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General Horse Management

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(Adapted from original chapter authored by Dana Zimmel)

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Facilities

Stable Management

The design of an equine facility should consider positioning of the stables to maximize the health of the horse and to provide easy access in case of an emergency. Stables should be designed to enhance ventilation to minimize respiratory disease. The average stall size is 12′ × 12′. Foaling stalls and stallion stalls are even larger, up to 12′ × 24′. The floor of all stalls should be designed to drain effectively and provide a nonslip walking surface. It is important that the surface not only be comfortable for standing and lying but also provide enough texture to allow easy standing. Each stall should be equipped with adequate water buckets (usually two) and a feed bucket. The water buckets should be washed daily and refilled frequently. Some farms with a large number of horses will choose to use automatic watering systems in which the horse will drink out of a small bowl of water that will continuously refill. Although this system is convenient, it does not allow monitoring of the horse's water consumption. The use of hay racks is controversial because they create an abnormal eating posture for the horse, increasing the amount of dust inhaled when eating hay. However, if a horse has a painful neck and cannot bend to eat off the floor, a hay rack or hay net is a good option. Hay nets and various devices are also used to slow hay consumption for horses that are on a limited-volume diet or require additional enrichment.

Grain should always be stored in a secured room to prevent any loose horses from accessing large quantities of it because grain overload can result in severe endotoxemia and death. Grain transported in wheel barrows should be secured in a safe place between feeding for the same reason.

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The grain should be stored in airtight containers to minimize rodent contamination. In warm climates, grain should also be stored in air-conditioned spaces to prevent the formation of mold. Consumption of moldy corn specifically can result in the severe neurologic condition *leukoencephalomalacia*, which is often fatal.

Hay should be stored in a separate building from the stable, when feasible. Studies have shown that stabling horses in close proximity to hay increases respiratory disease and it is also a fire hazard. Hay should be stored in an area where it can be stacked off the floor on pallets, kept dry from blowing rain, and have minimal sun exposure. To eliminate the chance of spontaneous combustion, hay must be properly cured before placing it the barn. It is advisable to store tractors and other gasoline-powered equipment in a separate area to reduce fuel fumes and decrease the risk of fire.

Bedding should also be stored in a separate facility to minimize dust and reduce the risk of fire. Common types of bedding are wood shavings, straw, and occasionally shredded paper. Wood shavings from Black Walnut trees should never be used because they can cause severe laminitis. Shredded paper or cardboard has the least amount of dust and is preferred for horses with respiratory disease. Stalls are cleaned on a daily basis and the removal of all urine and feces is important, as accumulation of ammonia from poor sanitation is detrimental to the respiratory tract. Commercial products have been developed to absorb ammonia in excessively wet areas within the stall. Removal of manure waste should be considered in the design plans of any facility. The manure can be composted or taken off site to a disposal area. Careful manure management is essential to minimize the spread of diseases, control flies, and prevent the spread of intestinal parasites.

Equine Hospitals

Equine hospitals should be designed with all the basic principles previously stated plus consideration for the type of patients that it will house. For example, when treating critically ill neonates, it is helpful to have a divided stall in a climate-controlled environment. This type of stall will allow the mare to stay near to her sick foal but provide adequate space for nursing care. There should also be plenty of lighting and electrical outlets and a ready supply of oxygen. Stalls with fully padded walls and a hoist are helpful when caring for recumbent or neurologic horses. Most facilities will use a 2-ton hoist for lifting neurologic horses.

The stall floor and walls should be composed of a surface that can be fully disinfected between patients. Concrete walls and rubber floors are typically used in large animal hospital settings. If surface paints are used, they must be impervious and tolerant of disinfectant chemicals. Each stall should be fitted with a fluid hanger that can be used to hold at least 10–20 liters of intravenous fluid bags at a time (Figure 1.1).

Each hospital should have an area that is appropriate for evaluating patients. Stocks are ideal for managing critical patients. The stocks keep the horse stationary while multiple staff members concurrently attend to the horse. Rectal examinations and diagnostic procedures are safe and easy to accomplish in stocks. The floor should be nonslip and easy to disinfect. The workup area should be in a quiet area away from mainstream traffic yet convenient to supplies and diagnostic equipment (Figure 1.2).

Isolation Facilities

To minimize the risk of spreading contagious diseases, every hospital and farm should have an isolation area and a corresponding protocol (Figure 1.3). The common contagious equine diseases

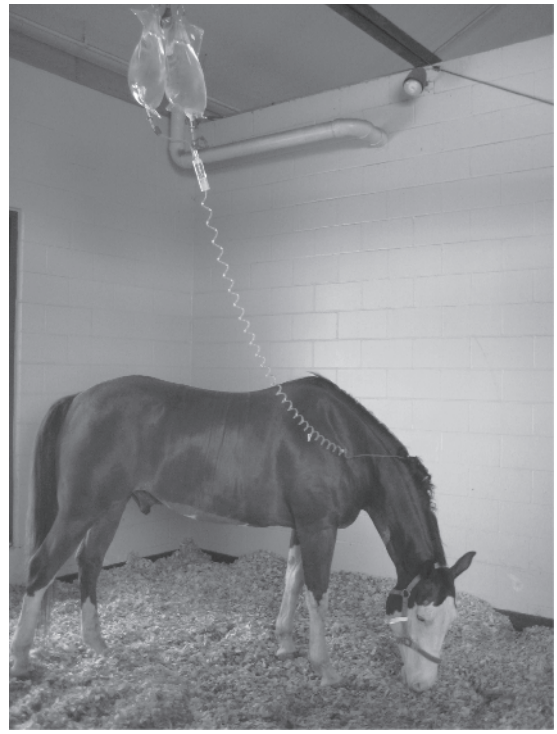

Figure 1.1 Fluid hangers that swivel and a rope to raise and lower them as needed should be placed in the center of the stall. Source: Courtesy of Dr. Dana Zimmel.

Figure 1.2 Stocks should be placed on a nonslip floor that can be disinfected. Notice the sides of the stocks can be raised or lowered or completely removed as needed to perform procedures. Source: Courtesy of Dr. Dana Zimmel.

are listed in Table 1.1. Contagious diseases can be spread between horses through contact with feces, aerosolization, or indirect contact with fomites such as water buckets, manure forks, contaminated tack or brushes, and personnel. It is important to be able to distinguish between contagious diseases and infectious diseases. A contagious disease is spread between horses and an infectious disease is caused by a specific agent such as a bacteria, virus, or parasite but is not at risk of direct transmission.

Figure 1.3 Isolation facility with a perimeter fence. Source: Courtesy of Dr. Dana Zimmel.

Table 1.1 Common contagious diseases.

Affected body system	Infectious etiology
Gastrointestinal	*Salmonellosis*
	Rotavirus
	Equine coronavirus
	Cryptosporidium
Respiratory	Strangles (*Streptococcus equi equi*)
	Equine influenza
	Equine herpesvirus (EHV-1 and EHV-4)
	Equine viral arteritis
Neurologic	Equine herpesvirus (EHV-1)
Reproduction/Abortion	Equine herpesvirus
	Equine viral arteritis
	Leptospirosis
	Contagious equine metritis (CEM)
Dermatologic	Dermatophytosis (ringworm)
Blood	Equine infectious anemia (EIA)
	Piroplasmosis

In hospitalized settings, an isolation facility is required when dealing with horses that may have contagious diseases, for example Strangles (*Streptococcus equi equi*), neurologic equine herpesvirus (EHV), or *Salmonella*. These contagious diseases can cause serious illness and can spread to other patients within the hospital.

Research shows that horses at risk of developing Salmonella infections are those with colic, diarrhea, or who have had exploratory abdominal surgery. The criteria for housing horses in the isolation unit may vary between hospitals but usually include the combination of fever, diarrhea, and a low white blood cell count. Fecal cultures for *Salmonella* are used to confirm a positive case. Because the organism is intermittently shed, five fecal cultures collected 12–24 hours apart are required to rule out the disease.

The protocol for isolating horses that may have contracted the neurologic form of EHV is more challenging. This form of herpes can spread through nasal secretions so careful isolation procedures are required to prevent spread among hospital patients. If horses are coming from a location where a horse has tested positive for EHV, the horse in question should be isolated until testing is complete. Nasal swabs and blood samples are used to test for the presence of the virus. Likewise, if any horse has developed sudden onset of fever and neurologic signs, it is best practice to place the horse in isolation until EHV infection can be adequately ruled out. Common neurologic signs for EHV include ataxia, poor tail tone, poor anal tone, and urinary incontinence.

Isolation stalls should be self-contained with water and electricity and connected to an anteroom that serves as a boundary area for supplies and equipment. The stall walls and floor should be composed of a nonporous surface that is easy to clean and tolerant of chemicals. Typical isolation protocol requires the use of plastic booties, barrier clothing, and gloves (Figure 1.4). All materials are discarded after use. Foot baths should be strategically placed to dip feet at least twice between the contaminated area and the clean area. Handwashing stations should also be available in the anteroom area where isolation apparel is removed. Manure and stall waste should be disposed according to state regulations and in a way that also prevents possible transmission to other hospitalized patients. Each stall should have its own veterinary equipment, brushes, buckets, and stall-cleaning equipment.

The isolation stall and all of the equipment are disinfected between patients. All organic debris must be removed first and then the surface may be scrubbed with the appropriate disinfectant. Chlorine compounds (bleach) can be used by adding three-quarters cup of bleach to 1 gal of water. Bleach is inactivated in the presence of organic debris, so it is imperative that all the surfaces be cleaned first. Phenolic compounds are used in a hospital setting because they are effective against

Figure 1.4 Horses in isolation should be handled with gloves, barrier clothing, and plastic foot covers. Source: Courtesy of Dr. Dana Zimmel.

both rotavirus and *Salmonella* organisms. Iodophors and alcohol are commonly used for handwashing.

Restraint of Horses

Horses are trained to be handled routinely from the left side but can be restrained from either side if necessary for clinical reasons. A halter and lead rope should always be used when working with a horse. The lead rope should never be wrapped around the hand or arm of the handler. Some horses may resist to being tied and will panic. For this reason, horses should not be tied unless the handler is certain the horse has received appropriate training. A horse should always be tied with a cotton lead rope with no chain attached and a quick release knot in case the horse needs to be untied quickly. For veterinary procedures, it is best to hold the horse rather than tie them to a wall or post.

The most common methods of physical restraint include a lead shank with a nose chain, lip chain, and nose twitch. The lead shank with a nose chain is an appropriate method to lead horses that are fractious (Figure 1.5). A lip chain is a method of significant restraint and is commonly used to control young racehorse or stallions. The chain portion of the lead shank is placed under the upper lip of the horse. Constant steady pressure is applied, and the handler should never jerk the rope suddenly (Figure 1.6).

A nose twitch is a good method of restraint for veterinary procedures because it will temporarily immobilize the horse. There are several types of twitches: a metal style called a humane twitch and a wooden handle with either a chain or rope loop at the end. The humane twitch is useful for

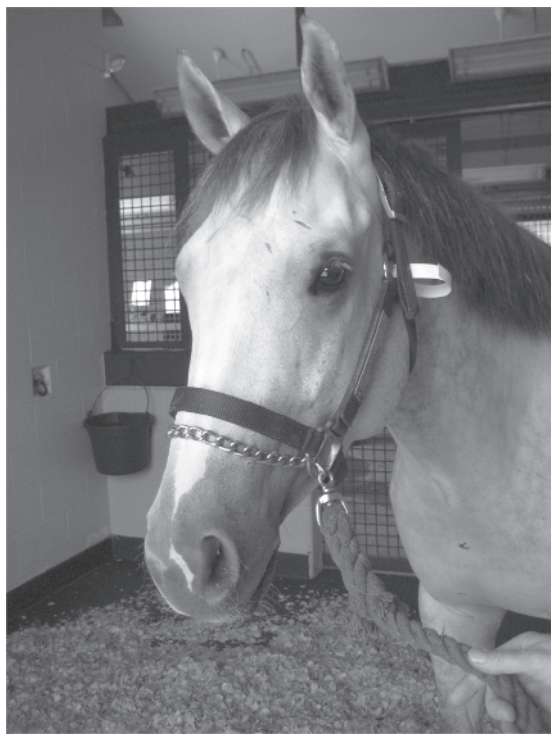

Figure 1.5 A lead shank with a nose chain is used to control excitable horses. Source: Courtesy of Dr. Dana Zimmel.

Figure 1.6 A lead shank with a chain applied under the upper lip is a method of restraint used commonly in the breeding shed or to perform veterinary procedures on excitable horses. Source: Courtesy of Dr. Dana Zimmel.

weanlings because it is small and the pressure is fairly mild. The wooden handle of a rope or chain twitch is approximately 45–50 cm long. The small rope loop or chain is placed around the upper lip, and the handle is twisted until the rope is tight (Figure 1.7). The handler should hold the twitch firmly and also use the lead rope to stabilize the head. The handler should be positioned on the side of the horse by the shoulder and should never stand in front of the horse. A nose twitch is used commonly to restrain the horse to pass a nasogastric tube, perform a rectal examination, or suture a wound. A twitch may be applied for short procedures and may be combined with sedation. A skin twitch is another method of restraint that requires the handler to grab a fold of skin along the neck and roll it until snug. This technique is appropriate to keep a horse still when administering an injection.

It is important to remember that physical restraint is often combined with chemical restraint. There are several medications available that will induce effective standing sedation in the horse and should be used instead of sole reliance on physical means of restraint, for improved safety of both horse and handlers.

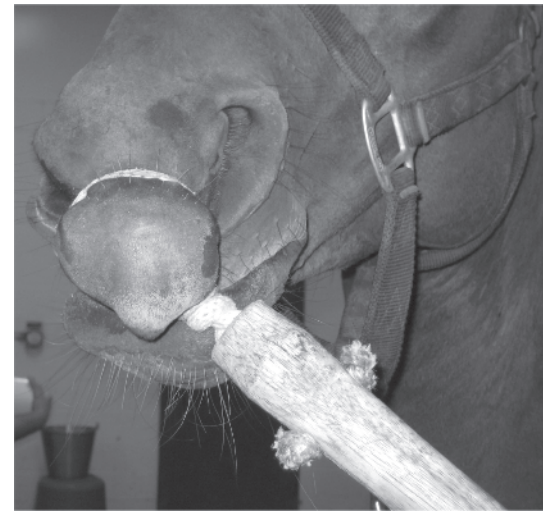

Figure 1.7 The rope twitch is a common method of restraint for passing a nasogastric tube or doing a rectal examination. Source: Courtesy of Dr. Dana Zimmel.

Methods of Identification

There are a variety of methods used to identify horses. In the United States, all horses must have a negative Coggins test, which tests for equine infectious anemia (EIA). The Coggins test form includes a hand-drawn picture or photos depicting the white marks on the head, legs, and body. This form is often used as a legal document of identification for the owner.

In the Thoroughbred (and previously Standardbred) industries, horses are identified by a tattoo placed on their upper lip. Freeze brands are common under the mane or hindquarters. The brand may be the registration number or simply signify the horse's breed or breeding farm.

The implantation of a microchip is easy and practical method for identification and required for some horse registrations, depending upon the organization. A small chip encapsulated in biocompatible glass vial (about the size of a grain of rice) is inserted into the ligament of the neck 1 in. below the crest on the left side. A 12-gauge needle is used to implant the device. The device is inexpensive ranging from $25 to $100 to implant.

Hoof Care

Daily foot care is important in maintaining healthy hooves. The feet should be cleaned each day with a hoof pick and stiff brush. The foot should be inspected for the presence of gravel along the hoof wall if the horse is barefoot. Mud and debris should be removed to keep the foot dry. If the horse is shod, the shoe should be inspected for fit and tightness. If the shoe becomes loose, the horse may lose it during exercise or turnout and damage the hoof wall. As the hoof grows, the shoe may shift and fail to provide the proper support resulting in lameness.

The hoof will grow 0.6 in. per month in a foal, 0.5 in. per month in a yearling, and 0.25–0.35 in. per month in an adult. The toe grows faster than heel. Thus, hooves should be trimmed every six to nine weeks. If the horse is shod, the shoes will need to be reset approximately every six weeks.

Shoes are used for a variety of reasons such as to protect the feet when the horse works on hard surfaces or to correct defects in hoof structure and growth. Shoes can assist in correcting the gait and can aid in gripping slick ground.

To remove a shoe, the clenches must be raised and each nail individually removed with a nail puller. This is an important skill for the veterinary technician to be comfortable performing. Removing shoes is necessary to evaluate the hoof, to take radiographs of the feet, or to place a horse in the magnetic resonance imaging (MRI) unit (Table 1.2).

Table 1.2 Useful farrier tools for the equine veterinary technician.

- Hoof testers
- Nail pullers
- Hoof knife (right or left handed)
- Shoe pullers
- Rasp
- Nippers

The hooves should be monitored for excessive moisture or extreme dryness. Excessive moisture from standing in mud or wet bedding can result in thrush. The loss of moisture, standing in urine and feces, and some astringent hoof dressings damage the protective layer of the hoof and may reduce the quality of the horn, thereby predisposing it to cracks.

Transportation of Horses

Health Concerns for Long-Distance Travel

Many horses travel long distances via road, train, or air without complications. In human athletes, traveling can directly impact performance. Horses that travel long distances may encounter impaired respiratory health, fatigue, and stress resulting in decreased performance. A small percentage of horses will become severely ill, developing shipping fever and subsequent pneumonia.

Studies have confirmed that mucociliary clearance is decreased when horses maintain an elevated head and neck position for as little as six hours. This is a common position for horses cross-tied during transport, if shipped in small stalls. The decrease in mucociliary clearance results in increased mucus, bacteria, and neutrophils in the trachea, predisposing the horse to pneumonia. Pneumonia associated with travel is often referred to as "Shipping Fever" and can be life-threatening if not treated promptly. Shipping horses in a box stall, which allows them to move freely, lay down, and put their head down and cough regularly, is a better option to reduce respiratory stress. After arrival at the final destination, the horse should have its temperature monitored every twelve hours for the next two days to detect early signs of respiratory infection.

Another problem that occurs when shipping horses long distances is mild colic. Horses are reluctant to drink on the road and may become dehydrated. It is best to stop and offer water every few hours to encourage drinking. Administering commercial electrolyte supplements or top dressing feeds with table salt can also encourage drinking and replaces electrolytes lost to sweat. Minimizing blankets on the horse during travel is better than allowing them to overheat and sweat. This can help to reduce their chances of becoming dehydrated (Table 1.3).

Shipping Sick or Injured Horses

- Horses that have severe colic should not be tied in the trailer during transport. If possible, they should be shipped in a box stall to have room to move around or lie down as needed.

Table 1.3 Guidelines for long-distance transport of horses.

• Take the temperature before and after transport to detect pyrexia.
• Offer water during the entire trip.
• Minimize blankets on the horse during travel.
• Plan for a recovery period after long transport. At least one overnight rest per eight hours of road travel or one day of rest for every two hours of flying.

Figure 1.8 A loading ramp should have tall sides and good footing. Source: Courtesy of Dr. Dana Zimmel.

- Sick neonatal foals should be separated from the mare with a divider if possible. If they are hypothermic, they should be placed in the cab of the vehicle or be covered in warm blankets. The mare may require sedation to tolerate being separated from her foal.
- Neurologic horses do better if they are shipped in a confined space that supports them on all sides. However, if they are weak, they may not be able to remain upright during travel. It is important that they are shipped in a van that has removable paneling in case they fall during transportation. A ramp will help to load and unload weak and ataxic horses. One person should be on the head and one person should take the tail to help stabilize the horse during loading.
- Horses with a distal limb fracture should be shipped similarly to neurologic horses. A snug fit may help them balance during the ride. The trailer should be equipped with removable panels that allow the horse to turn around in the trailer to exit. Appropriate use of a splint will protect the fractured area from additional damage during transport but must be applied carefully.

Loading Ramps

If horses have not been well trained, loading them can be easy or very challenging. Horses that are neurologic or have head injuries can be dangerous to load. An experienced horse handler should be in charge of this process when possible. Often, a veterinarian will be asked to sedate the horse to decrease the risk of the horse hurting itself.

Commercial vans will require the use of a loading ramp (Figure 1.8). Construction of a loading chute should be considered for all hospitals to facilitate the safe loading of horses (Figure 1.9). The chute keeps the horse from running backward and does not allow space for the horse to escape along the side of the trailer. The only option for the horse is to move forward onto the trailer. To minimize slipping and injury, it is best to load and unload horses in a dirt area, instead of concrete footing. The area where the horse is to be loaded should be completely fenced so if the horse becomes loose it does not get out on the road.

Figure 1.9 A loading chute will help load difficult horses. Source: Courtesy of Dr. Dana Zimmel.

References and Further Reading

Bassert, J.M. and Thomas, J. (2021). *Clinical Textbook for Veterinary Technicians and Nurses*, 10e. St. Louis: Elsevier.

Equine Disease Communication Center (n.d.). Biosecurity Resources. www.equinediseasecc.org (accessed 4 April 2022).

Raidal, S.L., Love, D.N., and Bailey, G.D. (1995). Inflammation and increased numbers of bacteria in the lower respiratory tract of horses within 6 to 12 hours of confinement with the head elevated. *Aust. Vet. J.* 72 (2): 45–50. https://doi.org/10.1111/j.1751-0813.1995.tb15328.x.