as flies and mosquitoes, contaminated needles and instruments, semen and milk can transmit the disease.

The way to accurately determine if a horse is infected with the EIA virus is through a blood test called The Coggins Test. A negative Coggins test means that there are no detectable antibodies and the horse is clear. A positive test indicates that a horse is a carrier and is infected. It is up to the State Veterinarian to determine the course of action for a positive test.

The USDA requires that any horse being imported from a foreign country have a negative Coggins Test. Each state has its own requirements regarding interstate movement and EIA testing. By law, EIA is a reportable disease and all positive cases must be filed with the state veterinarian and the Federal Animal and Plant Health Inspection Service (APHIS).

Since there is no cure and there are very few options should your horse test positive, prevention is crucial. All new horses should be quarantined, use only disposable needles

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and syringes, sterilize all instruments, test all horses yearly, test any horse at a prepurchase examination, require any new horse in your barn to be negative.

## **Botulism**

The soil-borne, spore-forming bacteria *Clostridium botulinum* causes 3 forms of botulism. Shaker foal syndrome results from the action of the toxins released by spores of the ingested bacteria or through entry of spores via the umbilical cord. "Wound Botulism" is caused by toxins of these spores acquired through a contaminated wound. Forage botulism is caused by the ingestion of toxins present in decaying plants or animals in the feed. Botulinum toxin is the most potent biological toxin known as acts by blocking nerve impulses leading to weakness, inability to swallow, stumbling, muscle tremors and frequently death.

Shaker foal Syndrome is a significant problem in Kentucky and the mid-Atlantic seaboard states in foals between 2 weeks and 8 months. The vaccine (toxoid) is used to prevent this syndrome by vaccinating pregnant mares.

Horses with clinical signs of Botulism can be treated with an anti-toxin and antibiotics. The anti-toxin is not effective on toxin that is already inside the nerves, so clinical signs may persist until the toxin has acted at the end of the nerves.

## **Anthrax**

*Bacillus anthracis* causes a serious and rapidly fatal infection that enters the blood stream via ingestion or wound contamination. Vaccination is only indicated for horses that live in endemic areas. There is no vaccine licensed for use in horses but, the cattle strain is used and there is evidence that suggests it affords the horse protection.

## **Rotavirus**

Equine rotavirus causes a foal diarrhea that accounts for about 50% of all foal diarrheas. It is transmitted via fecal-oral contamination and damages the small intestine resulting in maldigestion, malabsorption and diarrhea.

Vaccination of pregnant mares has shown to decrease the incidence of disease in foals that have nursed from those mares.

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## 2. DENTAL CARE

Routine dental care is essential to your horse's health. The domestication and confinement of horses has led to changes in their eating patterns, food types and natural selection for optimal anatomical configuration. So, now more than ever, periodic examinations, corrections and regular maintenance are especially necessary in order for your horse to be comfortable, utilize its feed more efficiently, perform better and live longer.

Horses have 2 sets of teeth, baby teeth or deciduous and adult or permanent teeth. Permanent teeth continue to "grow" or erupt until the horse reaches his 20's. The front teeth or incisors are used for shearing off forage. The canine teeth or Bridle teeth are located behind the incisors. Wolf teeth are the horse's first premolars. If not removed, wolf teeth interfere with the bit and cause the horse pain when the bit knocks against them. The cheek teeth or premolars and molars are used to grind the food before swallowing.

Due to the horse's particular anatomy (for example parrot mouth or sow mouth), the fact that the upper jaw is wider than the lower jaw, and since the teeth continue to erupt some surfaces become more worn than others. The results are the common problems that we see for example enamel points, hooks, uneven bite planes, long teeth, poor alignment and subsequent gum disease. Some key signs of horses with dental problems include pain or irritability, difficulty chewing, dropping feed from their mouths, excessive salivation, undigested feed in manure, head tilting and poor performance. They may also have a foul odor to their breath, facial swelling or traces of blood in their mouths. Some horses do not show a sign of teeth problems which is a main reason for periodic exams and maintenance.

Preventive maintenance starts in the young horse at 2 or younger depending on the horse's dental conformation or problems. Maintenance includes removing baby cheek teeth or caps, removing wolf teeth, reducing the sharp edges from canines, maintaining proper bite planes for the horse's conformation and smoothing the chewing surfaces by evening out the hooks, ramps and points on the cheek teeth. "Floating" teeth is a term used to describe filing the teeth. Complete dental includes "floating" in addition to grinding the biting surfaces and maintaining natural alignment. To insure that your horse is receiving good dental care, talk to your veterinarian or veterinary dental specialist.

As the horse ages there are various maintenance issues that arise. Young horses are losing teeth and often those teeth do not fall out on their own. This can cause problems with the adult tooth trying to erupt and cause problems for the adult teeth as well as discomfort to the horse. These caps should be removed. Older horses can suffer from gum disease and loose teeth. Since horse's teeth erupt for many years a lost tooth will allow the opposing tooth to erupt into the space of the missing tooth. This will stop the horse from chewing by blocking the chewing motion.

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A good dental maintenance program can help you avoid major dental problems as well as other systemic problems that can arise from poor dental health such as colic and other digestive issues.

## 3. DEWORMING

Internal parasites are the silent killers. They cause extensive damage without you even knowing that your horse is heavily infected. Signs of infestation include dull hair coat, unthriftiness, anemia, poor growth, colic and death. They also decrease the horse's resistance to infection and disease, decrease the horse's ability to maximize nutrition and cause permanent damage to internal organs. A good deworming program is as important as providing clean and high quality feed and water!

There are many deworming protocols. The important factor is exposure and consistency. You can have your veterinarian perform a laboratory test to determine the type and worm load in your horses by doing a fecal egg count and identification. The current recommendations include every 2-3 month paste or liquid deworming or using the continuous low dose in the feed products.

It is important to understand that most of the damage by intestinal parasites is caused by the migration through the organs by the immature forms of these worms called larvae. The larvae of the large and small strongyles migrate through the blood vessels and cause scarring in the intestinal blood vessels. This damage can lead to loss of blood supply resulting in organ death. One of the more common surgical problems seen in horses-Colic is often caused by larval migration resulting in damaged and dead bowel.

Clean stalls and a clean water supply cuts down on recontamination. Using feeders off of the ground, keeping foals and weanlings separate from older horses will decrease exposure, composting manure away from pastures and keeping a high acre to horse ratio will help in decreasing the contamination. Frequent deworming with a broad spectrum dewormer will eliminate a majority of parasites.

### **Types of Internal Parasites**

The most important parasites in terms of health risks are the large and small strongyles, ascarids and tapeworms. Most worms have an egg that is picked up from the environment, swallowed and mature into an immature form called larvae inside the horse. The immature forms will often migrate out of the intestine cause damage and then migrate back to the intestine as adults, produce eggs and the eggs are eliminated by the horse in the feces. The cycle then starts again.

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Large Strongyles also called bloodworms or redworms, as larvae penetrate the bowel and migrate along the blood vessels that supply the intestines. A small number can cause extensive damage.

Small Strongyles do not migrate through the tissues. They tend to burrow into the intestinal lining and remain dormant or “encyst”. Encysted larvae are not affected by most of the dewormers. When large numbers of encysted larvae emerge, they cause severe damage and the horse suffers severe colic and diarrhea.

Ascarids also called round worms are a problem in young horses. The adults which are several inches long can cause blockages in the intestine (impactions). The larvae also migrate through the lungs and cause pneumonia. Colic in foals over 3 months is common as is a pot belly appearance and rough coat.

Tapeworms cause both surgical and medical colics. The horse eats the tiny mite that lives in the grass, hay or grain and the tapeworm resides inside the mite. Treatment for tapeworms involves seasonal timing and specific dewormers.

Other internal parasites include lungworms that cause coughing and donkeys are the natural host meaning that they do not show signs. Pinworms lay eggs on the skin around the anus and causes irritation and tail rubbing. Bots can cause damage to the stomach and mouth lining. Bot eggs are laid on the horse's skin by the bot fly and are licked up by the horse. Threadworms are mostly a problem in young foals causing diarrhea.

## **External Parasites**

Flies are the most common external parasite and cause not only a nuisance but spread disease. Mosquitos and lice also cause irritation and diseases in the horse. Good manure management and the use of pesticides help in controlling pest populations. The use of fly predators is an alternative method. Standing water invites mosquito breeding, control of standing water is helpful in decreasing mosquito populations.

## **4. NUTRITION**

### **HAY**

The nutritive value and palatability of hay will depend on many factors including: plant species, maturity at harvest, weed content, growing, harvesting and curing conditions, soil conditions, moisture content and storage conditions.

There are two categories of Hay. Legume Hays are Alfalfa and Clover. Alfalfa is often found as a single feed while clover is most often found as a mix with other hays for

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example along with Timothy. Legumes are higher in protein, energy, calcium and Vitamin A than Grass Hays. Legumes provide concentrated protein and energy which is advantageous when feeding certain types of horses including performance athletes.

Feeding alfalfa may require a Phosphorous supplement to balance the calcium:phosphorous ratio which is very important for growing horses. The high protein and mineral content of alfalfa causes the horse to drink more water. Your horse will most likely need more frequent stall cleaning and more water available to drink.

Grass Hay are lower in protein than Legumes and is a good choice for adult horses. It provides the necessary roughage without the excess calories and protein. Good quality grass hays are an excellent choice to provide food and decrease boredom in the stall. Common varieties are Timothy, orchard, brome, prairie, fescue and Oat.

Mature horses require 1-1.5 % of their body weight in roughage. So, about 10-20 pounds of hay for an average sized horse.

Good quality hays are fine-stemmed, green and as leafy as possible. They should be soft to the touch. Moldy, musty, dusty or sun-bleached hays should be avoided. Select hays that have been harvested in early bloom for legumes or before seed heads have formed for grasses. Watch for blister beetles in alfalfa. Check hay for weeds, trash or debris. Fields with tansy should be avoided. Tansy poisoning will occur with dried tansy in the hay. Do not use hay that contains dead rodents or other animal products that have been inadvertently baled with the crop (see botulism).

Your experience with horses and your veterinarian are the best sources for helping you with an appropriate feeding program.

## **5. GROOMING/BATHING**

Brushing is important to shed the dead hair and to stimulate blood flow in the skin. It also has a calming effect.

Cleaning the Sheath is an essential part of horse health for geldings and stallions. The tip of the penis has pockets that harbor bacteria and dirt. If this is not periodically cleaned out the gelding or stallion can have difficulty urinating and can lead to behavioral problems resulting from the discomfort. Ivory soap and warm water works well. Caution, many horses do not like you working in that area and may kick. Additionally, you may need either mechanical restraint or sedation from your veterinarian to stay safe and to completely clean the penis and sheath.

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## 6. SHOEING

The old adage still holds true, “No foot, No horse”. Feet are a very important component of the horse’s anatomy and the ability of the horse to remain sound. Balanced shoeing for the particular horse and his conformation are essential for the sound performance horse.

There are various thoughts on the types of shoes that best suit the horse for the different footings on tracks and training areas.

Bar Shoes are used for heel support for horses with heel problems such as navicular disease. Because of their increased surface area, they can be slippery and decrease traction.

Toe Grabs are used for added traction on running surfaces. They can cause an imbalance to the foot which results in tendon and ligament problems.

Chalks are used for added traction and can cause excessive pressure on the wall resulting in cracks and bruises.

## ANATOMY

Soundness in the horse is a common problem. Stress, strain and injuries occur during typical training and performance even in horses with no obvious conformational defects. Lameness in a horse is cause to call your veterinarian to have it evaluated. Early detection and treatment can result with a better outcome and possibly prevent further damage.

The definition of lameness is any alteration of the horse’s gait and can manifest as a change in attitude or performance. These abnormalities can be caused by pain in the neck, withers, shoulders, back, loin, hips, legs or feet.

Your veterinarian will perform a lameness evaluation which may include history, watching the horse at rest and in motion, palpation of joints and structures, hoof testers and flexion. Diagnostic tests include nerve and joint blocks, radiographs and ultrasound. There are other diagnostics that your veterinarian can discuss with you. Veterinarians will often grade the lameness on a scale to indicate the severity.

A good working knowledge of anatomy both the form and function of the various bones, joints, tendon and ligaments will help you both to identify potential and to treat problems. Additionally, the more accurate you can describe a problem to your veterinarian the better the result will be.

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## GENERAL SKELETON:

It is easier to remember the order and location of the bones by making a correlation between the horse bones and our own. Essentially, the bones are the same with the horse standing on all 4 legs and we are upright. Take some time to compare and you will always have a reference with you anywhere you go!

## LIMBS:

The front and rear legs from below the carpus(knee) on the front leg and below the tarsus(hock) on the hind leg are the same.

The cannon bone or metacarpal III (metatarsal III in the hind limb) creates the fetlock joint with the sesamoid bones ( 2 of them) and the long pastern bone (1<sup>st</sup> phalanx). The pastern has a joint between the long pastern bone and the short pastern bone (2<sup>nd</sup> phalanx) this is the proximal interphalangeal joint. The short pastern bone and the coffin bone (3<sup>rd</sup> Phalanx) and the navicular bone form the distal interphalangeal joint. The tendons and ligaments run down the back side of the cannon bone and function to flex and extend the joints and support the bones. The superficial and deep flexor tendons are closest to the skin and insert at the pastern and the coffin bone respectfully. The suspensory ligament inserts on the sesamoid bones and then sends a branch to insert on the front side of the pastern.

The hoof is comprised of keratin like our finger nails and attaches to the coffin bone by means of an interlocking system of sensitive and insensitive tissue called laminae. Covering over the laminae, blood vessel and tissues is the hoof wall. The line (white Line) is where the sensitive and insensitive tissue join.

Various methods are used to manage soft tissue health and injury. Sweats are used to decrease inflammation and edema; Poultices (mudding) are used to reduce tendon and ligament strain by reducing swelling; Poultices for the foot are used to encourage abscesses to rupture; Braces are used for muscle strain and to cool worked muscles.

### **1. Laminitis**

Laminitis results from the disruption of blood flow to the sensitive and insensitive laminae. These laminae secure the coffin bone to the hoof wall. The inflammation can cause weakening of the laminae which can result in the bone separating from the wall. The separation can be such that the coffin bone rotates with the possibility of the toe penetrating the sole or the whole coffin bone can “sink” down through the sole. Laminitis can be seen on one or all four feet but, it most commonly seen in the front feet concurrently.

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Founder and Laminitis are used interchangeably but, founder usually refers to a chronic condition associated with rotation of the coffin bone and laminitis refers to the acute, sudden initial attack resulting in pain and inflammation of the laminae.

The causes of laminitis include: digestive upsets (grain overload), sudden access to lush forage (grass founder), toxins in the horse's system (results of diarrhea, pneumonia etc), high fever, severe colic, consumption of excessive cold water in an overheated horse, excessive concussion to the feet (road founder), various primary foot diseases, walnut shavings in the bedding and prolonged use of high doses of corticosteroids.

Risk factors include heavy breeds, obesity, high nutritional plane, ponies, morgans and donkeys, grain binges, previous laminitis and older horses with cushings disease ( pituitary tumor that causes excess cortisol levels).

The signs of acute laminitis include: lameness (when turning or shifting when standing), increased heat and digital pulse, pain at toe, reluctance to walk (walk on eggshells) and "sawhorse" stance.

The signs of chronic laminitis include: rings in the hoof wall that become wider from toe to heel, "stone bruises", widened white line (known as "seedy toe"), flat feet, cresty necks and dished hooves.

The sooner the treatment begins the better the chance of recovery. The treatment depends on the cause but basically the inflammation and toxins need to get under control. Your veterinarian may use antibiotics, banamine, mineral oil, IV fluids, vasodilators, anti-coagulants, wraps and soft bedding. Management of horses with laminitis includes: modified diets, routine hoof care, therapeutic shoeing, good health maintenance, nutritional supplements and avoidance of lush pastures.

## **2. Navicular Disease**

Navicular Disease is a common problem involving the navicular bone and typically the deep flexor tendon. It is result of conformation and use of the horse caused by a blood flow problem to the navicular bone. There are many treatments and surgeries for this disease that your veterinarian can discuss with you.

## **3. Flexor Tendon Injury**

Flexor Tendon injury - the deep and superficial flexor tendons have the job to flex the pastern and foot. These soft tissue structures can be injured by stress and cause permanent damage to the tendon and result in a crippled horse.

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## **4. Suspensory Injury**

Injuries to the suspensory ligament are typically due to conformational issues as well as fatigue. They often involve the sesamoid bones.

## **5. Sesamoiditis**

Inflammation of the proximal sesamoid bones is a common problem in horses especially in horses that have chronic irritation to the fetlock joint as in racing. The inflammation can result in irritation to the suspensory ligaments and possible fracture of the sesamoid bones themselves.

## **6. Osslets/Ringbone**

Arthritis of the pastern and fetlock joints are common wear and tear problems in horses.

## **7. Sidebone**

Irritation and excessive bone remodeling and growth of the collateral cartilage of the coffin bone can cause pain and lameness. Sidebone is often an older horse disease but, chronic irritation to that area due to conformational defects and use can cause premature sidebone.

## **8. Quittor**

Infection of the collateral cartilages of the coffin bone show up as abscesses and pain that do not resolve like a typical sole or foot abscess. Surgery is often required to resolve the problem.

## **9. Sole Abscesses**

Infections within the hoof wall often result in a pocket of pus that accumulates and causes pressure and pain. Sole abscesses can be so painful that the horse can present 3 legged lame.

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## **COMMON DISEASES AND PROBLEMS**

### **Gastric Ulcers**

Gastric ulcers are the result of the erosion on the lining of the stomach due to prolonged exposure to the normal acid in the stomach. 90% of racehorses and 60% of show horses are affected by gastric ulcers. When the horse does not have feed in his stomach to neutralize the acid, ulcers can form.

Ulcers are a man made disease. Stall confinement, twice daily feeding schedules, high grain diets, stress, training and strenuous exercise all can lead to stomach ulcers in horses. In addition chronic administration of non-steroidal anti-inflammatory drugs such as phenylbutazone decreases production of the protective mucous layers of the stomach making it more susceptible to ulceration.

The symptoms include: poor appetite, decreased performance, poor hair coat and some will show colic.

The diagnosis is through endoscopy. Treatment is decreasing the predisposing factors mentioned above, providing the horse with free choice hay, providing toys and socialization and anti-ulcer medications.

### **Colic**

Colic is the number one killer of horses. Many horses colic without us even knowing that they are sick and resolve on their own. Less than 10% of colics are surgical. However, every case of colic is serious and deserves attention at the very least by you and in most cases by your veterinarian to determine the severity and to treat the cause most appropriately.

Signs of colic vary in intensity and type depending on the pain tolerance of the horse, reason for the colic episode and the duration that the horse has been ill. Some common signs include: looking at the flank area, pawing, curling the upper lip, kicking at the belly, stretching out, repeatedly lying down and getting up, repeatedly rolling, refusing to eat, decrease feces, decreased gut sounds, increased heart rate and depression.

All colics are emergencies because it is difficult to tell the reason for the episode, call you veterinarian immediately.

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## **EMERGENCIES**

*The 3 most important things to remember in an emergency situation are to remain calm-don't panic, stay safe, and get help.*

Part of being prepared for an emergency is to have a plan that is made prior to any emergency situation. There will always be unforeseen events that change a plan but, a good plan will help keep things calm and aid in helping as many horses and people as possible.

Emergency care for your horse during and after an emergency is best dealt with by your veterinarian. Take care not get yourself hurt with a fractious and injured horse.

## **EVALUATING LAMENESS**

Lameness evaluations are typically done on hard ground without weight. All 4 limbs are looked at the walk and trot both to and from the observer. There are lamenesses that show up on the swinging leg and those that show on the weight bearing leg. Some unsoundness issues are best liked at with weight on the horse. Your veterinarian can help you determine the location of the lameness and the next course of action.

## **BANDAGING**

### **Types of Bandaging and uses**

Hoof bandages are used to protect wounds, cracks, abscesses or surgical sites from contamination or trauma. These bandages can be used to apply medication and absorb fluids (exudate). Lower leg bandages can be used for the same reason as hoof bandages and also to prevent swelling and edema, immobilize injured tissues and or reduce motion in the joints and provide support for tendons and ligaments. All bandages should be applied with care so as not to cause injury to structures.

There are many ways to bandage. A smooth evenly applied bandage under the correct amount of tension is critical. Apply clean and dry bandages only to cleaned and dry legs. Many types of materials are used. A sterile gauze non-stick pad is best over an open wound or healing surgical site. Sheet cotton, roll cotton (excellent for hocks), combine roll or disposable diapers work great for the padding portion of your wrap. Stretch bandaging tape such as vetwrap at least 3" wide works well for the tension layer.

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Adhesive outer coverings such as elastikon or duct tape work well. A plastic garbage bag or zip-lock bag work well to cover a wrap in the rain or mud.

Changing the bandages is very important and your veterinarian can give you instructions on how often to change the bandage depending on the injury and conditions the horse lives in.

## **RACING TRAINING AIDS**

**Tongue tie**

**Blinkers**

**Shadow Roll**

**Figure Eight Nose band**

## **HORSE TRANSPORTATION RULES**

**Health Certificates** - Required for all animals moving across state lines.

**Brand Inspection** - Required for all animals moving across state lines.

**Coggins test for EIA** - Required for all horses entering or leaving Oregon except for Washington State.

## **EUTHANASIA**

Although the decision is difficult, it is wise to have a list of events in mind that if occurred your decision would be to have your horse euthanized. It is much easier to have a plan before you are in a situation that is filled with emotion and urgency. Every case is unique, each horse will have a specific worth, response to pain, ability to change careers and prognosis. All these are taken into account when making the decision to euthanize. It is helpful to consult your veterinarian if possible to give advice on the situation and explain options.

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Euthanasia also known as “Put Down” or “Put to Sleep” is the act of giving the horse a lethal injection to render the horse dead. Most commonly a lethal dose of a barbiturate anesthetic that first shuts down the horse’s central nervous system and makes him unconscious. The heart stops and the horse quits breathing. These drugs are highly effective and quick acting.

## **EQUINE REPRODUCTION**

Whether live cover breeding or using shipped semen, your veterinarian can help you create a plan to breed your mare. Her dietary needs will change over the course of the pregnancy and she will require extra vaccinations to insure the foal is well protected. The use of ultrasound will help insure that there are no twins and that there is a live foal. The average gestation is about 340 days. Some pregnancies go over 1 year.

It is common now to foal mares at a foaling facility. There are advantages in that the facility is set up to monitor the mares and care for the newborn in the first few critical hours. Your veterinarian can help you with the basics you need to foal out your mare yourself.

The young foal also has specific dietary requirements. It is best to contact your veterinarian regarding the best plan for your new foal. Your veterinarian can also help you to devise an exercise and vaccination plan.

## **SENIOR HORSES**

Our older horses require special attention. Their nutritional requirements are different than our younger horses. It is most often better to be able to feed hay but, due to their digestion and dental problems “kibble” feeds are often recommended. Regular exercise and turnout along with good basic horse care will keep the older horse health and happy for many years.

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## EQUINE INSURANCE

Ownership of horses represents a significant investment of time, money and resources. Although nothing can replace the pride and companionship of a trusted friend, good planning can help reduce the economic impact should some peril befall your horse. There are several types of insurance available for horses they include:

1. Mortality- in the event the horse dies
2. Loss of Use-paid on a percentage basis should the horse become incapacitated from its intended use.
3. Major medical- offsets the cost of catastrophic veterinary care
4. Surgical- policies that cover only specific procedures such as colic.
5. Breeding infertility-covers reproductive failure.
6. Specified perils- includes many things including lightning, fire or transportation injuries.

It is important to know the policy you need and the coverage included before purchasing any policy. Your veterinarian cannot attest to the insurability of a horse, they can only respond to questions for which they have direct knowledge.

Most companies will require advance notification and prior permission for euthanasia. They may require a second opinion before having the horse euthanized. It is important to learn your insurance company's policies before anything catastrophic happens.

## RESOURCES

**Test Barn Procedure** - see posted procedures at Test Barn

**Claimed horses** - see ORC rules

**ORC Medication Rules** - see ORC rules

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## **ASSOCIATIONS**

**Important veterinary associations for information:**

**American Association of Equine Practitioners [www.aaep.org](http://www.aaep.org)**

**American Veterinary Medical Association [www.avma.org](http://www.avma.org)**

**US Department of Agriculture-Animal and Plant Health Inspection Service  
[www.aphis.usda.gov](http://www.aphis.usda.gov)**

**Association of American Veterinary Medical Colleges [www.aavmc.org](http://www.aavmc.org)**