

EQUINE



MANAGEMENT HANDBOOK

*A basic care
manual for
first-time
horseowners*

West Virginia Department of Agriculture
Kent A. Leonhardt, Commissioner

Equine Management Handbook

**A basic care manual
for first-time horse owners**



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To obtain additional copies of this handbook
contact 304.558.3708 or 304.558.2210

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WEST VIRGINIA EQUINE HEALTH REGULATIONS

To keep updated on all equine health regulations and health practices, go to the WVDA website, agriculture.wv.gov, "Animal Health Division"

Coggins Test

The Coggins Test is the official test for Equine Infectious Anemia (EIA) used throughout the United States. EIA is an infectious viral disease. At present, there is no treatment or preventative vaccine. Horses which test positive are governed under current individual state laws. Horses in West Virginia must be tested **every year** if they are participating in shows, organized trail rides, clinics or being exhibited in any way. Nursing foals are covered by their dam's Coggins Test.

Every state has different requirements concerning Coggins Testing; however, in most states it is required yearly. You must have a current Coggins test to cross state lines. Before traveling between states with your horse, check with the state veterinarian.

WVDA Animal Health Division Import Regulations

Horses

- A negative EIA (Coggins') test within **12 months** of shipment, if the state of origin has an EIA program also. If they do not have a program, a negative test within 6 months.
- Nursing foal may travel on the dam's test.
- The Coggins' test is good for **one year** in West Virginia.
- Horses going to a livestock market need a negative Coggins test within **12 months**.

Contact the State Veterinarian's office for the most up-to-date information on health requirements for fair and festivals or refer to the animal health division on the website at agriculture.wv.gov

State Veterinarian's Office:

1900 Kanawha Blvd., E
Charleston, WV 25305
304.558.2214 or 304.538.2397

STANDARDS OF CARE

Any person responsible for the management of a horse should provide the following minimal suggested standards of care:

- Nutritious food in sufficient quantity and quality and be of adequate and appropriate nutritious value. When preparing a horse's diet; age, breed type, condition, size, work level and quantity of horses should be taken into consideration.
- Appropriate veterinary care includes: hoof care, parasite control, dental care, regular vaccinations and Coggins test, as mandated by law. Immediate veterinary care should be sought if the horse is injured or sick.
- Clean, potable water should be available at all times for all equine. Equine that do not have access to water must be watered at least twice daily. Ice and snow does not provide an adequate water supply for equines.
- Proper air – enclosed areas should allow free flow of air to control temperature, humidity and prevent air stagnation.
- Proper space – should be clean, dry and safe. Fencing must be well maintained and in good repair. Space and exercise area should be appropriate and sufficient for age, breed type, quantity, condition and size of the horses.
- Proper shelter or protection from the weather. Shelter provided should be kept in good repair, dry and clean. All equines should have access to appropriate shelter from weather extremes. Trees and natural weather barriers providing shelter can be considered adequate shelter.

HOUSING RECOMMENDATIONS

The most important basic requirements for maintaining a healthy horse are: protection from temperature extremes, fresh air, adequate feed, clean water, exercise, dry bedding and good health care.

Protection from extreme weather and dry bedding go hand in hand. The type of shelter, flooring and bedding you choose for your animals are a matter of choice. Whether you choose a barn with individual stalls or an open shed type design, you must choose the site of your building carefully. Good drainage is the most important consideration; it should also be easily accessible and near your pasture or exercise area.

Your building should be well ventilated and have a good source of clean water. Storage is always a consideration. You will need adequate space to store your hay, grain, tools, tack and any other equipment needs. This needs to be a secure place, as horses have a knack for getting into places they should not be. Several equine diseases are caused by consuming feed contaminated by mice, rats, opossums, etc. For this reason, feed should be kept in a tightly closed, rodent proof container to prevent the spread of diseases caused by contamination from rodent fecal matter.

Your pasture needs to be well fenced and free of objects that might injure your animal. There are many choices for fencing available, some of which are designed specifically for horses and their safety needs. All pastures should be checked frequently for broken fence, holes or any object that could cause injury.



EQUINE

HEALTH



HEALTH CARE

Health care can fall into two categories, Preventive Maintenance and Treatment. **Preventive Maintenance** is scheduled health care. Yearly vaccinations, deworming programs, a good hoof care policy and yearly teeth exams are all the things that keep your animals in good health.

Treatment is for accidents and illness, which no matter how hard you try will happen. The best preventive maintenance will not stop things from happening, so you must be prepared. **It is best to have established a good working relationship with an equine veterinarian before an emergency occurs.**

EQUINE DISEASES

Most common equine diseases:

Equine Encephalomyelitis (Sleeping Sickness)

- All horses should be vaccinated.
- 3 most common types: Venezuelan (VEE), Eastern (EEE) and Western (WEE).
- Transmitted primarily by mosquitoes after the insects have acquired the virus from birds and rodents.
- Direct horse to horse or horse to human transmission is very rare.
- About 50% of horses infected with WEE die and the death rate is 90% if infected with EEE or VEE.
- Prevention: Vaccinate annually, or, preferably, every 6 months prior to vector season.
- Symptoms include high fever (106F), nervousness, drowsiness, drooping ears, abnormal gait and circling, recumbency. The final stage is paralysis and death.
- Treatment is supportive care but the outcome is usually poor.
- Reportable.
- Zoonotic.

Equine Infectious Anemia

- Detected by a Coggins Test.
- Virus is related to the human immunodeficiency virus but is not known to infect man.
- EIA should be suspected if a horse has a history of weight loss accompanied by periodic fever or if several horses in a group develop similar symptoms after introduction of new animals into a herd.
- No specific treatment or vaccine is available.
- General supportive therapy may help in an individual case.
- An infected animal is a likely source of infection for other horses.
- Infected animals should be promptly isolated from other horses.
- **Reportable disease.** Infected animals must be kept 200 yards from other horses or euthanized.
- Since the horsefly is an important vector, stabling during the fly season, repeated spraying or by screening might be desirable.
- Transmitted in the blood from infected animals by biting flies and mosquitoes.
- Can also be transmitted from infected/dirty needles, equipment.
- Only prevention is to Coggins test and identify carriers.
- Three forms:
 1. Acute: sudden onset of high fever (104-108F), severe depression, severe anorexia and severe anemia.
 2. Subacute: Symptoms not as severe.
 3. Chronic: unthrifty appearance, periods of mild illness.
- No treatment.

Equine Viral Rhinopneumonitis (Rhino)

- Caused by herpesvirus (similar to the human common cold).
- Rarely fatal, but can cause the horse to be sick for a prolonged period of time.
- Virus causes respiratory tract problems, abortion, foal death and neurological disease.
- All pregnant mares must be immunized at least during the 5th, 7th and 9th month of gestation with a killed vaccine.
- Rhinopneumonitis is spread by aerosol and direct contact with secretions, utensils, or drinking water contaminated by nasal secretions.
- Virus may be present in asymptomatic carrier animals.
- Secondary bacterial infection is often a complicating factor.
- Prevent by vaccinating susceptible animals (horses that travel off the farm and come in contact with other horses) and isolating new horses.
- Symptoms include high fever (106F) that may last up to five days, clear nasal discharge, coughing and abortions up to four months after exposure.
- Treatment includes supportive care and occasionally antibiotics to control secondary bacterial infections.
- Reportable.

Equine Influenza

- Caused by Myxoviruses.
- Respiratory disease that can affect large numbers of horses but usually not fatal.
- It is one of the most common respiratory diseases in the horse.
- Risk of infection is higher for young horses than older horses.
- Highly contagious and can be transmitted by the air from equine to equine.
- Prevent by isolating new animals and vaccinating those horses that are susceptible (horses that travel off the farm and come into contact with other horses).
- Symptoms include high fever (101-106F), depressed appetite, watery nasal discharge, and a hard, dry cough.
- Spread by droplet (nasal) inhalation.
- Treatment is supportive care.

Leptospirosis

- Affects most species of mammals.
- In horses, disease is usually mild but can have serious side effects, such as periodic ophthalmia (moon blindness), kidney disease, hemolytic anemia or abortion in mares.
- Most common carriers are rodents and deer.
- No approved vaccines for horses.
- Can be treated with antibiotics.
- Reportable.

Potomac Horse Fever

- Caused by Rickettsia bacteria (Ehrlichia)
- According to the Horse Industry Handbook, studies have suggested that transmission is not from horse to horse, but from insect or arthropod (tick) to horse.
- Prevention: using available vaccine and limiting tick exposure.
- Symptoms include mild depression and decrease in appetite, fever may be present and gut sounds absent or decreased. A watery diarrhea develops within 24-48 hours.
- One third of affected horses die.
- Treatment consists of intravenous fluids and electrolytes, antibiotics and supportive care.
- Reportable.

Rabies

- Caused by Rhabdovirus
- Transmitted by a bite from a rabid animal (usually wild animals such as skunk, fox, bats or racoon).
- Zoonotic concern for humans.
- Prevention: Vaccine with an animal booster
- Symptoms include: paralysis, lameness, anorexia, grinding of teeth, colic, aggressive behavior and eventually, death.
- No treatment is available. 100% fatal.
- Reportable.

Septicemia

- This most commonly occurs in foals that fail to drink and absorb colostrum in the first hours after birth, but can also occur after a normal delivery.
- It is recommended that foaling take place in a clean environment (clean barn, clean straw, outside pasture, etc. DO NOT foal on sawdust).
- Early signs are decreased appetite, depression, diarrhea, generalized weakness, weakened suckling activity, swollen joints or umbilicus and mild dehydration. Foals may be too weak to nurse and may appear unaware of their surroundings. Early recognition is the key to treatment. Foals can be tested after 12 hours old to make sure they have received an adequate amount of colostrum. If not, treatment can be started immediately.
- Prevent by disinfecting the umbilical cord with 10% iodine and making sure the foal nurses soon after birth to obtain colostrum.

Strangles

- Acute contagious upper respiratory disease caused by the bacteria *Streptococcus equi*.
- Bacteria could be carried in the guttural pouch for years.
- Prevent by isolating new animals for at least 4 weeks, preferably 6 weeks. Vaccinate two times at four week intervals and annual boosters thereafter for horses with potential exposure.
- Early symptoms include anorexia, high temperature (103-105 F) and a nasal discharge that becomes thick and purulent; swollen submandibular lymph nodes.
- Once infected, symptoms include upper respiratory infection and swollen lymph nodes, especially those under the jaw. When infection is severe, the lymph nodes may abscess and rupture.
- Disease is spread by contamination of inanimate objects such as grooming equipment, troughs, and feed and water buckets or even clothing.
- Infected horses should be isolated.
- Treatment consists of antibiotics and supportive care.
- Reportable.

Tetanus (Lockjaw)

- All horses should be vaccinated annually and at the time of any injury or open wound.
- Caused by *Clostridium tetani*, which can be found in equine fecal matter and in contaminated soil.
- Transmitted by the bacteria entering a wound and the formation of endotoxin.
- Symptoms include difficulty walking, prolapse of the third eyelid, spasms of the jaw (lockjaw), and finally death by asphyxiation.
- Treatment includes muscle relaxing drugs, antibiotics and supportive care.
- The death rate is high despite treatment (70-80%).
- **Of all vaccinations that horses receive, Tetanus Toxoid is by far the most important.**
- Vaccine is safe and provides good protection.
- If horse has a fresh wound or surgery, tetanus antitoxin is indicated for fast, short term protection (up to 3 weeks).

West Nile Virus

- West Nile Virus affects a number of different species, including man, horses and birds.
- Is a mosquito-borne virus that was first detected in the U.S. in 1999.
- No documentation that infected horses can spread the virus to uninfected horses or other animals.
- Mosquitoes acquire the West Nile Virus by biting infected birds and transmit to other birds, humans (zoonotic) and horses.
- Infected signs include ataxia (stumbling or incoordination), muscle twitching, fever, weakness of limbs, partial paralysis or death.
- Preventing animals' exposure to mosquitoes is essential.
- Mortality rates can approach 40%.
- Vaccinate initially, and then follow with a booster 3 weeks later, then annual booster before mosquito season. In WV, Spring and Fall prior to onset of vector season.
- Reportable.

VACCINATIONS

Equine diseases can attack suddenly and, without protection, they can be devastating to your horse, lowering performance levels and possibly jeopardizing life. Unfortunately, many horse owners may be unaware of the importance of immunization to protect their horse from disease.

Preventing a disease through a proper vaccination program is far safer, easier and cheaper than treating the disease after the horse is already sick. Vaccinations help protect your horse against diseases by stimulating their immune system to fight back when they are exposed to a virus or bacteria. Vaccinations do not offer immediate protection because the body takes 2-4 weeks to produce protective antibodies against the vaccinated disease. First time vaccinations must be boosted with a second vaccination 2-4 weeks later to strengthen the protective response.

Remember, a complete vaccination program is an essential component to your horse health program.

It is important for you to consult your veterinarian about which diseases you should vaccinate your horse against. He or she is your best source of information regarding your horse's health.

Making the Most of Vaccinations

Take the following steps to ensure the vaccination you administer will be as effective as possible:

- Develop and maintain a vaccination schedule with your veterinarian. (Accurate and complete record keeping is a must for all health care practices.)
- Review and update vaccination program semi-annually.
- If you are administering vaccines yourself, make sure you can do it properly.
- Obtain your vaccines from a reliable source – where they've been kept in a clean, refrigerated environment. If they become contaminated, you could risk an injection-site reaction.
- Follow all label instructions.
- Give only the recommended dose.
- Use sterile syringes.
- Throw away expired medicines.
- Do not use unnecessary vaccines.
- Do not vaccinate sick animals.

Vaccination programs vary according to your horse's specific needs. Variables include the horse's age, environment, exposure risk and geographic region.

Contact your veterinarian to assist you in developing a vaccination schedule for your entire equine herd. Your veterinarian can advise you regarding the individual requirements of your horse. If you own more than one horse, it is important that they all be included in the vaccination program. One unprotected horse in a herd can provide a reservoir of infection to all the others.

If your horse participates in shows, competitive events or just travels with you to a pleasure trail ride, you must take these travel plans into consideration when deciding on an immunization program. Certain vaccines will be important if your horse is exposed to horses from various places. These vaccinations must be given at least two weeks prior to your departure so that your horse will have time to develop immunity.

VACCINATIONS FOR FOALS

****ALL VACCINATION PROGRAMS SHOULD BE DEVELOPED IN CONSULTATION WITH A LICENSED VETERINARIAN****

The two categories below reflect differences in the foal's susceptibility to disease and ability to mount an appropriate immune response to vaccination based on the presence (or absence) of maternal antibodies derived from colostrum. The phenomenon of maternal antibody interference is discussed in the text portion of these guidelines.

CORE VACCINATIONS protect against diseases that are endemic to a region, those with potential public health significance, required by law, virulent/highly infectious, and/or those posing a risk of severe disease. Core vaccines have clearly demonstrated efficacy and safety, and thus exhibit a high enough level of patient benefit and low enough level of risk to justify their use in all equids.

	Foals and Weanlings (<12 months of age) Of mares vaccinated in the prepartum period against the disease indicated	Foals and Weanlings (<12 months of age) Of unvaccinated mare	
DISEASE			COMMENTS
Tetanus	3-dose series: 1st dose at 4-6 months 2nd dose 4-6 weeks after 1st dose 3rd dose at 10-12 months of age	3-dose series: 1st dose at 1-4 months 2nd dose 4 weeks after 1st dose 3rd dose 4 weeks after 2nd dose	
Eastern/Western Equine Encephalomyelitis (EEE/WEE)	3-dose series: 1st dose at 4-6 months* 2nd dose 4-6 weeks after 1st dose 3rd dose at 10-12 months of age, prior to the onset of the next vector season. *Foals in Southeastern USA: The primary vaccination series should be initiated with an additional dose at 3 months of age due to early seasonal vector presence. 3-dose series:	1st dose at 3-4 months* 2nd dose 4 weeks after 1st dose 3rd dose, 60 day interval after 2nd dose *Foals in Southeastern USA: The primary vaccination series should be initiated at 3 months of age due to early seasonal vector presence.	Note: Primary vaccination series scheduling may be amended with vaccinations administered earlier to younger foals that are at increased disease risk due to the presence of vectors. A foal born during the vector season may warrant beginning vaccination at an earlier age than a foal born prior to the vector season.
Rabies	3-dose series: 1st dose at 6 months 2nd dose 4-6 weeks after 1st dose 3rd dose at 10-12 months	3-dose series: 1st dose at 3-4 months 2nd dose 4 weeks after 1st dose 3rd dose at 10-12 months	

VACCINATIONS FOR FOALS, CONT.

DISEASE			COMMENTS
<p style="text-align: center;">West Nile Virus</p>	<p>Foals and Weanlings (<12 months of age) Of mares vaccinated in the prepartum period against the disease indicated</p>	<p>Foals and Weanlings (<12 months of age) Of unvaccinated mare</p>	
	<p><u>Inactivated whole virus vaccine</u> 3-dose series: 1st dose at 4-6 months 2nd dose 4 - 6 weeks after 1st dose 3rd dose at 10-12 months of age, prior to the onset of the next vector season.</p> <p><u>Recombinant canary pox vaccine</u> 3-dose series: 1st dose at 4-6 months of age 2nd dose 4 weeks after 1st dose 3rd dose at 10-12 months of age, prior to the onset of the next vector season.</p> <p><u>Inactivated flavivirus chimera vaccine</u> 3-dose series: 1st dose at 4-6 months of age 2nd dose 4-6 weeks after 1st dose 3rd dose at 10-12 months of age, prior to the onset of the next vector season.</p> <p>Foals in Southeastern USA: Due to early seasonal vector presence, the primary vaccination series should be initiated earlier with the addition of a dose at 3 months of age.</p>	<p><u>Inactivated whole virus vaccine</u> 3-dose series: 1st dose at 3-4 months 2nd dose, 30 days after 1st dose 3rd dose, 60 day interval after 2nd dose</p> <p><u>Recombinant canary pox vaccine</u> 3-dose series: 1st dose at 3 - 4 months of age 2nd dose, 30 days after 1st dose 3rd dose, 60 day interval after 2nd dose</p> <p><u>Inactivated flavivirus chimera vaccine</u> 3-dose series: 1st dose at 3-4 months of age 2nd dose, 30 days after 1st dose 3rd dose, 60 day interval after 2nd dose</p> <p>(If primary series initiated during mosquito vector season, an interval of 3-4 weeks between the 2nd and 3rd doses is preferable to the above described 8 week interval.)</p> <p>Foals in Southeastern USA: Due to early seasonal vector presence, the primary vaccination series should be initiated at 3 months of age.</p>	<p>Note: Primary vaccination series scheduling may be amended with vaccinations administered to younger foals that are at increased risk of exposure due to the presence of vectors.</p> <p>A foal born during the vector season may warrant initiation of the primary vaccination series at an earlier age than a foal born prior to the vector season.</p> <p>Data indicates that maternal antibodies do not interfere with the originally licensed inactivated whole virus vaccine product; however, protection from clinical disease has not been provocatively tested in foals less than 6 months of age with any of the currently licensed West Nile Virus products.</p>

VACCINATIONS FOR FOALS, CONT.

RISK-BASED VACCINATIONS are those having applications which may vary between individuals, populations, and geographic regions. Risk assessment should be performed by, or in consultation with, a licensed veterinarian to identify which vaccines are appropriate for a given horse or population of horses. The listing of a vaccine here is not a recommendation for its inclusion into a vaccination program. Vaccine scheduling is provided for use after it has been determined which, if any, risk-based vaccines are indicated. Note: vaccines are listed in this table in alphabetical order not in order of priority for use.

	Foals and Weanlings (<12 months of age) Of mares vaccinated in the prepartum period against the disease indicated	Foals and Weanlings (<12 months of age) Of unvaccinated mare	
DISEASE			COMMENTS
Anthrax	Not applicable. As it is not recommended to vaccinate mares during pregnancy there will be no foals of mares vaccinated prepartum	No age specific guidelines are available for this vaccine. Manufacturer's recommendation is for primary series of 2 doses administered subcutaneously at a 2 - 3 week interval.	Antimicrobial drugs must not be given concurrently with this vaccine. Caution should be used during storage, handling and administration of this live bacterial product. Consult a physician immediately should accidental human exposure (via mucus membranes, conjunctiva or broken skin) occur.
Botulism	3-dose series: 1st dose 2-3 months of age 2nd dose 4 weeks after 1st dose 3rd dose 4 weeks after 2nd dose	3-dose series: 1st dose 1-3 months of age 2nd dose 4 weeks after 1st dose 3rd dose 4 weeks after 2nd dose	Maternal antibody does not interfere with vaccination; foals at high risk may be vaccinated as early as 2 weeks of age.
Equine Herpesvirus (EHV)	<u>Inactivated or modified live vaccine</u> 3-dose series: 1st dose: 4-6 months of age 2nd dose 4-6 weeks after 1st dose 3rd dose: 10-12 months of age Revaccinate at 6-month intervals	<u>Inactivated or modified live vaccine</u> 3-dose series: 1st dose: 4-6 months of age 2nd dose 4-6 weeks after 1st dose 3rd dose: 10-12 months of age Revaccinate at 6-month intervals	
Equine Herpesvirus (EHV)	<u>Inactivated or modified live vaccine</u> 3-dose series: 1st dose: 4-6 months of age 2nd dose 4-6 weeks after 1st dose 3rd dose: 10-12 months of age Revaccinate at 6-month intervals	<u>Inactivated or modified live vaccine</u> 3-dose series: 1st dose: 4-6 months of age 2nd dose 4-6 weeks after 1st dose 3rd dose: 10-12 months of age Revaccinate at 6-month intervals	

VACCINATIONS FOR FOALS, CONT.

	Foals and Weanlings (<12 months of age) Of mares vaccinated in the prepartum period against the disease indicated	Foals and Weanlings (<12 months of age) Of unvaccinated mare	
DISEASE			COMMENTS
Equine Viral Arteritis (EVA)	Colt (male) foals: Single dose at 6 -12 months of age (see comments).	Colt (male) foals: Single dose at 6 -12 months of age (see comments).	<u>Prior to initial vaccination, colt (male) foals should undergo serologic testing</u> and be confirmed negative for antibodies to EAV. Testing should be performed shortly prior to, or preferably at, the time of vaccination. As foals can carry colostral derived antibodies to EAV for up to 6 months, testing and vaccination should not be performed prior to 6 months of age.
Equine Influenza	<u>Inactivated vaccine</u> 3-dose series: 1st dose at 6 months of age 2nd dose 3 - 4 weeks after 1st dose 3rd dose at 10 - 12 months of age <u>Modified live vaccine</u> 2-dose series administered intranasally: 1st dose at 6-7 months of age 2nd dose at 11-12 months of age <u>Canary pox vector vaccine</u> 2 dose series: 1st dose at 6 months of age 2nd dose 5 weeks after Revaccinate at 6-month intervals.	<u>Inactivated vaccine</u> 3-dose series: 1st dose at 6 months of age 2nd dose 3 - 4 weeks after 1st dose 3rd dose at 10 - 12 months of age <u>Modified live vaccine</u> 2-dose series administered intranasally: 1st dose at 6-7 months of age 2nd dose at 11-12 months of age <u>Canary pox vector vaccine</u> 2 dose series: 1st dose at 6 months of age 2nd dose 5 weeks after Revaccinate at 6-month intervals.	An increased risk of disease may warrant vaccination of younger foals. Because some maternal anti-influenza antibody is likely to be present, a complete series of primary vaccinations should still be given after 6 months of age.
Potomac Horse Fever (PHF)	2-dose series: 1st dose at 5 months of age 2nd dose 3 - 4 weeks after 1st dose	2-dose series: 1st dose at 5 months of age 2nd dose 3 - 4 weeks after 1st dose	If risk warrants, vaccine may be administered to younger foals. Subsequent doses are to be administered at 4-week intervals until 6 months of age.
Rotavirus	Not recommended in foals	Not recommended in foals	

VACCINATIONS FOR FOALS, CONT.

DISEASE			COMMENTS
<p>Strangles <i>Streptococcus equi</i></p>	<p><u>Killed vaccine</u> 3-dose series: 1st dose at 4-6 months of age 2nd dose 4-6 weeks after 1st dose 3rd dose 4-6 weeks after</p> <p><u>Modified live vaccine</u> 3-dose series administered intranasally: 1st dose at 6-9 months of age 2nd dose 3-4 weeks after 1st dose 3rd dose at 11-12 months of age</p>	<p>Foals and Weanlings (<12 months of age) Of mares vaccinated in the prepartum period against the disease indicated</p> <p>Foals and Weanlings (<12 months of age) Of unvaccinated mare</p> <p><u>Killed vaccine</u> 3-dose series: 1st dose at 4-6 months of age 2nd dose 4-6 weeks after 1st dose 3rd dose 4-6 weeks after</p> <p><u>Modified live vaccine</u> 3-dose series administered intranasally: 1st dose at 6-9 months of age 2nd dose 3-4 weeks after 1st dose 3rd dose at 11-12 months of age</p>	<p>Vaccination is <u>not</u> recommended as a strategy in outbreak mitigation.</p> <p>If risk warrants, the modified live vaccine (MLV) may be safely administered to foals as young as 6 weeks of age. However, vaccine efficacy in this age group has not been adequately studied. If MLV is administered to younger foals, a 3rd dose of vaccine should then be administered 2-4 weeks prior to weaning.</p> <p>The risk of vaccine-associated adverse events is increased when the MLV product is administered to young foals.</p>

Vaccinations for Foals developed by the American Association of Equine Practitioners Infectious Disease Committee, 2008 and updated by the AAEP Biological & Therapeutic Agents Committee, 2012.

VACCINATIONS FOR ADULT HORSES

****ALL VACCINATION PROGRAMS SHOULD BE DEVELOPED IN CONSULTATION WITH
A LICENSED VETERINARIAN****

CORE VACCINATIONS protect against diseases that are endemic to a region, those with potential public health significance, required by law, virulent/highly infectious, and/or those posing a risk of severe disease. Core vaccines have clearly demonstrated efficacy and safety, and thus exhibit a high enough level of patient benefit and low enough level of risk to justify their use in all equids.

	BROODMARES	Other Adult Horses (>1 year of age) previously vaccinated against the disease indicated	Other Adult Horses (> 1 year of age) unvaccinated or lacking vaccination history
DISEASE			
Tetanus	<p>Previously vaccinated: Annual, 4 - 6 weeks pre-partum</p> <p>Previously unvaccinated or having unknown vaccination history: 2-dose series 2nd dose 4-6 weeks after 1st dose. Revaccinate 4-6 weeks pre-partum</p>	Annual	<p>2-dose series 2nd dose 4 - 6 weeks after 1st dose. Annual revaccination</p> <p>COMMENTS Booster at time of penetrating injury or prior to surgery if last dose was administered over 6 months previously</p>
Eastern / Western Equine Encephalo- myelitis (EEE/WEE)	<p>Previously vaccinated: Annual, 4 - 6 weeks pre-partum</p> <p>Previously unvaccinated or having unknown vaccination history: 2-dose series 2nd dose 4 weeks after 1st dose. Revaccinate 4-6 weeks prepartum.</p>	Annual - spring, prior to onset of vector season.	<p>2-dose series 2nd dose 4 - 6 weeks after 1st dose. Revaccinate prior to the onset of next vector season.</p> <p>COMMENTS Consider 6-month revaccination interval for: 1) Horses residing in endemic areas 2) Immunocompromised horses.</p>
West Nile Virus (WNV)	<p>Previously vaccinated: Annual, 4 - 6 weeks pre-partum</p> <p>Unvaccinated or lacking vaccination history: It is preferable to vaccinate naive mares when open. In areas of high risk, initiate primary series as described for unvaccinated, adult horses.</p>	Annual	<p>Single dose Annual revaccination</p> <p>COMMENTS *Due to the relatively long duration of immunity, this vaccine may be given post-foaling but prior to breeding and thus reduce the number of vaccines given to a mare pre-partum.</p>

VACCINATIONS FOR ADULT HORSES

	BROODMARES	Other Adult Horses (>1 year of age) previously vaccinated against the disease indicated	Other Adult Horses (> 1 year of age) unvaccinated or lacking vaccination history
DISEASE			
Rabies	Annual, 4 - 6 weeks pre-partum OR Prior to breeding*	Annual	Single dose Annual revaccination
<p>COMMENTS</p> <p>*Due to the relatively long duration of immunity, this vaccine may be given post-foaling but prior to breeding and thus reduce the number of vaccines given to a mare pre-partum.</p>			
<p>RISK-BASED VACCINES are selected for use based on risk assessment** performed by, or in consultation with, a licensed veterinarian. Use of these vaccines may vary between individuals, populations, and/or geographic regions.</p> <p>Note: Vaccines are listed in this table in alphabetical order, not in order of priority for use.</p> <p>**Refer to “Principles of Vaccination” in main document for criteria used in performing risk assessment.</p>			
Anthrax	Not recommended during gestation	Annual	2-dose series 2nd dose 3-4 weeks after 1st dose. Annual revaccination.
<p>COMMENTS</p> <p>Do not administer concurrently with antibiotics. Use caution during storage, handling and administration. Consult a physician immediately if human exposure to vaccine occurs by accidental injection, ingestion, or otherwise through the conjunctiva or broken skin.</p>			
Botulism	Previously vaccinated: Annual, 4-6 weeks pre-partum Previously unvaccinated or having unknown vaccination history: 3-dose series <ul style="list-style-type: none"> • 1st dose at 8 months gestation. • 2nd dose 4 weeks after 1st dose. • 3rd dose 4 weeks after 2nd dose. 	Annual	3-dose series <ul style="list-style-type: none"> • 2nd dose 4 weeks after 1st dose. • 3rd dose 4 weeks after 2nd dose. Annual revaccination

VACCINATIONS FOR ADULT HORSES

	BROODMARES	Other Adult Horses (>1 year of age) previously vaccinated against the disease indicated	Other Adult Horses (> 1 year of age) unvaccinated or lacking vaccination history
DISEASE			
Equine Herpesvirus (EHV)	<p>3-dose series with product labeled for protection against EHV abortion.</p> <p>Give at 5, 7 and 9 months of gestation.</p>	<p>Annual (see comments)</p>	<p>3-dose series</p> <ul style="list-style-type: none"> • 2nd dose 4-6 weeks after 1st dose. • 3rd dose 4-6 weeks after 2nd dose. <p>COMMENTS</p> <p>Consider 6-month revaccination interval for:</p> <ul style="list-style-type: none"> • Horses less than 5 years of age. • Horses on breeding farms or in contact with pregnant mares. • Performance or showhorses at high risk.
Equine Viral Arteritis (EVA)	<p>Not recommended unless high risk.</p>	<p>Annual</p> <p>Stallions, teasers: Vaccinate 2 - 4 weeks before breeding season.</p> <p>Mares: Vaccinate when open.</p>	<p>Single dose (see comments)</p> <p>COMMENTS</p> <p><u>Prior to initial vaccination, intact males and any horses potentially intended for export should undergo serologic testing</u> and be confirmed negative for antibodies to EAV. Testing should be performed shortly prior to, or preferably at, the time of vaccination.</p>
Influenza	<p><i>Previously vaccinated:</i> <i>Inactivated vaccine:</i> Semi-annual with one dose administered 4 - 6 weeks pre-partum. <i>Canary pox vector vaccine:</i> Semi-annual with one dose administered 4 - 6 weeks pre-partum. <i>Previously unvaccinated or having unknown vaccination history:</i> <i>Inactivated vaccine:</i> 3-dose series</p> <ul style="list-style-type: none"> • 2nd dose 4 - 6 weeks after 1st dose. • 3rd dose 4 - 6 weeks pre-partum. <p><i>Canary pox vector vaccine:</i> 2-dose series</p> <ul style="list-style-type: none"> • 2nd dose 4 - 6 weeks after 1st dose but no later than 4 weeks pre-partum. 	<p>Horses with ongoing risk of exposure: Semi-annual.</p> <p>Horses at low risk of exposure: Annual.</p>	<p><i>Modified live vaccine:</i> Single dose administered intranasally. Revaccinate semi-annually to annually. <i>Inactivated vaccine:</i> 3-dose series</p> <ul style="list-style-type: none"> • 2nd dose 4 - 6 weeks after 1st dose. • 3rd dose 3 - 6 months after 2nd dose. <p>Revaccinate semi-annually to annually. <i>Canary pox vector vaccine:</i> 2-dose series 2nd dose 4 - 6 weeks after 1st dose. Revaccinate semi-annually.</p>

VACCINATIONS FOR ADULT HORSES

	BROODMARES	Other Adult Horses (>1 year of age) previously vaccinated against the disease indicated	Other Adult Horses (> 1 year of age) unvaccinated or lacking vaccination history
DISEASE			
Potomac Horse Fever (PHF)	<p><i>Previously vaccinated:</i> Semi-annual, with one dose given 4 - 6 weeks prepartum. <i>Previously unvaccinated or having unknown vaccination history:</i> 2-dose series</p> <ul style="list-style-type: none"> • 1st dose 7-9 weeks prepartum. • 2nd dose 4-6 weeks prepartum 	Semi-annual to annual	<p>2-dose series 2nd dose 3-4 weeks after 1st dose. Semi-annual or annual booster</p>
Rotavirus	<p>3-dose series</p> <ul style="list-style-type: none"> • 1st dose at 8 months gestation. • 2nd and 3rd doses at 4-week intervals thereafter. 	Not applicable	Not applicable
Strangles <i>Streptococcus equi</i>	<p><i>Previously vaccinated: Killed vaccine containing Mprotein):</i> Semi-annual with one dose given 4 - 6 weeks pre-partum. <i>Previously unvaccinated or having unknown vaccination history: Killed vaccine containing Mprotein):</i> 3-dose series</p> <ul style="list-style-type: none"> • 2nd dose 2 - 4 weeks after 1st dose. • 3rd dose 4 - 6 weeks prepartum. 	Semi-annual to annual	<p><i>Killed vaccine containing M-protein:</i> 2-3 dose series</p> <ul style="list-style-type: none"> • 2nd dose 2 - 4 weeks after 1st dose. • 3rd dose (where recommended by manufacturer) 2 - 4 weeks after 2nd dose. <p>Revaccinate semi-annually. <i>Modified live vaccine:</i> 2-dose series administered intranasally. 2nd dose 3 weeks after 1st dose. Revaccinate semi-annually to annually.</p>
		<p>COMMENTS</p> <p>A revaccination interval of 3 - 4 months may be considered in endemic areas when disease risk is high.</p>	
		<p>COMMENTS</p> <p><u>Prior to initial vaccination, intact males and any horses potentially intended for export should undergo serologic testing</u> and be confirmed negative for antibodies to EAV. Testing should be performed shortly prior to, or preferably at, the time of vaccination.</p>	
		<p>COMMENTS</p> <p>Vaccination is not recommended as a strategy in outbreak mitigation.</p>	

How To Give Your Horse An Intramuscular Injection

Most horse owners occasionally must give their horse an injection. Fortunately, giving an injection to a horse is an easily learned skill.

Determining what type of medication the horse needs and how to administer the medication is the critical part of the process and should be determined by your veterinarian.

There are four basic types of injections used with horses.

- Intravenous injections are given into a vein.
- Intradermal injections are administered into the skin.
- Subcutaneous injections are given underneath the skin.
- Intramuscular (IM) injections are given deep into a large muscle mass where the drug is absorbed slowly into the horse's system.

Intramuscular injections are the most common type used in horses and are the focus of this circular. Although a few horses are “needle shy” and object to injections, most horses quietly accept a properly given IM injection. By following the methods outlined in this circular, horse owners should be able to safely and efficiently give an IM injection to a horse.

Safety First

Consult Your Veterinarian

Although giving an IM injection to the horse is a routine procedure, it is not without risk to the horse. Always consult your veterinarian about the type of medication, the dosage, and the route (IM, intravenous, subcutaneous, or intradermal) before giving any drug to a horse.

Improper drug handling and injection techniques can result in infections such as needle abscesses, life-threatening drug reactions such as anaphylactic (allergic) shock, and ineffective drugs or vaccines. Have your veterinarian discuss signs of drug reaction in the horse and how to handle drug reactions.

Precautions For Handlers

Giving an injection to a horse also can pose some risk to the human handler. A horse which seriously objects to the injection can easily injure the handler. Also, some drugs used in horses can be absorbed directly through human skin or can produce severe reactions if accidentally injected into humans by needle punctures.

Make sure to ask your veterinarian about any safety precautions you should take when handling a drug or giving an injection.

Medication Precautions

Before giving any injection, read the drug label on the bottle. It is a good practice to check the label before you draw the medication out of the bottle and again before you inject the drug into the horse. Check the drug name to ensure it is the one recommended by your veterinarian. Remember, the generic name for a drug and the brand name may differ.

Dosage

Next check the recommended dosage. This may differ from the instructions given by your veterinarian. If you have any questions about the dosage, get clarification from your veterinarian before giving the injection.

Route Of Injection

Check the recommended route of injecting the drug. Again, if you have questions, check with your veterinarian.

Drug Handling And Storage

Follow the recommended method of drug storage, drug handling procedures, expiration date, and precautions. Do not mix individually packaged drugs in the same injection. Compounds in one drug preparation may inactivate or decrease the efficacy of the other drug. It is better to play it safe and give the horse two separate injections.

Sterile Equipment

Next, make sure you use a sterile needle and syringe. Individually packaged, disposable sterile needles and syringes are the easiest way to ensure sterile equipment. Open the packages immediately before use, and properly dispose of them immediately after use. Never reuse a needle because a contaminated needle can easily introduce an infection into a horse.

Never use the same needle or syringe on more than one horse. Infectious diseases can be passed easily from horse to horse this way.

Size Of Needle

The size of the needle depends on the medication being injected. A large-diameter needle (18 gauge) works best with thick solutions such as penicillin, while a smaller-diameter needle (20 to 21 gauge) can handle a thin, watery solution. Remember, a larger gauge number equals a smaller diameter.

Larger gauge needles may break more easily than smaller gauge. If your horse reacts adversely to the injection and breaks the needle, you should make sure you can find both pieces of the needle. If you suspect a piece of needle may be retained in the horse's muscle, consult your veterinarian. Most IM shots are given to adult horses with a 1½-inch needle so that the medication is injected deep into the muscle mass. Foals are usually given IM injections with a 1-inch needle. Collect used needles, with their plastic covers attached, and syringes in a resealable plastic bag or bottle and take them to your veterinarian's office for disposal in an approved medical waste container.

Site Preparation

Antiseptic cleansing of the injection site is not commonly practiced by most horse owners or veterinarians. They simply brush any noticeable dirt from the injection area and insert the needle into dry skin. There is no noticeable increase in infection with this method when compared with a method that uses an antiseptic cleansing agent. Studies have shown alcohol is a weak antiseptic that has very little effect on the cleanliness of the injection site. To thoroughly clean the injection site, the horse's hair must be shaved, the area scrubbed with an antiseptic soap which must remain in contact with the skin for at least 2 minutes, and then rinsed with alcohol. This is impractical for most horse owners and most people do not want their horse shaved at the injection site. Using a sterile needle and syringe is more important in preventing injection site infections than thoroughly cleaning the site.

Horse Handling

If you are unsure how your horse will react to the injection, it is best to untie the horse and hold its lead line or have someone else hold it. A tied horse which overreacts to the injection may pull back against the tie rope. The resulting pressure on the horse's head may cause it to panic, injuring the horse or the handler. If the horse does pull back during the injection, simply move with the horse and continue the injection when it calms down. If the horse tries to kick, pull its head toward you. This automatically swings its rear end away from you. Some seriously needle-shy horses may need to be distracted by a twitch (a restraint device which tightly grips the horse's upper lip and nose) or the chain end of a stallion lead run through the mouth or over the upper gum while the injection is given.

Injection Sites

The site of the IM injection is important for the safety of the horse and the handler. Choose a large muscle mass that is actively used by the horse. This promotes drug absorption and decreases the chance of swelling and pain at the injection site. The site should allow the needle to be placed deep in the muscle without danger of hitting bone, ligaments, nerves, or blood vessels. Also, the injection site should allow the handler to be in a relatively safe position if the horse objects to the injection.

Base Of The Neck

The base of the horse's neck is an injection site favored by many horse handlers because it allows the handler to remain in a relatively safe area by the horse's shoulder.

This site is a triangle defined by the nuchal ligaments along the crest (top) of the horse's neck, the cervical vertebrae which form a backward S-shaped curve from the horse's poll (between its ears) toward the point of the shoulder, and the scapula (shoulder blade) (see Figure 1).

To locate the appropriate injection area, put the heel of your hand on the base of the horse's neck where it joins the shoulder, about midway between the crest and the bottom of the neck. The area covered by your palm is the injection site. Higher toward the crest you risk hitting the nuchal ligaments, and lower toward the bottom of the neck is where the cervical vertebrae and blood vessels are located. Make sure you stay near the base of the neck rather than injecting higher up the neck toward the ears. This again avoids ligaments, bone, and blood vessels and gives a larger muscle mass for the injection.

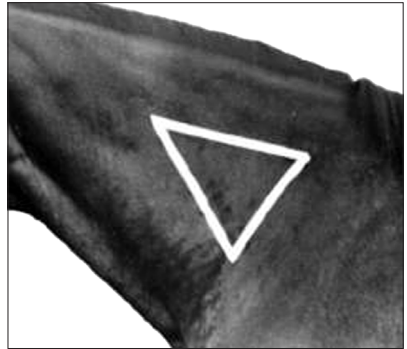


Figure 1. The triangle indicates the area for IM injections in the neck. Keeping near the base of the neck helps prevent muscular soreness.

Buttocks Region

Below the point of the horse's buttocks is another large muscle mass (semitendinosus) which is a good injection site (see Figure 2). Because this muscle is used every time the horse takes a step, it is a good site for drugs which might cause swelling and pain at the injection site. It is the preferred injection site in foals because it is one of the larger muscles on a foal's body.

The major drawback to this injection site is that it puts the handler within kicking range of the horse and should be used only by experienced horse handlers. Horse handlers should remember that horses will kick at the person inflicting pain rather than at the painful area. You are not safe from being kicked if you stand on the left side of the horse and reach across the horse to inject its right buttock. The horse will kick at you with its left hind leg rather than kick at the site of the injection with its right hind leg. To find this injection site simply locate the bony protrusion which makes up the point of the buttocks (tuber ischii). Drop about 1 inch below the tuber ischii and inject anywhere in the large muscle mass along the back of the leg.

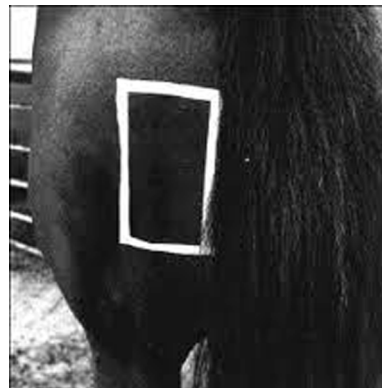


Figure 2. The rectangle outlines the area for an injection in the buttocks. Note that top border of this injection site begins one inch below the point of the buttocks.

Pectoral Muscles

The pectoral muscles in the chest are another possible injection site (see Figure 3). This site does put the handler at some risk because the handler must lean over in front of the horse to see the site clearly, putting him in a position where he could be easily bitten, struck with a front foot, or run over by the horse. The pectoral muscles tend to become sore easily and generally are only used when the horse is receiving prolonged treatment and is sore in other injection sites. This injection site is the bunchy muscles in the lower half of the chest between the tops of the forelegs.



Figure 3. The rectangle outlines the area for an injection in the pectoral muscles. Using this area can put the handler in a unsafe position and can result in stiff, sore muscles in the horse.

Top Of The Rump

Many horse handlers use the top of the rump (gluteal muscles) as an injection site. This is a large, frequently used muscle mass which allows the handler to stand in a relatively safe area while giving the injection.

The disadvantage to this site is that it has very poor drainage if a needle abscess develops at the injection site. An infection at this site tends to spread up the loin and back and cannot be treated easily. Therefore it is not a recommended injection site. However, it can be used as a last resort for a difficult horse or a horse which is sore in all other injection sites.

The proper location of this injection site is the intersection of a line between the tail head and point of hip and a line between the top of the croup and the point of the buttocks.

Injection Techniques

There are several methods of giving the horse an IM injection. The method you use will depend on your experience, the injection site, and the horse's attitude. There are a few basic rules to follow no matter which injection method you use.

1. Insert the needle perpendicular to the skin (do not slant the needle upward or downward) and sink the needle into the muscle all the way to the hub (the place where it attaches to the syringe). This ensures that the needle will not shift during the injection and that it is deep into the muscle mass (see Figure 4).

2. Always aspirate (pull back on the plunger) before injecting the drug to ensure that you are not in a blood vessel. Some commonly used drugs can kill a horse if accidentally injected into the blood stream. If blood collects at the hub of the needle when you place it into the horse or you draw blood when you aspirate the syringe, then you must pull the needle out and redirect it before giving the injection. It is safest to pull the needle out completely and start over in a different area with a clean needle. However if you have a needle shy horse, you can pull the needle partially out of the skin, change the injection angle, and push it back into the muscle. Many needle shy horses object to the needle going through the

skin, which is the painful part of the injection, and will be relatively quiet once the needle is through the skin. Remember to aspirate again when using a clean needle or redirecting a needle to make sure you are not in a blood vessel.

3. Insert the needle quickly and decisively. A fast stab is easier for you and less painful to the horse than inserting the needle slowly into the skin.



Figure 4. When injecting the needle, use a quick, decisive thrust that sinks the needle in the muscle to the hub.

4. Be prepared for an adverse drug reaction. Anaphylactic shock usually occurs rapidly and the horse may die within minutes. Discuss signs and proper treatment of anaphylactic shock with your veterinarian. He or she may leave epinephrine to be administered in case of anaphylactic reactions.

Make sure you have the epinephrine on hand when you are giving injections. If you have to go somewhere to retrieve the epinephrine, the horse may die before you can give it the epinephrine. Observe the horse for any signs of allergic reaction for about 30 minutes after giving the injection. Usual signs of allergic reactions such as swelling around the injection site, hives, increased respiratory rate, depression, or agitation indicate that the horse may be allergic to the medication. Discontinue its use and consult your veterinarian immediately.

5. If you are giving large, repeated doses of a medication, rotate injection sites (such as left neck, right neck, left buttock, right buttock) to reduce soreness in any one area of the horse's body. Extremely large doses (more than 15 to 20 cc) of a thick or irritating substance such as penicillin should be split into more than one injection to reduce soreness, no more than 10cc at injection site.

It is also a good practice to use more than one injection site (for example, the neck and the buttocks) when giving several separate medications or vaccines at once. Then if the horse has a drug reaction it may be easier to identify the drug that caused the problem.

IM Injection Procedure

The general procedure for an IM injection is to

- remove the needle from the syringe,
- set the needle into the muscle,
- attach the syringe,
- aspirate, and
- slowly insert the medication.

Novice horse owners often worry about injecting air into the horse when the needle is inserted without the syringe attached. However this amount of air injected into the horse is minor and will not harm it.

A quiet horse may allow you to simply pop the needle into its neck or buttocks. However, if the horse needs a little distraction there are several methods of easing the needle stick. One good method is to pinch up the horse's skin next to the injection site for a few seconds prior to inserting the needle. While holding the pinched skin, insert the needle next to the pinched area.

Another method is to hold the needle between the thumb and forefinger. Tap the horse vigorously 2 to 3 times with the side of your palm in the injection site and without breaking your rhythm, rotate your hand and insert the needle.

However, some horses may learn to associate the taps with the following needle stick, and leave the area prior to the needle stick.

A similar method is rubbing against the direction of horse's hair growth several times while holding the needle between the thumb and forefinger.

Insert the needle on the last rub.

SUMMARY

Giving your horse an IM injection is an easily learned technique. By observing proper safety rules and injection techniques, you can often avoid infections and adverse drug reactions. A summary of the IM injection procedure follows.

1. Consult your veterinarian about the type of drug needed, route of administration, dosage, drug handling precautions, and adverse drug reactions.
2. Read the drug label.
3. Use only sterile needles and syringes.
4. Untie the horse if you are not sure of its reaction.
5. Insert the needle straight into the muscle and up to the hub.
6. Attach the syringe to the needle.
7. Aspirate (pull back) on the plunger. If blood appears in the syringe, remove the needle and try again with a clean one.
8. Slowly inject the medication.
9. Observe the horse for signs of adverse drug reaction. Make sure you have epinephrine ready for injection in case of anaphylactic shock.
10. Properly dispose of your needle and syringe in a medical waste container.

Rhinopneumonitis and equine influenza vaccines should be given every 60-90 days if your horse travels regularly. Both of these are highly contagious respiratory diseases which are spread from horse to horse by sneezing and coughing.

It is also important to know that all states have their own vaccination and health requirements. You should contact the state veterinarian of your destination for their state health regulations.

PREVENTION OF MOSQUITO BORN ILLNESS

It is generally acknowledged in the horse community that Eastern and Western Encephalomyelitis, West Nile, rabies and tetanus Toxoid vaccines are a must every year, for every horse. Eastern and Western Encephalomyelitis as well as West Nile virus are carried by mosquitoes and tend to occur primarily during the summer. Routine vaccinations should take place annually one month prior to mosquito season. The USDA recommends that horse owners not only vaccinate their animals but implement safeguards to prevent animal exposure to mosquitoes.

Prevention of infection

To prevent mosquitoes from affecting your horses:

- House horses indoors during peak periods of mosquito activity (dusk to dawn).
- Avoid turning on lights inside the stable during the evening and overnight. Mosquitoes are attracted to lights.
- Place incandescent bulbs around the perimeter of the stable to attract mosquitoes away from horses. Black lights do not attract mosquitoes well.
- Remove all birds, including chickens that are in or close to the stable.
- Look around the property periodically for dead birds, such as crows. Any dead birds should be reported to the local health department. Use rubber gloves to handle dead birds or use an implement, such as a shovel.
- Eliminate areas of standing water on your property. Shallow standing water, used tires, manure storage areas, and drainage areas with stagnant water are ideal mosquito breeding places.
- Topical preparations containing mosquito repellents are available for horses. Read the product label before using and following instructions.
- Use fans on horses while in the stable to help deter mosquitoes.
- Fog stable premises with a pesticide in the evening to reduce mosquitoes. Read directions carefully before using.

PARASITES

Internal Parasites (Worms)

The fact is that almost all horses have internal parasites. If left untreated, bots and worms can rob a horse of precious blood nutrients and energy. A parasite-ridden horse can suffer permanent damage to blood vessels and intestines that can cause malnutrition, colic, chronic digestive problems and undermine athletic potential. A horse that is not dewormed regularly and effectively often has a dull hair coat, dull attitude, potbelly, persistent winter coat, more frequent episodes of colic and poor performance.

All horses with the opportunity to graze may be infected with small strongyles which account for 95% of the eggs seen in equine manure. **Checking a fecal egg count on a regular basis is the most important thing you can do to improve your horse's parasite control program.** It is recommended that a fecal egg count be done two weeks before the date you plan to deworm, so that the appropriate dewormer or antihelminth can be used once results are available.

Horses should ideally have fecal examinations performed 1-2 times a year to determine what kind of parasite load that horse is experiencing and if there appears to be any resistance (if the horse has been dewormed four times and still has a high fecal egg count there may be some resistant worms on the farm). If you have any questions concerning a particular worm or drug, consult your veterinarian. Parasite fecal checks by a veterinarian are always a good idea.

You may wish to do a post-treatment fecal check to see if the dewormers you are using are doing their job. The routine annual fecal exam should be performed two weeks after treatment to determine if there is a problem with a specific parasite not normally covered by these dewormers.

Deworming products come in paste, liquid, pellet and powder forms. The easiest of these to administer is the paste. The directions are easy to follow and safe when used as directed. It is the chemical ingredient in a dewormer which determines what product you purchase.

Dewormers

There are several types of deworming compounds: Ivermectin, Moxidectin, Fenbendazole, Pyrantels (Pyrantel Pamoate), and Quaziquantels. Each compound works a little differently in the horse to destroy internal parasites, and each plays a different role in a rotational deworming program. **It is advised that you read and follow all directions, useage, and precautions written on the drug label. Not all dewormers are safe for pregnant or lactating mares.**

Ivermectin

Trade names include Eqvalan, Zimecterin, Rotation 1 and others. At the approved dose, Ivermectin is effective against:

- Large strongyles: *Strongylus edentatus*, *Strongylus equines* and *Strongylus vulgaris* (adult and migrating)
- Small strongyles or cyathostomes (adults only)
- Stomach worms: *Trichostrongylus axei*, *Habronema spp.*

Ivermectin, cont.

- Adult and L4 pinworms: *Oxyuris equi*
- Adult Ascarids: *Parascaris equorum*
- Neck Threadworm Microfilaria: *Onchocerca Cervicalis*
- Bots (Oral and Gastric Stages): *Gasterophilus spp.*

Moxidectin

Trade name: Quest. At the approved dose, Moxidectin is effective against:

- Large strongyles: *Strongylus edentates* (adults and migrating)
- *Strongylus equines* and *Strongylus vulgaris* (adult and migrating)
- Small strongyles or cyathostomes (adult and L4)
- Hairworms: *Trichostrongylus axei*
- Adult and immature pinworms: *Oxyuris equi*
- Adult and immature ascarids: *Parascaris equorum*
- Bots (2nd and 3rd instars): *Gasterophilus spp.*

Fenbendazole

At the approved dose, Fenbendazole is effective against:

- Large strongyles: *strongylus edentates*, *Strongylus equines* and *Strongylus vulgaris*
- Small strongyles or cyathostomes
- Pinworms: *Oxyuris equi*
- Ascarids: *Parascaris equorum*

Pyrantel Pamoate

Trade name: Strongid. At the approved dose Pyrantel Pamoate is effective against:

- Large strongyles: *Strongylus edentates*, *Strongylus equines* and *Strongylus vulgaris*
- Small strongyles or cyathostomes
- Pinworms: *Oxyuris equi*
- Ascarids (Large roundworms): *Parascaris equorum*

In addition, pyrantel is somewhat effective on small strongyles resistant to benzimidazoles.

Praziquantel

Trade names include: EquiMax, Zimectrin Gold, and Quest Plus. Praziquantel is a compound introduced into the U.S. equine market during the year 2003, and is being used in combination with Ivermectin or Moxidectin. Praziquantel is highly effective in removing tapeworms.

***Remember to read all drug labels carefully as not all dewormers are approved for pregnant or lactating mares.**

COMMON HEALTH PROBLEMS

External parasites: flies and mosquitoes – many commercial products are available to help control and repel these pests. Also, good horse keeping practices, such as manure removal and grooming are helpful.

Lice: bloodsucking parasites which are very irritating; can debilitate a horse from blood loss. They are most active in spring.

Umbilical Hernia: Usually present at birth or appears within a few weeks. Considered to be inherited, can also be caused by the umbilical cord breaking off too close to the body wall, poor nutrition, excessive straining due to constipation or foal diarrhea. Successfully treated when found early. Consult your veterinarian.

Thrush: a fungus much like athlete's foot. It involves the frog, clefts and sole of the hoof. It is characterized by black discharge with an offensive odor. Left untreated, can develop into a major problem.

Rain Rot: caused by bacteria. Usually found on unsheltered animals exposed to long periods of wet weather; also poorly ventilated stables where moisture retention and condensation are a problem. Rain rot is characterized by hair loss, skin sores, crusty scabs and flaking. Getting animals dry, treating with antibacterial shampoos and ointments, and injectible antibiotics are some recommended treatments.

Colic: Any pain or discomfort arising from the gastrointestinal tract. Colic is the #1 killer of horses. Since a horse cannot vomit, great pressure is placed on the stomach when problems arise. True colic, involving the intestines or stomach, can be caused by many different things:

1. Gas distension.
2. Foreign objects/impactions (manure, hair, mineralized rock, lawn clippings, sand, etc.)
3. Displaced bowel (twists)
4. Infectious agents (Salmonella)
5. Parasites (small and large Strongyles) - This is the #1 cause of colic in a foal
6. Anything that compromises the blood supply to the intestines
7. Tumors in an old animal
8. Ulcers
9. Sand

Risk Factors: Many times it is not known why an animal colics. Here are a few possibilities:

1. Changes in environment or feed.
2. Changes in weather.
3. Changes in management or housing.
4. Anything that causes the horse to stop drinking.

Clinical Signs: (One or all of these signs can be present.) The horse may act uncomfortable or uneasy and play with the feed or water bucket. The horse often sweats, rolls, paws, and even kicks at its abdomen. Curling of the lips, turning of the head towards the flank, and stretching are often seen. Some of the more severe signs include getting up and down aggressively, rolling to the point of injury, and severe lethargy. If one or more of the symptoms is present, call your veterinarian immediately.

1. Information to know when calling the veterinarian: It is important to begin with an overall evaluation of the horse, reflecting on the past history and assessing the severity of the pain. Evaluate the horse's vital signs and compare with them with horses normal vital signs. It is a good idea to know what your specific horses "normal vital signs" are when they are healthy, so that you can easily compare signs when sick or injured. Have on hand your health records with a good history of past de-worming and previous treatments, as well as when the horse last defecated.

The following are some things that can be done before the veterinarian arrives:

2. Keep the horse from consuming any more feed.
3. Allow the horse to do some light walking, particularly if the animal is rolling and is likely to injure itself.

* Be aware that excessive walking may cause the horse to overexert and lead to exhaustion.

Prevention: Often it is impossible to prevent every incident of colic. However, being a conscientious and responsible owner can go a long way in preventing this problem. Good management and disease prevention practices are essential. Good nutrition, good water, and consistent de-worming are highly recommended. When a horse is thought to have colic, quick and appropriate action on the owner's part can result in a more successful outcome.

COMMON PROCEDURES

Castration: surgical removal of the testicles. Only the best horses, meaning horses correct in confirmation and disposition, should be kept for breeding. Most male horses are castrated between the ages of one and two years. This procedure renders animal incapable of reproduction, improves animals' disposition, decreases aggressive tendencies. Fall is the optimal season for castration due to low fly population and cooler weather.

DENTAL CARE

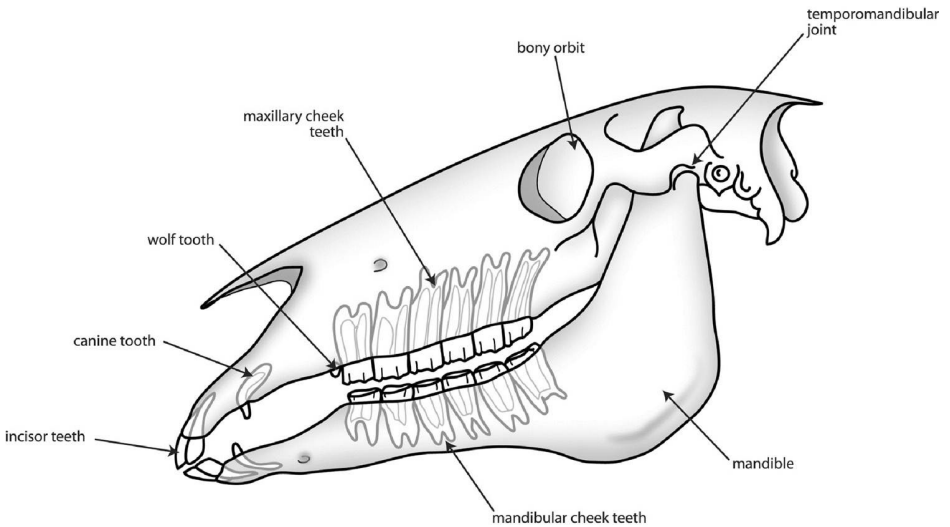
Dental Problems and Tooth Care

Horse's teeth are often neglected and do not receive proper dental care. It is important to include a routine dental exam in your yearly maintenance plan. This can be done by your veterinarian or by an equine dentist.

There are several factors which make an annual check up necessary.

- Horse's teeth grow throughout their entire life.
- Horse's chew from side to side, causing wear and sharp edges to appear.
- Horse's age.

The following diagrams illustrate a horse's teeth.



With continuous growth and chewing, rough/sharp edges develop causing gum irritation. Also projections, called hooks, can develop causing cuts in the cheek and tongue. These problems can be treated or even prevented by having your horse's teeth filed. This procedure is called floating. The rate of tooth growth varies with age. Young horses should be checked at one year of age. This is the time many potential problems can be spotted and prevented. After this, a yearly exam is suggested.

A common problem in young horses is wolf teeth. Wolf teeth are small round teeth that grow between the canine teeth and the premolars (cheek teeth). Some horses do not get wolf teeth. It is important to check your horse before you start training. The wolf teeth are located right where the bit will set in your horse's mouth and may need to be extracted and the teeth floated by your dental professional before a bit is introduced into a horse's training. Contact with the bit will cause irritation and make your horse uncomfortable.

Horses who are experiencing mouth pain may exhibit many signs which will help you find the problem. Some of these are:

- Dropping feed while chewing.
- Chewing with an outstretched neck or chewing when no food is present.
- Head tossing or resisting the bit.
- Excessive drooling, smacking of the lips or bleeding.
- Weight loss.
- Colic

After it has been determined that the teeth may be a problem, professional help is required to properly diagnose the extent of the dental problems and then provide adequate treatment. There are different types of services and skills that can be found in the equine industry. Currently, there are many veterinarians that do nothing but equine dentistry. Many of these practitioners use very specialized tools that help them float a horse's teeth efficiently and thoroughly. Many veterinarians also use sedation to help make the procedure more successful. Do not be surprised if a thorough dental exam and float takes 30-45 minutes or more to complete.

FOOT CARE

The horse's hoof is grown from the coronary band (where hoof and skin meet) down to the ground. This is a constant process that varies in rate depending on the nutrition a horse receives and the temperature/moisture the foot is exposed to. Good nutrition and warm, moist conditions generate the most growth, while poor nutrition and cold weather slow growth down.

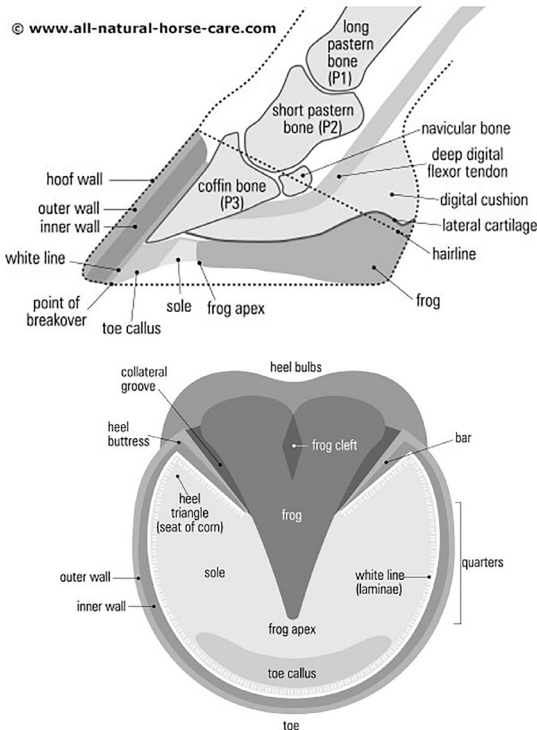
In the wild, horses use the ground they travel on to control the rate of hoof growth. Today, most horses do not have a choice of the ground they have available to them. So, the animal must depend on his owner to provide good hoof care.

For the young horse, proper hoof care starts soon after the animal is born. You should begin to handle your foal's feet, working your way up to actually being able to pick its' foot up and hold it. This process takes time and cannot be accomplished in one day.

When you can pick up all four feet and your animal is comfortable with this process, it is a good idea to have a farrier inspect its' feet. This is usually done at about two months of age and at this time corrective trimming can be started if needed. Remember, it is not the farrier's job to train your horse to stand and become comfortable with the process of someone handling their feet.

For all horses, good hoof care starts with cleaning out the foot with a hoof pick on a regular basis. This is done to remove any accumulated debris, such as old bedding, stones or sticks. This is a good time to inspect for injury or infection and to determine if the hoof needs trimming or shoeing.

The hoof is divided into three main parts: the wall, sole and frog.



WALL: The part we see when the horse has its' foot on the ground. This protects the foot on the front and sides. It extends from the edge of the hair just above the coronary band to the ground. The thickness of this wall varies with the size and breed of the horse. In the front feet, it is the thickest at the toe. There is little difference in wall thickness in the hind hooves.

SOLE: which is about the same thickness as the wall, it covers the soft undersurface of the foot. The sole should arch upward or be concave, the surface rough and uneven.

FROG: The frog is V-shaped. When touched, it should feel springy or elastic, like gum rubber. It grows from the back or heel toward the front like a wedge. The frog acts like a shock absorber and should touch the ground even when the horse is shod.

To maintain healthy hooves, routine trimming and shoeing is necessary. Your farrier can help you set up the right schedule for your horse. This is usually every 6-8 weeks. Of course, this depends on your horse, how often it is worked, the type of surface it is worked on and the time of year. A clean, well shod horse not only looks good, but makes both the horse and owner feel good.



IS MY HORSE SICK?

Before an emergency: Along with a list of emergency telephone numbers, post the barn address and written directions to your farm next to each telephone so everyone, even a visitor, can call for help and provide information to emergency personnel.

What does a horse's body language tell you about its overall health? Some factors to consider before contacting your veterinarian:

Posture

Read your horse's body language.

- Is his head down or up? Down, he might just be dozing or he might be feeling sick.
- Is he holding one leg up? If it is a hind leg, he might be resting while he is sleeping or it might be lame, if it is a front leg, it is probably lame.
- If he is not standing, how is he laying down? Is he in a normal, peaceful sleeping position, or is he restless, rolling back and forth with anxiety?

Expression

What do his eyes and ears tell you?

- Is he alert with ears forward and eyes bright? If his head is down and his eyes are dull and he does not look up when you approach, you should be concerned.
- Do his eyes look peaceful and content or do they look tense and alarmed?

Appetite

A good appetite is one of the signs of good health.

- Has your horse finished all of his feed from previous feeding?
- Has he been drinking at least five gallons of water per day?
- Is he standing by his hay rack at feeding time waiting for his next meal?
- Does your horse finish all of his feed two to three hours after you feed him?

Manure

What does his manure look like? It should be well formed yet the fecal balls should easily break in half.

- If the fecal balls are very dry and hard (and especially if you notice the horse strains when defecating) he is not drinking enough water.
- Loose, sloppy piles (more like cow manure) tell you that your horse's feed is either too rich (too much grain, pasture or alfalfa hay), or he is eating too much salt and water, he has an irritation in his digestive tract and has diarrhea, or he is very nervous.
- If you see slime or mucous on his manure, he has an irritated gut.
- If there is whole grain in the manure or long pieces of fiber from hay, it means the horse is either gobbling his feed without chewing, that the feed is passing through his body too fast, or that he has a dental problem and can't chew his feed thoroughly.
- If you see worms in his manure, it is way past time for you to deworm him.

Living Quarters

Look at his stall or pen and his body for signs of distress: rubbing, rolling or pawing.

- Is his tail ruffled?
- Is he covered with dirt or manure?
- Is he sweaty or has he sweated and dried?
- Are there new holes in his stall from pawing?
- If you have reason to suspect there might be a problem such as colic, you should immediately check his vital signs.

Limbs

Look for wounds, swelling or puffiness. If warranted, halter the horse and examine his legs by palpation. Develop a feel for normal texture and temperature of a horse's legs. When the horse moves, does he place weight on all four legs equally or does he limp, bob his head, skip or buckle over at the hoof or take short, stiff steps? These signs can indicate a lameness problem and you need to consult with your veterinarian.

VITAL SIGNS

Vital signs give an indication of overall state of health. The results you obtain when you suspect a horse is ill will be much more useful if you compare them to the horse's own "normals". Approximate normal ranges are provided on the following page.

Normal vital signs of the Horse

- Temperature between 98.5 – 101.0F
- Heart rate 36-48 bpm
- Respiration rate 8-16 bpm
- Normal manure output 8-10 piles daily
- Mucous membranes should be pink and moist
- Horse should consume normal amount of food and water

Note: It is recommended that you consult with your equine veterinarian to learn the proper procedures in order to take temperatures and/or any other vital sign readings. Your veterinarian will advise you on the procedures they feel the horsemen is able to obtain themselves.

Temperature

The average temperature of an adult horse at rest is about 100 degrees Fahrenheit. The normal range is about 99 to 101 degrees F, but an increase in temperature, by itself, is not cause for alarm. Often a 2 degree increase is not a problem but 4 degrees above a horse's normal is cause for concern. Younger horses often have higher temperature than mature horses in the same environment. Temperature might also increase when a horse is exercised, excited, in pain, diseased, or is in a hot, humid climate.

How to take a horse's temperature

The horse should be tied or held by an assistant. Use a 6 inch veterinary thermometer with a 2 foot string tied to it with a clip on the end (used to attach to the tail). Shake the thermometer until the mercury is at 95 degrees F. Lubricate the tip of the thermometer with room temperature petroleum jelly or a drop of saliva. Stand on the side of the horse, not directly behind him. Move the tail to the side by grasping the bone, not the tail hairs. Insert the thermometer gently into the rectum at an angle about 15 degrees above horizontal. Attach the clip to the tail hairs so if the horse defecates, the thermometer won't fall to the ground. Remove the thermometer after two or three minutes and take the reading. Clean the thermometer before returning it to its case.



Pulse

The average pulse rate of an adult horse at rest is about 30 to 40 beats per minute. If a horse is excited, in pain, nervous, has a high temperature, is in shock, has a disease, or has just completed exercise, his pulse rate will be higher than normal.



How to take a horse's pulse

Hold your index and middle finger over the artery (if you use your thumb, you risk getting your own reading confused with the horse's). Once you have located the artery, make sure you can feel the pulse clearly and then count the beats in one minute or for fifteen seconds and multiply by four.

Pulse rates can be taken anywhere an artery lies close to the surface of the skin. Just above the fetlock or on the inside of the horse's jawbone. You can also use a stethoscope at the horse's girth area just behind the point of the elbow. Count each lub-dub as one beat.

Respiration

The average respiration rate of an adult horse at rest is 8 to 20 breaths per minute. One inspiration and one expiration equal one breath. Respiration increases with hot, humid weather, exercise, fever, pain, pregnancy and age. In general, a horse's respiration rate should never exceed the pulse rate. However, horses which are used in competitions will sometimes have this occur, but they will soon recover back to normal.

How to measure a horse's respiration

Watch his rib area for one minute and count every time he breathes in and out as one breath. This will be easier to see after the horse has exercised than if he is resting. You will have to become practiced to get an accurate reading when he is resting.

Capillary refill time:

Noting how long it takes for blood to return to blanched tissues is the CRT, a sign of general circulation. Normal is one to two seconds. If the CRT is prolonged, the horse is showing circulatory impairment and may be in shock. This is often indicative of a horse that has colic.

Measuring the CRT

Exert light thumb pressure on the horse's gums for two seconds to cause the blood in the capillaries to be pushed out of the tissues, leaving a white spot the size and shape of your thumb print. Note how long it takes for normal color to return to that spot.



Lung sounds

The lungs should sound clear. There should be no rattles, wheezes or gurgles.

Listening to the lungs

Place your ear or the stethoscope against the horse's rib cage approximately in the area your leg would be if you were riding.

Pinch test

The pliability and resiliency of the skin is a good indication of the level of hydration. To determine if a horse is dehydrated, perform the pinch test.

Performing the pinch test.

Pick up a fold of skin in the shoulder or neck region and then release it. It should return to its flat position almost instantaneously, within a second or two. If the skin remains peaked for more than two seconds, this is termed a standing tent and indicates some degree of loss of body fluid. If the standing tent is five to ten seconds or longer the horse is suffering from moderate to severe dehydration and needs immediate veterinary attention.



Mucous membrane color

The color of the horse's gums, conjunctiva (lining of eyelids), and nostrils can provide information about a horse's overall condition and circulatory function. Color of mucous membranes

- Glistening, pink gums indicate healthy, normal.
- Very pale or white gums indicate anemia or blood loss.
- Bright red gums indicate a toxic condition.
- Gray or blue gums indicate severe shock.
- Bright yellow gums are linked to liver problems.

Gut sounds

The abdomen usually produces sounds indicating roughage and fluids are moving in the intestines. Excess gut sounds are generally less indicative of a problem than the absence of sounds.

Listening to gut sounds

Put your ear or a stethoscope to your horse's flank. With practice, you should be able to determine if the gurgling, gaseous sounds are normal, in excess or absent.

NUTRITION



BASIC NUTRITION

This section cannot be started without cautioning you about the danger of feeding your horse as you would feed other ruminant agricultural animals (cattle, goats or sheep).

In most ruminant animals, the food goes into the first stomach where it is broken down by bacterial digestion before being chewed again as cud. In the horse, food goes directly to a relatively small stomach and must pass through the small intestine before bacterial digestion takes place. The horse's stomach is not provided with muscles which permit it to vomit. Any fermented feed, such as silage, may stay in its stomach causing gas formation and pain, producing the symptoms known in the horse as colic. For this reason, if you keep both horses and ruminant animals, the horses should not have access to feedlots.

There are four different energy forms that the horse can take in: starches, fiber, fat and protein. **Starch** is the primary component of cereal grains such as corn, oats and barley. Starch in itself is not a bad thing, but in too much volume, starches can overload the ability of the small intestine to digest food properly. If not digested, starches will pass straight through to the colon where it can kill the good bacteria and lead to severe diarrhea, and other symptoms such as colic, and laminitis. This is especially true of corn that is not processed. Large grain meals can cause several problems and, as a general rule, horses should not be fed more than five pounds of concentrated feed at a time. Grain overload, or accidental ingestion of large quantities of grain are a medical emergency because they can quickly lead to some of the above mentioned problems.

Fiber is the structural component of plant material. Most good quality hays are high in fiber as are beet pulp and soy hulls. A high fiber diet is very important in the horse because it helps to maintain the health of the normal bacteria in the colon, and also provides energy. High fiber diets also increase chewing, which helps increase saliva production, which in turn can help to buffer the acid of the stomach and help prevent gastric or stomach ulcers.

Hay is an excellent source of fiber in a horse's diet. There are two main types of hays that horses can eat and those are grass hays and legumes. Grass hays include orchard grass, brome, fescue, oat, Bermuda and prairie grass. These hays tend to be about 6-8% protein and are higher in fiber, and lower in protein and energy than legumes.

Legumes are alfalfa and clover. They are higher in protein, energy, calcium and vitamin A than grass hays. When evaluating hay, it is important that the hay be fine stemmed, green and leafy. It should be soft to the touch, and should not be moldy, musty or dusty. It is important to avoid hay that is sun bleached or over cured, as well as hay that is contaminated with weeds, dirt, trash or debris. The bale of hay should not be excessively warm or heavy.

The types of hay most often recommended for horses are:

Alfalfa: fed in small quantities is an excellent source of highly palatable protein and minerals.

Timothy: one of the safest hays, rich in carbohydrates and fats, but lacks minerals and protein,

Orchard Grass: readily available, good source of energy and protein.

Fescue: readily available, good source of energy and protein. **Not recommended for Broodmares.** Most fescue is infected with a toxin-producing mold called endophyte. In brood mares, this toxin causes decreased fertility, increased early embryonic death, increased gestation length, difficulty foaling and decreased milk production. Foals are affected not only by lack of milk production, but also have hormonal and immune problems.

Pasture is also a good source of roughage for your horse. Most mixed grass pasture provides a good source of vital nutrients needed by horses. Occasional mowing is recommended to rid your pasture of weeds and undesirable grasses. **KENTUCKY 31 FESCUE IS NOT RECOMMENDED FOR HORSE PASTURE.** Endophyte enhanced or endophyte free fescue may have a place in the pleasure horse farm. Consult the WVU Extension Service for more information.

Fats: Horses are very tolerant to energy in the form of fats, and can safely consume up to 10% of their diets in fats. Good sources of fats are vegetable oils and rice bran.



Horse grain is available in many forms, such as **straight whole grain** (oats, corn), **textured feed** (sweet feed), and **extruded feed** (pellets). Textured feed is often referred to as a “sweet feed” which is usually a mixture of molasses, corn, pelleted grains as a protein source, and some fiber. The corn is usually processed so it is better digested. Sweet feeds are typically high energy. Extruded grains which are pelleted feeds increase digestibility.

Complete feeds are feeds that are designed to be fed exclusively as the sole source of energy in the diet, without additional hay. They are typically very high in fiber, usually due to the addition of beet pulp or soy hulls to take the place of roughage in the diet. The feed you choose for your horse depends on many factors, body weight, production status and level of work/activity, availability of feed types and special nutritional needs. For more detailed information consult with your equine veterinarian or feed dealer.

Many horse owners aren't sure of how much to feed their horse. This is highly variable, depending on the nutrient content of the feed and the energy requirements of the horse. A mature, idle horse generally needs to eat approximately 1.5-2% of his/her bodyweight daily and at least 1% of that should be in roughage. For example, a 1,000 pound horse should be eating 15-20 pounds of feed daily and at least 10 pounds of that should be in hay. It is very important that when feeding, all feeds should be fed by weight, not by a coffee can or feed scoop, as different feeds in that same can will weigh different amounts. Energy demands really start to increase when in situations such as pregnancy, lactation or intense work.

It is very important when making diet changes in the horse that you do so very gradually over a period of one to two weeks to allow the flora in the hindgut to change. If this does not happen, you can get an overgrowth of toxin producing bacteria which then leads to diarrhea, colic and laminitis.

Clean, fresh water and salt should always be available. It is also recommended that you never feed your horse directly on the ground.

BODY CONDITION SCORING OF HORSES

Body condition scores are used to identify the general condition of animals. In horses, the grading system is based on the amount of fat found on the animal in certain areas. Each horse is given a body condition score (BCS) that ranges from a 1 (extremely thin/emaciated) to a 9 (extremely fat). Things such as nutrition, reproductive status, weather, parasite load, performance demands, and dental problems can all influence the body condition of horses. Body condition is often a more reliable indicator of the nutritional status than simply using body weights. Realize that horses with the same weight may not have the same BCS.

When assigning a BCS to a horse, begin by stepping back and looking at the horse to observe general fat distribution. Also consider how things such as pregnancy and different amounts of feed in the digestive tract may influence the general appearance of the horse. Then physically feel or palpate the following regions to evaluate the amount of fat deposited in these areas:

1. Behind the shoulder
2. Ribs at mid-barrel
3. Crest of neck
4. Withers
5. Crease of the back
6. At the tail head

A horse with a BCS of 5 should be used as the standard; all other animals should be compared to this “average” horse. A horse with a BCS of 5 is not too fat or too thin; the ribs cannot be seen, but can be felt. Finally, compare results of the visual observations and the manual palpations with the following descriptions adapted from Henneke et al., 1983.

Programs should be implemented to help keep a horse at the appropriate weight and body condition score (BCS) for its use and level of activity. For example, a horse that is used for racing and competition should have a body condition score of between a 4-7. Animals just prior to the breeding season and then after becoming pregnant often should have a BCS of 5 or slightly greater. Obese mares may experience difficulty foaling produce less milk, and be more prone to laminitis problems.

It is also important to understand that each individual person may score the same horse differently. This is not a reason for alarm. The key to effectively using body condition scores is to be consistent. Each individual should develop a feel for what each body condition score will look like to them by determining and assigning body condition scores on multiple horses. Then, if changes are noticed in a particular horse’s condition, appropriate adjustments can be made. (Body Condition Score information provided by Info Vets. Preston Idaho).

The Henneke Body Condition Scoring System

Provided by
 **Masterfeeds**

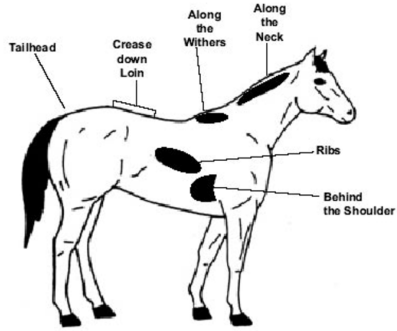


Table 1. Characteristics of Individual Condition Scores

Condition	Neck	Withers	Loin	Tailhead	Ribs	Shoulder
1 Poor	Bone structure easily noticeable, animal extremely emaciated, no fatty tissue can be felt.	Bone structure easily noticeable.	Spinous processes project prominently.	Spinous processes project prominently.	Tailhead (pinbone) and hook bones project prominently.	Bone structure easily noticeable.
2 Very Thin	Faintly discernable, animal emaciated.	Faintly discernable.	Slight fat covering over base of spinous processes. Transverse processes of lumbar vertebrae feel rounded. Spinous processes are prominent.	Tailhead prominent.	Slight fat cover over ribs. Ribs easily discernable.	Shoulder accentuated.
3 Thin	Neck accentuated.	Withers accentuated.	Fat buildup halfway on spinous processes but easily discernable. Transverse processes cannot be felt.	Tailhead prominent but individual vertebrae cannot be visually identified. Hook bones appear rounded but are still easily discernable. Pin bones not distinguishable.	Slight fat cover over ribs. Ribs easily discernable.	Shoulder accentuated.
4 Moderately Thin	Neck not obviously thin.	Withers not obviously thin.	Negative crease along back.	Prominence depends on conformation; fat can be felt. Hook bones not discernable.	Faint outline discernable.	Shoulder not obviously thin.
5 Moderate	Neck blends smoothly into body.	Withers rounded over spinous processes.	Back level.	Fat around tailhead beginning to feel spongy.	Ribs cannot be visually distinguished but can be easily felt.	Shoulder blends smoothly into body.
6 Moderately Fleishy	Fat beginning to be deposited.	Fat beginning to be deposited.	May have slight positive crease down back.	Fat around tailhead feels soft.	Fat around tailhead feels soft.	Fat beginning to be deposited.
7 Fleishy	Fat deposited along neck.	Fat deposited along neck.	May have positive crease down back.	Fat around tailhead is soft.	Individual ribs can be felt, but noticeable filling between ribs with fat.	Fat deposited behind shoulder.
8 Fat	Noticeable thickening of neck, fat deposited along inner buttocks.	Area along withers filled with fat.	Positive crease down back.	Tailhead fat very soft.	Difficult to feel ribs.	Area behind shoulder filled in flush with body.
9 Extremely Fat	Bulging fat. Fat along inner buttocks may rub together. Flank filled in flush.	Bulging fat.	Obvious positive crease down back.	Building fat around tailhead.	Patchy fat appearing over ribs.	Bulging fat.

From Henneke et al. Equine Vet J. (1983) 15 (4), 371-2

BROODMARES

BROODMARE NUTRITION

Your mare's diet is very important. Nutrient requirements vary with age, size, physical activity and stage of pregnancy. For this reason, making general recommendations on the amount and type of feed is impossible. A diet that supplies her with adequate protein, calcium and vitamin A is sufficient. This can be obtained by grazing on good grass pasture. If your pasture is not adequate, you will have to supply your mare with a balanced diet of hay, grain and pasture. A protein level of 10-12 percent will be required at this time. Your mare's weight gain should be minimal during the first eight months of pregnancy.

In the last three months of pregnancy, your mare will gain about ½ pound a day while the foal is gaining approximately 1 pound a day. At this time the mare should be eating close to 2.5% of her body weight. A general guideline is that enough fat should cover your mares' ribs so they be felt, but not seen.

During these last three months, your mare's energy needs, as well as protein needs, grow. At this time, grain is almost always essential, as it is not possible for her to eat enough hay or grass to satisfy these needs. Her protein intake for these last three months can increase up to 12-16 percent.

After foaling, her nutritional requirements can increase up to three times normal amounts. Over 60 percent of all her feed intake goes to milk production. Lactation increases the energy demands even more, with it being approximately 3% of body weight. This means that a 1,000 pound mare with a nursing foal needs to eat about 30 pounds of feed a day. At this point, good quality hay alone will not meet those energy requirements and concentrate supplementation is essential.

A good supply of clean, fresh water is essential. Pregnant mares can consume as much as 10 gallons per day. During lactation, her water requirements will increase one and a half to two times that. In addition to diet, your mare should get exercise. If she is turned out to pasture, this is probably enough for her. However, she can also continue to work as normal if you ride or drive her, gradually reducing the length of activity as her pregnancy advances. Total stall confinement should be avoided unless absolutely necessary. It is also not a good idea to trailer your mare during late gestation (last 60 days).

BROODMARE CARE

Of all the horses we own, the most special care must go to our broodmares. The care they receive while pregnant determines the health of their newborn foal, which in turn determines that foal's health for the rest of its life.

Breeding horses is always a gamble. There is no way to insure you will get the foal you want. Colt or filly, big or small, the right color; all are chances we take. But when it comes to health, we can stack the deck in our favor.

First, start with a healthy mare. Before breeding, your mare should be dewormed and have her vaccinations. Eastern and Western Encephalomyelitis, Tetanus Toxoid, West Nile and Rhinopneumonitis are the five vaccines most often recommended. Your mare should be a good weight, as both overweight and underweight conditions can affect fertility.

Rhinopneumonitis, while not usually fatal for mature horses, is a leading cause of abortion. The vaccine used for pregnant mares contains killed virus and is safe for the fetus. The recommended schedule for vaccination is the 3rd, 5th, 7th and 9th months of gestation.

Tetanus Toxoid should be given 30 days prior to giving birth. This will help your foal as it will receive passive immunity in the colostrums.

Fescue Toxicity: Pasture and hay containing fescue is dangerous for your pregnant mare. If your broodmare is on fescue during pregnancy, she must be moved out of a fescue pasture thirty days before foaling. Most fescue is infested with a toxin called endophyte. This toxin has been known to cause decreased fertility, abortion, increased gestation length, difficulty in foaling and decreased milk production. Also foals who survive can have hormone and immune deficiencies.

Do not forget to deworm your mare while she is pregnant. Routine deworming should proceed all through her pregnancy. However, make sure you use a dewormer which is approved for pregnant mares.

It is important to know the date or dates your mare was bred. Gestation period for the horse is 330 days. Knowing exactly what day to start counting is a big help. You can have your mare checked for pregnancy. There are at home tests for horses, your veterinarian can perform an ultrasound or a rectal palpation can be done around 50 days after breeding. Of these methods, rectal palpation is probably most often chosen. It is highly recommended that your horse foals in a clean pasture or a barn with clean straw. Foaling on sawdust is discouraged.

Please consult your equine veterinarian for more detailed information on broodmare care and nutrition.

EQUINE

SAFETY



Equine Safe & Danger Zones

Horse reality is that there are no real safe zones on or near a horse. They have unpredictable, instinctual and instantaneous reactions. Always be aware when you are within any zone of a horse, no matter how 'tame' you think it is.

Avoid the red zone in front of a horse.
You can be injured if they bolt

Use the green zones when moving around a horse's side. Lead from the "Near Side" (Left Side) stay in the green zone.

Avoid the side red zones as horses can swing their legs when they strike.

Also when they bolt horses move as fast to the side as they do to the front

The red shows a critical danger zone!!

Many horse owners have been accidentally injured for standing or moving around back here. When you move behind a horse stay close to them (Green Zone) with one hand on their rump. Notify a horse when approaching from behind.

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EQUINE SAFETY

Horses are often timid animals and react instantaneously when frightened, but there is no need to fear the horse if safety precautions are followed. To disregard simple safety rules in handling a horse can result in serious mishap. Knowledge of safe riding and handling is important to basic horsemanship skills. The best horse handlers “think like a horse” and try to anticipate what a horse will do. Horses have a very large field of vision and therefore, they can move their eyes and see things on both sides at the same time. Horses also have two blind spots, directly in front of them and directly behind them. As a horseman, you need to take safety precautions to keep both you and your equine safe.

Approaching

- Always speak to horse before approaching or touching it from behind. Most horses are likely to jump or kick when startled.
- Never approach a horse directly from the rear. Even in a tie stall it is possible to approach at an angle.
- Pet a horse by first placing your hand on his shoulder and neck. Don't reach for the end of the nose. This is a blind spot for the horse and is annoying to the animal. Repeatedly dabbing at the end of a horse's nose, especially a young animal, can encourage biting.
- When walking around horses, stay out of kicking range. Never walk under the tie rope or step over it.

Handling

- When working around horses, stay close so that, if kicked, you will not receive the full impact of the kick. Stay out of kicking range whenever possible.
- Work on a horse from a position as near the shoulder as possible. In this way, you cannot be touched by either the front or the hind feet.
- When working with the horse's tail, stand near the point of the buttock, to the side and facing the rear, not directly in back. Hold the tail, bringing it around to you.
- Learn the proper way to lift the horse's feet.
- Be calm and confident when around horses. A nervous handler can make a horse nervous and unsafe. This is important in showmanship.
- Know the horse with which you are working. Know his temperament and reactions. Control your temper at all times. Let him know you are his firm, but kind, master. Never punish a horse in anger.
- Know your horse's peculiarities. If someone else is riding, tell them what to expect.
- Always wear boots. Never go barefoot or wear tennis shoes.
- ASTM/SEI certified helmets are recommended for riding and required for many classes.

Leading

- Walk beside a horse when leading it, not ahead or behind. Always turn the horse to the right and walk around it, keeping it on the inside.
- A horse is stronger than you are. Don't try to out muscle one. The horse will usually respond to a quick snap on the lead strap or rope if properly halter broken.
- Never wrap the lead strap, halter shank, or reins around your hand, wrist or body. Use a long lead strap, folded "accordion" style in the left hand while leading.
- When leading a horse into a box stall or pasture, turn the horse so that it faces the door or gate before releasing the lead strap or removing the halter or bridle. Otherwise, the horse is likely to bolt forward before it is released.

Tying

There are no rules for tying a horse other than those dictated by safety and common sense. Tying is only a matter of keeping a horse in one place. Most horses learn to "tie" simply because they find it easier to stand quietly than to fight. All horses should be taught to stand tied and should not be considered fully trained until they do so.

Horses should be tied far enough apart so they cannot kick or bite each other. They should be separated by ropes, rails or distance. A recommended distance between strange horses when tied to a hitching post/hitch line or along a picket line is 20 feet. At no time should they be tied closer than 10 feet apart. Unless a horse is tied in a stall, it should not be left unobserved for long periods of time. This is particularly important with young horses.

The first requirement in correctly tying a horse is to use a knot that can be untied quickly, will not slip, and can be untied even though the horse may be pulling back on the tie rope. The recommended knot for tying a halter rope to a fixed object is a quick-release knot.

Tying to post

To tie a horse to a post, stake or smooth vertical pole, a combination knot may be used to prevent the rope from dropping down the pole and from slipping.

It is a good practice always to tie a horse above the height of its withers, with 2 to 2 1/2 feet of tie rope between the knot and the halter. It is important to keep the horse from dropping its head down and stepping over the rope. The horse must, however, be able to hold its head at its normal height.

Tying a horse to a smooth horizontal pole or to a picket line can be safely done in a manner similar to the procedure used for a vertical pole. In this case, an additional wrap should be made in the hitch, followed by the quick-release knot, to keep everything in place. Just as with the vertical post, the hitch knot may be difficult to untie when the horse pulls back too hard. Therefore, the same procedures as outlined above should be used.

EQUIPMENT AND SUPPLIES

Grooming Supplies

Halter and lead rope
Stiff brush
Soft face brush
Hoof pick
Rubber curry
Towel or rub rag
Sponge and sweat scraper
Insect repellent
Vacuum

First Aid Supplies

Clean bucket
Sterile gauze
Towel
Veterinarian rectal thermometer
Petroleum jelly
Antibacterial ointment
Epsom salt
Povidine Iodine Scrub.5%
Saline solution
Weigh tape



GENERAL
EQUINE



INFORMATION

GENERAL EQUINE INFORMATION

*Hand = 4”

GESTATION PERIOD

The time frame of the development of a fetus from conception to birth is called the gestation period.

Individual mares tend to have their own gestation length tendencies. The “normal” gestation period for a full size horse is 335-360 days (342 average). Miniature horse – 320 days; Donkey – 360-375 days; and Draft horses, 330-340 days.

HORSE TYPES

Horses are divided into four general types based on size, body build, and weight: ponies, light horses, draft horses and feral horses.

Ponies are less than 14.2 hands in height. Most ponies weigh less than 900 pounds.

Light horses are medium sized with medium built bodies. Most of these horses weigh less than 1,400 pounds.

Draft horses are large and sturdy with muscular bodies and hair growing on their lower legs. They weigh more than 1,400 pounds. It is necessary to understand the differences so that you can set up the right health maintenance and feed programs for your horse.

Feral Horses are wild or semi-wild horses.

BREEDS

Each breed of horse has a combination of distinctive and individual characteristics. Since ancient times, various types of horses have been bred for specific purposes and the characteristics which developed are transmitted from generation to generation. A knowledge of the characteristics of the various breeds help make it easier to select the type of horse you want. For a more detailed look into horse breeds go to the following website www.ansi.okstate.edu/breeds. Information on some of the most popular breeds of horses and ponies in West Virginia follow.

American Saddlebred

Originally known as the Kentucky Saddler, it was developed by Kentucky plantation owners who needed a horse that would carry them comfortably for many hours as they went about the task of overseeing their vast plantations. The foundation sire was a Thoroughbred called Denmark, foaled in 1839. Selective breeding has produced a showy horse with easy gaits, an equable temperament and great stamina. The Saddle Horse has a small, elegant head set on a long, muscular neck and strong shoulders, back and quarters. Predominant colors are bay, brown, chestnut and black. Average height is 15 to 16.1 hands.



American Standardbred

Also known as the American Trotter or Pacer. This American breed descends from an English Thoroughbred named Messinger. Today, it is one of the world's finest harness racehorses, with courage, speed, endurance and refinement. It has length of stride and action for great speed. A few are shown at horse shows. Its height is approximately 15.2 to 16 hands and predominant colors are bay, brown, black and chestnut.



American Quarter Horse

Originated during the Colonial era in the Carolinas and Virginia where match races were run on the village streets. Seldom were the horses raced beyond 440 yards; hence the colloquial name "Quarter Miler." The foundation was the Arab, Barb and Turk brought to North America by the Conquistadors. The Quarter Horse became the greatest cow horse in history. In performance and endurance, it has never been excelled. Following the organization of the American Quarter Horse Association, popularity of the breed swept across the continent.

Appaloosa

A great breed of spotted horses, with intelligence, speed and endurance, brought to America more than three centuries ago by the Spanish Conquistadors. It was the Indian horse of the Nez Perce tribe in the Northwest and was used for hunting, traveling, racing and war. Today, the Appaloosa is one of the most popular horses in America, and finds much favor as an all-around saddle horse. The deciding characteristic of the Appaloosa is the color patterns of the coat, usually solid-colored foreparts, fading to white on the rump and broken with dark spots. Due to its remarkable coloring, it is often used as a circus and parade horse. Height is approximately 15.2 hands.



Arabian

The Arabian was bred to withstand long treks across the desert and the tribal wars which sometimes followed such trips. Individual horses were selected for the gentle, affectionate nature, the striking look and proud spirit the breed is known for today. Even though centuries have passed, today's Arabian cannot be mistaken for any other breed. Whether ridden English or western, shown in park classes or used for trail riding, Arabians have the same basic distinctive appearance. The Arabian's head has a characteristic dished profile with a prominent eye, large nostrils and small teacup muzzle. His gracefully arched neck rises out of a long sloping shoulder and broad chest. A short, strong back and high trail carriage complete the picture.

Arabians come in grey, chestnut, bay and roan and an occasional solid black. Although some individuals will vary, most are between 14.2 and 15.2 hands in height and weigh between 800 and 1,000 pounds.



Belgian

The Belgian came to America in 1886 and now ranks as one of the foremost draft breeds. Belgian draft horses are compact, but with exceptional style and action. The legs are free from feather characteristics of the Clydesdale and Shire. It has good placement of the legs with a long stride and great power. Mature stallions weigh from 1,900 to 2,300 or more pounds and stand 15.3 to 16.3 hands.



Miniature Horse

The American Miniature is a “height” breed; they must measure no more than 34 inches in height at maturity. This measurement is the vertical distance from the last hairs at the base of the mane to the ground. These tiny equine are replicas of their larger breed cousins and will look like Quarter Horses, Arabs, Thoroughbreds, and Draft Horses.

Morgan

Originated in the United States and is principally of Thoroughbred and Arabian blood, tracing its ancestry to the great stallion, “Justin Morgan.” It is a smaller type of trotting horse and is known for speed and endurance. Morgan horses have made great progress as fine saddle and cow horses. The Morgan has also been of value in building up the American Saddle Horse and Standardbred. Height is 14 to 15 hands; weight from 800 to 1,000 pounds. Usual colors are bay, chestnut, brown and black.



Mule

A hybrid whose sire is a Jack and dam, a mare. The Mule is long known in history with a record of usefulness and service in war and peace. The ability of Mules to work hard under adverse conditions has won them great praise by farmers and ranchers everywhere. Mules have great endurance and are surefooted. Normally mules are sterile. The Mule stands approximately 15 hands tall.

Paint

Decorated by nature, the origins of the Paint Horse in North America can be traced back to the two-toned horses introduced by the Spanish explorers, descendants of horses from North Africa and Asia Minor. Inevitably, some of these colorful equines escaped to create the wild herds of horses roaming the Great Plains. Captured and gentled, they raced alongside the vast herds of buffalo and traveled hundreds of miles on cattle drives. Cherished by the finest horsemen of the Western frontier, both Native Americans and cowboys sought the hardy horses loudly splashed with color.

Over time, breeders gradually improved the conformation and athletic ability of the rugged descendants of wild mustangs and cow ponies. Each generation passed its



unusual and unique coat patterns and coloring to the next, creating the American Paint Horse. Today, the stock-type conformation, natural intelligence and willing disposition make the American Paint Horse an ideal partner for pleasure riding, showing, ranching, racing, rodeoing, trail riding, or just as a gentle friend for the kids.

Shetland Pony

A native of the Shetland Islands north of Scotland, dating back to about the 16th century. A standard was set for the breed in England, and America began importing Shetlands during the 19th century. Today it is most popular as a children's pony used for riding, driving and as a pet. The Shetland is intelligent, docile, strong, hardy and fearless. Ideal height is 38 to 42 inches; weight from 300 to 400 pounds. Shetland Ponies may be any color with an abundant supply of mane and tail hair.

Tennessee Walking Horse

The Walking Horse became a breed in America after a century of selective breeding. This beautiful horse from Tennessee has the refinement and endurance of the Thoroughbred and Standardbred, strength of the Morgan, and style and quality of the American Saddle Horse. Its exceptionally comfortable pace has earned the nickname "the most comfortable ride in the world." Walkers were acclaimed as a show horse breed in 1939 and its prominence on the bridle path and in horse shows has been spectacular. Average height is approximately 15 to 15.2 hands and usual colors are black, bay or chestnut.

Thoroughbred

Originated in England and its ancestry may be traced to three foundation sires – the Byerley Turk and Godolphin and Darley Arabians, which were imported into England during the late 1600s. The first Thoroughbred imported to America was in 1730 in Virginia. Through selective breeding and good training, the Thoroughbred is the outstanding horse in racing, and has also been useful in breeding for Hunters, Jumpers, Polo Ponies and Saddle horses. The Thoroughbred has a beautiful head, trim muzzle, long and clean neck, sloping shoulders, well-muscled loin and good muscular development in the hindquarters. Usual colors are brown, bay and chestnut, and height can vary from 14.2 to over 17 hands, with 16.1 being the average.

EQUINE COLORS AND MARKINGS

There are five basic colors of horses.

- **Brown** – A brown horse has a mixture of black and brown in his coat. In Europe, a “bay” is considered to be a brown horse.
- **Bay** – A bay horse can be any shade of brown (which is a mixture of red and yellow), with points such as tail, mane, muzzle and lower legs being black. The brown can range from a light, almost tan or chestnut to a dark, seal color.
- **Black** – A black horse is completely black, including muzzle and flanks. Most horses that look black are actually a very dark bay.
- **Chestnut** – A chestnut horse has brown skin and the hairs are actually red. The shades vary from a light yellowy color to dark liver. The mane and tail are usually the same color as the body but can be lighter. The lighter coloring is called flaxen. Lighter colored horses are called sorrel; very dark chestnut is called “liver chestnut”.
- **White** – A truly white horse is born white and remains white. His hair is snowy; he has pink skin and blue eyes. Cream horses are a variation, also having unpigmented skin and pink or blue eyes, with a pale colored coat. Most “white horses” are actually light gray.

There are also three major color variations in horses and three major color breeds.

Major Color Variations:

- **DUN** – Duns have black skin with an evenly distributed coat color and a black mane and tail, similar to bay coloring. The coat color can range from a pale yellowish color to the color of a dirty canvas. Dun horses usually have a dorsal stripe down their backs and some have stripes on their forearms. The lighter shades are called buckskin.
- **GRAY** – A gray coat is actually a mixture of black and white hairs on black skin. A foal may be born a solid color with a few white hairs sprinkled in his coat, but more white hairs will appear in the coat until he is gray at maturity. “Dappled gray” looks mottled, while grays with clusters of darker hair which sometimes include a reddish brown, are called “flea bitten”.
- **ROAN** – Roan is a mixture of white and colored hairs. White with brown is called red roan; white with red is strawberry roan; white with black is called blue roan.

Major Color Breeds:

- **PALOMINO** – Palominos are golden horses with light colored or “flaxen” manes and tails.
- **PINTO** – Pintos have a mixture of white and colored areas on their bodies. Horses with black and white splotches are called piebald, while horses with any other color than black are called skewbald. Pinto is a Spanish word meaning painted. Painted horses are divided into two categories: Tobianos, the most common, have white splotches across their backs which extend downward. On Overos, the white extends from the belly and legs upward toward the back but does not actually cross the back. Overos often have a “War Bonnet” or white face.
- **APPALOOSA** — This is a color breed. It is divided into three color patterns:
 - Leopard* is a white horse with dark spots all over his body;
 - Snowflake* is a dark horse with tiny white spots;
 - The “Blanket”*, the most well-known Appaloosas pattern which usually consists of a white blanket with dark spots on the rump.Appaloosas must meet three minimum requirements: striped hooves, unpigmented sclera (white around the cornea of the eye) and mottling of the skin, particularly on the nostrils, muzzle, and genitalia. There are solid colored appaloosas but they must meet the above requirements.

MARKINGS

The white markings on the head of the horse fall into several categories and they can then be further described by size, exact shape and location. Some horses will also have combination facial markings as described in the connected star and strip from above. Again, there are some variations in the terminology used, so it is best to be familiar with these basic terms and the accepted terminology in your region, breed, or field.

Star is any white marking on the forehead of the horse. A star can be small, large, regular or irregular in shape, in the center of the forehead or off to the left or right side of the forehead. Some horses have only a few discernable white hairs on the forehead that do not have white or pink skin underneath and these can be described as a few white hairs on the forehead.

Snip is any white mark that is located between the nostrils of the horse. A snip may be small, large, centered or extend into one or both nostrils. A snip is often connected to a stripe, and many times with a star and stripe.

Stripe or strip is a white marking on the bridge of the horse's nose, below the level of the eyes and above the level of the nostrils. A stripe or strip can be long, short, wide, narrow, centered on the face of the horse or off to the left or right side.

Blaze is a wider white marking that usually covers the region of a star, stripe and snip, but extends to the width of the bridge of the horse's nose.

Connected **star** and **strip** is often connected to a **stripe**.

Bald face is a very wide blaze that extends to and may cover the eyes, nostrils, and upper lip. Horses with bald faces often have white that extends to the lower lip as well, and this should be listed in a description of the face markings.

HORSE FACE MARKINGS



SNIP



FAINT



FAINT STAR



STAR



HALF STAR



STAR & STRIPE



STRIPE



BROKEN STRIPE



BLAZE



BLAZE & SNIP



IRREGULAR
BLAZE



BALD FACE

Reference: Cornell University College of Veterinary Medicine

The white markings on the legs are named according to their location and height. The following are common terms.

Coronet – the coronet is a band above the hoof. A white strip on the coronet is also called coronet.

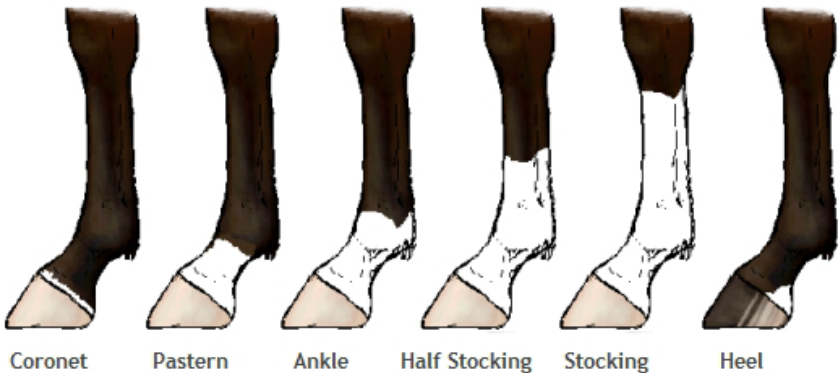
Pastern – the pastern is the narrow part of the leg between the angle and the hoof. A white marking extending to the top of the pastern is also called pastern.

Ankle – the ankle marking is white extending up the leg to cover the ankle.

Half stocking – the cannon is the part of the leg between the ankle and the knee or, on the back legs, between the ankle and the hock. White extending midway up the cannon is called the half-stocking.

Stocking – the stocking is white extending all the way up to the knee.

A horse may only have white covering the heel, and may be referred to as outside heel white extending, outside heel, or inside heel.



Equine Fun Facts

~ General ~

- The family of horses is called *Equidae* which comes from the Latin word for horse, equus.
- The best known wild member of the horse family is the zebra.
- Another truly wild beast belonging to the horse family is the Wild Ass of Asia.
- This family also includes both the donkey and the mule.
- The nearest horse relatives are the rhinoceroses and the tapirs, both of which are odd toed creatures.
- Horses are used for a wide variety of sports such as racing, showing, and competitions such as barrel racing, dressage, hunter, rodeo, show jumping and polo.
- There are approximately 75 million horses alive today.
- Horses have hair like humans, not fur.
- Horses do not get fleas. Many horse owners employ used horse blankets on the beds of their dogs and cats to combat fleas.
- Horses are social animals and will quickly become feral and run in herds of hundreds when released to nature.
- The term “Wild Horses” is misleading. All “wild” horses and ponies (*Equus ferus*) including ‘wild’ Mustangs in the western United States are feral with two exceptions:
 1. *Przewalski's Horse (Equus ferus przewalskii or Equus przewalskii)*, the only true wild horse alive today.
 2. The *Tarpan (Equus ferus ferus)*, which became extinct in the late 19th century, the tarpan is the only other undomesticated horse surviving into historical times.
- In nature, horses generally breed every other year.
- Foals are usually born in the spring after being carried inside the female for 11 months.
- A foal is born with its eyes open and is able to stand unsupported within a few minutes of birth.
- These young are born with milk teeth which later are replaced with permanent teeth.
- These teeth grow throughout their lifetime, but are worn down with grazing.
- Horses are grazers and usually eat grasses and various grains and leaves, however they will eat a variety of different plant matter like buds and blossoms and they are especially fond of sweet flavors such as that of the apple. Horses are considered old at 20, but some live as long as 30 or 40 years. The oldest known horse lived to be 50 years old.

~ Historic Equine Facts ~

- Horses were some of the earliest mammals.
- The origin of the horse dates back to the Eocene period, 60 million years ago.
- By the Pleistocene period about 1 million years ago, the modern horse had developed.
- During the stone age horses were a source of food eaten for their meat.
- Horses were first domesticated and tamed about 4,500 years ago.
- It's been suggested that man has relied on horses since 4000-3500 BCE.
- Horses were used for riding, for delivering mail and messages, for hunts, and for battle; for hauling, such as pulling loads, carrying packs, or pulling plows; and for herding other animals such as cattle.
- Only recently (within the past 75 years) have we stopped relying on them as our main mode of transportation.
- The speed and endurance of Arabian horses allowed Muslims to establish a great empire sweeping over Africa and Spain.
- It wasn't until 732 AD when the Muslims advanced into France that their swift light horses were overpowered by France's armored knights mounted on huge, heavier breeds.
- In the 13th century, horses allowed Genghis Khan's Mongol cavalry to sweep north east to conquer much of Russia.

~ Anatomical Equine Facts ~

- The height of a horse is measured using hands. (One hand = 4 inches or 10.16 centimeters)
- The horse has a sharp sense of hearing, direction and smell.
- A horse's ears can aim forward, to the side, or back to catch sound.
- Their eyes are larger than the eyes of any other living animal except the whale and the ostrich.
- With these large eyes, one placed on each side of their head, they are able to see objects well at quite a distance and detect movement from almost any direction.
- The horse's skin is very sensitive and responds to the slightest touch (Dressage employs this fact in its riding aids).

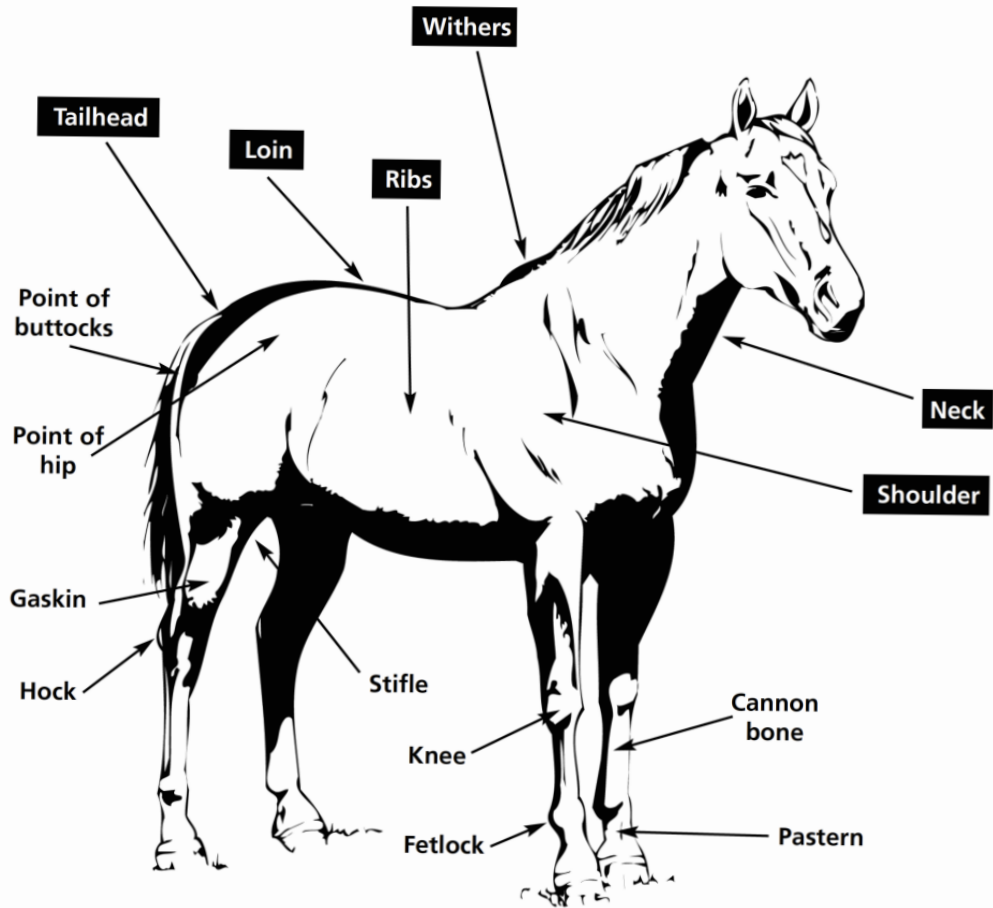
- Horses have hair like humans, not fur like other animals.
- Horses are the only animal that has only one functional toe.
- This toe is protected by a hard, horny hoof.
- Horses are one of the relatively few mammals that sweat.
- Horses have about 175 bones in their body.
- Most horse breeds have 18 ribs; 6 lumbar bones and 18 tail vertebrae.
- A horse's hoof grows at a rate of about 1 cm per month.
- A full grown horse weighs between 1,000 and 2,000 pounds.
- Horses can drink up to ten gallons of water a day.
- Horses can see in two directions at once (Monocular and Binocular vision).
- Horses can see everywhere, except directly in front or behind them.
- Horses make 8 basic sounds- snort, squeal, greeting nicker, courtship nicker, maternal nicker, neigh, roar, blow.
- Horses are not fully mature until age 5.
- Miniature Horses are actual horses not ponys.
- Horses' bodies are built for speed with powerful leg and rump muscles, long slender legs, and large lungs.
- *Thoroughbreds* are the only breed which has a closed registry and live cover.
- One of the most famous Thoroughbreds was *Man o' War* who during racing could run one quarter of a mile in 21 seconds.

~ Equine Behavior ~

- Horses use their voices to communicate.
- Horses also use many body parts for communication.
- Horses can generally signal a variety of emotions and ideas with body language.
- Arching their necks, showing their teeth, rearing up, widening their eyes, and other body movements signal to other horses and animals what an individual horse is thinking.
- Feral stallions usually form herds of mares which roam 20 square miles (30 sq. km.) of land.

- Stallions will fight to keep his mares and may also challenge other lead stallions for the opponents females.
- Although fighting injuries are common, fighting deaths are rare.
- Those males which do not have a herd of mares will sometimes band together in “bachelor bands”.
- A horse has three defense techniques:
 1. Running
 2. Striking out and or trampling with their hooves
 3. Biting
- Generally a horse will run and will only turn to fight if cornered.

<http://equestrianoutreach.com/Equestrian-Outreach-Equestrian-Information-Page.html>



Glossary of Terms

Antibody: Protein molecules, produced by the immune system, that provide protection from infectious viruses or bacteria.

Acidosis (Grain Overload): A condition where abnormally high grain intake causes the pH of the digestive system to be abnormally low (<5.5). Signs of this problem may include diarrhea and colic.

Acute: Any process occurring over or within a short period of time.

Capillary: The smallest vessels where nutrients, oxygen, and carbon dioxide are exchanged in the tissues.

Capillary Refill Time (CRT): The amount of time it takes the gums to return to normal after being “blanched out.” Normal CRT is less than 2 seconds. If longer than 2 seconds, the blood circulation throughout the body may be compromised due to shock, dehydration, or other cardiovascular problems.

Castration: Surgical removal of testicles.

Colt: Male horse from birth to sexual maturity (about 24 months)

Crude Protein: The total amount of protein in a feed, expressed as a percent of the feed. Crude protein is further subdivided into soluble, degradable, un-degradable, by-pass, and bound protein fractions.

Energy: The amount of calories available in a feed for activity, work, growth, or milk production.

Fiber: The portion of a feed that is indigestible or slowly digested. It may be expressed as crude fiber, non-detergent fiber, acid detergent fiber, or effective fiber.

Filly: Female horse from birth to sexual maturity (about 24 months)

Foal: Infant horse of either sex

Forage: A high fiber plant such as grass, hay, or corn silage that is used for feed.

Founder: A condition that is caused by inflammation of the tissue between the hoof wall and coffin bone. Severe laminitis with rotation of the coffin bone is called founder.

Gelding: Adult, castrated male horse

Gestation: The process of carrying or being carried in the womb between conception and birth.

Grain Overload (Acidosis): See acidosis.

Hand: (hh) the common measurement in the United States to measure equine is the **hand**, which is 4 in (10 cm). If a horse is said to stand 10-2 hands, that means it is 40 + 2 in (107 cm) tall at the withers.

Horse: Adult equine of either sex over 14.2 hh (58 inches, 1.47 meters)

Immunity: Protection from disease as a result of the body's normal immune system response. The body's immune system can provide disease protection because of prior vaccinations or previous exposure to an infectious organism.

Laminitis: A problem caused by inflammation of the tissue between the hoof wall and coffin bone. Severe laminitis, with rotation of the coffin bone, is called founder.

Lethargy or Lethargic: Describing an animal's disposition. These animals are slow to react, lack energy, and are often sick.

Mare: Adult female horse

Murmur: An abnormal heart sound. These murmurs are graded from 1-6, with 6 being the loudest murmur.

Necropsy: The animal equivalent to human autopsy, meaning to examine an animal after death for signs that might indicate the cause of death.

Pony: Equine 14.2 hh or less (58 inches, 1.47 meters)

Quarantine: To confine and keep an animal from contacting other animals or people. This is essential in many of the infectious diseases that are potentially transmissible to other animals or humans.

Skin Tent: A process where the skin of an animal is gently pinched and pulled outward. A dehydrated animal's skin will not return to its normal position or shape rapidly.

Stallion: Adult, uncastrated male horse

Systole: Part of the normal beating of the heart where blood is pushed from the ventricles of the heart. This is known as the "contraction" phase of the heart beat.

Vein: The blood vessels in the body that carry blood towards the heart.

Ventricle: A chamber of the heart that pumps blood to the lungs and the rest of the body. The heart of a horse has two ventricles, left and right.

Wolf Teeth: Small round teeth that grow between canine teeth and the premolars.



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