



# THE ONTARIO **EQUINE** EDUCATION AND EMPLOYMENT PROGRAM

An E-Manual to accompany the Ontario Equine Education and Employment Program  
**Equine Guelph, 2022**

# Welcome

## to the Ontario Equine Education and Employment Program

You have taken the first step towards a rewarding career in the equine industry! For success in this very competitive industry, knowledge and skills are valuable to succeed. This program (OEEEP) will help you begin to learn the knowledge and skills needed to be an important part of the industry. You are the “first line of defense” for the horse in your position as Groom or Caretaker.

The industry training program is divided into two parts:

- 1) TheHorsePortal Online Learning Community for knowledge and skills acquisition
- 2) Work placement and on-the-job Skills Training through the Mentoring System with an assessment of skills and knowledge for completion of the program

It is important that you understand the goals of the program and therefore the expectations of you as a student and employee of the horse industry. A survey was completed to determine the needs and desires of the horse industry and this program has been developed to reflect those needs and desires as summarized by the survey and reviewed by the Equine Guelph Education Committee with updates/consultation/review with our industry partners.



**EQUINE GUELPH**  
helping horses for life™

### Who is Equine Guelph?

Equine Guelph is the Centre for the horse owner at the University of Guelph. You can learn more about Equine Guelph by visiting [www.TheHorsePortal.ca](http://www.TheHorsePortal.ca) or [www.EquineGuelph.ca](http://www.EquineGuelph.ca)

### About this e-Manual

This e-Manual has been developed by Equine Guelph for the OEEEP program, as a companion document for the online training program and has been developed for the students of the program for reference and review.

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IMPROVE LIFE.



This Employment Ontario project is funded in part by the Government of Canada and the Government of Ontario.

# Goals of the Program

The goals of the Program focus on those interested in starting level Groom/Caretaker positions to:

- Develop a positive self-concept by learning the necessary skills for being a groom
- Practice making good decisions when caring for the equine athlete
- Demonstrate the value of learning so that the learning pathway for lifetime learning will be viewed positively by students

## Global Learning Objectives

Based on the Industry Goals, defined by our industry panel, students who successfully complete the program will be able to:

- Describe the basic skills and knowledge for employee and horse safety in the equine industry
- Demonstrate the skills and knowledge for safe and effective basic care and management of the racehorse in a caring and humane fashion
- Develop integrity and ethical standards that will help the industry to grow and develop for a sustainable future
- Understand the value of knowledge generated from research studies and to apply the information to improve the standards of care for equine athletes
- Work competently on a computer using basic skills for word processing, file opening, saving and sharing; conduct searches on the internet for quality information; and learn to function and contribute as part of the online community

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# Introduction

## to the Horse Industry and the Role of the Groom and Caretaker

Equine Guelph is the horse owners' centre at the University of Guelph, supported by the Equine Industry in Ontario. The online portion of this program is presented by Equine Guelph, on [TheHorsePortal.ca](http://TheHorsePortal.ca).

This program is designed to offer you an opportunity to develop the necessary skills and knowledge to begin your journey to becoming a top-notch groom or caretaker of the equine athlete. This is your chance to start on the pathway to a lifelong career in the horse industry by learning the basics of horse care. After successful completion, you can then progress to the next level. There are many pathways for rewarding careers in the horse industry, and we encourage you to look around, explore and ask people in the industry for more information when you get the chance to meet industry participants.

The groom's job is one of the most important in the horse industry. The groom is the "frontline caretaker" of the horse. It is important to understand that the horse is an athlete and needs to be treated as an athlete, with a focus on its health and welfare. A good groom exhibits all the positive traits and behaviours of true horsemanship. The actions of the groom can have a profound effect on the behaviour,



health and performance of his/her equine charges, so it is important for the groom to get started the right way!

The best grooms quickly learn to present a polished and professional appearance for themselves, their horses and stable. A professional groom takes great pride in the health and vigour of their horses. A good groom adapts his or her procedures to the temperament of each horse and keeps the horses calm and confident. This helps to reduce the stress imposed on the equine athlete by the competitive environment.

### Content for the course

1. The Horse: Identification, Anatomy, Physiology, Gaits of the Horse, Behaviour
2. Handling the Horse: Basic Handling Skills, Basic Safety
3. Care of the Horse: Horse Health, Disease Prevention
4. Nutrition: Feeds, Feeding
5. Facilities and Management: Daily Routine, Safety, Tack and Equipment
6. The Horse Industry in Ontario: Association Contacts, Equine JobTrack, Employment

LEARN, DO, REFLECT and APPLY!

# Phase One: Online Learning Program on TheHorsePortal.ca: Acquiring Knowledge and Skills

This part of the program is overseen by Equine Guelph with input/review from our industry partners.

You will begin your learning journey by working through the online modules. Through a digital learning program that includes videos and other interactive videos included in the Digital Learning Object, you will begin to develop your knowledge and skills as part of this learning community through a 6-module program.

**Skills and Knowledge:** You will learn important skills such as assessing the basic health status of your horses, basic feeding and nutrition requirements of the horse, safety and improved management standards, the “language” of the industry along with rules and regulations as they pertain to a new Groom/Caretaker. Review quizzes, learning activities and additional resources will be provided and give you opportunities to observe, learn, discuss, and analyze the knowledge

and practices that you are presented, including the Test Your Knowledge and quizzes.

**Groom Community of Practice:** You will be able to discuss your new skills and knowledge with others in the program and with your facilitators. As part of the online program, you will work through the Portal activities (and the e-Manual for specific groups coming from another program or association).

You will need to have regular access to a computer and the Internet 3-5 times per week over the 6 weeks. You will work through the 6 units by watching videos, viewing presentations, taking part in online discussions, and learning activities, as well as review activities and quizzes. The activities will help you learn new skills and identify the skills where you have become competent. You will also learn more about the procedures, tack and equipment, safety, first aid and prevention.

# Phase Two: Work Experience for On-The-Job Skills Training

After the online program, the next step is to find a placement with a mentor in the equine industry. The industry partners for this current program (Ontario Harness Horse Association and VPI, Inc.) will be contacting you about this phase and will organize and oversee the mentorship program.

When you are ready, you can begin to look for employment in the horse industry by posting on EquineJobTrack.ca, which is a free employment listing for the horse industry. Go to [www.EquineJobTrack.ca](http://www.EquineJobTrack.ca) and review employment opportunities currently available or you can list your own information and describe the position you are looking for. There are also a growing number of resources and other features on Equine JobTrack that may be of interest.

Ongoing learning opportunities are offered by Equine Guelph and include short courses and Certificate and Diploma pathways for your career development.



For more information, visit [www.TheHorsePortal.ca](http://www.TheHorsePortal.ca)

# UNIT 1 The Horse

## 1.1: Unit Introduction to Identification of Horses

### Colours and Markings

Horses come in a wonderful variety of colours and markings. The markings can be as individual as fingerprints in humans. Knowledge of colours and markings will be helpful in identifying different horses. This section will introduce you to the various colours and markings in horses. You will be introduced to the common colours of horses such as bay, brown, chestnut, grey and a few others.

Leg markings such as socks and stockings, along with facial markings such as snips, strips and blazes will be presented.

In this section, you will learn to correctly identify the common colours and markings of the horse and will use this knowledge to help identify horses.

### Learning Objectives

- Upon successful completion of this section, you will be able to:
- Identify and describe common colours of horses
- Identify and describe common white markings of the face
- Identify and describe leg markings

### Digital Learning Object (DLO)

For each Unit, we have developed an audio/visual introduction to each topic to help get you started with the basics. In your course site, open your Digital Learning Object for audio-visuals on this topic so that you can see the coloured pictures.

Let us start off with some of the basic areas that new grooms need to learn - the colours of the hair coat and the white markings on the face and legs. This is one of the first steps when identifying a horse.

**Appaloosa** – An appaloosa is a breed with a specific spotted colour over the whole body. The body can have white hair with coloured spots on it, or the horse may be a brown or chestnut colour with a “blanket” of white with spots over the rump. Many variations of this colouring exist.

**Bay** – the body can be a brown or reddish-brown to brown colour with a black mane, tail, legs and points. There are several variations of bay, from deep



red or mahogany to a light bay. Bay horses can have white markings on the face and legs.

**Black** – the hair over the entire body is black, including all points. If there are brown hairs mixed in around the flank, muzzle, belly or legs, then the horse is not a true black but would be called a brown. True black colouring is not common unless in specific breeds such as Friesians. Black horses can have stockings and face markings. If the horse is out in the sun, there can be changes in colour along the back resulting in slight browning of the hair.

**Bloody Shoulder** – Also called blood mark, this is a patch of reddish or brown hair on the body, often on the shoulder/neck area.

**Brown** – The brown horse has both black and brown hairs on the body with a colour ranging from very dark to a lighter mouse brown shade. They may have lighter brown areas on the muzzle, legs, and belly and around the eyes. They have no black points but can have white markings on face or legs.

**Buckskin** – The body will be a yellow shade, along with variations of dark brown/red, tan or golden to even a silvery colour and the mane and tail will be black. White markings may be found on buckskin horses, but they do not have a dorsal stripe (black stripe down the back, which would make it a dun).

**Chestnut** – The chestnut horse is a reddish colour that can range from a dark chestnut, red chestnut, liver chestnut to a light or sandy coloured or even copper coloured chestnut (the term sorrel may also be used). The mane and tail are the same colour (or close) as the body, and there are no black points. A chestnut with a much lighter coloured mane and tail is commonly called a flaxen. There can be a variety of

white markings on the face and legs. The term sorrel may be used by Western disciplines, and chestnut used by English disciplines.

**Cremello/Cream** – the body of the horse is a very pale cream colour (not a true white). The skin is pink and they have blue eyes. Although hard to distinguish, cremello horses can have white markings on the face and legs.

**Dapples** – Dapples are circular patterns in the coat usually with a mixing of a lighter with a darker shade, which creates the “dappled pattern”. A common colour is a “dappled grey” but it may appear in other colours as well.

**Dorsal stripe** – this is a black (or dark) stripe down the centre of the back from the mane to the tail head.

**Dun** – A buckskin with a dorsal stripe is called a dun, but otherwise shares the same colouration as the buckskin. It is also not uncommon to see zebra stripes on the legs, and wither striping across the shoulders. White markings may be seen on the legs and face. There is also a red dun which is more of a copper colour with a dorsal stripe, and possibly striping on the legs.

**Flea-bitten** – This term refers to a horse with small flecks of colour over the base coat. The flecks are usually a reddish or brown colour, and a common colour with this would be a “flea-bitten gray”.

**Gray** – the hair on the body will be white over black or pigmented skin or a mixture of gray and black. Gray horses are born other colours like black, bay or chestnut but become gray after they shed their baby coats or as they age, usually starting about 2 years of age. There may be variations with flecks of other colours on the gray coat. There can be white markings on the face and legs. Gray horses may also have dapples as they age (mid-age) and they often get progressively whiter with age.

**Grulla** – Also called grullo, these horses are similar to the duns and have a dorsal stripe and may have primitive markings as well. The grulla shade can be quite variable with a smoky, dove, or mouse-coloured body but they will have black points and darker-coloured heads. Some have blue eyes.

**Ink spots** – these are small dark spots on the white area, often seen in paint or pinto horses.

**Multi-coloured** – Horses can also have white and coloured patterns on their body. The pinto is a two-coloured horse with patches of white over the second colour of black, bay, or chestnut. Less commonly,

you may hear the term piebald, which is a horse with white on the black, or a skewbald, which is any other colour than black with the white. Appaloosas are a breed with spotting patterns, as well as the Pony of the Americas. The base coat can have white spots over the rump or the whole horse with many, many variations. The skin can be variations of non-pigmented (white) to dark skin.

**Palomino** – the coat of the horse is yellow with a white/cream mane and tail, and no black markings or points. The palomino can be a very rich golden colour to a very light “straw” yellow. White markings are common on the legs and face.

**Roan** – white hairs are mixed in with other base coat colours of black, bay and chestnut and as a result can be referred to as “blue roan”, “red roan” or “strawberry roan” respectively. They may shed out to a roan after the loss of the foal coat, but they remain a roan for their life. They usually have a solid-coloured head, and the legs may be the same colour as the head.

**“Primitive” markings** – these include zebra-like striping on the knee, hock, stifle or lower leg. It can also include a wither stripe across the shoulders along with the dorsal stripe, called a “cross”. Rarely, there may be “cobwebs” on the forehead.

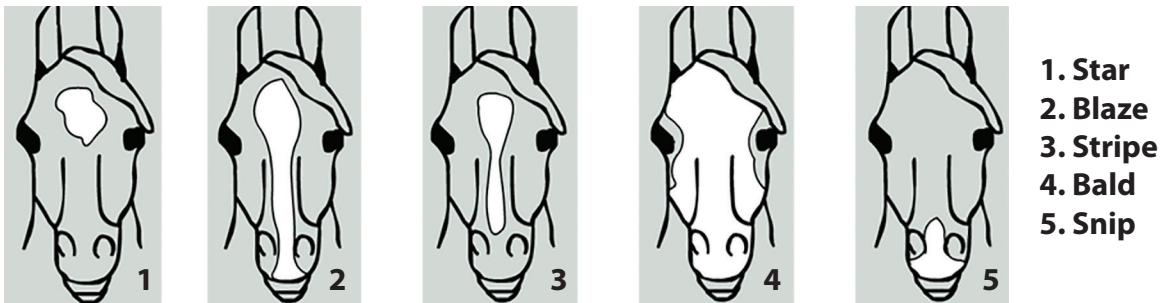
**White** – Very few horses are true white with pink skin and dark coloured eyes. There may be true whites in Arabians and Thoroughbreds and rarely in Tennessee Walking horses. The albino horse is often confused with a white horse; however, albino horses have pink skin and pink eyes, muzzle, rectum, and sheath. There are no true albino horses as they do not have pink eyes, just pink sclera

## Colour Breeds

In the horse world, there are also “Colour Breeds” and “Colour Registries”. Colour Registries only register a certain colour of horse, such as Pinto, Palomino or Buckskin, even though the breed of the horse can be different (for example there can be Palomino Quarter Horse or a Palomino Walking Horse, so two different breeds, but both can be registered as Palomino in the Colour Registry). Then there are “Colour Breeds” which include defined colours or patterns, and Paint and Appaloosa are two examples. It is also possible for a horse to be double registered in the Breed Registry and the Colour Registry. For example, a part-bred Arabian that is a palomino can be registered with the Arabian registry and the Palomino registry.

## Face Markings

Horses can have specific white markings on the face and legs. These, along with scars and whorls in the hair, are important aspects for identification. White markings on the face generally fall into specific patterns, although there can be several variations and combinations. Examine the following diagrams to learn about white markings on the face.



There can be combinations of these markings as well, for example, a horse may have a star and snip together or a bald face can extend to or over the eyes.

## Leg Markings

White markings on the legs can also be variable but again fall into certain patterns. Examine the following diagrams to learn more about the white markings on the legs and their descriptions. The hooves can also be solid white, solid black or have vertical striping of white and black. There are many variations and combinations of the markings on the legs and hooves.



## Summary

You have now finished Colours and Markings. You have learned to identify the different colours of horses. There are many variations of the major colours and with experience you will learn more about those colours. If you are interested in learning more about the genetics of colours, you may want to do a web search or Equine Guelph offers an Equine Genetics course online. You have also been introduced to the major white markings of the face and legs (a unique trait amongst horses) as these can be important for helping you identify horses.

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## Unit 1.1 Common Terms Used for Horses

### Introduction

If you are new to the horse industry, you may feel like those around you are speaking a foreign language! It is helpful for you to learn what these terms mean and how they are used in daily conversation. In this section, you will learn the common terms for gender and type, state of growth, and categories of horses.

Once familiar with these terms, you can use them during your conversation with equine professionals.

You have learned about the common colours and white markings of horses, so let us challenge ourselves to learn about more terms. When describing a horse, you will be required to refer to most or all the following descriptors: colour, sex, markings, height, age, type, and breed.

For example, the horse named "Mark'n Time" is a 13 hand, bay Standardbred yearling filly with one white sock and a star. A second example is a horse named "Smoky Buzz" is a 14.3 hand Quarter Horse buckskin stallion with no white markings but has primitive stripes on the hocks.



## Learning Objectives

Upon successful completion of this section, you will be able to:

- Identify and define the common terms used to describe horses
- Use the new terms appropriately in conversation
- Define descriptive terms such as near side and off-side
- Define the terms dorsal, caudal, cranial, ventral

Refer to the Digital Learning Object on TheHorsePortal for more audio-visuals.

**Mare** – a term used for a female horse after she has turned 3 years of age. (Note: in some countries they may use the age of 4 for this term.)

**Stallion** – the term used for a male horse over the age of 4 years that has not been gelded (castrated).

**Gelding** – a male horse that has been castrated (the male sexual organs, the testicles, have been surgically removed). Colts are usually gelded at about one year of age, but that can vary according to the individual horse and its maturity and rate of growth.

**Foal** – a young horse that has not been weaned (separated) from its mother or dam. It is a term applied to young newborn horses of either sex. It is usually used to describe a horse under one year of age.

**Filly** – a term used for a female foal, when it is necessary to denote the sex of the foal. The term applies until she turns 3, after which she is called a mare. (Note: in other countries, the age may be 4.)

**Colt** – the term used for a male foal, when it is necessary to denote the sex of the foal. The term will be used to describe him until he turns 4 years of age.

**Dam** – the term used for the mother or the female parent.

**Sire** – the term used for the father of the foal or the male parent.

**Yearling** – on January 1 following its birth, the foal is now called a yearling. This refers to a horse that is between one and two years of age.

**Weanling** – this term is used to describe a foal just separated from its mother or dam. The process of separation is called “weaning the foal” and may occur at about 6 months of age, however, the time of weaning can vary according to many factors.

**Height** – the height of the horse is measured from the top of the withers to the ground and is expressed in hands. A height stick or “withers stick” is the tool to use for measuring the height of the horse.

**Hand** – the unit of measure for the height of

horses, with one hand equivalent to four inches (10 cm). If the horse measures 14 and one-half hands, this would be expressed as 14 h 2” or 14:2.

## Age of the Horse

The age of the horse for racing classification is determined by the calendar year, not the date of birth. A foal that is born on March 30, 2020 will become one year old (yearling) on January 1, 2021. Even if the foal was born at 11:45 p.m. on December 31, 2020, the foal would become a yearling in 15 minutes! Note: This applies to both racing and non-racing horses in North America. In Australia, it is August 1.

## Terms for Surfaces of the Horse

You may have heard (or may in the future) a veterinarian describe an injury using a phrase like “the lesion is on the cranial surface of the radius”. The veterinarian was referring to the surface, or the side of the bone closest to the head, of the radius (one of the bones in the forearm of the horse). Using terms to describe the surfaces of the horse, or planes of the horse, helps us to be specific when we are describing things. (See the DLO on course site for more information)

The following are common terms to describe the surfaces of the horse.

**Dorsal** – this term describes the upper side of the body or towards the back.

**Ventral** – this term describes the lower or underside of the body, also called the abdominal side.

**Caudal** – this term refers to the tail or rear end of the horse, also called the posterior side.

**Cranial** – this term refers to the head area or toward the head area. The term anterior may be used to refer to the cranial area. The anterior or cranial surface of a bone is the surface toward the direction of the head.

**Posterior** – this term refers to the back end of the animal, also called the caudal area. For example, the tail is found in the caudal or posterior region of the horse.

**Anterior** – this term refers to the area of the head of the horse or toward the head. The term cranial can be used as well.

**Forequarters** – this is the area from the shoulders/withers to the head of the horse and includes the front legs, neck and head.

**Hindquarters** – this is the area from the barrel to the tail and includes the back legs.

**Near side and Offside** – the left side of the horse is the near side, and the right is the offside.

## Summary

In this section you have learned terms used in the horse industry to describe various categories of horses. This is important because a groom needs to understand the specific terms used for describing horses in the industry. Using the correct terms helps to prevent misunderstandings and marks you out as a knowledgeable caretaker.

## Unit 1.1 Identification of Horses – Tattoos and Registration

### Introduction

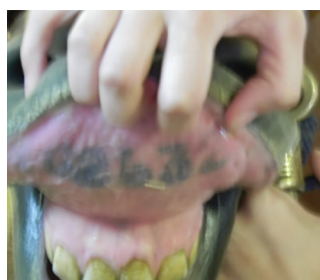
Identification of the individual horse and proof of registration is an important part of racing, sales and other equine activities. We will review the various methods used to identify horses, such as tattoos of the upper lip or freeze branding and the recent addition, microchipping. When racing a horse, the identity of the horse will be checked and verified and it is important that the groom be familiar with these procedures. Other competitive events also have methods of checking the identification of the horse such as passports and registration papers.

In this section, you will learn about tattoos, freeze-brands, micro-chips and registration papers.

### Learning Objectives

Upon successful completion of this section, you will be able to:

- Identify and describe the purpose of a tattoo, microchip or freeze/hot brand
- Identify and describe registration papers and their purpose
- Identify and describe procedures used for verification of the identity of the horse



Credit: G. Ecker

You have learned about the Tattoos and Registration papers from the DLO, so now let us look at a few others through a visual presentation.

We have learned that a tattoo is found on the upper

lip of the horse, typically a Thoroughbred racehorse that has come to the track to start its racing career. You can see the numbers tattooed on the upper lip of the horse in the lower left corner.



Credit: G. Ecker

A freeze-brand tattoo typical of those found on Standardbreds is on the right side of the neck under the mane with a series of letters and numbers. This has recently changed for Standardbreds. For any horses born on or after

January 1, 2019, the new system of microchipping will be implemented.

You may recall watching western movies where cowboys roped the cattle and branded them with a hot iron, glowing red from the fire. This is called Hot Branding, and unfortunately this is still practiced in some areas, but causes great pain as the hair is burned off and the skin is burned so the hair does not grow back and the scar is an evident sign of ownership. Here are examples of hot brands on horses.



Credit: G. Ecker



Credit: G. Ecker



Credit: G. Ecker



Credit: G. Ecker



Credit: G. Ecker

There are several brands on the rump of the horse above, indicating several changes of ownership and each put their brand on the horse.

This horse (above) has a special brand on the left side of the neck, indicating that it was once under the ownership of the Bureau of Land Management, in the U.S.



You should be able to point to the following parts of the horse:

**Specific Parts of the Horse:** Head, muzzle, nostril, lips, bridge of nose, face, eyes, forehead, forelock, poll, ears, neck, crest, mane, withers, back, loin, abdomen, ribs, croup, tailhead, tail, buttocks/rump, flank, stifle, gaskin, hock, cannon, pastern, fetlock/ankle, coronet, hoof, knee, forearm/foreleg, elbow, shoulder, point of the shoulder, chest, throatlatch, jugular groove, jaw, heart girth, barrel

**Specific Parts of the Hoof:** coronet, wall, toe, white line, frog, bars, sole, heel/bulb of the heel, periople

**General Terms:** Hind leg, foreleg, near side, offside

Let us take a closer look at the hoof. When you are able to do so, examine the hoof of a quiet horse. You can do this while cleaning out the feet as part of the daily care of the horse. Compare the shape of the front hooves with that of the back hooves. What differences do you



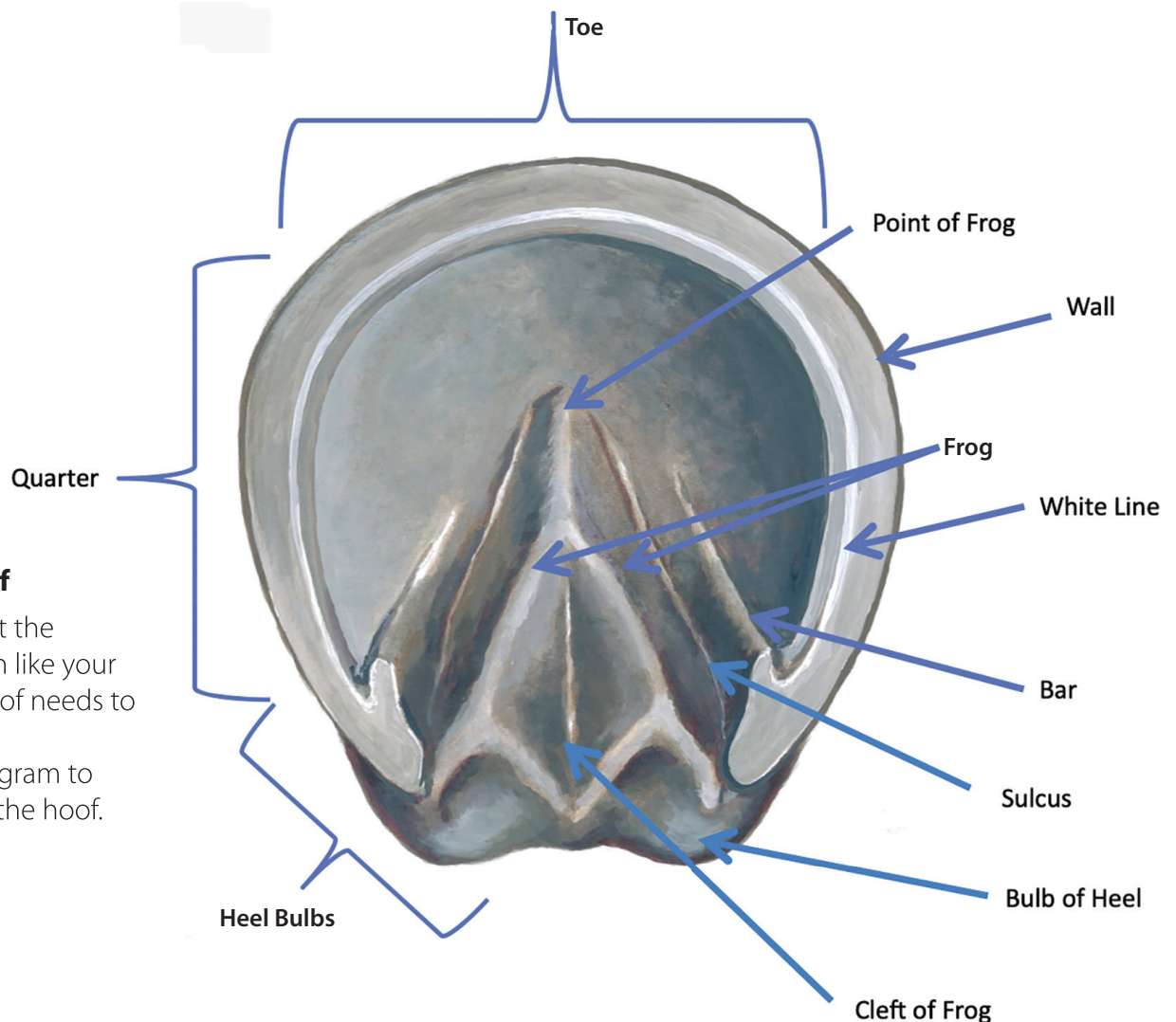
see? When examining the hoof, do not forget to find the wall and identify the toe, quarter and heel.

Feel the coronet band and gently move the hair aside so you can see where the skin blends into the hoof wall.

Pick up the hoof and examine the underside. Clean

out the hoof with a hoof pick so you can see all the parts (if you have not been trained to clean out a hoof yet, ask an equine professional to show you the safe way to do so or see the section on Basic Handling, (under Handling the Horse for more information). Identify the sole, the frog and the white line.

Watch the hoof for changes as it grows out after a trim. If possible, talk to the farrier when he or she visits and have the farrier point out the characteristics of the hooves. Watch as the farrier trims the hoof so you can see the structures on the bottom of the hoof.

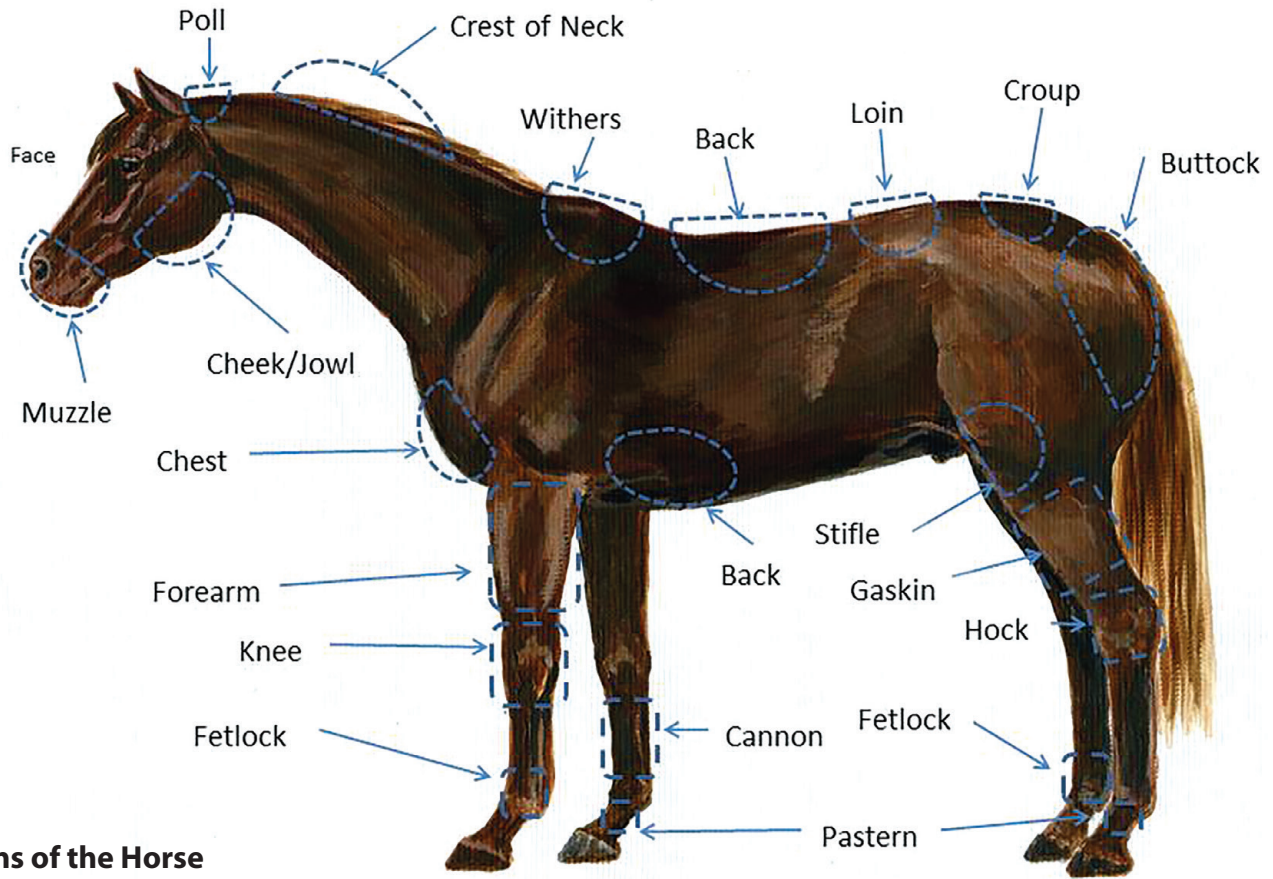


### Parts of the Hoof

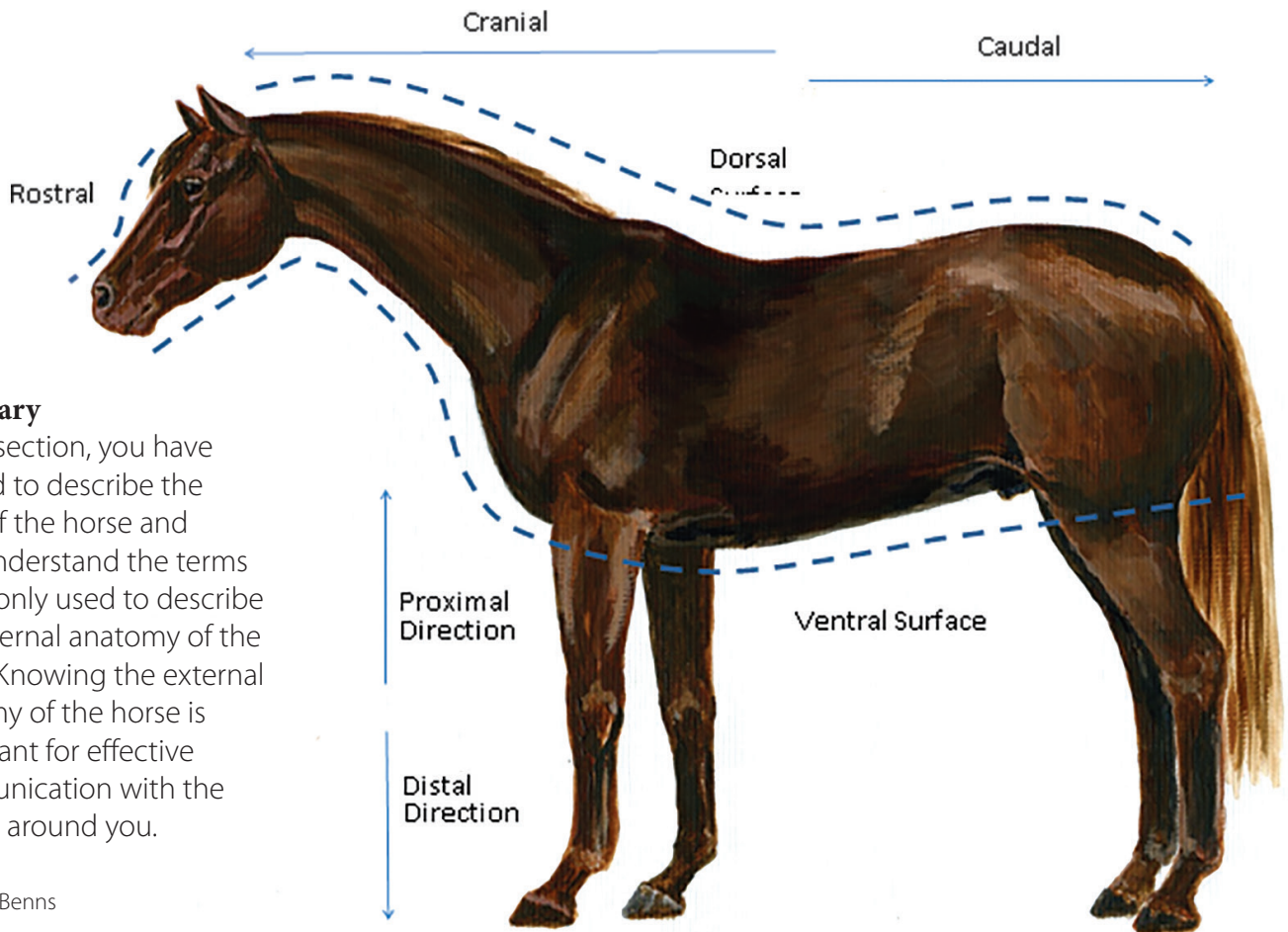
Did you know that the hoof grows? Much like your fingernails, the hoof needs to be trimmed.

Study the diagram to learn the parts of the hoof.

Credit: R. Benns



**Regions of the Horse**



**Summary**

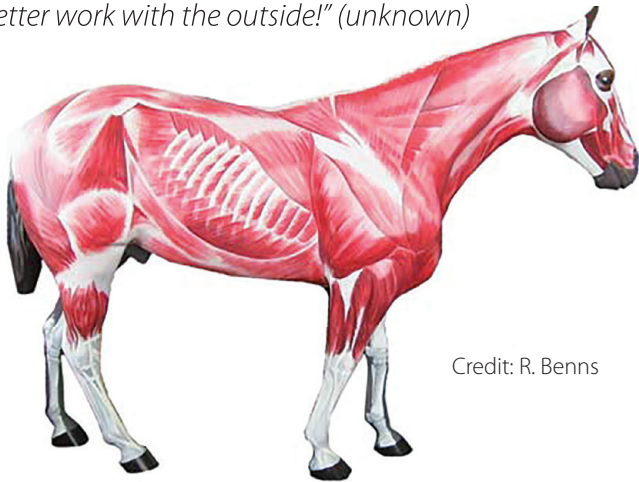
In this section, you have learned to describe the parts of the horse and now understand the terms commonly used to describe the external anatomy of the horse. Knowing the external anatomy of the horse is important for effective communication with the people around you.

Credit: R. Benns

## 1.2 Internal Anatomy

### Introduction

*"It is crucial to understand the inside of a horse, in order to better work with the outside!" (unknown)*



Credit: R. Bennis

The horse is an amazing athlete, and we are often in awe of the athletic feats it can achieve. However, these same athletic feats pose a risk to the health of the horse when injury or disease strikes. As a groom, you play an important role in prevention and identification of problems at an early stage. You can be more effective in this role if you understand some basic horse anatomy.

Many similarities exist between a human and a horse, but also, some important differences exist. The bones and organs of the horse have evolved over time for life as a prey animal and you will be introduced to some of these adaptations in order to better care for the health of your horse. A horse's anatomy allows the horse to move on all four feet and to achieve different gaits. It will help if you think of yourself as walking on your hands and feet, like a four-legged animal, as this may help you better understand the horse.

The tissues, organs and systems of the horse will be introduced. This will help you develop a basic understanding of the internal anatomy so that you can learn the workings (physiology) of the different systems necessary to sustain life.

### Learning Objectives

*Upon successful completion of this section, you will be able to:*

- Identify and describe the major organs of the horse and identify to which system(s) each organ belongs
- Identify and describe the major bones in the skeleton
- Identify, describe and differentiate the five divisions of the vertebral column
- Identify, describe and give examples of the basic types of joints

- Identify and describe three different types of muscle fibres and where these would be located in the horse
- Identify and describe different types of tissues in the body



Credit: R. Bennis

For this section, go to the DLO from the course site. Find the section on The Horse-Anatomy-Internal Anatomy. In this section, you will be introduced to the terms used to describe various parts and organs on the inside of the horse. This will be done in an interactive format (which we cannot re-create in the e-manual) that will help you learn the parts and organs of the inside of the horse. We will learn about the organs first, and then look at the Physiology, which is how the organs function, but first, let us get started on learning about the internal anatomy by going to the DLO. Or you can refer to websites with horse anatomy. Then test yourself by labelling all the structures that you can on the following diagram.

### Summary

In this section you have learned the names and structures of the main organs, bones and muscles of the horse. This will help you understand the structure of the horse and will give you insight into many of the problems that the athletic horse may experience.

Knowing the internal anatomy of the horse is important as this level of understanding can help you assess your horse. You will also be able to discuss any problems your horse may have with veterinarians and other equine professionals.

Do a web search to find some articles on internal anatomy or read some books on anatomy of the horse either through the library or ordering them online. There are several good ones available. If you like anatomy, Equine Guelph has an Equine Functional Anatomy course that will take your learning to the next level for those interested. There are many other courses available to you that you can review by checking on [TheHorsePortal.ca](http://TheHorsePortal.ca).

## Unit 1.3 Physiology

### Introduction

Now that you have learned about the organs and internal anatomy of the horse, it is time to “put the pieces of the puzzle together”. We will learn about the structure and function of the systems of the body and the role each plays in maintaining health and performance. This section will provide a solid foundation which you will need for future units on stable management, health and disease prevention, nutrition and others. This section is divided into the following areas:

- Skeletal System
- Muscular System
- Digestive System
- Respiratory System
- Circulatory System
- Excretory System (Urinary System)
- Nervous System
- Endocrine System
- Reproductive System (optional)
- Skin
- Immune System

### Learning Objectives

*Upon successful completion of this section, you will be able to:*

- *Identify and describe the role of each of the major systems in the body*
- *Identify the organs and know their major functions*
- *Describe the normal functioning of the major systems of the body*
- *Trace the pathway of the circulation of blood through the body*
- *Trace the pathway of food through the digestive tract*

The DLO on the course site and go to 1.3 The Horse-Physiology to learn about the different systems of the horse and the basic functions of each system, including the function of the organs that are part of that system. This will be done in an interactive format with audio-visuals that will help you understand the basic functioning of the organs as part of the system and then how the systems are all connected and dependent upon each other for a healthy functioning horse. Work through each system.

### The Skeletal System

The skeletal system is made up of the bones of the legs, body, head and neck. The skeleton gives the body

shape and form. It also protects the internal organs, such as the brain which is inside the skull, and the heart and lungs which are inside the ribcage.

Think about what a horse would look like without bones. What would happen to the horse if the bones were suddenly vaporized? The horse would collapse into a shapeless lump on the ground. It could not move to find food or run away from predators or danger. This clearly demonstrates the importance of the skeleton.

**Did You Know?** A horse typically has 205 bones that make up the skeleton. A human skeleton has 206. There can be variations, for example, there are usually six vertebrae in the lumbar (lower back) region in most horses, but breeds such as Arabians, may have 5 lumbar vertebrae.

For a racehorse or performance horse, the skeleton must be strong, particularly the legs, as they carry the weight of the horse and support that weight as it lands on each leg, including the concussive forces as the foot strikes the ground. The hips (also called the pelvis) and shoulders must have strong bones, as the force from running is transferred up through the legs and into the pelvis and shoulders. Finally, the backbone (called the vertebral column, as it is made up of many individual bones called vertebrae) must also be strong. The backbone is the connection between the front and back legs and acts much like the supports of a suspension bridge.

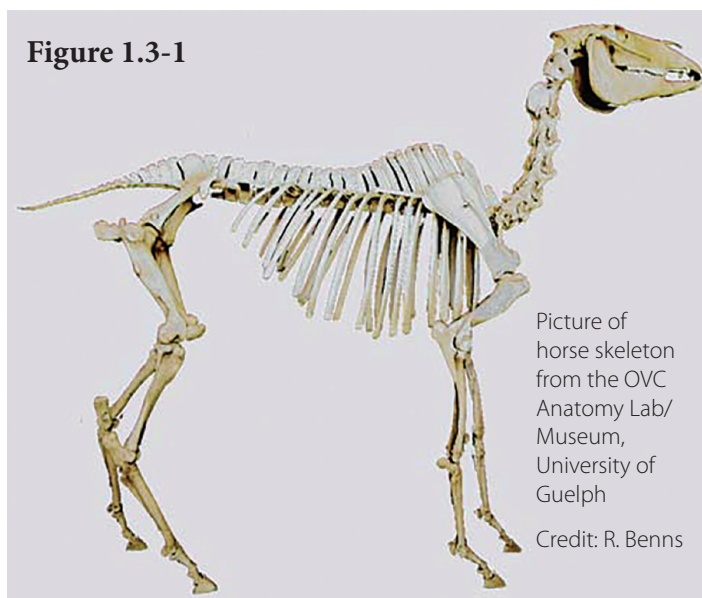
**Did You Know?** The human shoulder is attached to the body through the clavicle. The horse does not have a clavicle, so the shoulder rests in the muscle attachments and has no bony attachment to the body. All the forces acting on the front leg are absorbed through the muscles.

### Functions of the Skeleton

- Provides support and structure, giving rigidity to legs and body
- Provides a lever so the muscles can cause movement when they contract
- Provides protection to vital organs like the brain, heart, lungs and digestive tract
- Provides a storage of important minerals like calcium and phosphorous
- Contains marrow (a fatty substance) where the blood cells are produced

## Characteristics of Bones

- Bone is a “living” tissue that requires blood flow for growth and repair
- Bone is flexible but strong
- Bones are arranged in “cylinders” and layers giving strength, yet reducing weight
- Bones contain a high proportion of minerals such as calcium, phosphorous, magnesium and sodium
- Bone is “soft” in the young horse but becomes harder with age and can become “brittle” with advanced age
- Bones have two types of cells; the “osteoblasts” that create new bone cells for growth and repair, and “osteoclasts” that reabsorb the bone for re-modelling
- “Growth plates” are located at the ends of the bones where the new cells are added to continue growing the bone and then become hard.



**Figure 1.3-1**

Picture of horse skeleton from the OVC Anatomy Lab/ Museum, University of Guelph  
Credit: R. Bennis

**Figure 1.3-1:** The skeleton of the horse.

The skeleton is divided into two divisions:

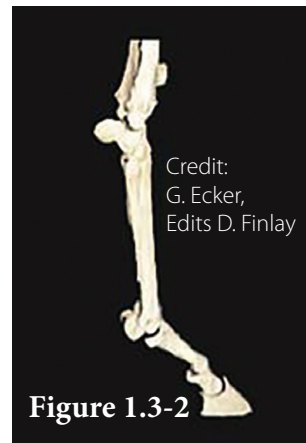
1. The trunk (also called the axial skeleton).
2. The limbs (also called the appendicular skeleton).

## Shapes of the Bones

When you look at all the bones in the skeleton, you will see they have developed into many sizes and shapes. This variety helps to provide functional advantages for the horse such as range of motion, attachments for the muscles, and sometimes rotational movements.

## Long Bones

There are “long” bones, such as the femur, which provide support and act as levers for movement. Examples of long bones include the femur, cannon bone, radius, ulna and humerus.



**Figure 1.3-2**

Credit: G. Ecker, Edits D. Finlay

**Figure 1.3-2:** An example of a long bone is the cannon bone in the front leg. The cannon bone is found on the lower leg for both front and back legs.

## Flat Bones

There are “flat” bones that provide protection as well as a bony location for attachments of muscles and ligaments... These would

include the scapula (shoulder bone), the bones of the skull (cranium), the ribs and sternum (breastbone).



Credit: R. Bennis

**Figure 1.3-3:** An example of a flat bone is the scapula or shoulder bone.

**Did You Know?** In ancient civilizations, humans used the scapula of the horse as a shovel or spade in digging trenches! In fact, the word “scapula” comes from the Latin word for ‘shovel’.

## Short Bones

There are “short” bones, like the ones in the front knee or the hock in the hind leg. These provide shock absorption during locomotion.



**Figure 1.3-4:** An example of short bones can be found in the knee joint. This is a front view of the right knee. Notice the many small bones located between the two long bones that make up the joint. In this picture the bones are fused as this is a model of the leg.

Credit: G. Ecker, Edits D. Finlay

**Did You Know?** The “knee joint” in the horse is comparable to the human wrist and is made up of several smaller bones that allow movement.

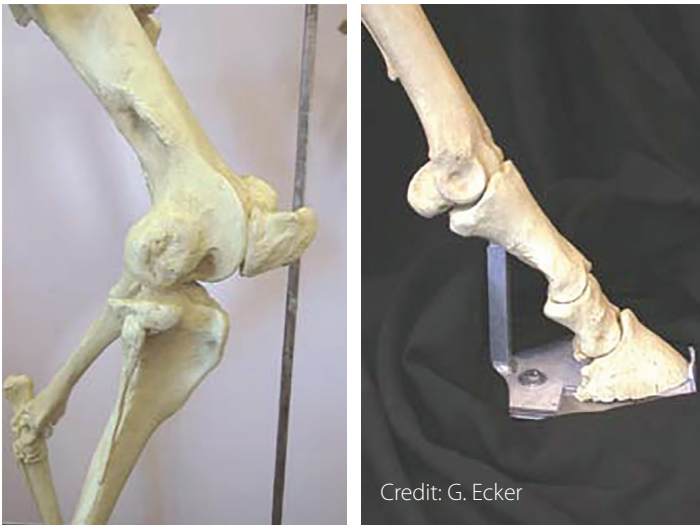
## Irregular Bones

There are “irregular” bones, such as the bones in the back and vertebrae, which come in specialized shapes for specific purposes. This category also includes the “sesamoid” bones. The sesamoid bones (called so because they resemble sesame seeds) are smaller,



usually rounded in shape, and found in certain tendons, where they act as “bearings” for movement in some of the joints. The largest sesamoid bone is the knee cap (patella). There are also sesamoid bones in the fetlock joint (the ankle). There is also a tiny bone behind the coffin bone (the bone inside the hoof wall) that is called the navicular bone, as it is shaped like a tiny canoe!

**Did You Know?** The tiny navicular bone in the horse can be damaged or it degenerates, leading to “navicular disease” (usually in the front feet) or navicular syndrome, which can be very painful as well as career-ending for the horse. The navicular bone looks like a tiny canoe! Humans have a navicular bone in the middle part of our foot.



**Figure 1.3-5:** The patella (also called the kneecap in humans) is the small bone at the front of the stifle joint, also called the hock (left photo), is one of the sesamoid bones and there are sesamoid bones at the back of the fetlock joint (right photo).

**Did You Know?** Sesamoid bone damage can be a serious problem for the horse, particularly for fractures. These bones do not have the same blood supply as found in other bones, so healing after damage can be challenging for the horse.

### Joints

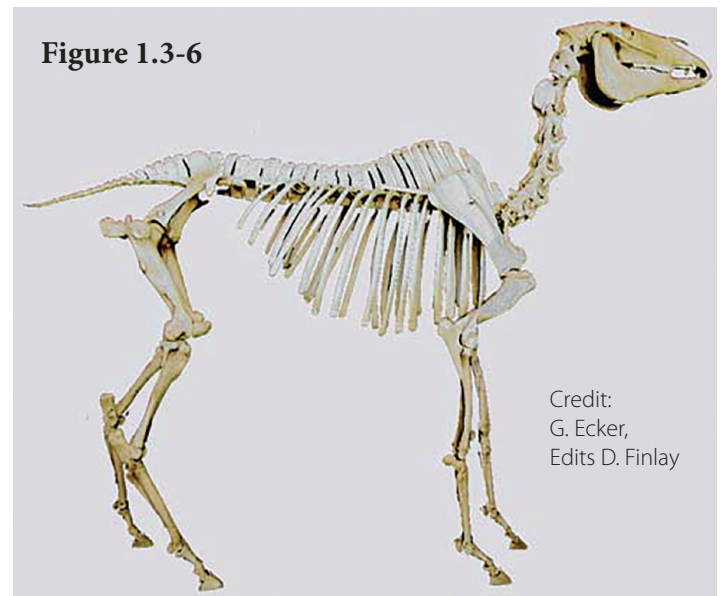
Now think about a hypothetical horse with legs that do not bend, something often called a “peg-leg horse”. Try walking without bending your knees or ankles. Pretty tough, right?

Running is even harder! So, what makes it easier to move? The “joint”.

A joint is the area where two bones meet. It is also called an articulation. Joints can be freely movable, slightly movable, or immovable depending on how they are constructed.

In the skull, several bones come together (they are fused) and form a protective barrier to safeguard the brain. The ribs join the vertebral column and form a protective, but light cage around the organs (the heart, lungs, digestive tract) in the chest and abdomen.

Now, look at the skeleton in the legs. At a joint, the two (or more) bones are joined together in such a way that movement is allowed to take place, and the amount of movement is controlled and limited for safety and efficiency.

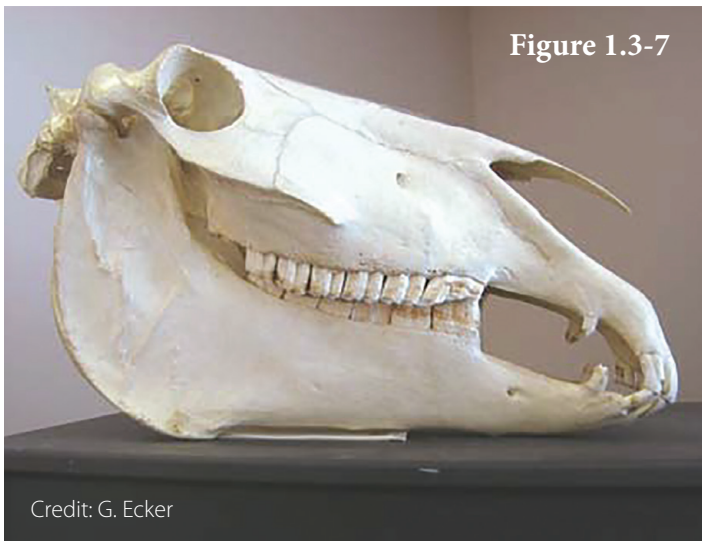


**Figure 1.3-6:** Look at the skeleton in the image above. Look closely at the legs and identify where the legs can bend. These are the joints of the legs.

### Immovable Joints (Fibrous Joints)

Immovable joints are a union between two or more bones where motion is not possible.

The bones could be fused or connected by fibrous or connective tissue, such as ligaments, so that there is no motion, hence the alternate name of fibrous joint. These joints help provide structure and support, such as the bones in the skull, or cranium. If you examine the skull, you will notice there are seams called “sutures” where two bones are joined, but no movement is possible. The bones of the pelvis are another example of immovable joints. The pelvis provides support for the vertebral column and hind legs and allows the powerful movement of the hindquarters.



**Figure 1.3-7**

**Figure 1.3-7:** This photo shows the skull. Note the lines in the bones that stretch from the eye socket to the bridge of the nose. These lines are “sutures” where two bones are joined, or fused together, but movement is not possible.

**Did You Know?** Note on the skull picture for the “nose” there is no support under the nasal bone, and this is where the noseband of the halter sits. Harsh treatment with the halter and leadrope can cause damage here. It is important that the halter be fit properly (noseband high enough to be above the fragile end of the bone) to prevent damage and pain. Causing pain through harsh use of the halter can lead to “head shy” horses, which in turn can be dangerous for both horse and handler.

### **Slightly Movable Joints (Cartilaginous Joints)**

This type of joint may have a pad of slightly elastic cartilage on the ends of both bones to help absorb concussion or shock and allow only slight movement (like a rocking motion).

The joints between the vertebrae are examples of slightly movable joints.

**Did You Know?** When you are sitting on a horse, you are sitting on its backbone! Bad saddle fit and a rider that is too heavy for the horse, or a rider that “rides heavy” or bounces on the horse’s back can compromise health of the horse’s back and cause damage. Saddle fit, which can cause pressure on the bone, may result in pain and anxiety in the horse, which in turn creates avoidance behaviour, as the horse tries to get away from the pain, causing risk to both horse and handler/rider. So called “bad

behaviour” under saddle may reflect pain caused by the saddle and should not be ignored or punished.



**Figure 1.3-8**

Credit: G. Ecker

**Figure 1.3-8:** The joints of the vertebrae (along the back of the horse) are slightly movable. In the picture (left side), you can see the vertebrae that make up the withers of the horse. In the live horse, there are cartilage pads between each vertebra.

### **Freely Movable Joints (Synovial Joints)**

This is the type of joint you were likely thinking about when you saw the word “joint”. Examples of freely movable joints would be the hip, shoulder and knee or hock joints.

Freely moveable joints have a cavity between the ends of the two (or more) bones and form what are called “true joints”, as they allow a range of movements. The ends of the bones are held together by ligaments, strong bands of connective tissue which pass over the joint and attach to each of the bones. These help to stabilize the joint.

The ends of the bones are covered in a smooth substance called cartilage. Cartilage helps absorb the shock of movement and also has a smooth surface allowing ease of motion (similar to a Teflon coating). Fibrous tissue, called the joint capsule, encloses the entire joint.

The joint capsule helps hold the joint together. It is also lined with a synovial membrane that secretes clear, slightly yellow fluid (similar to medium-weight motor oil) called synovial fluid (joint water or synovia) into the joint cavity to help lubricate the joint and prevent friction that damages or erodes the cartilage. Synovial fluid, much like lubricating oil in the engine of a car or other machine, prevents wear and tear on the movable parts.



Figure 1.3-9

**Figure 1.3-9:** *This picture shows the right hock of the horse. The ligaments and joint capsule have been removed. In the live horse, there would be a joint capsule and ligaments surrounding this joint to hold it together and allow movement.*

**Did You Know?** A joint tap is a process that samples the synovial fluid. After surgically preparing the site, a sterile needle is inserted into the joint cavity and a small sample of fluid is drawn into the syringe. The fluid is sent for analysis to see if there is inflammation or infection in the joint.

### What are the types of movement?

On your DLO on the course site, you will find animations of the different types of movement as animated sequences. If you have not reviewed this section yet, do so now and then review the list below.

**Abduction** – taking the limb away from the centre line (median) of the body. (Hint: to remember this, think of “abduction” which is to take away or kidnap). The opposite of adduction.

**Adduction** – bringing the limb towards the centre line (median) of the body. (Hint: to remember this, think of “add” meaning to put together.) The opposite of abduction.

**Circumduction** – moving a limb so that the end of the limb (the distal end) moves in a circle. If you extend your arm and pretend to draw a large circle, this would be an example of circumduction.

**Extension** – a movement that increases the angle of the joint, such as straightening out your elbow joint. Upon releasing the leg after cleaning out the hoof, the knee joint will extend or straighten out as the horse puts its hoof on the ground. The opposite of flexion.

**Flexion** – a movement that decreases the angle of the joint, such as bringing your hand to your shoulder by bending your elbow. When you bend the horse’s knee to clean out the hoof, you are flexing the knee joint. The opposite of extension.

**Rotation** – a turning or twisting motion on one

axis. If you rotate your head to say “no”, this is a rotation movement. You can also rotate your wrist to have “palm of hand down” or “palm of hand up”. The legs of the horse do not rotate as our arm can.

**Did You Know?** The human arm and leg are capable of rotation, particularly in your forearm. This is due to the specific structure of the bone called the radius. It allows your arm to rotate in both directions (picture your hands outstretched and palms facing down, then rotate to face palm of hand down). In the horse, there is very limited rotation in the front or hind leg, as this would not be efficient for running at high speeds if the legs were rotating! In fact, a “rotational force” on the front leg of a horse can result in serious bone fractures. Over-extension of a joint can also cause serious damage.

### Different Types of Freely Movable (Synovial) Joints

Within the freely movable joints, there can be different types of joints.

**Hinge Joint** – allows movement in only one plane creating flexion and extension (fetlock), like the hinges on a door. Move your elbow to observe flexion and extension.

**Gliding or Plane Joint** – allows gliding between two bones (carpal-knee) or a “rocking” motion. Look at the carpus (front leg - knee) of the horse and watch its movement. It allows flexion (bending) of the knee and extension (straightening) of the knee and a very small amount of abduction and adduction. Your wrist (carpus) is also a good example of this type of joint but the human wrist has more movement possible.

**Pivot Joint** – allows rotation around a single axis (atlas and axilla). One bone pivots or rotates around the other bone. This allows the “no” movement of the head, as the first cervical vertebra rotates on the second cervical vertebra.

**Ball and Socket Joint** – allows extensive movement in most directions (hip joint). Try this with your hip joint by moving your leg in all directions - flexion, extension, adduction, abduction, circumduction and rotation. The hip joint and shoulder joint are both examples of a ball and socket joint.

**Did You Know?** In the human, the arm is attached to the body through the bony structures from the upper arm (humerus) to the clavicle (shoulder blade) to the clavicle (collar bone) to the sternum and surrounded

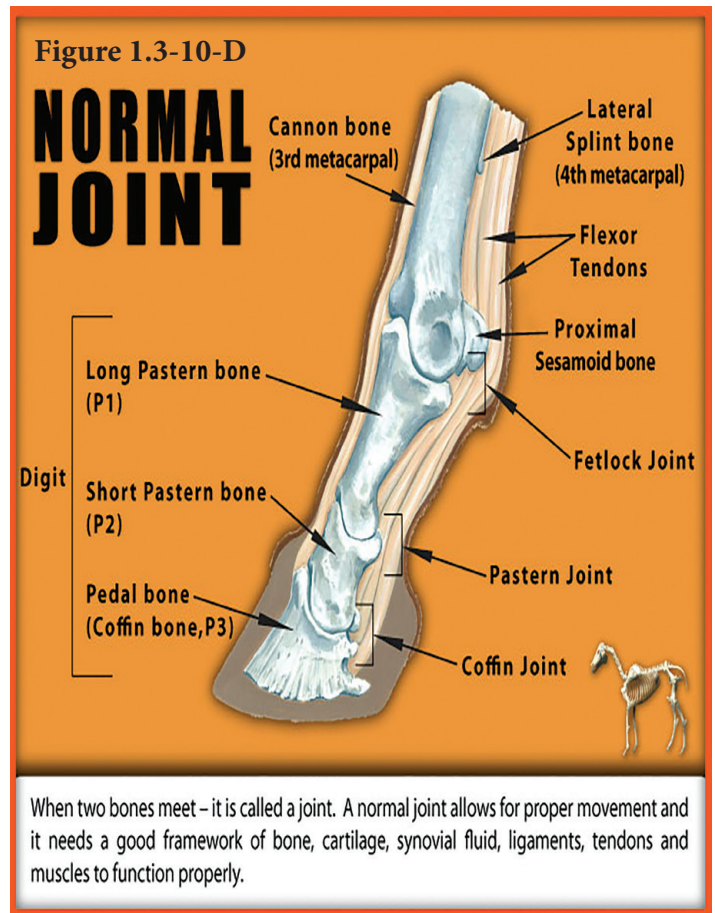
by muscles. The horse does not have a clavicle, so the front leg is only attached to the body by the muscles and connective tissues!

### A Closer Look at the Skeletal Bones in the Hoof

The term “No Hoof, No Horse!” is one that is profoundly true. If there is a problem in the hoof, the health and performance of the horse will be affected. The hoof is a fascinating structure and one that is worth studying. This section will introduce you to the bones in the hoof. In other units, you will learn about care of the hoof and prevention of hoof problems. You may want to refer to this section at a later date to refresh your memory about hoof structure.

### Internal Structure of the Hoof

A good groom will soon recognize the importance of the structure and function of the hoof. The hoof supports the entire weight of the horse. The pounding and concussion from running on any surface is first met by the hoof. The structure of the hoof must be strong enough to take the beating imposed on it by pounding on the track or other surfaces. Let us start by examining the bones of the hoof.



**Figure 1.3-10:** This 4-picture series can help you understand the hoof a bit more. Picture A is the hoof capsule that has been removed and dried. You can see the space inside where the hoof bone (coffin bone or sometimes called the pedal bone or P3) fits inside. Picture B shows the front view of the bones of the right front leg. Picture C shows a side view of the pastern and the bones that are inside the hoof capsule of the right leg. Picture D shows the inside of the hoof, with the bones labelled.

### New Terms for this Section

Coffin bone, navicular bone, sensitive laminae, insensitive laminae

### Comparison to the Human Foot and Hand

The hoof may seem like a foreign structure, but there are many similarities between the hoof and the hand or foot in the human. The equivalent bones are shown in the diagram on page 21.

**Figure 1.3-11:** The picture at the top of the following page shows a comparison of the equivalent bones between the horse and the human.

Poster created by D. Finlay/G. Ecker



**Figure 1.3-10-A**

Credit: G. Ecker



**Figure 1.3-10-B**



**Figure 1.3-10-C**

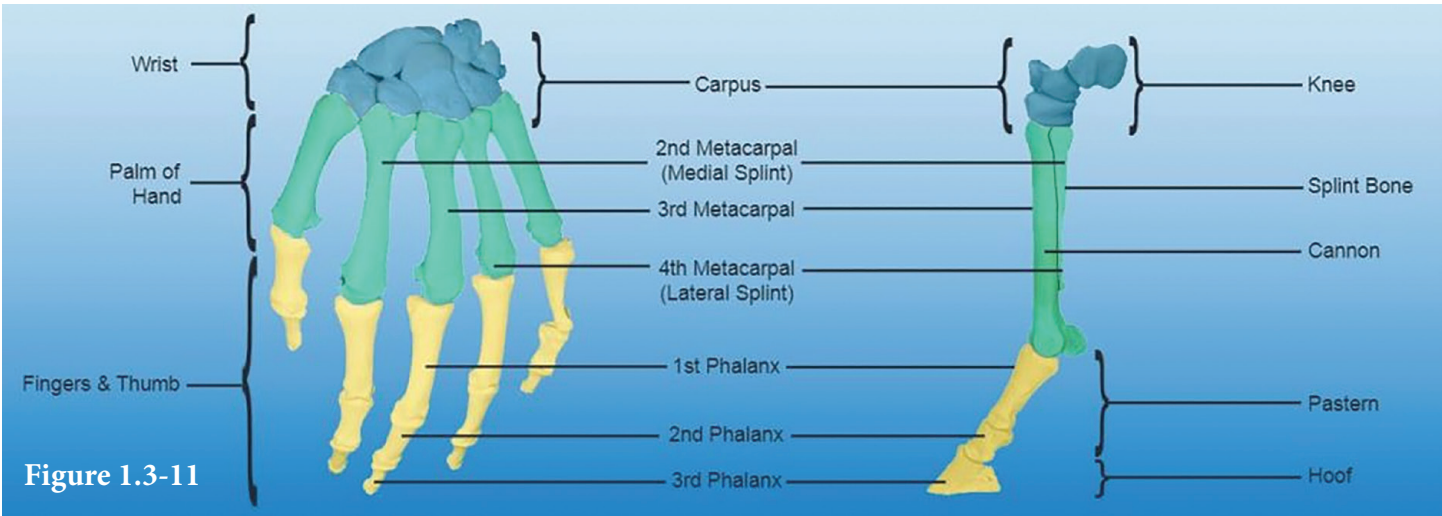
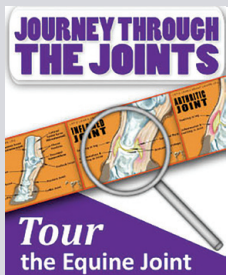


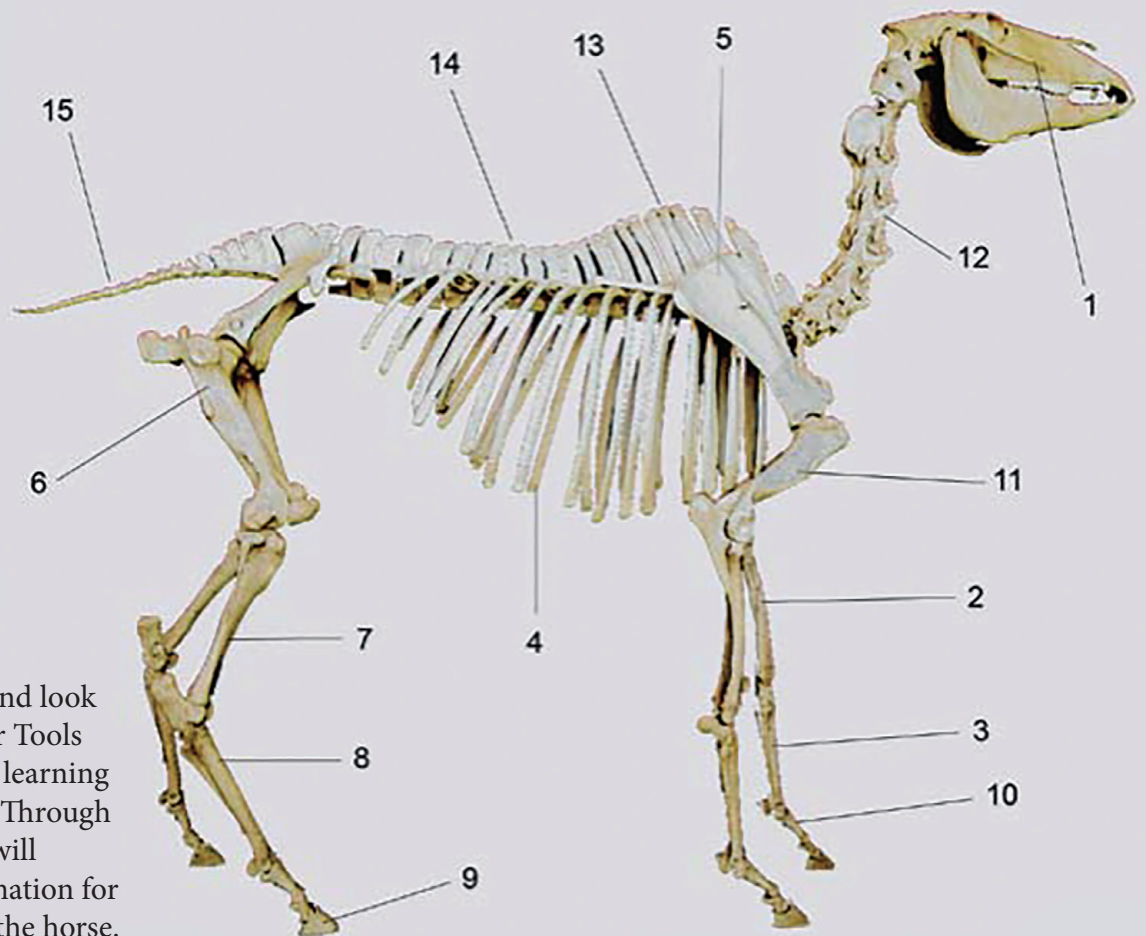
Figure 1.3-11

**Review Activity**

On the following diagram, write in the name of each bone that has an arrow and number beside it.



Be sure to visit [TheHorsePortal.ca](http://TheHorsePortal.ca) and look for the Horse Owner Tools section, which has a learning tool called "Journey Through the Joints" and this will provide more information for you on the joints of the horse.

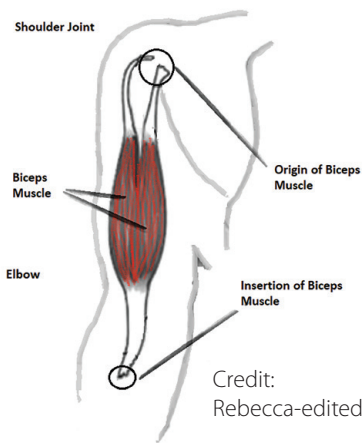


- |          |           |           |
|----------|-----------|-----------|
| 1. _____ | 6. _____  | 11. _____ |
| 2. _____ | 7. _____  | 12. _____ |
| 3. _____ | 8. _____  | 13. _____ |
| 4. _____ | 9. _____  | 14. _____ |
| 5. _____ | 10. _____ | 15. _____ |

## The Muscular System

Now we have the shape of the horse thanks to the skeleton. The next challenge is movement. To survive, the horse must move. Movement is made possible by the action (shortening) of the muscles on the skeletal system. When the muscle shortens, or contracts, one bone is pulled towards another bone and movement occurs. There can be movement inside the horse as well, such as the movement of the heart when it contracts to push blood into the body. Approximately 50% of the body's weight is made up of muscle.

Let us look at an example of a muscle that is easy to relate to for us. Look at your forearm and compare to this picture.



**Figure 1.3-12:** An example of skeletal muscle. This is the biceps muscle, as found in your upper arm and is attached on the “insertion” point on your forearm, just below your elbow. When you tell your biceps to contract, the muscle shortens and pulls your forearm upwards, so your hand gets closer to your shoulder.



**Did You Know?** Is there more than one kind of muscle? Yes, there are actually three types of muscles in the body. While they may look the same to the naked eye, under a microscope, they look very different and have different functions in the body.

### Types of Muscle

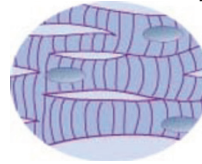
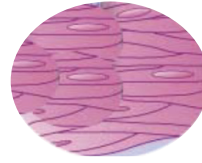
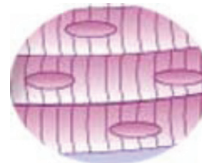
1. Skeletal Muscle  
(also called voluntary striated)

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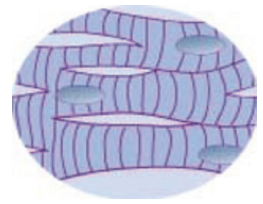
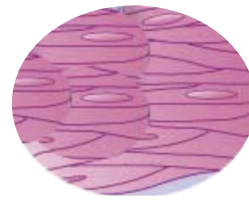
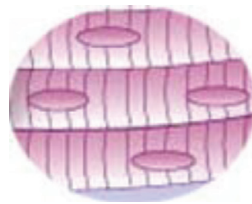
2. Visceral Muscle  
(also called involuntary smooth)

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3. Cardiac Muscle  
(also called involuntary striated)



### MUSCLE TYPES



FEATURES	SKELETAL MUSCLE	VISCERAL MUSCLE	CARDIAC MUSCLE
LOCATION	Attached to skeleton	Internal organs such as blood vessels/uterus/eyes and digestive tract	Wall of heart
ACTION	Moves the bones; Generates heat	Produces contraction-like movements in the organs-such as peristalsis in the digestive tract	Contracts walls of heart to pump blood
STRIATIONS?	Yes	No (smooth appearance)	Yes
SHAPE	Long / thin fibre	Spindle shape with both ends tapered	Branched thin fibres
CONTROL	Voluntary	Involuntary	Involuntary
NUCLEI?	Multiple nuclei	Single	Single
ALTERNATE NAMES	Striated / Voluntary	Smooth / Involuntary	Striated / Involuntary

## Characteristics of the Three Types of Muscle

### 1. Skeletal Muscle

The skeletal muscle is the muscle that is attached to the skeleton and causes movement by contracting. The muscles generate a great deal of heat when they are contracting. They are under voluntary control; that is, you can consciously tell your arm muscle to contract and lift a brick. When you look at the skeletal muscles through a microscope, they have lines or striations and are also called Striated Muscles.

### 2. Visceral Muscle

Visceral muscle is also called smooth muscle as it has no striations and appears smooth when observed under a microscope. In the digestive tract, smooth muscle fibres line the stomach and intestines. Contraction of these muscles pushes the food along the tube and out of the body. This activity is done for hours without fatigue and is unconsciously performed (or automatically occurs). It continues even during sleep. The wavelike action of the smooth muscle in the digestive tract is called peristalsis (more about this in the section on the digestive tract).

### 3. Cardiac Muscle

Cardiac refers to the heart, so the heart is the only place where this type of muscle is found. The heart contracts and beats continuously throughout life, with no conscious thought or control. Its only rest is the split-second time between beats, when the heart is filling with blood (more about this will be presented in the cardiovascular section). When you look at cardiac muscle under the microscope, it appears to have stripes, similar to skeletal muscle, but the fibres are branched.

### More About Skeletal Muscles

There are some muscles that are tiny and delicate and help control the precise movements, such as fine adjustments that your fingers can make.

There are also large and powerful muscles that are the “power” muscles. These are the ones that help the horse gallop, jump and perform other power movements. Muscles come in many different sizes and shapes but basically, they have a thicker area in the middle, called the belly of the muscle, and two or more ends that attach to the skeleton. The belly has a large supply of blood vessels to nourish the muscle.

Skeletal muscles are attached to the bones by means of very tough fibres called tendons. Tendons

have less blood supply than the belly of the muscle, so when injured, take longer to heal.

The place where the muscle provides a stable attachment is called the origin. It does not move when the muscle contracts, but rather the muscle contracts and pulls the joint towards the origin. The other end of the muscle is called the insertion.

To move a leg, the muscles of locomotion contract (get shorter and thicker) pulling on the bone. Muscles use energy from food eaten by the horse. The energy is used for contraction of the muscle, so the legs can move, the head can be lifted, or a foot can strike out. If you are interested in learning more about the details of muscle contraction, you may wish to do an internet search on “muscle contraction” to see how energy is used inside the muscle to produce the athletic feats of horses.

Many muscles are arranged in pairs so that one muscle bends the joint and the other muscle straightens the joint. This helps provide a “braking system” and also helps stabilize the joint by having the muscles on either side of the joint. Skeletal muscles become tired after contracting and require rest. Too much activity can cause fatigue and this can lead to injury.

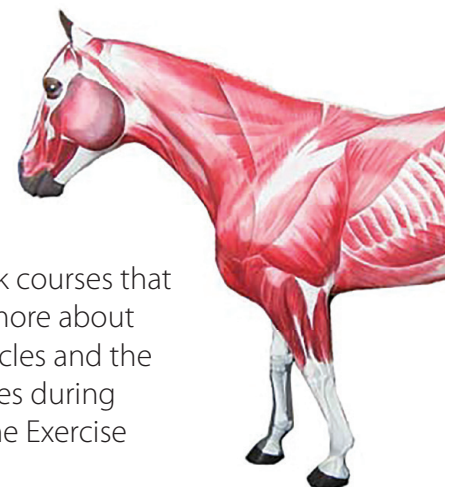
**Did You Know?** There are over 650 muscles in the horse, some for power and speed of the racehorse, some give fine precision and control in the dressage horse.

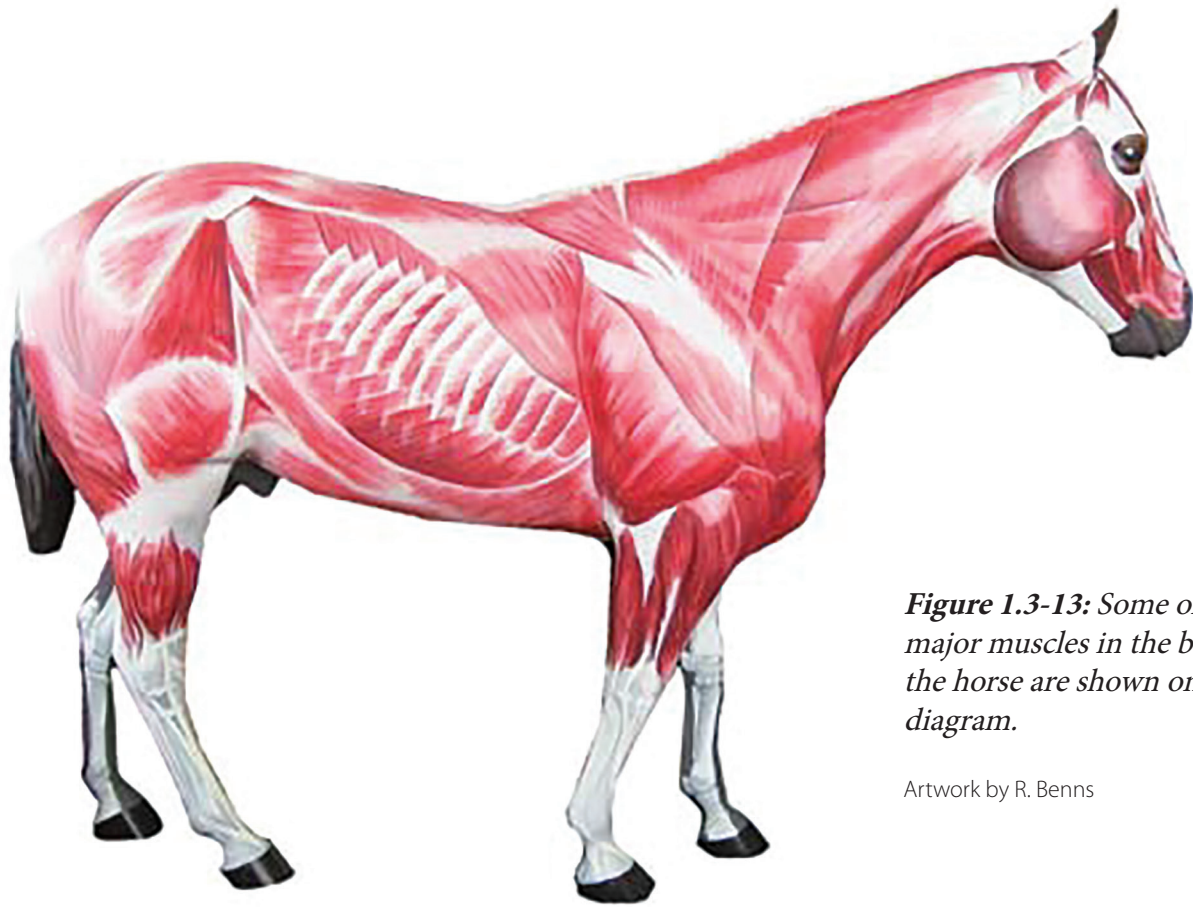
### Some Important Muscles

There are several hundred individual muscles in the body of the horse. For this course, we will look at some of the major muscles. If you would like to learn more about the muscles of the horse, locate some books on anatomy of the horse.

In your course site, the DLO has more information on the names of the muscles.

(Note: Equine Guelph offers short courses and 12-week courses that can help you learn more about the anatomy of muscles and the physiology of muscles during exercise in the Equine Exercise Physiology course).





**Figure 1.3-13:** Some of the major muscles in the body of the horse are shown on this diagram.

Artwork by R. Bennis

### **Tendons, Sheaths and Bursae**

If you study the picture of the major muscles of the horse, you will notice that the majority of the muscles are up high (above the hock and knee) and there are few muscles below.

This arrangement is important for the athletic ability of the horse. Muscles on the lower legs (such as we humans have) would make the legs quite heavy. The muscle arrangement allows the legs to be lighter and therefore move faster. In order for the muscles to work on the legs, there are very long tendons that pass over several joints and sometimes even change direction before their insertion on the bone.

**Did You Know?** Throughout evolution, the legs of the horse evolved to be long and thin. Breeding programs for Thoroughbreds have amplified this trait making the legs longer than for many other breeds in order to breed fast horses. This long, thin leg helps reduce the energy needed to pull the leg forward and increases the speed for the horse. Think of a hammer that you hold with the heavy head of the hammer on the bottom, then, using only your wrist movement, try to wiggle it back and forth like a leg would go forward and back. Now, hold the head of the hammer in your hand, and move it back and forth. Which

position requires more energy to move, the weight at the bottom or the weight at the top? Which position allows you to move the wooden arm of the hammer faster?

To help ease the friction of the long tendons running over the bones, the body has special "friction-reducing" structures called tendon sheaths and bursae.

A tendon sheath is a synovial (fluid-filled) sac that helps lubricate the movement of the tendon as the muscle contracts and relaxes, similar to the role of engine oil to reduce friction and wear in the engine of the car.

The tendon runs through this fluid-filled sac and the friction is reduced by lubricating the pathway of the tendon. The bursa (the plural is bursae, the singular is bursa), located in and around the joints, is a synovial sac that is between the tendon and the surface over which the tendon travels.

**Did You Know?** When you have been doing physical work or jogging, you know how hot you get. Working muscles generate heat when they contract. This heat can build up inside the body and if not dissipated, the body will overheat and cause damage. On hot, humid days, it is important to monitor the body heat in the horse and help it cool down so heat injury does not occur.



**Did You Know?** You no doubt have seen horses out on the track for a time doing slower work before they do their “works” or fast speeds. This warm-up time does just that! It warms up the muscles, ligaments and tendons so they are supplied with more oxygen flowing through the blood stream. Think about a rubber band or elastic. It has more stretch when warm than it does when cold. If you want to try an experiment, collect two balloons. Place one in the freezer for several minutes. Keep the other at room temperature. Blow up the room temperature balloon and notice how hard it is to fill the balloon with air. Now, try this with the balloon from the freezer. Is there a difference? Why?

## The Digestive System

In the previous section on muscles, you learned that energy is required for the muscle to contract and cause movement. Where does this energy come from? It comes from the food eaten by the horse.

The digestive system (also called the alimentary system) is designed to convert food (hay, grass and other feeds) to a form that can be used by the body for exercise, growth, repair and reproduction.

Horses are herbivores, which mean they are plant-eating animals. Meat-eating animals, called carnivores, eat meat products and those animals that eat both plant and meat, like humans, are called omnivores.

The function of the digestive system is to:

1. Gather the food (called prehension) with the lips, teeth and tongue
  2. Break down the food by grinding it up with the teeth
  3. Digest the food (breaking it down chemically using digestive enzymes)
  4. Absorb the nutrients as well as water
  5. Eliminate the wastes out of the body
- Failure of any of these functions of the digestive system may cause the horse to lose weight or suffer other problems, such as colic, diarrhea and other illnesses

**Did You Know?** Horses cannot throw up! Once the food has been swallowed, it must go through the entire digestive tract, as the horse cannot vomit like humans and other animals. It may take 2-4 days for food to move through the gut and if there was a toxin ingested, it will take this long as well. This is why the feeding of horses is so important, as we need to ensure good quality food is part of the feeding program.

The digestive tract is essentially one very long tube from the mouth to the anus, but it has specialized functions and other organs along the way to help with digestion. This includes the mouth, teeth, tongue, esophagus, stomach, intestines (small and large) and the anus. There are also other organs like the liver, pancreas and salivary glands that help out. The digestive tract is very long, approximately 100 feet! Its capacity can exceed 40 gallons! In order to fit all this inside the horse, the digestive tract (particularly the intestines) is looped and coiled inside the abdomen.

Let us look at the functioning of each of the major parts of the digestive tract.

## Mouth

The mouth, also called the Oral Cavity, includes the teeth and tongue and extends to the back of the throat, an area called the pharynx. The roof of the mouth is solid and is called the hard palate. Behind this area, just before the pharynx at the back, is the soft palate, a soft “curtain-like” tissue that is suspended at the back of the hard palate.

The lips help the horse pick up food or sort through food. The front teeth crop the grass, and the tongue helps move the food into the mouth where it can be chewed and then swallowed. The molars, along the sides and further back in the mouth, are used for grinding food prior to swallowing.

The mouth also contains salivary glands that secrete saliva (the clear fluid in your mouth). Saliva is a fluid that helps soften and lubricate the food to make it easier to swallow and starts the breakdown of starches and sugars in the feed. The tongue moves the chewed and moistened bolus of food to the back of the throat where it is swallowed.

**Did You Know?** Horses only secrete saliva when the molars are chewing. The mouth is quite dry when they are not chewing. How would this affect the bit in the horse’s mouth? How well can a horse get salt off the salt block when the tongue is dry? Have you ever seen teeth marks on a salt lick? What might that mean? (Hint: the horse may be salt-deprived so trying to get more salt off the block by using its teeth, as it cannot get enough by licking the block).

‘Choke’ occurs when horses swallow too much dry food, and it gets stuck in the Esophagus (not in the trachea, so the horse can still continue to breathe with choke, unlike a human where choking is food getting stuck in the trachea or windpipe).

If horses bolt their feed without chewing, then it helps to add water to the feed, or to change feeds to a type that requires more chewing, such as roughage chunks. If you feel your horse has choked or is choking on the feed, quickly consult your veterinarian for assistance, so that long term damage to the esophagus and lungs does not occur.



Credit: J. Thomason, edited D. Finlay

*A picture of a horse skull from the OVC anatomy lab with the bone cut away so the full size of the roots of the teeth can be shown.*

## Teeth

The horse has specialized teeth designed for its life as a grazing animal. Look at the diagram of the skull and notice that the front teeth are different in shape than the teeth further back in the mouth. The front teeth are designed for cutting the grass. These are called the incisors. There are six on the top jaw and six on the bottom jaw.

Just behind the incisors (see diagram above), you will see the canine teeth. These are also called “stallion teeth” or “tushes”, as they are found more often in the male horse, however, the female horse can have them too. Dogs and cats have very developed canine teeth that are used for fighting.

**Did You Know?** Teeth in the horse continue to erupt throughout its life but the tops get worn down from the chewing. The roots on the teeth are very long in the horse and give the horse about 20 to 25 years before wearing down, depending on the diet and dental care. Older horses may need special diets to help compensate for worn down teeth that cannot chew efficiently.



Credit: G. Ecker, Edits D. Finlay

**Figure 1.3-14:** *This picture shows the teeth of the horse. Notice the different shape and position of the teeth. Also notice the “wave mouth” for this skull as the molars are not even across their tops and this can cause problems for the horse while chewing.*

The large teeth behind the canines are called molars. Molars are designed for grinding the food and play a critical role in helping to break up the food so that it can be digested.

In the upper jaw (and sometimes the lower jaw) you may find a tiny tooth right in front of the molars. This is called a “wolf tooth” and it is the remnant of a tooth from the ancestors of the modern horse.

You will notice there is a space between the canines and the molars. This space is where the bit should sit, so that it does not hit the teeth.

**Did You Know?** The space between the teeth may be one of the reasons why bits can be used, and hence provide more control of the horse. Without the space, a horse would never be able to tolerate a metal bit in its mouth due to the pain from the impact of the bit on its teeth. The bit can inflict great pain, so be careful how it is used, and the pressures applied.

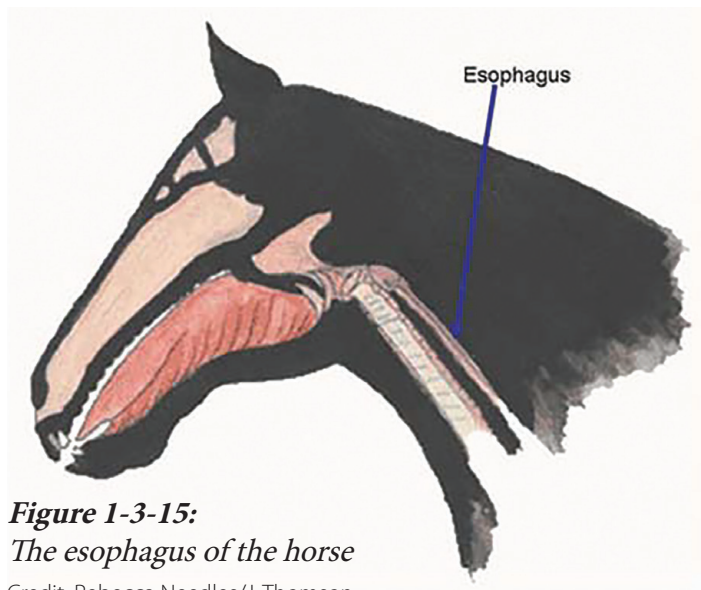
With the constant grinding of food, teeth may wear down unevenly and sharp edges can form. Regular dental care, at least once per year, is an important part of health care of the horse. A horse with dental problems will not perform well due to pain or interference, and bad teeth can also lead to other serious health problems in the horse. Horses with dental issues can lose weight and develop other health

problems, so more than once per year a visit with an equine dentist may be required for ongoing care. The horse may suffer severe pain from dental ailments, just as humans can suffer.

**Did You Know?** The horse may develop a preference for chewing on one side of the mouth more than the other. This can lead to uneven wear of the teeth. A "mouthful" for a horse is about 10 grams of food. The horse will chew about 60-70 times per minute.

### Pharynx and Esophagus

The pharynx is the funnel-shaped muscular tube at the back of the mouth. The muscular action helps the horse swallow the food. The food then enters the esophagus. The esophagus is also a muscular tube, and the wave of muscle contractions helps to move the food down into the stomach. The esophagus enters the stomach at an angle making it almost impossible for a horse to throw up or vomit.



**Figure 1-3-15:**  
*The esophagus of the horse*

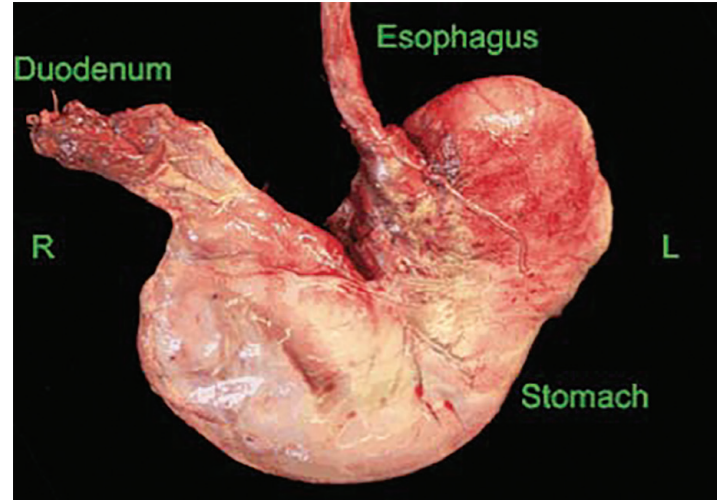
Credit: Rebecca Needles/J. Thomson

**Did You Know?** If you see food or water coming out of the nostrils, it is a sign that the horse has choked with a blockage of food in the esophagus. The horse cannot throw up or vomit. If you eat something that does not agree with you, you may throw up. The horse cannot do this, so care must be taken to prevent the horse from eating undesirable things like toxic weeds, plastic and other dangerous things.

### Stomach

The stomach is a U-shaped muscular sac in the front section of the abdominal cavity.

Food enters the stomach through the esophagus. The food that is swallowed is layered in the stomach and is churned by muscular activity with digestive acids (called gastric juices) to break it down.



**Figure 1.3-16:**  
*The stomach of the horse is a muscular sac*

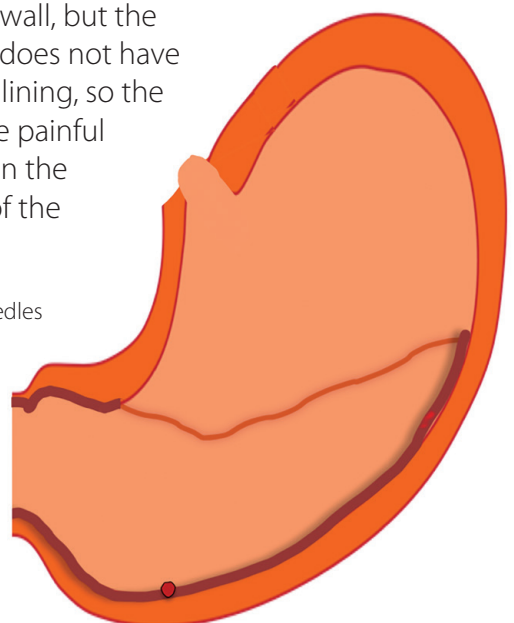
Credit: J. Thomason

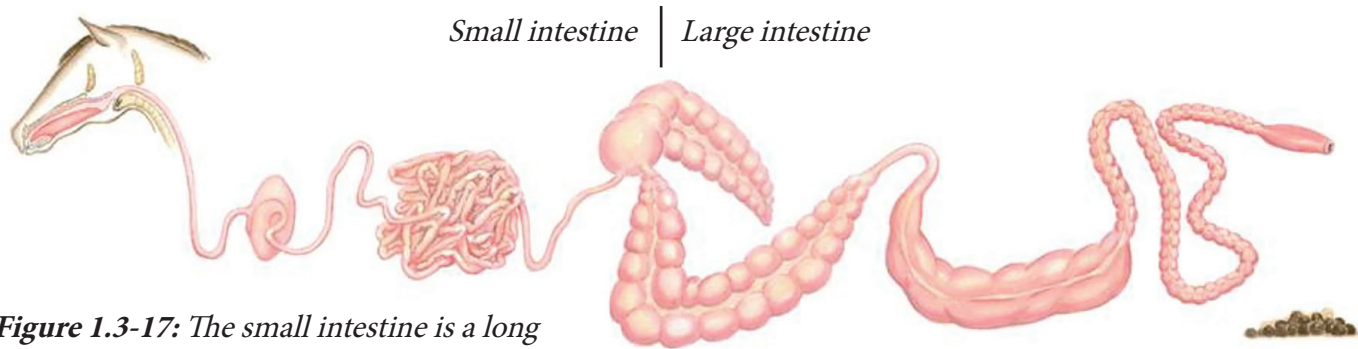
**Did You Know?** Horses can have ulcers! Stress and diet can contribute to the development of ulcers in the horse. You may wish to discuss this with your instructors in the online Discussion forum or do some searching online for reputable sources.

### Inside the Stomach

If you look inside the stomach (see picture below), there is a division between the upper and lower part of the stomach. The lower area has a special lining that helps prevent the acids from damaging the wall, but the upper portion does not have this protective lining, so the acids can cause painful ulcers, usually in the upper region of the stomach.

Credit: Rebecca Needles





*Small intestine* | *Large intestine*

**Figure 1.3-17:** The small intestine is a long tube coming out of the stomach and can be 70 feet in length. It ends at the cecum and large intestine.

Credit: R. Bennis

### Small Intestine

The next part of the digestive tract is the small intestine. This is a long muscular tube about two inches in diameter and 70 feet in length! It can hold about 12 gallons of fluid and food. The small intestine lies in folds and coils within the abdomen near the left flank (the left side of the abdomen). The folds of the small intestine are held suspended from the top by a sheet of membrane called the mesentery.

### Large Intestine

The large intestine is also a very long muscular tube that can be over 26 feet in length!

The horse consumes large amounts of forage (grass and hay) consisting of a carbohydrate called cellulose. Cellulose is harder to break down than other foods so sections of the large intestine are designed to help in this process. The sections of the large intestines include the cecum, large colon, small colon, rectum and anus.

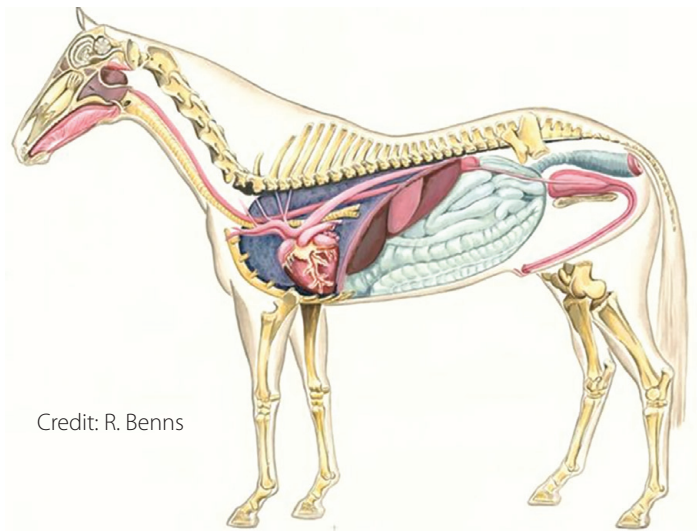
The cecum is a large, long “blind” sac (in the human, this is a tiny sac we call the “appendix”) that sits in the abdominal cavity, stretching from the right flank down and forward to the diaphragm (see the unit on the respiratory system for a picture of the diaphragm). The length is about four feet. Food enters the cecum through an opening from the small intestine and then exits to the large colon. The cecum contains about eight gallons of fluid. In this fluid filled sac, the forage is broken down.

The large colon is 10 - 12 inches in diameter and about 12 feet long. It can hold about 20 gallons of fluid and takes the fluid from the cecum and carries it to the small colon. Further digestion of the food occurs here.

The small colon is the next part of the large intestine, and it takes the food from the large colon to the rectum. The small colon is about 10 feet in length and about 4 inches in diameter. By this time, a great deal of the water has been reabsorbed from the colon

and the balls of manure (called fecal balls) are forming.

From here the fecal balls move into the rectum, which is about 12 inches in length, and then to the anus. The anus is the end of the digestive tract and is made of a circular ring of muscle that stays closed except when stretched so the fecal balls or gas can pass through.



Credit: R. Bennis

**Did You Know?** Food flows from the large colon, which is about 10-12 inches in diameter, into the small colon, which is about four inches in diameter. This narrowing of the tube can be a site for impaction. Impaction colic can occur when there is not enough water. The food material becomes dry and gets caught up in the twists and turns of the digestive tract. Water is an important lubricant in the digestive tract of the horse which enables the food to keep moving through. Always provide clean, fresh water for the horse all day.

**Did You Know?** Equine Guelph offers a two-week online course on the Gut Health and Colic Prevention on TheHorsePortal.ca. There are also more courses such as Equine Nutrition and Equine Anatomy that can provide the next step to your learning journey.

## The Respiratory System

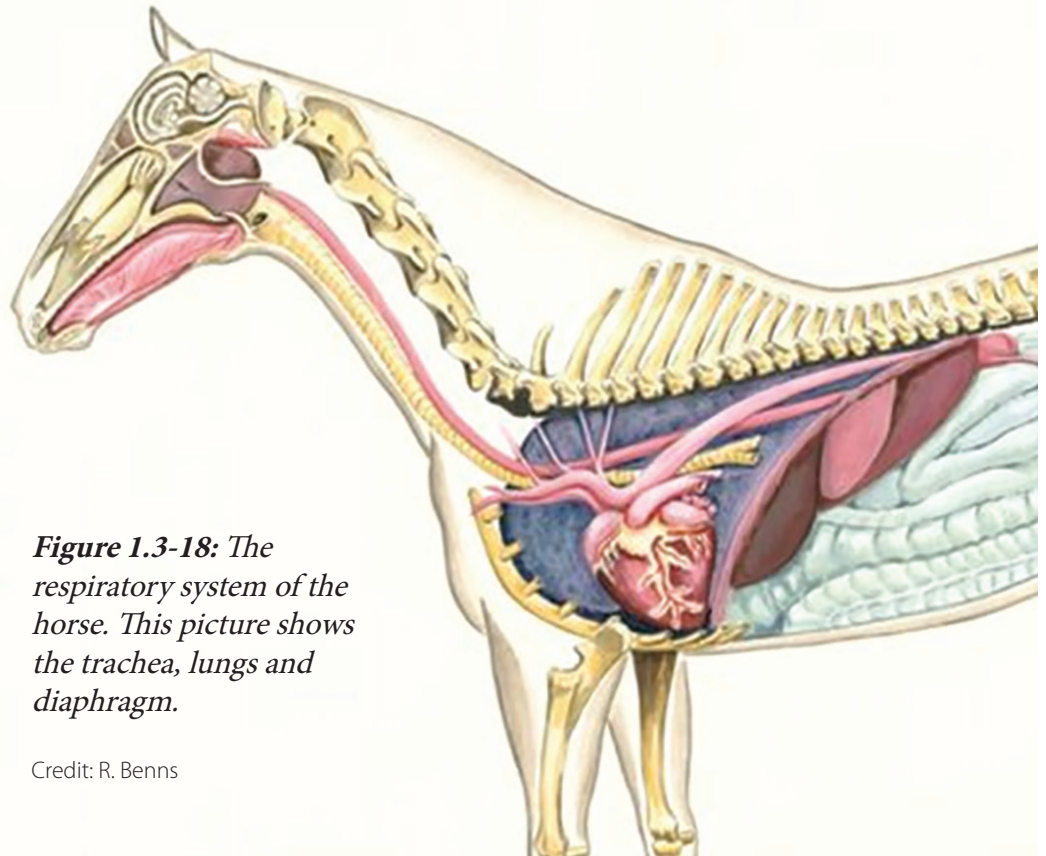
A horse (or human) can go for days without food and water, but not without oxygen.

In fact, without oxygen, the cells of the body are damaged in as little as two minutes! The constant supply of oxygen to the body is therefore critical to survival. The respiratory system is responsible for getting the oxygen into the body and then to all the tissues of the body.

It also rids the body of the carbon dioxide that is produced in the cells when chemical reactions take place. The respiratory system starts at the nose of the horse and includes the nasal passages, the pharynx, the larynx, the trachea, the bronchi and two lungs. (See the online DLO for more labelled pictures)

Below the lungs in the chest cavity, lies a concave-shaped muscle called the diaphragm.

The diaphragm contracts lifting the ribs outwards and expanding the rib cage. This pulls air into the lungs. Inside the lungs are many passages which end



**Figure 1.3-18:** *The respiratory system of the horse. This picture shows the trachea, lungs and diaphragm.*

Credit: R. Benns

in small “grape-like” clusters. These clusters are air-filled sacs called alveoli. The exchange of oxygen for carbon dioxide takes place here. The oxygen is picked up by the blood and taken to the tissues of the body. The carbon dioxide is given up into the air space inside the lungs, and then released into the air with the next breath out.

The larynx, also called the “voice box” is located between the pharynx and the trachea. As air is pulled into the lungs, it travels over the folds of the voice box, the “vocal cords”, causing a vibration. The vibration is heard as neighing, whinnying or other sounds made by the horse, such as a low nicker when you approach with the feed bucket! The larynx also helps keep debris and objects from going down the trachea to the lungs.

**Did You Know?** The part called the “upper respiratory section” is essentially the part of the respiratory system that is in the head (the nasal passages or cavities to the upper trachea), while the “lower respiratory section” refers to the lungs. You may have heard of an “upper respiratory infection” and this means that the infection is in nose, pharynx, larynx or upper trachea. A “lower airway disease” may be referring to inflammatory conditions in the lungs themselves.

### The Extra Mile

Here are some great videos that will help you learn more about the digestive tract:

The Horse’s Digestive System - YouTube

The Equine Digestive System - YouTube

Journey Through the Digestive Tract by Equine Guelph (3 parts)

Part One:

<https://www.youtube.com/watch?v=wTemKgXeVWk>

Part Two:

<https://www.youtube.com/watch?v=xZgecrT42V4>

Part Three:

<https://www.youtube.com/watch?v=YTWjWv5RYAI>



### **Do Horses Laugh?**

Have you ever seen a horse curl its upper lip and lift its head? Some people will tell you that the horse is laughing, but the horse is actually trying to smell a new odour. It is called the “Flehman response”.

By curling its nose, it partially closes off the nostrils creating suction. The suction draws the nasal fluids into a special “odour-detecting” organ (that humans do not have) called the vomeronasal organ. The nerve endings in this organ help detect the odours.

You will see the Flehman response in stallions when they are sniffing the urine or the vaginal secretions of a mare that is in heat. It is sometimes seen in horses that are in pain from colic.

**Did You Know?** When “tubing” a horse, the veterinarian passes a tube through the nostril into the stomach. This can be a very risky procedure if you are not trained as a veterinarian.

What is the risk? The tube can go down the trachea instead of the esophagus and so take fluid directly into the lungs. The horse will actually suffocate and drown in the liquid. Even small amounts can lead to severe respiratory conditions that may lead to death. Unfortunately, there have been horses that have developed serious lung conditions and died as a result of someone making this costly mistake and causes suffering in the horse when this happens. It is important that trained veterinarians are the only ones to perform this procedure.

### **Resources for Respiratory System**

The Equine Respiratory System – The Horse

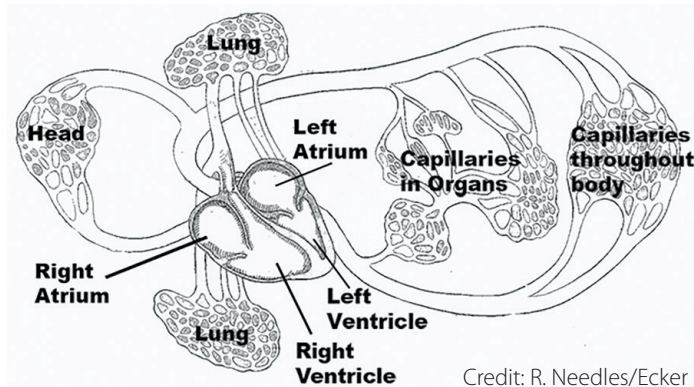
#### **The Extra Mile**

Want to learn more? Did You Know? Equine Guelph offers a two-week online course on the Respiratory System on [TheHorsePortal.ca](http://TheHorsePortal.ca)

## The Circulatory System (or Cardiovascular System)

The millions of cells in the body require oxygen. Each cell creates carbon dioxide which has to be removed from the body. How does the body accomplish this?

The cardiovascular system, also known as the circulatory system, is the “pump and pipes” that distributes the blood to every cell in the body. The blood is the red fluid made up of water, red blood cells, white blood cells and other important substances. The blood also carries oxygen and other nourishment to the cells and takes away carbon dioxide and other wastes.



**Figure 1.3-19:** The circulatory system consists of the heart and blood vessels that travel to all parts of the body, carrying the blood to every cell before returning back to the heart.

The central part of the Circulatory System is the pump, the organ we call the heart. The heart is basically “all muscle”. The walls are composed of the muscle type called “cardiac muscle”.

The heart of the horse weighs about 3.5 to 4 kg (or approximately 7 to 8 pounds) and works constantly, pumping 25-40 beats per minute in the resting horse. With each contraction of the heart, blood is pushed along the arteries and veins. You can feel this pushing of the blood when you feel the pulse. (Note: you can try this on yourself by feeling for the pulse on your wrist or on the groove in your neck)

**Did You Know?** Secretariat is reported to have had the largest heart of all horses that have been measured. His heart weighed an amazing 5.4 kg (12 pounds)! The human heart is about the size of your closed fist, about 300 to under 400 g, which is about 0.6 pounds.

When the horse starts to exercise, more oxygen is needed for the hard-working muscles, so the heart begins to pump faster. During intense exercise, the heart rate can reach 210 to 240 beats per minute!

Compare this to a human. An adult’s resting heart rate is about 60-70 beats per minute and will increase to 190 – 205 during hard exercise. The horse has a lower heart rate at rest, but the heart can beat faster than a human heart during intense exercise, giving an extra athletic ability for speed.

The heart lies within the rib cage, between the lungs, at about the third to sixth ribs. The heart is found inside a sac called the pericardium. There are four chambers inside the heart. Between the chambers, there are valves that stop the blood from going in the wrong direction. The chambers are called the right atrium, left atrium, right ventricle and left ventricle.

In addition, there is a wall (made of cardiac muscle) between the right side and left side of the heart. Within the wall is a specialized tissue that triggers an electrical current (similar to an electrical shock). The electrical impulse spreads through the heart muscle and makes it contract. When the heart muscle contracts, this pushes the blood out into the blood vessels, or the tubes that make up the circulatory system.

### The Blood Vessels

There are three types of blood vessels:

- 1. Arteries (singular artery):** these are muscular walled vessels that take blood from the heart to the organs of the body. The largest artery in the body is the aorta, the section that leaves the heart from the left ventricle and starts the pathway to the rest of the body.
- 2. Capillaries (singular capillary):** these are very tiny vessels that deliver blood to the individual cells. The capillaries are so tiny, only one red blood cell at a time can pass through.
- 3. Veins (singular vein):** these are thin-walled vessels that collect the blood from the capillaries and take it back to the heart. Many veins empty their blood into the largest vein, the vena cava (meaning large vein), which then passes into the right atrium.

### The Blood

Within the vessels flows the life-giving fluid called the blood. Blood supply is critical to every cell, every tissue and every organ. Life-threatening damage can occur to the brain in as little as 2 minutes if deprived of blood and the oxygen it brings to the cells.

Blood carries nutrients (food substances) and oxygen to the cells, then carries carbon dioxide and waste products away from the cells.

### Pathway of Circulation

With a contraction of the heart, the blood is pumped out of the left ventricle through the aorta. It travels through many arteries and smaller branches to reach the organs and tissues. As the branches become smaller and smaller in diameter, they become capillaries that wind through the heart, the muscle and all the organs. It is here where the oxygen and nutrients are released from the blood to nourish the cells of the body.

The blood then picks up carbon dioxide and other wastes and moves these through the capillaries. The blood is then collected in the veins which join to form larger veins.

The blood is emptied into the vena cava. Entering the right atrium, the blood travels past the valve into the right ventricle. When the ventricle contracts, the blood is pushed through the pulmonary artery into the lungs. The lungs' capillaries wind their way around the alveoli where the gases are exchanged. The blood travels back to the heart in the pulmonary vein. Once back in the heart, the blood enters the left atrium, then travels through the valve into the left ventricle. The cycle is now complete and set to start again.

So, let us review this:

Left ventricle > aorta > arteries > capillaries > organs > capillaries > veins > vena cava > right atrium > right ventricle > pulmonary arteries > capillaries in the lungs > alveoli > pulmonary vein > left atrium > left ventricle

### Colour Conventions for Showing Blood

Blood rich with oxygen is bright red. You will know if an artery has been cut because the blood is bright red (arterial blood) and is usually pulsing. Blood that has lost its oxygen and is high in carbon dioxide is a dark red (venous blood). When a vein is cut, you will see dark red blood that is oozing rather than pulsing out.

**Did You Know?** Whenever a horse is bleeding, we must stop and have the situation assessed. If the blood coming out is dark red and oozing, then you have a bit more time. If the blood is bright red and pulsing, this means that an artery is bleeding and this can become very serious quickly as it leads to rapid blood loss, so this is a first aid emergency.

### Group Discussion Blood Tests

The next time the veterinarian takes a blood sample from the horse, and you are present, ask the veterinarian about the tests that will be done on the blood.

Will the red blood cells be measured?

Will the white blood cells be measured?

What other measurements will be made on the blood sample? How will that information be helpful?

There are many websites that can help you find out more information about blood. Do a search to see if you can find some interesting sites.

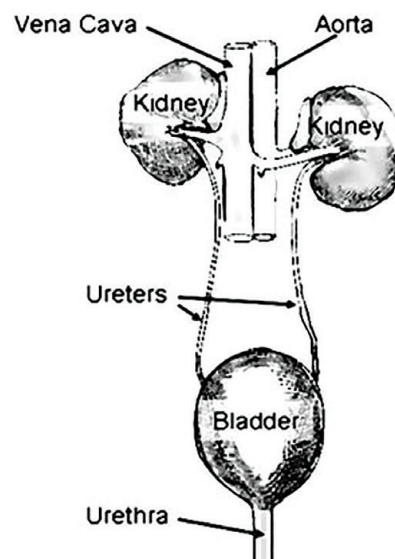
**Did You Know?** You can feel the pulsing of the blood in the arteries when you feel for the pulse of the horse. Ask an equine professional or veterinarian to show you how to take the pulse of the horse, when there is time available. Try taking the pulse at different locations to feel the difference and to know what is normal for that horse.

### The Excretory System

As the horse digests food and absorbs nutrients from the food, waste products are produced. Waste products must be removed from the body. If the waste products build up in the blood, it will cause the horse to become very sick.

The excretory system (also called the urinary system) is the major system that helps cleanse the body. The urinary system includes the kidneys (2 of them) along with the ureters, the bladder and the urethra. The kidneys are about 4-6 inches wide by two

inches thick. They are a paired organ located on either side of the backbone near the 18th rib.



**Figure 1-3.20:** The excretory system of the horse is composed of the kidneys, the ureters, the bladder and the urethra.

Credit: G. Ecker



The kidneys are richly supplied with blood vessels. They filter the blood to help maintain the water and mineral (the salts) balance in the bloodstream. During a day (in 24 hours), blood will be filtered through the kidneys over 400 times!

The fluid filtered out of the blood is sent through the ureters to the bladder. The urine is stored in the bladder. Urine is emptied from the body through the urethra. The urethra in the mare is short; however, in the male horse it is quite long as it extends to the end of the penis.

## **The Nervous System**

The “control centre” of the body is the nervous system. Information from the external environment is transferred to the brain for processing, such as temperature or pressure.

Information about the internal environment, that is, inside the body, is also monitored and sent to the brain. This information is processed by the brain and a response or behaviour change may be the result. For example, if your hand touches something hot, special sensory organs in the skin detect the heat. This information is sent to the brain and processed. A signal may come back to your hand to pull away from the heat source to prevent burning the skin. The sending of information back and forth goes on constantly in the nervous system and involves the brain, spinal cord and thousands of nerve fibres and sensory receptors in the organs and throughout the body.

The nervous system is divided into two parts, based on the control of the body:

- 1.** Autonomic nervous system: This is the “automatic” part of the brain that functions without you being consciously aware of it. An example of this would be digestion. The process of breaking down food starts and stops without a person (or horse) thinking about it.

- 2.** Central nervous system: This is the part of the nervous system that controls our “conscious” or voluntary actions. An example of voluntary action would be to throw a ball or start singing. You consciously tell your body to start and stop the activity.

The parts of the nervous system include the brain, spinal cord, and nerves. The brain of the horse sits inside the cranial cavity of the skull. The brain is divided into three major sections. These are called the cerebrum, the cerebellum and the brain stem.

Each section of the brain has a specific function.

### **The Cerebrum**

This part of the brain performs the functions related to intelligence, memory and emotional response.

### **The Cerebellum**

This part of the brain controls coordination of the muscles, equilibrium and balance.

### **The Brain Stem**

This part of the brain sits between the brain and the spinal cord. It has been termed the “Primitive brain”. It is the centre that controls life sustaining functions such as the beating of the heart, respiration and body temperature.

### **Sensory Organs and Receptors**

Branching off the spinal cord are hundreds of nerves that in turn branch out to smaller threads distributed throughout the entire body. There are also specialized receptors throughout the body that monitor things like blood temperature, electrolyte balance, blood glucose and many other functions. The information is fed back to the brain for processing and if necessary, a response.

There are basically two types of nerves. One type sends impulses back to the brain over the sensory nerve fibres. The second type, called motor fibres, carries the “commands” from the brain back to the organ or muscle.

### **The Endocrine System**

Throughout the body are various glands, composed of specialized tissues that allow the formation and secretion of hormones. These hormones influence virtually every system of the body and help regulate and control the internal environment. This internal balance is called homeostasis.

You may be familiar with the term adrenaline. This is a hormone from one of the endocrine glands that gets the body ready for the “fight or flight” stage when an animal feels threatened, or more correctly for the horse, it is “flight or fight”. Other hormones control blood pressure, the birth of a foal, letting down of milk, control of the digestive tract, the amount of water lost from the body in the urine and many others.

This course will not be going into the endocrine system in depth, but you are encouraged to learn more about this fascinating aspect of control of the body in the horse. This becomes particularly important if you are interested in being part of the horse breeding sector.

## The Reproductive System

The “survival of the species” is one of the deepest instincts and ensures the creation of new individuals within that species. Within most species, there is a male and female.

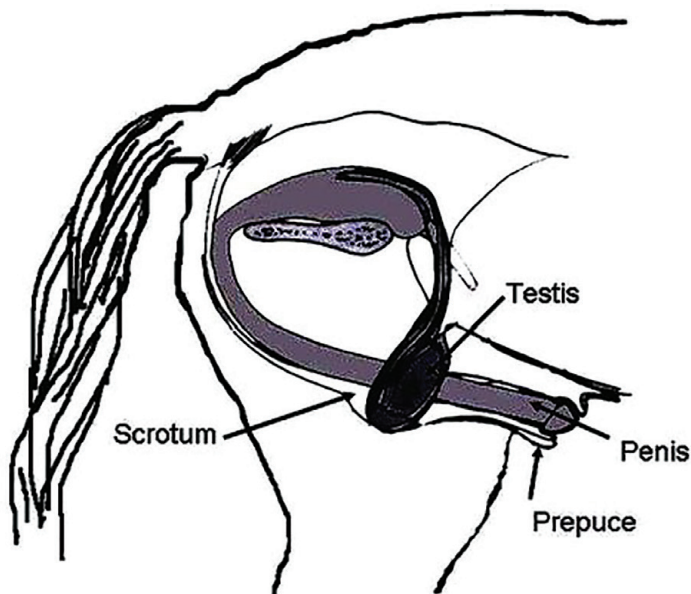
The male has specialized organs called the testes that produce sperm. The female has specialized organs called the ovaries and uterus that provide the egg and the “home” for the growing baby.

## Reproductive Hormones

Hormones are chemical substances in the body that initiate and control changes in the development of tissues, organs and behaviour. The reproductive hormones control the reproductive functions in the horse. The major hormone in the stallion is called testosterone and is produced in the testes. There are two major hormones in the mare; estrogen and progesterone.

## The Stallion

The organs that make up the reproductive tract of the male include the two testes (or testicles), the accessory sex glands, a series of tubes for transport of the semen and the penis (Figure 1.3-21). Sperm are produced in the testes, which are suspended in the scrotum. Sperm cannot live at body temperature and therefore the testicles are not inside the abdominal cavity in a mature animal. Sperm are passed out of the body through a small tube inside the penis, called the urethra.



**Figure 1.3-21:** The reproductive system of the stallion

Credit: G. Ecker

## Parts of the Male Reproductive Tract

**Testes (or testicles)** – within the scrotum, the testes are the organ where sperm is developed. The testes must be outside the body as sperm cannot survive at body temperature.

**Scrotum** – the pouch of skin that contains the testicles. Scrotal muscles play an important role in controlling the temperature within the testes.

**Accessory Sex Glands** – these glands include the seminal vesicles, the prostate, and bulbourethral gland. Fluid secretions are provided to transport sperm through the urethra. The combination of fluid and sperm is called semen.

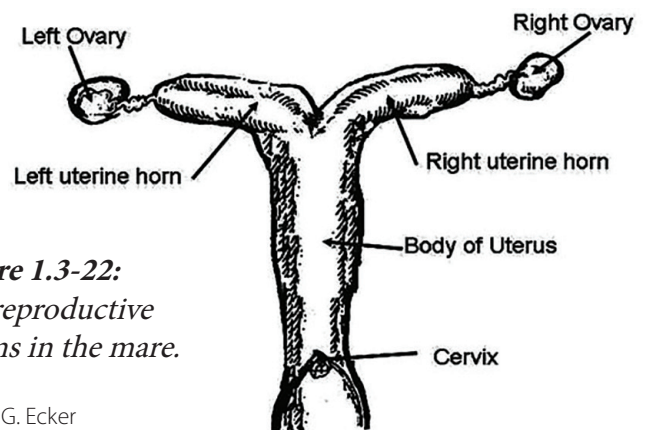
**Urethra** – a tube within the penis that transports semen and urine outside the body.

**Penis** – the organ in the male horse used for depositing the semen into the vagina of the mare during breeding.

**Did You Know?** A cryptorchid or ridgling is a male horse in which the testicles have not descended. They remain in the abdominal cavity making it very difficult to castrate or geld the stallion. Cryptorchids should not be used for breeding as this condition is passed on to the offspring.

## The Mare

The reproductive organs of the mare are shown in Figure 1.3-22. The eggs are produced in the ovaries. When ready, an egg is released and travels down the fallopian tubes. It is usually in this area that the egg is fertilized by the sperm to create a fertilized egg. The fertilized egg then travels into the muscular-walled organ called the uterus. It is in the uterus where the fertilized egg will continue its development into a foal. The hormone estrogen controls the heat cycle or estrus of the mare while progesterone is involved in preparing the uterus to receive the fertilized egg and in maintaining the pregnancy.



**Figure 1.3-22:** The reproductive organs in the mare.

Credit: G. Ecker

## Parts of the Female Reproductive System

**Ovary**- the organ in the mare that produces the eggs.

**Fallopian tubes** – commonly the site of fertilization and the connecting pathway from the ovary to the uterus.

**Uterus** – the “two-horned” muscular organ where the fertilized egg completes the development of a new foal.

**Vagina** – the passageway that receives the sperm after mating has occurred. It is the passage to the outside of the body for the foal at birth and is also called the birthing canal.

### Did You Know?

Sometimes the mare will produce two eggs at the same time. If both are fertilized, then twins may develop. This is a potentially serious health situation for the mare.

Therefore, it is common that the second fertilized egg will be destroyed by the equine veterinarian to make it safer for the one foal to be born.

This has been a brief introduction to the reproductive system in the horse. You are encouraged to learn more about this area and obtain specialized training, particularly if you would like to work on a breeding farm or develop a breeding business.

Note: If you wish to learn more about this area, check [www.equinesciencecertificate.com](http://www.equinesciencecertificate.com) for more information about courses in Anatomy and Growth and Development.

### Skin

The skin is actually considered to be an organ of the horse. It is also the largest organ of the horse! The skin, also called the integumentary system, includes the hair and skin that cover the body. Skin plays an important role by forming a boundary between the outside and inside environments of the horse. Hair grows out of the skin and helps to protect the horse. In the summer, hair helps protect against flies and insects. In the winter, extra hair growth (called the winter coat) helps to keep the horse warm.

Skin also plays an important role in regulating the body temperature during exercise.

When the body becomes hot, skin produces tiny droplets on the surface. Most people have seen this “sweat” on the horse. The skin around the ears, neck

and chest become wet. Skin will sweat under the saddle and harness, and if the exercise continues the entire horse may sweat. In order for heat to leave the horse, sweat must evaporate.

Walking the horse keeps air moving over the skin and helps the sweat to evaporate. Evaporation will cause the horse’s body temperature to come down faster.

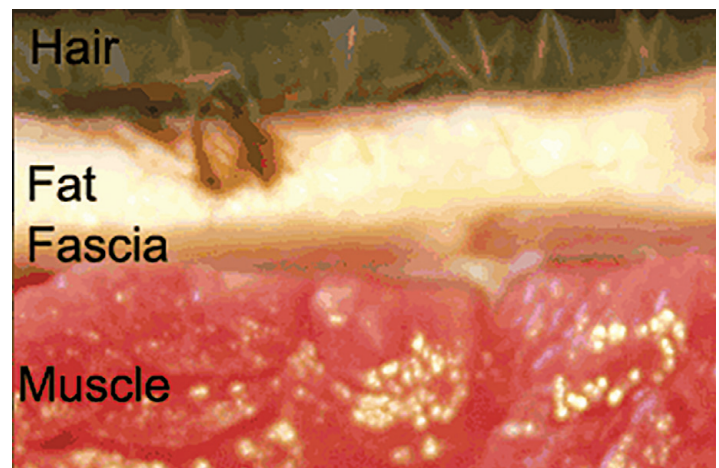
### Checking the Skin

As a groom, you can check on the skin daily to ensure there are no problems.

Remember, the skin is the barrier to the outside environment and keeps germs and bacteria from entering the body. If skin develops cuts, rashes or other problems, the boundary may be breaking down infection into the body.

So, when you are doing the daily grooming of the horse it is important to check the skin.

Run your hands over the body of the horse and move your fingers through the hair. You will be able to discover any lumps, scratches, scabs or other changes in the skin. Also, move the hair aside and check the mane and tail including the area underneath, right at the base of the hairs. If you see the horse scratching or rubbing the mane or tail, then check further to see the condition of the hair and skin underneath.



Credit: J. Thomason

If you see a bald spot on the tail, where the hair is pushed aside and damaged, this commonly indicates that the horse may have parasites (pinworms) or the tail and dock area could be dirty or irritated. It could also indicate that the horse needs the sheath or udder cleaned. If you see any flakiness, scabs, lumps or scratches, inform your veterinarian and ask them to check on it.

## Did You Know?

- The horse can get skin infections from dirty blankets and from dirty grooming tools. Keep your horse blankets clean and wash the grooming equipment regularly in an antibacterial soap and rinse well.
- A nice, shiny haircoat gives some indication of the overall health of the horse. Disease or malnutrition may cause the haircoat to become dull and brittle and even patchy, or lack of shedding of the winter coat.
- When you are brushing the horse, you are also helping to ensure the health of the skin. Grooming removes dirt and grime, distributes the natural oils that are an important part of skin health and gives a massaging action to the skin which helps increase blood flow.

## The Immune System

A properly functioning immune system is critical for life. Every day the body is bombarded by viruses, bacteria, parasites and other threats. Without the “army” of the immune system, viruses and bacteria can quickly take over the body.

So, what is this army that protects the life of the horse? The immune system is composed of cells and molecules. Its function does not live in a single organ but rather the immune system works through the entire body. The immune system is closely linked with the circulatory system.

The circulatory system also carries the most important parts of the immune system.

These include:

**Antibodies** - specialized proteins that can actually recognize foreign cells and molecules.

**Lymphocytes and monocytes** - white blood cells that respond to fight off infections when foreign invaders are discovered. There are five kinds of white blood cells that help fight off infection, as they patrol the body hunting down the invading germs and viruses. When the white blood cells find an invading organism, they attack it and destroy it.

## Did You Know?

- The lymphatic system is part of the immune system. The lymphatic system is a series of vessels that collect fluid in the tissues and dump it back into the circulatory system.
- Lymph nodes are small structures that act as filters to

remove foreign material. Lymph nodes can become swollen and painful when infection is present.

- Antibodies are developed when the horse is exposed to foreign materials. They work as “detector” cells to recognize the foreign material when it invades the horse again. Once the antigen attaches to the foreign material, a sequence of events begins when the white blood cells attack and remove the offending material.

## Summary

In this section you have learned the basic physiology of the major systems of the horse and the functions to support health. A good understanding of the normal physiology of the horse will help you protect the health and performance of your horse. This will provide you with the knowledge that will enable you to have productive and informative discussions about the care of the horse with equine professionals. This knowledge also provides the foundation for other units in Groom One.

## 1.4 Gaits of the Horse

For humans, we have a choice in how we move. We can walk or run. These are examples of different gaits. For those who love horses, it is a great delight to watch horses move.

It is important to understand the different gaits of horses and how the legs move. In this section you will be introduced to the fascinating world of “gait analysis” by first learning about the basic gaits. This will be followed by an introduction to gait problems and then how these problems affect the performance and health of the racehorse.

### Learning Objectives

*Upon successful completion of this section, you will be able to:*

- *Identify and describe the basic gaits of the horse including walk, trot, canter, gallop and pace*

### DLO Activity

For your DLO, go to The Horse-Gaits. The information on the CD will introduce you to the gaits of the horse. You will see video clips that will allow you to study the action of the gaits and understand the footfall pattern of each. You can also do a web search of horse gaits to learn more about this area. Look for videos to show you the walk, trot/ jog, canter/lope and gallop.

### Did You Know?

The walk, trot (jog), canter and gallop are common to almost all horses. The pace is a gait used by Standardbred racehorses in "Pacing Races."

### Did You Know?

Gait Analysis is a method of assessing the gait of the horse to detect issues of movement, imbalance or lameness (sometimes called "rough gaited"). Through new technology, this can be done by computer analysis.

### Summary

In this section you have learned to identify the basic gaits of the racehorse and how the legs move during these gaits. You have also been introduced to gait analysis. This is important to understand, as this is the first step when working with horses to help improve performance. Further educational courses will be necessary to become better at observing gaits, picking out gait problems and learning how to deal with these problems through shoeing or special equipment.

## 1.5 Equine Behaviour

Handling a horse can be risky, even if you know the animal. When you have to handle horses unknown to you, the risks increase. While horses may not be able to speak our language, horses have a language all of their own that we can learn if we know the basics and pay attention.

In this section you will learn about horse behaviour and its interpretation. By understanding the language of the horse, the knowledgeable groom can manage a horse safely and effectively; thus, reducing the risk to the horse and others around you. This knowledge will help you identify and understand undesirable behaviour that can lead to stereotypes. Stable stereotypes are hard to diminish once they have started, therefore, the groom should understand the risks that lead to these behaviours in order to prevent them. You will be introduced to the basics of equine behaviour that will help you recognize behavioural cues.

### Learning Objectives

*Upon successful completion of this section, you will be able to:*

- Describe and identify basic behavioural cues such as

*changes in the positions of ears, tail and other body postures*

- Describe normal behaviour of the horse and its explanations
- Describe the life of the horse under feral conditions and the changes imposed on behaviour due to domestication

### DLO Learning Activity

From your course site, open your DLO, click on The Horse-Behaviour. You will be introduced to the basics of normal behaviour of horses.

You will also need to view the following sections:

- ear positions and facial expressions
- tail positions
- leg positions
- body postures
- and vocalization



On the next page you will see examples of behavioural cues (Figures 1.5-1, 1.5-2, 1.5-3 and 1.5-4).

A behavioural cue is a behaviour that leads to an intended action, whether the cue is directed toward a person or another horse or even at a dog or other predator. It is important that both the sender and receiver of the cue or message understand the intention and act accordingly.

A cue can be thought of as a warning or a hint.

The illustrations on the following page are all examples of behavioural cues.



### **Ears relaxed -**

Ears relaxed and to the side - This horse may be sleepy, or relaxed. This horse could also be listening to something from behind. If this occurs after exercise or in the heat it could also mean a fatigued horse. If the horse responds to movement or voice and moves his ears forward, then it is likely to be normal.



### **Ears turned backwards -**

This horse could be listening to sounds coming from behind, or this could indicate submissiveness to a more dominant horse.



### **Ears flat back -**

A horse with its ears flat back against its head is threatened and is sending a warning to protect itself. This is a sign of territorial protection, aggression or fear.

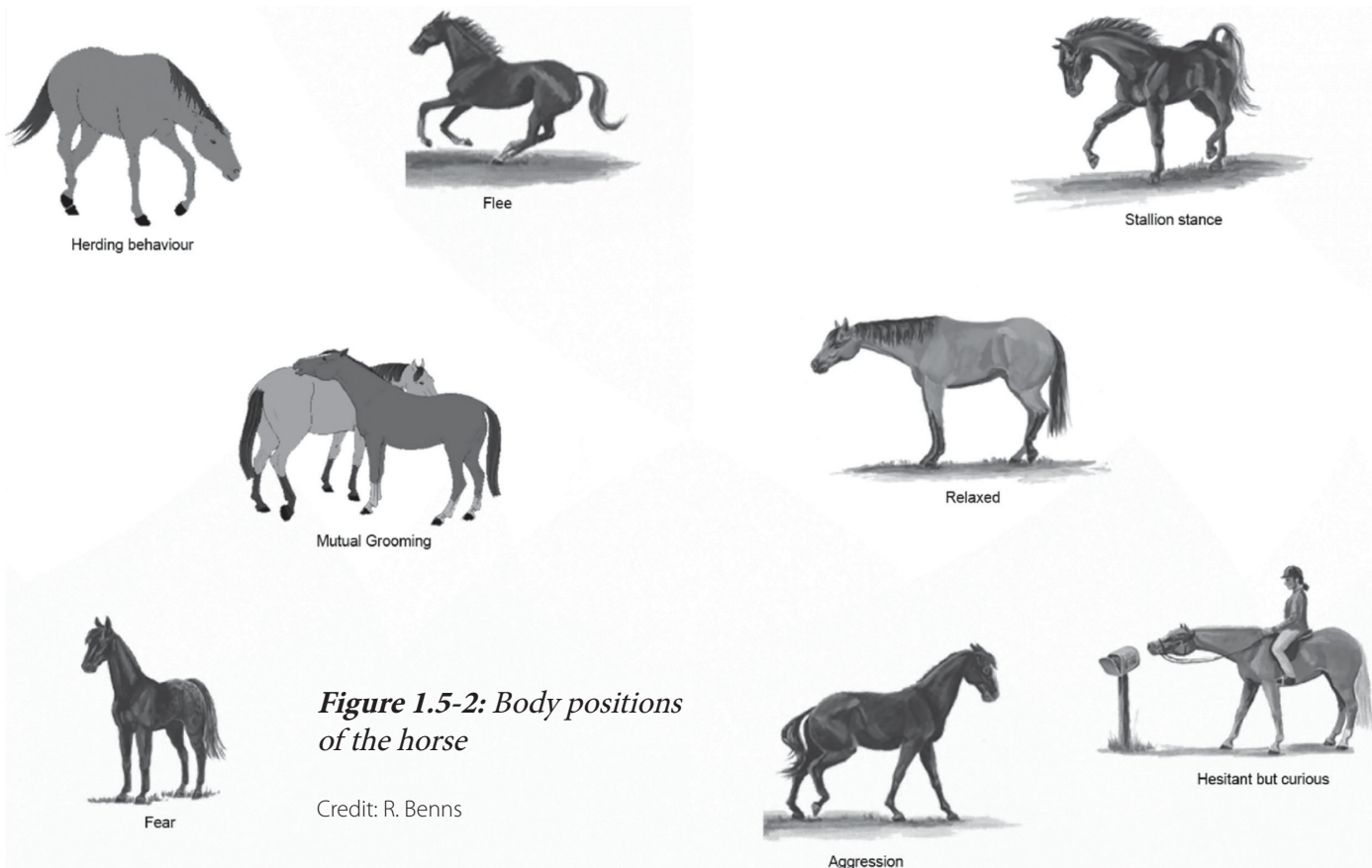


### **Afraid -**

This horse is showing cues that it may be on the verge of panic. The ears are pointed towards the source of fear. The head is held high and the whites of the eye are showing. The neck muscles may be tense.

***Figure 1.5-1: Ear positions of the horse***

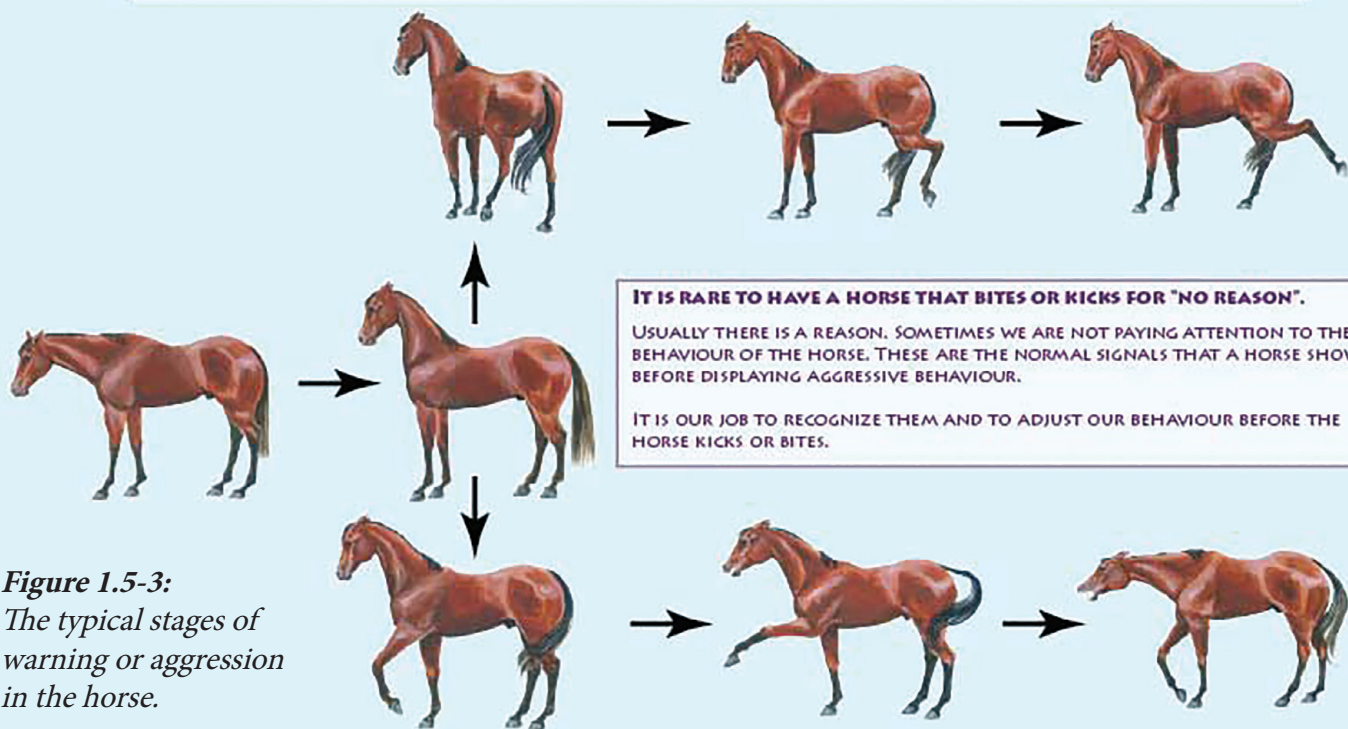
Credit: R. Bennis



**Figure 1.5-2:** Body positions of the horse

Credit: R. Bennis

## IS THIS HORSE MEAN? "HE KICKS & BITES FOR NO REASON!"



**IT IS RARE TO HAVE A HORSE THAT BITES OR KICKS FOR "NO REASON".**  
USUALLY THERE IS A REASON. SOMETIMES WE ARE NOT PAYING ATTENTION TO THE BEHAVIOUR OF THE HORSE. THESE ARE THE NORMAL SIGNALS THAT A HORSE SHOWS BEFORE DISPLAYING AGGRESSIVE BEHAVIOUR.  
IT IS OUR JOB TO RECOGNIZE THEM AND TO ADJUST OUR BEHAVIOUR BEFORE THE HORSE KICKS OR BITES.

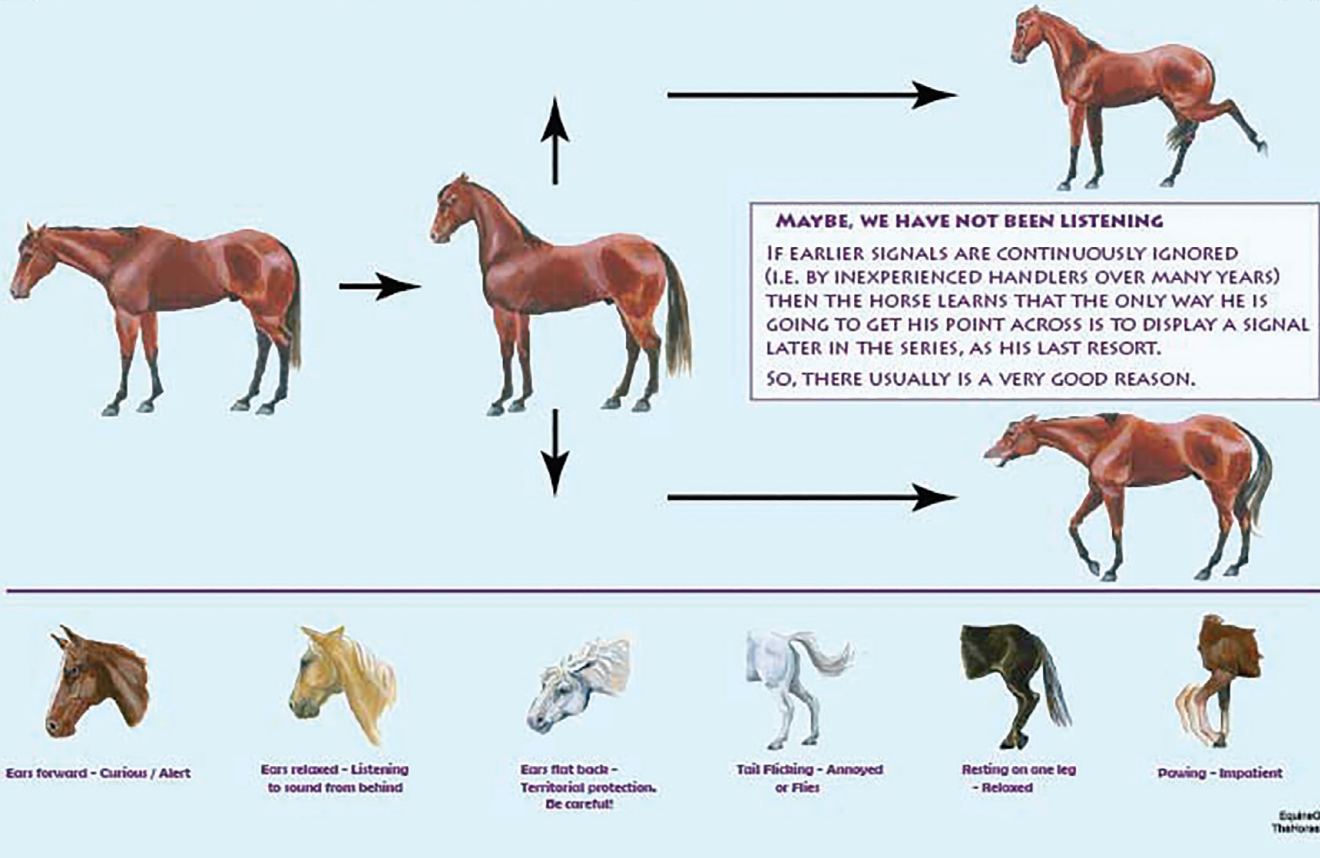
**Figure 1.5-3:** The typical stages of warning or aggression in the horse.

Credit: R. Bennis

EquineGutph.co  
TheHorsePortal.co



# MAYBE THERE IS A REASON!



*Figure 1.5-4: If warning signs have been ignored, the horse may respond by kicking.*

Credit: R. Benns

Take some time to watch horses, both in their stalls and while they are being handled by people. Can you interpret the behaviours that you are observing? Are the horses sending cues or messages to other horses or the people that are handling them? If you do not have any access to watching horses, do some searches on YouTube and find videos of horses. Do you recognize any behaviour that has been reviewed here?

## DLO Learning Activity

In your course site, view, "Horses in the Wild versus Horses in a Human World". It is located on your DLO in the The Horse-Equine Behaviour area.

The very instincts that serve the horse well in dealing with life as a prey animal in the wild are often in direct conflict with life in the human world.

Horses are social, herd orientated, and generally quiet animals. Living successfully and peacefully with a group depends on using the right signals (cues) as well as understanding the language.

Domestic horses, while pastured, spend most

of their time grazing. Time spent grazing depends somewhat on availability of forage and the needs of the animal. Grazing behaviour can also be affected by factors such as stocking rate, social relationships, types of plants and pasture design.

Horses have sleep patterns typical for prey species that evolved on open plains. Horses can sleep standing up due to a special anatomical feature that allows them to "lock" the stifle. To achieve deep stages of sleep, horses apparently need to lie down. Observations of herds of wild and semi-wild horses show that horses take "power naps" and use the buddy system to get the rest they need, while keeping safe from predators. Wild horses sleep for a greater amount of time each day than stabled horses.

For any horse or group of horses, there is usually a recurrent pattern of rest and other activities, such as grazing. The pattern varies with the weather and season, and the type of daily activities. Stabled horses, affected by the activity around them, typically get



much of their sleep during the evening and early morning hours. Horses tend to learn the pattern of the barn and their deepest rest and sleep tend to occur soon after the busy 'people day' ends.

The behaviour of the domestic horse has been altered from that of the wild horse due to housing and management. Some of the constraints caused by management include:

- increased amount of time where horses are confined in stables
- competition (and breeding) – higher energy requirements for active horses; therefore, horses are given grain/concentrates to add more calories and vitamins/minerals
- common practice of giving twice-daily feeding of concentrated meals such as grain and a flake of hay as horse is a grazing animal
- size of pasture provided can influence type of exercise - for example, locomotion at a canter is restricted in fields of three acres and less, but not in fields of 5 acres or more.
- herd mates can impact on behavioural patterns, such as increased aggressive behaviours when there is competition for food and water

### **DLO Learning Activity**

In your course site, view "What do horses see?" and "What do horses hear?" It is located on your DLO in the The Horse-Equine Behaviour area. You can also do some web searches for more information on these topics.

It is important to know what a horse can and cannot see and hear. It is also useful to understand how a horse's vision and hearing differs from our own. Having an understanding of horse vision and hearing will provide you with insight on why a horse might behave a certain way.

- Can he see you approaching?
- Can he see the horse or vehicle beside him?
- What does he see as he is approaching a horse trailer?
- Why does he seem nervous when it is windy?

### **Learning From Your Instructors**

As outlined in the DLO, the following lists are summaries of the key points on horse vision and hearing:

### **Vision**

- Horses have a blind zone; they cannot see directly behind or directly below their nose
- A horse is less able to distinguish contrasts in light levels than a person
- Horses have a greater field of view than a person (wide panoramic view). A horse is better able to see in dim light, but more easily blinded by bright light
- A horse is less able to distinguish between colours than a person
- A horse has less depth perception than a person
- A horse can see longer distances than a person

### **Hearing**

- Horses have sensitive hearing and can hear sounds that we cannot
- Like all animals (including people) horses can hear sounds from both ears at the same time. This assists them with locating the sound
- Horses can hear a wider range of high frequency tones than we can
- Horses' hearing is very sensitive but not very precise
- Horses can move their ears. Horses swivel their ears towards a sound to help them locate it
- Because horses have large, cup-shaped outer ears, very little sound spills out of them
- People have small, flat outer ears that are less effective for keeping sound in
- The outside part of a horse's ear acts like a satellite dish to capture sound waves and funnel them to the inner ear, so their hearing is much better than a human

### **Learning Activity**

#### **Equine Behaviour**

Now that you have some understanding of what a horse sees and hears, how does this differ from you? Can you think of specific examples, when dealing with horses, when vision or hearing may explain why a horse behaves differently than you?

For example, how does vision / hearing affect behaviour when loading a horse into a trailer? Or when it is windy? Or in bright sunshine or reflected glare?

Write your answer down. You may wish to discuss your thoughts in the Unit Discussion area. If you have any questions, ask your instructor.

So far, you have learned the basic behaviours of the horse and its "body language".

You have also learned to recognize when a horse is territorial, threatened, submissive, impatient and showing other common behaviours. You should now have an appreciation of the impact of domestication and stabling on what is the “natural” life of the horse.

It is important for a groom to fully understand these behaviours as you are the “front line” advocate of the horse. It is your job to recognize the behaviours of the horse and understand the meaning implied as well as what is “normal” behaviour for the horses in your care.

With this knowledge, you will be more effective at monitoring the health and welfare of the horse and in recognizing problems and warning signs before they become serious.

### **Abnormal or Undesirable Behaviours**

The groom should also be aware of abnormal or undesirable behaviours so that these behaviours can be prevented through improved horse management. In this section, you will learn about undesirable horse behaviour.

You will also be introduced to possible causes and procedures for the prevention of these behaviours. With the knowledge of both normal and undesirable behaviour, you will be aware of changes in behaviour that could become a problem and also effective at recognizing management methods that could help prevent or treat these behaviours.

#### **Learning Objectives**

Upon successful completion of this section, you will be able to:

- Describe and define undesirable horse behaviour
- Describe and identify possible causes and procedures for prevention of stereotypes

### **DLO Learning Activity**

In your course site, on your DLO, go to The Horse-Behaviour.

View: Stereotypic behaviour.

Stereotypic behaviours are undesirable behaviour patterns that are repetitive and unvarying in form and do not appear to serve a purpose or goal.

These behavioural patterns can contribute to reduced performance, reduced value of the horse and can be destructive to both horse and stable. In some cases, the display of a behaviour may be undesirable to humans but may not actually harm the horse.

The DLO contains a video clip containing a series of examples of stereotypic behaviours. You may also

wish to do an internet search for equine stereotypes. A note of caution here – be careful not to get caught up in ways to “punish” the abnormal or “undesirable” behaviour as that is a welfare issue and there are better ways of management. Searching out the cause of the behaviour is the important part and removing that stressor is a better way to move forward.

### **Learning Activity**

#### **Negative Horse Behaviour**

Now that you have observed the video examples of stereotypic behaviours, take some time to sit quietly in the barn centre aisle and observe horses in their stalls. Can you spot horses exhibiting similar behaviours as those on the DLO? Watch horses at feeding time – are there horses showing any of these behaviours?

#### **DLO Learning Activity**

On the course site, open your DLO, go to The Horse-Behaviour. View: Stereotypic behaviour. What can we do to prevent or treat stereotypic behaviour?

Stereotypic behaviour can develop when an animal’s behavioural needs are not being met. A stabled horse’s nutritional and physical health needs are usually provided but often their ability to perform activities is reduced.

As outlined in the previous section, in the wild, horses spend most of the day foraging in a social herd. When a stabled horse does not have an outlet for these behaviour patterns, stereotypic behaviours can develop. In order to help reduce or eliminate the behaviour, the underlying cause of the behaviour must be removed. The following is a list of changes in management that helps allow the horse to have greater control of its own activities, which may reduce stress and eliminate the unwanted behaviour.

#### **Items to consider:**

##### **Change your stable management**

- Increase forage provided each day
- Increase visual or physical socialization (make sure horses can see / touch each other in neighbouring stalls by providing open / gridded partitions)
- How many windows or doors are in the stable?
- Increase turnout time or time out of the stall
- Consider use of a stall mirror or feed ball toy (note: some horses may react aggressively)
- when using a mirror – mirrors should not be installed near feeding or drinking locations –
- must be shatterproof and not too large –

horse must be able to escape mirror.)  
(Note: some horses may find a feed ball too challenging or threatening – therefore use may increase frustration or stress.)

Research does not support the concept that stereotypies are learned or copied from other horses. If several horses are exhibiting similar behaviours at the same stable, it may be due to exposure to the same environment and management practices.

Equine behaviourists caution against the use of methods aimed at physically eliminating repetitive behaviours – weaving bars on stall doors and collars on cribs do not eliminate the behaviour and tend to further frustrate and stress a horse.

Stereotypic behaviours are not found in wild horses. Zoo equids may exhibit this behaviour.

## **Learning Activity**

### **Stereotypic Behaviours**

Have you observed horses that have changed their stereotypic behaviour when changes in management practices have been introduced (either positive or negative)? Explain why you feel the change in management has made a difference.

### **DLO Learning Activity**

In the online course site, open your DLO, go to The Horse-Behaviour. View: “The horse that bites or kicks for “no reason””

Most of us have met a horse that kicks or bites for no reason. Usually there is a reason.

The DLO provides a series of images that show the normal escalating collection of threat signals. If earlier signals in the series are continuously ignored (i.e., by inexperienced handlers over many years) then the horse learns that threats are ignored and obvious aggression is the only signal that gets the desired response. The horse resorts to a response later in the series at the first sign of a disturbance in order to get the desired response.

So, the horse that is labeled as one that bites or kicks for no reason, usually has a very good reason. Refer to Figures 1.5-3 and 1.5-4 for a review of this.

## **Learning Activity**

We have provided links to an article entitled, “Can We Drive Horses Mad?” by Coralie Sopher, Equine Guelph. We have also included it in print at the end of this

section. It is a summary of a talk given at the University of Guelph by Dr. Daniel Mills, an internationally known specialist in equine behaviour. The article includes a summary of behavioural problems and includes Dr. Mill’s research findings on the underlying causes of several common undesirable activities displayed by the stabled horse.

## **Learning Activity**

We have provided a second article for you entitled, “What causes stable vices or stereotypies?” by Dr. Suzanne Millman, Ontario Veterinary College, University of Guelph. We have also included it in print at the end of this section. Dr. Millman explains what a stereotypy is and how it may be caused. She also includes why the term, “vice”, is not appropriate to use in this context.

## **Summary**

In this section, you have learned the basic normal behaviours of the horse and its “body language”. You have also learned to recognize when a horse is territorial, threatened, submissive, impatient and showing other common behaviours. You should now have an appreciation of the impact of domestication and stabling on what is the “natural” life of the horse.

It is your job to recognize the behaviours of the horse and understand the meaning implied, as well as what is “normal” behaviour for the horses in your care. With this knowledge, you will be more effective at monitoring the health and welfare of the horse and in picking up problems and warning signs before they become more serious. The groom should also be aware of abnormal behaviours and stable vices so that these behaviours can be prevented through improved horse management.

## **Reading Articles**

### **Can we drive horses mad?**

*By Coralie Sopher, Equine Guelph*

Dr. Daniel Mills, a Specialist in Veterinary

Behavioural Medicine at the University of Lincoln, UK, believes we can and do when we stable horses for prolonged periods. At a recent seminar at the University of Guelph sponsored by Equine Guelph and the Centre for Animal Welfare, Dr. Mills discussed behavioural problems and presented his research findings on the underlying causes of several common undesirable activities displayed by confined horses. Although the display of these behaviours may be undesirable to humans and might reduce the value

of an animal, Dr. Mills questions whether or not they significantly harm a horse.

### **Stress and stereotypies in horses**

We all know what it feels like to be stressed, however, we often have difficulty describing this in horses. Not all stress is bad, and problems occur when it becomes excessive and the stressor cannot be relieved, leading to lack of control of a situation. Dr. Mills suggests that decreased grazing, socialization and tactile contact in stabled horses are significant factors. Stress responses may be physiological, physical or behavioural.

Examples include increased heart rate and blood pressure, and stereotypic behaviour (stereotypies). Stereotypies are repetitive behaviours that serve no obvious function and include weaving, box walking and cribbing. He adds that there is no solid evidence to support that stereotypies are caused by boredom as previously believed nor are they learned or copied from other horses. Rather, the incidence of several horses exhibiting similar behaviours at a given facility is due to exposure to the same environment and management practices. Dr. Mills believes the presence of stereotypies in domesticated, but not wild horses, is a product of a human-made environment and help the animals cope with their unnatural surroundings. Horses have evolved as social herbivores and our provision of food and shelter among other physical items allows them to satisfy their physiological, but not behavioural needs, often leading to frustration.

### **Factors associated with stereotypies**

Through extensive surveys and scientific research Dr. Mills has identified risk factors associated with stereotypies. For example, factors contributing to weaving include decreased social contact with other animals, restricted exercise and turnout in areas less than four acres and predictable feeding schedules. Additional factors include decreased hay as source of forage, feeding concentrates and non-straw bedding, all of which are time-filling activities.

Treating stereotypic behaviours in stabled horses In order to prevent and treat stereotypies, one must remove the underlying causes, allowing the horse to have a greater control of his activities and reduced stress. Dr. Mills cautions against the use of methods aimed at physically eliminating repetitive behaviours. For example, he has noted that weaving bars on stall doors and collars on cribbers do not eliminate weaving and cribbing, respectively, and tend to further frustrate

and stress a horse. Dr. Mills determined that increasing visual and social interaction among stabled horses is a key factor in treating stereotypies. When studying stable design he established that by increasing the number of windows, doors and betweenstall grill openings significantly decreased repetitive behaviours. However, stable size and the use of standing stalls were not contributing factors to these behaviours.

Significant reductions in stereotypies were routinely found to occur when several management changes were made, including increasing turnout time and paddock size, reducing concentrates and increasing forage and supplying straw bedding.

Encouraging redirection of energy into alternative activities or behaviours that compete with stereotypies were shown to reduce the unwanted behaviours, for example, introducing feed balls into a stall multiple was shown to reduce stereotypies, stable toys may often prove too challenging, therefore increasing frustration and stress.

### **Mirrors can reduce various stereotypies**

A mirror on a stall wall may greatly decrease or even eliminate a stereotypy in a horse by imitating visual contact with other horses and decreasing social isolation. In his studies using known weavers, Dr. Mills found that weaving behaviour as well as other activities such as nodding was greatly reduced and had little effect on other routine activities such as feeding. Based on thorough research, Dr. Mills developed the commercially-available "Lincoln stable mirror". He cautions that, although these may be very effective, there are some horses that might respond aggressively and the mirrors should not be installed near feeding and drinking locations. Also, it is imperative that they be shatterproof and not too large to avoid the horse feeling threatened. In related studies, Dr. Mills established that a life size poster of another horse was as effective as providing social contact.

### **Conclusions:**

"Loving your horse is not the same as caring for your horse". Dr. Mills sees "owners who love their horses but with unhappy horses". He stresses there is a great need for education of the owners. If owners can understand the factors that cause stress in the horse, then many of the behaviour problems could be reduced or eliminated.

Equine Guelph is the horse owner and caregiver's centre at the University of Guelph.

Equine Guelph is dedicated to improving the health and well-being of horses through the provision and promotion of research, performance and education.

Equine Guelph, (519) 824-4120 ext. 54205, [www.equineguelph.ca](http://www.equineguelph.ca), [horses@uoguelph.ca](mailto:horses@uoguelph.ca)

### **What causes stable vices or stereotypes?**

*By Suzanne Millmann, PhD*

Horse owners frequently use the term “vices” to refer to anything that a horse does that we find to be undesirable. Some vices are normal behavioural responses, despite the fact that they are annoying. For example, a “barn sour” horse that is reluctant to leave the property or pasture is displaying normal social behaviour for a herd species; it is safer to hang out with your equine buddies. Other vices appear to be abnormal or pathological behaviour responses, such as wood chewing and eating bedding or manure. Unfortunately, the term vices also holds implicit moral overtones (Vices & Virtues). Hence the horse is often labelled as a “bad” horse, negatively affecting how treatment is employed. I discourage use of the term in favour of “undesirable behaviour” and/or encourage use of more descriptive terminology (i.e.: wood chewing).

Stereotypic behaviour is the scientific term used for a specific category of undesirable behaviour and refers to behaviour patterns that are repetitive and unvarying in form and do not appear to serve a purpose or goal. Horse enthusiasts will likely recognize some of these strange behaviour patterns, such as cribbiting, wind-sucking, head nodding, weaving, tongue rolling, tongue chewing, etc. They are problematic for horse owners, since they can reduce performance, reduce the value of the horse, and can be destructive to both horse and stable. Stereotypies are also seen in other confined animals, such as bar-chewing by laboratory rodents and pacing by captive carnivores at zoos or circuses. A decent body of scientific literature is developing about stereotypies, but it is necessary to look across species to develop an understanding of the biological mechanisms underpinning these behaviour patterns.

In general, stereotypies are likely to develop when an animal’s behavioural needs are not being met. We usually do a good job providing for the nutritional and veterinary needs of our horses, but activities they evolved to perform are often taken for granted.

In the wild, horses spend sixteen hours per

day foraging- looking for food, manipulating food, selecting which items to eat and which to avoid. Since they evolved to live in a herd, social interactions are also high priority- determining the social order, maintaining relationships with individuals within the group through grooming, playing, relying on the vigilance of others, and just hanging out together. Even though horses are fed an adequate diet and are not in danger of predators, they are highly motivated to forage and socialize. When they do not have outlets for these behaviour patterns, stereotypic behaviour is more likely to develop.

Research has shown that horses are less likely to develop stereotypies (1) when they are provided with at least 6.8 kg of forage (hay) each day, (2) when they have opportunity to socialize with other horses in neighbouring stalls through windows or over partitions, (3) are bedded with straw. Interestingly, the amount or type of exercise that the horse receives does not seem to affect development of stereotypies, nor does the provision of “toys”. An exception is the “foodball” which dispenses food as the horse pushes it around the stall, satisfying motivation to forage. Oral stereotypies, such as cribbing, are associated with feeding of concentrate or grain. It appears that grain feeding affects gut acidity and prevalence of gastric ulcers, both of which are correlated with cribbing behaviour.

The relationship between stress and stereotypic behaviour is not straightforward. Some researchers suggest that stereotypies develop as “coping mechanisms” when horses are unable to resolve conflict, such as desire to graze when no forage is available. However, measurements of stress, including plasma hormones such as cortisol, endorphins and heart rate, have been difficult to interpret. Some researcher found stress levels to be higher in animals performing stereotypies, some found them to be lower and some found no differences. To complicate the issue, stereotypies may initially develop during periods of stress or anxiety, but over time stereotypies become “hard-wired” activities that are separated from their original causes. In other words, a horse may originally develop weaving in response to social conflict when it is separated from its companions, but as it becomes older and the stereotypy is more firmly established in the horse’s behavioural repertoire, a weaving horse may show this behaviour even when social companions are present. It becomes a type of “default” behaviour that can be triggered by a number

of factors, not just social isolation. It may also become harder to “turn off” this behaviour by distracting the horse with other activities. Some of you may have seen a cribber that is standing in a pasture of lush grass, cribbing on the wood fence!

We are beginning to gain an understanding of how stereotypies develop. A recent prospective study that followed 225 Thoroughbreds and part-Thoroughbred young horses over four years showed that more than one-third of the horses displayed abnormal behaviour patterns. Cribbing was performed by 10% of the horses and tended to develop at 20 weeks of age, shortly after weaning. Weaving and box walking were less common (5% and 2% respectively) and developed later (60 weeks and 64 weeks respectively). One-third of the horses were wood chewing at 30 weeks of age. Although wood chewing is not necessarily a stereotypy, since this depends on how uniform and repetitive the patterns are, horses that develop cribbing almost always begin with wood chewing.

Stereotypies were more likely to develop in foals from socially dominant mares rather than low and middle rank mares. It is not clear if this represents a genetic effect or an effect of reactivity, stress or anxiety response. Importantly, weaning method was a significant risk factor for development of stereotypic behaviour. Foals that were weaned on pasture or in a paddock were less likely to develop stereotypies later than foals that were confined at weaning in a stall or barn. Opportunities for grazing during weaning appear to be beneficial. Weaning is a significant time of stress due to dramatic changes in diet and social environment (separation from primarily social companion and mediator in times of conflict with other horses in the herd). Research on weaning stress in beef cattle has shown that fence line weaning, where calf can see and interact with their dams in neighbouring pastures, is beneficial. Also, devices that prevent nursing while allowing foals to interact socially with their dams are worth exploring. Nose guards have been used successfully in beef calves for this purpose by Haley & Stookey at University of Saskatchewan.

Unfortunately, we know less about treating stereotypies. Methods of physical restraint or pharmaceutical intervention are ethically questionable as these methods prevent the behaviour, but do not address underlying causes. Hence, they run the risk of increasing the anxiety and frustration. Experimental evidence shows that use of a crib collar to prevent the

behaviour causes motivation build up, since horses will display even more cribbing behaviour when the collar is removed than they did initially. In situations where stereotypies cause injury, restraint may be justified with the guidance of a qualified animal behaviour specialist who can assist in addressing the causal factors and mitigating the distress and anxiety produced by prevention.

Although there is a pervasive belief that stereotypies are learned or imitated by other horses, there is no evidence, direct or circumstantial, to support this belief. Environments that cause stereotypies to develop in one horse are likely to cause the behaviour in other horses in the same barn, since the underlying causes of foraging opportunities and restrictive stall designs affect all inhabitants. Experiments exploring whether horses can learn a task or can gain information about the location of a food source by watching the actions of a trained horse have indicated that social learning does not occur in horses, although other species such as primates, pigs and even chickens perform well in these experiments. It is important to emphasize that stereotypic behaviour is not contagious since this factor affects treatment (also see my comments about the term “vices” above).

Horses displaying stereotypies are often unwelcome in boarding stables and are often relegated to a deserted corner of the barn, a location that is likely to exacerbate the problem.

*Suzanne Millman, PhD*

*Assistant Professor, Large Animal Behaviour & Welfare,  
Dept. of Population Medicine, University of Guelph*

### **Suggested readings:**

Cooper, J., McGreevy, P., 2002. Stereotypic behaviour in the stabled horse: causes, effects and prevention without compromising horse welfare. In: Waran, N., (Editor), *The Welfare of Horses*. Kluwer Academic Publishers, pp. 99-124.

Nicol, C.J., 1999. Understanding equine stereotypies. *Equine Veterinary Journal*, Supplement 28:20-25.

Waters, A.J., Nicol, C.J., French, N.P., 2002. Factors influencing the development of stereotypic and redirected behaviours in young horses: findings of a four year prospective epidemiological study. *Equine Veterinary Journal* 34:572-579.

#### Introduction

Each year many horse handlers get injured when handling a horse. Many of these are preventable and in hindsight, we may realize there could have been better ways to handle the situation and avoid injury. The injury can be minor (but painful) such as a broken toe. Unfortunately, injuries can also be life threatening and career ending. So, always work hard to prevent the injury from happening.

**Learning Outcomes:** This unit can help you develop awareness of safety and then apply it when you are working with horses.

Every time you are near a horse, THINK SAFETY FIRST!

- Reduce the Risk
- Prevent the Danger
- Solve the Problem and Minimize the Damage

In this section, you will be introduced to safety concepts when near a horse. You are encouraged to develop a “safety radar” so that you are always scanning the environment and keeping a watchful eye on the horse. Your goal is to identify potentially dangerous situations and act to prevent the danger and reduce the risk. As you go through this unit, consider making notes to review later as this can be an important reminder when you are “on the job”.

#### DLO Learning Activity

Open your DLO and go to Handling the Horse-Basic Safety. You will find an introduction to some important safety rules for handling horses. Every year, people who work in the industry or are horse enthusiasts get injured in the course of their duties. For many people this imposes a great financial hardship as they must be off work for extended periods. Being vigilant is a skill like any other, and knowledge of the risks, and being aware of potential dangers, is important to keep yourself from getting injured on the job. Read the following after you have viewed the DLO section for this unit.

#### Safety Rules

- The first rule is always Safety First! You are dealing with a large animal that lives by the “flight first” rule of survival. If the horse is startled or scared, the horse will try to run away.

- Never approach a horse until he/she is standing with his head toward you.

As you approach a stall, speak to the horse, so the horse knows that a person is near and is not startled. A startled horse will want to flee and run away as this is their natural instinct. Do not give a horse a reason to be startled and you will have fewer safety risks. Once you have spoken to the horse, approach quietly but decisively, with no sudden movements. Open the stall door and speak to the horse. The horse should turn and face you. Do not enter until the horse is facing you.

Never walk into the stall and approach the rump or you can get caught in the stall with no safe path to the door. If the horse bolts, kicks or tries to run over you, you may not get out of the stall safely.

- Never sneak up on a horse or touch it if the horse is not aware you are near. Horses can be very nervous, particularly in the high stress environment of the racing world. When startled, the natural urge of the horse is to flee or strike out for protection. Speak to the horse quietly, and let it know you are near before touching it. Touch the horse gently first and stroke its shoulder and neck area before moving closer.

- Never bolt the door of the stall while you are in the stall. A closed door may keep a horse from bolting out the door, but if you approach the horse safely, this should never happen. A bolted stall door is dangerous if the horse becomes unpredictable and you are locked into the stall.

- Never duck under the lead rope when a horse is tied. If the horse spooks or strikes out when tied to a wall with a lead rope, you would be in a high-risk situation. Keeping a hand on the horse and speaking gently, go around the back end of the horse to the other side.

- Never leave equipment such as pitchforks, wheelbarrows, and muck buckets in the stall or out in the aisle. Do not leave equipment unattended if there is a horse near or about to come into the area (such as a wheelbarrow in the aisleway or electrical cords left on the ground). There is a high risk of injury to the horse and the handler if the horse should knock over a pitchfork and get a puncture wound or get tangled in the wheelbarrow or muck bucket and become panicked at the noise and feeling trapped.

- Never wrap the end of the lead rope around your hand or your body. If the horse spooks or runs away from you, you will not be able to unwind the rope fast enough and you will likely get a very bad rope burn. Other horse handlers have been pulled off their feet or had their hands or wrists broken when they have done this. One young woman in the UK was strangled when she had the lead rope draped over her shoulders and the horse spooked.

- Never drag the end of the lead rope. A dragging rope can spook or trip your horse and it may trip you. The horse may step on the end of the lead, resulting in the horse spooking or trying to escape the sudden pressure on the halter. Keep ends of any rope neatly folded back and forth in your hand. Do not circle the end of the rope but fold it back and forth on itself and hold the folded rope end in your other hand.

- If you have long hair, tie it back with a braid or secure ponytail. Long hair will frequently become tangled with lead ropes, crossties or other equipment and this can be a dangerous situation. Do not allow your long hair to blow around or fall over your face. Never flip your braid or ponytail to your back but move it slowly out of the way if it falls to the front where it will get in the way.

- When cleaning out stalls, never leave the shovel, broom or pitchfork in the stall. Equipment left in the stalls can cause injury to the horse. Punctures from a pitchfork covered in manure and bacteria are particularly dangerous for horses and humans due to the risk of tetanus.

- When leading horses, only lead one horse at a time. Keep your concentration on the horse and be aware of any potential dangers in the road ahead. Do not lead more than one horse at a time, as this can create a risky situation. If one horse spooks or pulls back, this can upset the second horse. Trying to calm two horses at one time is difficult and dangerous and frequently leads to one or more horses running off.

- Do not use cell phones while you are handling horses. Keep your cell phone turned off or on vibrate/low volume while you are handling horses or near horses. The sudden ring of a cell phone can startle the horse. We have become so used to them, that we pay no attention, but do not assume the horse will ignore

the ring. When you are on the phone, you will not be paying attention to the horse. You can check for messages later, when the horse is safely put back in its stall or turned out.

- Learn about your horse and its temperament. The more you know your horse, the better you will be at anticipating the reaction of the horse. Once you learn the “triggers” for stressed behaviour (like a flapping plastic bag or flag), then you can take preventative measures.

- Never tease the horse. This can lead to bad behaviour due to the frustration of the horse.

- Good grooms and caretakers are never loud or rowdy when near horses. Keep your voice low when around horses as yelling can cause a horse to startle. Do not allow anyone to run, throw things, or make loud noises near the horse. Keep radio volume low.

- Always approach the horse from his left and from the front. Keep your approach slow and gentle and use a soft, calm voice. Stroke or softly rub the shoulder as you get near the horse.

### **More About Safety**

As you may be asked to approach and handle horses you have never met before, you must learn to watch the horse and read the signs that warn you of a high-risk horse. This is a skill that will be learned over time and with experience and close attention to horse behaviour. There are some helpful things to keep in mind to reduce the risk when handling horses.

Horses have a “flight zone” that is like their “personal space”. You may know the feeling you have when someone moves in closer to you than you what you feel comfortable.

The horse also has its own personal space. A nervous horse will have a larger personal space or flight zone. A horse that is confident and comfortable with its handler and surroundings will have a smaller flight zone. The horse that is nervous and lacks confidence will have a larger flight zone. This is a horse that should not be crowded.

Always be very careful when working around the legs, the rump and tail area and around the head. When a 1200-pound horse gets nervous or irritated and decides to get out of there, you may be at risk.

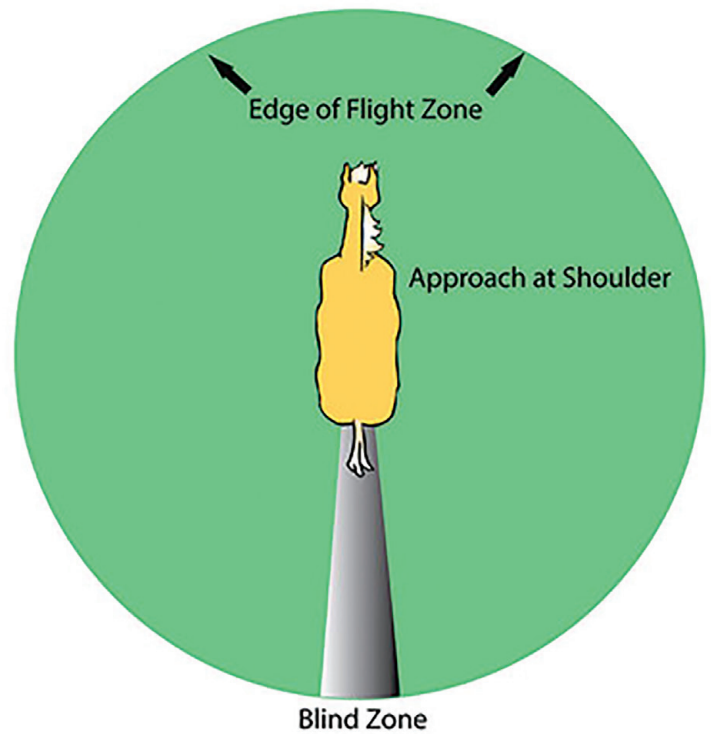


Watch the body language of the horse very carefully before approaching a new horse. Look at the eyes and ears, the head carriage and facial expression. Notice the tension in the muscles of the horse and its demeanor. A nervous horse will back off when you come closer or will turn its rump to you or maybe pin its ears. You should quietly encourage the horse to turn around before you approach.

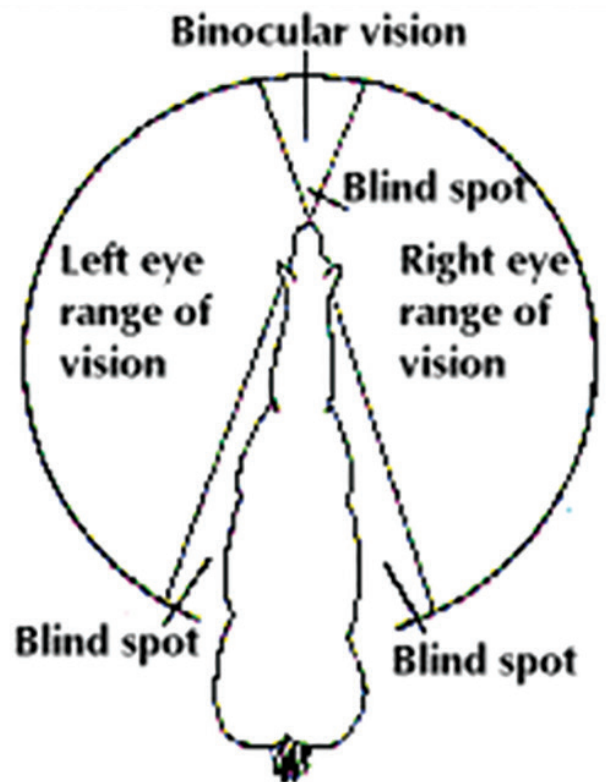
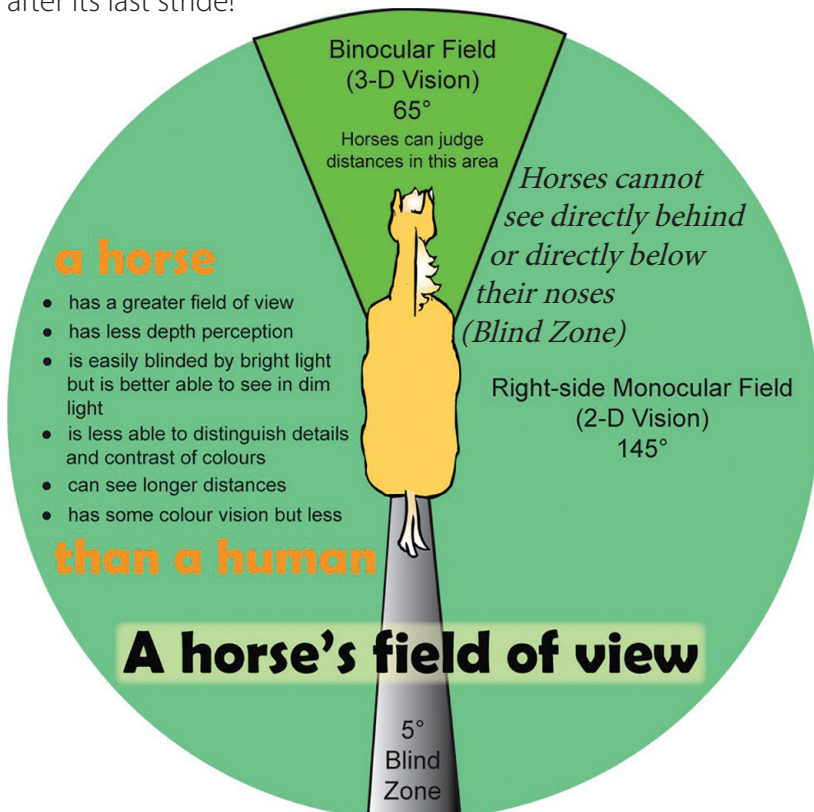
Once you have spent several months around horses, and pay close attention to horse behaviour, you will start to pick up on the subtle signs of horse behaviour and it will come naturally to those who carefully study horse behaviour. (There are Horse Behaviour courses that can be taken from Equine Guelph for those who want to continue learning more about this).

### Horse Vision

It is important to understand the vision of the horse. Horses have "blind zones". These are areas where the horse cannot see anything. There is a blind zone directly at the front of the horse. There is a second blind zone directly behind the horse. The horse has to turn its head in order to see towards its rump. Study the diagram below to familiarize yourself with these blind zones. The horse cannot see below its nose and head unless it puts its head down, so when a horse is going over a jump, it actually does not see the jump after its last stride!



**Figure 2-1-1:** The figure shows the blind zones of the horse. There is a blind zone at the front of the horse. A second blind zone is located directly behind the horse. Credit: R. Benns and Equine Guelph staff



**Figure 1:** The horse has a large peripheral vision - and three areas of blind spots

## Learning Activity

following is an article on several safety issues and provided to expand your knowledge in other areas.

### **Safety Around Horses - A basic guide for beginning horse people**

*Allison Taylor, PhD, Animal Behaviour*

Getting involved in horses is a wonderful and rewarding way to learn new skills, develop a relationship with a fascinating animal, and meet new friends in the process. Like many activities, however, equestrian sport also involves some degree of risk. Horses are large, powerful animals, easily capable of injuring a person. But, if you are well armed with a basic understanding of horses, a few hard and fast rules, and your own good sense, the risks are readily minimized.

- Never touch or feed a horse without the owner's permission
- Approach a horse from the front or side, never from the rear. Announce your presence and offer your hand for the animal to smell
- Avoid sudden movements such as waving, running etc
- Speak quietly; avoid loud or unusual noises
- Always keep young children and dogs under direct control
- Sturdy footwear and an approved helmet are essential if you intend to ride.

### **Understanding Horses**

The biggest risk in being around horses occurs when they are frightened. At this time, their only concerns are escape and survival, and people who are in the wrong place at the wrong time can be hurt. Therefore, the easiest way to prevent such accidents is to understand what frightens horses. Horses are prey animals; in the wild, they are constantly at risk of being eaten. As a result, they have evolved systems of behaviour to help them successfully detect and avoid predators. Specifically, horses are always on the lookout. Their long necks, widely spaced eyes, and mobile ears help them be aware of things all around them. This means that they see things "out of the corner of their eye" much better than humans, whose eyes are on the front of their faces. Equine ears swivel in all directions, allowing them to hear and locate faraway sounds. These abilities are crucial to horses' survival, because despite their speed, they are not as fast as many of their natural predators. Early detection

is essential.

Having widely-spaced eyes means that the horse's field of peripheral vision is very large (Fig. 1 on page 49), but it also limits his field of binocular vision (i.e., where he sees with both eyes at once) to a small area directly in front of him. Binocular vision is essential to accurately judge distance and depth. Therefore, most of the things a horse sees are only one-dimensional, and it is difficult for him to know exactly where they are. In terms of the horse's survival, it really doesn't matter - all the horse has to do is run the other way. But it does mean that horses will be seen to often "overreact" to little things behind and beside them.

### **Equine Body Language**

Take some time to observe horses from a distance and learn a bit of their body language. When startled, a horse (like all animals) has three typical reactions. Some will show all three in succession; others may show only one in a given situation. If you can recognize these signs, you will be better able to predict and avoid danger.

First, a horse will usually freeze. This makes him less noticeable to the potential predator, while allowing him to better identify the source. The horse will usually look intently in the direction of the surprising stimulus, with its head up and ears perked. The animal is often very tense, and a second startle may cause it to bolt. Second, horses run. Many will freeze momentarily before running, but many may not. Prior to running, a horse may sidestep, spin, rear, or jump, and it is these actions which are particularly likely to injure onlookers.

Finally, if cornered, horses will fight. Despite their size and power, they are really not ideally suited to warding off predators, lacking weapons such as horns. They can, however, do considerable damage with their hooves and teeth. Never corner a panicked horse.

### **Approaching a Horse**

In terms of your safety, then, you should be aware that horses are most easily scared by sudden movements or loud noises, particularly outside of the animal's field of binocular vision. Quick movements or loud noises in these areas will trigger fear reactions such as spinning or bolting, and you may get trampled or kicked in the process. For this reason, avoid approaching horses from the rear or side. Move to the head, giving the animal a chance to see you. Most horses are more used to being approached from the left. Announce your presence and put a hand on the horse's neck or shoulder so

he knows where you are. Offer your hand in a closed fist for the horse to smell. Never run up to a horse, throw things toward a horse, or move in a quick or unpredictable manner. Never stand directly behind a horse; he cannot see you well there, and you risk being kicked. By learning about horses, how they perceive and react to the world, and by adopting a few basic rules of conduct, you can look forward to safe and enjoyable interaction with these beautiful creatures. Let's now consider some specific situations where you may come into close contact with horses: the horse show, while driving your car, and in the context of your first ride.



*Many horse shows have only single ropes or chains defining the ring, making it easy for children and dogs to dash under.*

Credit: Allison Taylor photos

### **At a Horse Show**

For many people, a local fair or horse show is their first close-up exposure to horses. Going to a show is a wonderful way to learn more about the different types and uses of equines, to meet people involved in the sports that interest you, and to make contacts that may lead you to riding lessons, or even your first horse. For the competitors, however, a horse show is a serious thing. Behind the scenes at a show can get pretty hectic, and there are risks to both spectators and horses alike. In addition to the basics we have just covered, here are some specific cautions for the horse show environment:

**1.** Keep children under direct control at all times. Young children are often very excited at seeing horses and other livestock, and many will run up to them, unaware of the risks. By their very nature, children represent those things horses find most frightening: sudden movements and loud noises. Teach your children the correct way to approach animals, always first asking the owner for permission to do so.

**2.** Leave your dog at home. Dogs that are not used to horses may bark, lunge, or chase. Horses that are not used to dogs may become panicked by such behaviour. Further, summer shows can get hot, making parked cars unsafe for dogs and creating problems with access to water and shade. In addition, having a dog may limit your access to parts of the show grounds (stands, etc), reducing your enjoyment of the event. For the safety of both dogs and horses, leave your pet at home.

**3.** Be especially careful at ringside. Many outdoor shows have only single ropes or chains defining the show ring, and children or dogs could easily dash under these into the ring. Avoid sudden movements such as taking off jackets or shaking out blankets while there is a class in progress.

**4.** Occasionally horses break free from their handlers at shows, and the call "Loose horse!" will ring out. Perhaps the rider has fallen, or the animal has escaped from its stall. In such situations, some horses wander harmlessly, but more often they become frightened by the activity, the strange environment, and people trying to catch them. Remain calm. Running will only frighten the animal more and increases your risk of being hurt. Restrain your children, and move slowly towards a solid object, such as a building or tree. Stand still and let those with more experience handle the situation. If the horse runs toward you, stand your ground, make yourself appear large by holding out your arms, and speak to the animal in an authoritative tone. In most cases, it will avoid you.

**5.** Avoid taking flash photographs while horses are competing in the ring. Flashes of light can startle horses, distracting them from the task at hand and risking injury or collision.

**6.** Never feed a horse anything without the permission of the owner. Some horses may be on very controlled diets, others may nip; in any case, it is discourteous and potentially dangerous to feed a horse at a show, even if only grass. Never tease a horse with food.

**7.** For your own safety and comfort, bring a few essentials with you. For outdoor events, remember your sunscreen, sunglasses, hat, and insect repellent. Sturdy footwear will protect you from rough terrain as well as horses' hooves. If you suffer from allergies to animals or dust, be sure to bring appropriate relief with you; horse shows are full of both!



*Riding on the road requires extreme caution. It should be ideally shared by both riders and drivers.*

Credit: Allison Taylor photos

### **Sharing the Road**

Do you know what to do if, when in your car, you meet a horse being ridden or driven down the road? This can be a particularly dangerous situation for all concerned: if frightened, the horse may bolt into the oncoming vehicle or jump into a ditch or fence line. The horse may be injured, the rider or driver thrown, or your car damaged.

Your best strategy is to slow to a crawl, keeping to the opposite side of the road. Dim or turn off your headlights, if possible, and turn down your car stereo. If the horse appears particularly nervous, stop and wait for the rider to either enter a laneway or wave you by. Never brake or accelerate suddenly, both of which cause noise and throw up gravel. Spraying gravel will certainly frighten and may even injure the horse. Never, ever honk the horn. When you are well past the horse, accelerate gradually and be on your way.

### **Your First Ride**

So, you've decided to take the plunge and learn to ride. Whether at a riding school, a trail riding establishment, or a friend's stable, there are a few basic rules you should follow to ensure a safe and enjoyable first ride.

**1.** Wear a helmet. Helmets have saved untold numbers of lives in riding accidents - don't even think of riding without one. If driving is your chosen sport,

you should also wear a helmet. Head injuries can occur if you are thrown out of the cart. Make sure the helmet fits snugly and has a solid chin strap to hold it securely in place. Avoid helmets labeled as "items of apparel", as these have no real protective value. Look instead for a logo indicating approval by a safety or standards organization, such as the Canadian Standards Association or equivalent such as (in the U.S.) the American Society for Testing and Materials (ASTM) or the Safety Equipment Institute (SEI) Bicycle helmets are used by many pleasure riders, who find them cooler than conventional equestrian helmets. As long as they are similarly endorsed by a recognized standards organization, they are a safe alternative.

**2.** Wear solid boots with heels. Never ride barefoot, in sandals, or in slip-on shoes such as loafers. Your feet must support you in the stirrups, and flimsy shoes can fall off or get in the way. Heels are important to prevent your foot from going all the way through the stirrup and getting stuck. Sneakers are unacceptable. A lightweight, ankle-high boot, preferably designed for riding, with laces is ideal.

**3.** Wear comfortable but not overly baggy clothing. Tight jeans do not stretch and are uncomfortable to ride in. Very loose clothes can chafe or catch on fences or tree branches. Sweatpants or exercise tights are a good choice. Men should consider some form of athletic support for their comfort and safety. Don't chew gum (which can be inhaled) and avoid carrying anything in your pockets, such as a wallet (which is uncomfortable) or a pen (which could stab you if you fall).



*Correct riding attire is essential to safety around horses.*

Credit: Allison Taylor photos

4. Before saddling or harnessing, check all equipment to ensure that it is in good condition and free from foreign bodies that may irritate the animal. Do not use equipment that is cracked or frayed, as it may snap during use.

5. Finally, use your own good judgment and be realistic about your abilities. Do not ride a horse that frightens you. Be patient with the animal and with yourself.

Learning to ride or drive a horse is a long-term prospect, and you will not be able to gallop across fields, jump fences, or rope cattle on your first outing. If you enjoy your first experience, seek out an experienced, qualified/certified instructor and enjoy the process of learning. It is a wonderful adventure.

*This article was contributed by Equine Guelph, the centre for the horse owner at the University of Guelph (www.equineguelph.ca)*

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## Unit 2.2 Basic Handling

### Developing the Skills to Become an Equine Expert

In this section, you will learn about the basic handling skills needed to be safe and competent with horses. Basic skills such as leading and grooming will be demonstrated so that you can learn and review the skills you will use everyday in handling horses.

Developing good skills for handling the horse will help make this a safe environment for you, the horse and those around you.

#### Learning Objectives

*Upon successful completion of this section, you will be able to:*

- Describe and demonstrate the safe way of haltering, leading and tying a horse
- Describe and demonstrate safe and effective grooming techniques, hoof care and bathing
- Describe and demonstrate safe and appropriate ways of blanketing a horse, applying leg wraps and other

*needed skills for basic horse handling*

- Describe and identify tools and equipment needed for basic handling

### DLO Learning Activity

Open your DLO, and go to Handling the Horse-Basic Handling, and you will be introduced to the skills and equipment required for "Basic Handling". Work through each section at your own pace. You may wish to review the material once more, before moving on the next topic. The following pages provide you with written material that supports the material in the DLO.

Study Hint! Watch the video of each skill several times, then practice going through the motions on your own as you mimic the behaviours you saw in the video of safe ways to accomplish these skills. This will be helpful for you to do, prior to trying this on a real horse.

Read the following after you have viewed the DLO as a review:

### Approaching the Horse and Placing a Halter and Lead on the Horse Including Leading the Horse.

Always remember that the horse did not read the textbook! Horses may not respond the same way as the ones in the video, so always be careful around any horse. If you are unsure of any horse, talk to an equine professional first before handling the horse.

Safe handling of the horse is one of the most important functions you will be involved with daily. Good horsemanship is not about "forcing" the horse, rather it is about learning to work with the horse in a balanced way. Horses are governed by survival instincts from the herd and previous experience. The method that is effective for one horse may have to be modified for another horse, so judgment and careful reading of the mood of the horse is important. The overriding instinct in the horse is "fight or flight". When given a choice, the horse that feels threatened will first choose "flight" when possible. It is important to understand that the horse may try to run away when it feels threatened. When flight is not possible, as when the horse is boxed in, then the horse may "fight" or kick, bite or run through the threat. It is important to keep the horse feeling safe.

If a horse feels safe, then the person handling the horse will be safer.

The following material will help you learn effective skills for basic handling.

- Placing the halter on the horse
- Attaching the lead rope
- Leading the horse out of a stall
- Leading the horse in other areas
- Removing the halter

Before you go near a horse, think SAFETY!

The area must be safe and clear of dangerous obstructions. You must always be on the alert for any unsafe conditions or situations. No matter how well you think you know the horse, never assume that nothing will happen. Always be proactive about safety.

## Learning the Terminology

**Halter** – a piece of equipment used on the head of the horse to help communicate with the horse and when needed, control the horse. The halter is designed with a series of straps that fit over the nose and ears. It can be made of leather, rope, nylon or biothane.

**Lead rope** – sometimes called “the lead” or “lead shank”. This is usually a rope or strap that has a snap on one end to attach it to the halter. There are also lead ropes with a chain at one end with a snap. Lead ropes can be made of braided rope, leather, biothane or nylon.

**Near Side** – Most things are done from the left side of the horse, also called the “near side”. You will generally approach the horse from the near side, mount the horse from the near side and lead the horse from the near side. There may be occasions, such as tacking up and grooming procedures that will take place on the offside.

**Offside** – The right side of the horse is called the “off side”. It is useful to use the term “offside” as it always refers to the right side of the horse, so there is no confusion about the sides of the horse.

**Chain Leadrope** – a chain lead rope is a lead rope of leather or rope that has a chain attached at one end with a snap. For times when more control may be required, the chain is passed through the lower ring of the halter, through the side ring and across the nose through the side ring on the far side of the face and attached to the ring higher up. When tightened or pressure is applied, the chain causes pain on the sensitive part of the nose. It must be used carefully and only when required, and the tension should be immediately released as soon as the horse responds. This should only be used when necessary and carefully.

As you read through the following, imagine going through those motions in your mind, as that will help you when you get the opportunity to do this with a real horse.

## Skills Description

### 1. Approaching a Horse

Always let the horse know you are coming into the stall by talking gently to the horse. Voice and touch can be very powerful in calming a horse and helping it feel safe.

Approach the horse from the near side initially. If the horse is in the stall, then do not go near the horse until it is facing you.

Never walk up behind a horse. A nervous horse can kick out as you approach from the rear. The horse has a blind spot behind him and approaching from this area is very dangerous

(See Horse Behaviour section on Vision for more information).

Never walk around a horse in the stall, as you will cut yourself off from an escape route. Do not latch the door in case you need to leave the stall quickly. If you approach the horse correctly and learn to read the behaviour of the horse before approaching it, this should rarely be necessary.

Softly approach the shoulder while talking to the horse. Touch the horse gently on the shoulder, and then move your hand slowly up the neck. Avoid sudden movements, harsh handling and let the horse see you clearly.

### 2. Putting on the Halter

To get ready for haltering a horse, begin by attaching the lead rope to the bottom ring on the halter. Make sure the halter is unbuckled and not twisted. Approach the horse from the left side (the near side). Do not approach the horse straight on or stand directly in front. Hold the loose end of the lead rope in your left hand along with the top strap on the halter. Place your right hand under the chin of the horse and around the nose, so that your hand is now flat on the horse's nose and maintain gentle control. Slide the halter over the nose with your left hand then take the top of the halter in your right hand and move it up and gently over the ears. Make all your movements smooth so the horse is not startled. Be gentle as you move the top strap around the eyes and ears. Do up the snap on the left side of the halter, so that there is a comfortable looseness. The nose strap should be only 2 fingers

in front of the cheekbone, and not down over the lower bridge of the nose. Give the horse a scratch on the neck or a pat to show appreciation for the good behaviour.

**Safety Hint!** Make sure the end of the lead is not left dangling or dragging on the ground.

### 3. Leading the Horse

Leading, like any other procedure, should be done quietly and calmly. Most horses, once trained, will lead quietly for you. The halter and lead rope should be on the horse. Standing at the left shoulder of the horse and facing forwards, talk to the horse, so that it knows that you are about to ask it to do something. Hold your right hand on the lead rope about 8-12 inches from the snap (or away from the chain if using a lead with a chain). The rest of the lead rope should be held in your left hand. Fold the lead rope back and forth on itself (or make a figure eight with the excess) and place it in the palm of your left hand. Do not wrap the lead around your left hand. This can lead to severe rope burn or crushed fingers if the horse spooks and runs off.

Click to the horse and ask it to “walk on”, then walk forward beside the shoulder of the horse and keep your eyes forward to ensure a safe pathway. When it is time to stop, tell the horse to “whoa” and apply gentle but firm pressure on the rope in a backwards direction.

### 4. Leading the Horse out of the Stall

When leading the horse out of the stall, first make sure the halter is on and the lead rope is attached properly. Then, holding the lead rope in your right hand, open the stall door all the way with your left hand. Make sure the stall door is fully open and will not swing back on the horse as it walks through, or this could spook and injure the horse and perhaps the handler.

### 5. Taking the Halter Off and Releasing the Horse

Once you have completed the necessary tasks with the horse, it is time to release it in the stall or the pasture. Depending on the circumstances, you may leave the halter on but there may be occasions where you are asked to remove the halter. Horses at the track are required to have halters on in the stall, as this helps in the event of a fire.

Walk the horse into the stall (or pasture) and close but do not lock the gate. Turn the horse around to face the gate. Ask the horse to “whoa” and stand quietly

before doing anything else. Once the horse is standing quietly (and ONLY when the horse is standing quietly), then you can begin to release the horse. To release the horse with the halter left on, simply unsnap the lead rope, pick up both ends of the rope, so nothing is dragging, then step back from the horse and exit the stall or pasture. Do not take your eyes off the horse or turn your back on the horse as you walk out, as this can be dangerous with some horses.

If you are instructed to take the halter off, then lead the horse into the stall and turn it around to face the front of the stall. The stall door should be closed to prevent escape but not locked. Undo the snap on the side of the halter (or undo the buckle to release the strap over the poll area) and lift the top strap of the halter up and over the ears and off the head. Make sure nothing is left dragging and exit the stall, keeping your eye on the horse at all times for safety. Do not turn your back on the horse.

When letting a horse go in a pasture, many people will be observed smacking the horse on the rump to make it run off. DO NOT DO THIS! A horse may get in the habit of trying to run through the gate and run off before being released, in anticipation of the slap on the rump, and both horse and human can get caught on the gate. Other horses may kick out when slapped on the rump. Make sure the process of releasing the horse is quiet and calm and you simply move away from the horse.

## Learning Activity

### Basic Handling: Developing the Skills to Become an Equine Expert

Safety Survey: If you have not done so, when possible complete the small “safety survey of horse handling skills” in your barn. Record your observations of the common mistakes or unsafe practices you see happening. What advice would you give them if you were invited to help them improve their handling skills? What mistakes or unsafe practices did you see? And what are the risks?

Ask an equine industry professional to watch you perform the skills of approaching a horse, placing a halter on the horse, and then leading the horse out of the stall. Ask for their input on how you can do this in a quiet, safe manner for a calm and willing horse. What were the important points on improving your skills?

When you have completed this activity, make notes for yourself about the important things you have

learned, and these can be placed into your personal learning journal.

## **Use of Crossties and Other Methods of Tying a Horse**

It is important to safely tie a horse whenever you need to do something around the horse. A loose horse can be dangerous and will often get into trouble due to its curious nature. To groom a horse, it is important that the horse be safely tied for safety, as well as when you are tacking up, putting blankets on or off, or any other procedure.

The use of crossties is a common method for tying up a horse in the racing industry. Crossties are a set of two leads that attach to side rings of the halter and are secured onto the walls of the inside barn aisle. There is one on each side of the horse, so that it learns to stand quietly without moving side to side or forward or back. There will be some horses that are not trained for the use of crossties, or their temperament may not allow the use of cross-ties. An alternative for tying a horse is the use of a single lead rope to a ring on the wall and this is sometimes done in the stall for safety reasons.

Crossties should be made out of a strong but flexible material. It is best if they have some “give” in them should the horse lean on them or pull back suddenly. They must have a panic release (quick release snap) for emergencies, to untie the horse. They should also be simple to use, as you should not be fumbling with the crossties while you are holding a horse.

The height of the crossties should be appropriate to the height of the horse. The cross-ties should be fastened to the walls on either side of the aisle at about the height of the head when the horse is standing quietly or just above wither height. If you are in a barn with mixed breeds, you may need to have more than one set of crossties attached at different heights. For example, you may have one set for the horses, and one set for the smaller ponies. Also, the aisle should not be too wide, or the horse could get itself turned around in the crossties. This is very dangerous and often the result is injury to the horse or handlers. An aisle of about 10-11 feet in width is appropriate for use with crossties.

**Safety Note!** Crossties should be equipped with panic snaps at the end of the rope that attaches to the wall. If the horse is in a panic, it may be safer to release the panic snap at the wall, not the one attached to the halter of the panicked horse. If you do not have panic

snaps at the end of the rope, then ensure you have a quick release knot where it attaches to the wall. It also helps if you have a jackknife or safety blade that can be used to cut the rope where it is attached to the wall if the horse should fall, and you cannot release the crossties.

**Safety Note!** Some equine professionals prefer to use chains for the crossties, however, this is not recommended from a safety standpoint. You cannot cut the chain when necessary as you can a rope. If you are using chains for crossties, use a piece of thin rope or twine at the end of the chain where it attaches to the wall. The rope should attach the chain to the wall using a quick release knot. You can also cut this portion of the rope at the wall if necessary to release the chains.

In the barn aisle, you may find a set of crossties for use in tying up a horse. After you have led the horse out of the stall with the halter and lead rope, you will walk the horse into the centre of the aisle, stopping when the head of the horse is even with the cross-ties. Maintaining a hold on the lead rope, you will tell your horse to “stand” and then you will reach over to grasp one of the crossties. Do not turn your back on the horse while you do this. Attach one of the crossties to the side ring of the halter. Still holding onto the lead rope, walk softly across in front of the horse, and grasp the second crosstie, then attach it to the side ring of the halter. Now, you can unfasten the lead rope and place it in a safe spot hanging on the wall, where you can reach it later. The crossties should not be so tight that the head cannot move. The horse should not be able to move forward or back more than one step. Be careful of moving under the crossties as you move to the other side of the horse. Many horses may spook as you duck under, so move to the other side of the horse slowly until the horse is used to the action. On your DLO, there are videos that demonstrate a safe and effective method of hooking up the crossties on your horse.

Once you are finished with your tasks, then attach the lead rope to the bottom ring of the halter and detach the crossties from the halter, near side first, then far side, while keeping the lead rope in your hand, and telling the horse to “stand” quietly. You can then lead the horse back to its stall or outside for turnout.



**Safety Rule!** NEVER attach the crossties to the bit, if the horse is standing with a bridle on it.

**Safety Rule!** Do NOT duck under the head of the horse as you go from one side to the other. Come under the crosstie to the front of the horse near the wall, then pass in front of the horse calmly, and pass under the cross-tie on the other side.

**Safety Rule!** Make sure the crossties have panic snaps attached, preferably at both ends of the strap. If you do not have panic snaps on both ends, then make sure you have the end of the crosstie that is attached to the wall tied with rope or binder twine. This can be cut if the horse gets caught up and needs to be released. With a horse that is fighting, you may not be able to get near the panic snaps on the halter.

In this section you have learned two methods for tying a horse. You have learned the use of crossties and the method of safely tying a horse with a lead and quick release knot. This is important because the process of tying and untying a horse can be a time when horses and handlers can get hurt. If a horse spooks or slips while tied, it is important to be able to release the horse, directly or indirectly, before the situation becomes worse. The use of crossties must be done carefully. There will be some horses that you meet that should not be tied up using crossties. Check with an equine industry professional before using crossties on any horse for which you are responsible.

## Grooming the Horse and Learning about Grooming Tools

First, get all your equipment together. It is recommended that you have a Grooming Kit or grooming box. This is the name given to the collection



of brushes and equipment that is regularly needed to do a good job in keeping the horse clean and shiny. Your grooming kit should include the items listed below. Depending on your situation, there may be other equipment you will need; so, this is not an all-inclusive list. The purpose of each item is listed beside its name.



### Grooming Kit Equipment

**Hoof pick:** A pick made of metal or plastic for cleaning the hooves out. The pick lifts the stones and dirt out of the underside of the hoof.



**Rubber curry comb:** used in a circular motion to lift the dirt and sweat. Rinse with hose after grooming to prevent dirt buildup and hang to dry.

**Shedding blade:** when horses are shedding, this blade helps pull out the long hair quickly. It is usually made of metal shaped in a tight U-bend with leather handle.

**Body brush** (also called stiff Dandy brush): used



on the body, first with short flicks to lift up dirt, then in long, sweeping motions as the finish. Should not be used on face, legs or other sensitive or ticklish areas.

**Body brush** (also called soft Dandy brush): used



on the body in long sweeping motions, and on the face in short, gentle sweeping motion. Can also be used on the legs, pasterns and other sensitive or ticklish areas with soft pressure.

**Shedding blade:** when horses are shedding, this blade helps pull out the long hair quickly. It is usually made of metal shaped in a tight U-bend with leather handle.

**Hoof knife:** The hoof knife is a long, sharp blade with a curve at the end and a wooden handle. It is used to trim old pieces off the frog and to trim the sole of the hoof. It should be stored in a plastic case (usually comes with purchase) to help protect the blade and for safe storage. This knife is also called a Farrier's knife and should be kept very sharp. Be careful not to cut yourself with this tool.

**Grooming mitt (optional):** It helps to get mud and dirt off the coat quickly when used in a circular motion. Also used for an invigorating body massage. These are sometimes found as a rubber mitt with small nubs that work to massage the skin and muscles. There are different versions of the grooming mitt that can be found in tack stores.

**Bot knife:** a curved and dull blade used to scrape bot eggs off the hairs. There are also “bot blocks” which are rectangles with a rough surface that pull the eggs off the hair.

**Sweat scraper:** a curving plastic or rubber blade used to scrape water (after bathing) or sweat off the coat. It is not for use on the legs or face. The use of a clean towel is a better option.



**Mane and tail comb:** used to gently tease out snarls in the mane and tail. This may be made of metal or plastic.

**Small sponge:** for gently wiping around the eyes and the nose. Use only for this area for hygiene reasons.

**Large dock sponge:** for gently cleaning the dock (under the tail) and tail area, not to be used on other areas.

**Large body sponge:** for washing the horse or cooling out the horse.

**Body towel (also called a rub rag):** a soft rag used to wipe the face and eyes, or to do a final wipe of the body to remove the last traces of dust and raise a shine on the haircoat.

This is not an all-inclusive list of grooming tools. There may be differences in grooming kits used in different stables. Show stables will have different equipment than racing stables so keep this in mind when you are looking at the grooming kit. If you can, visit a tack shop in your area and look at the various tools in the grooming aisle. Now that you have reviewed the usual grooming tools, let's review how to proceed for a full grooming.

### Steps for Grooming

**1.** Use a halter and lead rope or cross ties to safely tie the horse. If using a lead rope, then use a slip knot or quick release knot. Do not take the halter off while grooming.

**2.** Using the hoof pick, clean out each foot in turn. The hoof is picked up, so the bottom of the hoof is facing you. The pick is used on the sole and in the cleft of the frog to take out all of the dirt. Drag the pick away from you, as you take the dirt out of the cleft. This does not hurt the horse when done firmly. In some stables,

the procedure may be to clean the hooves last.

**3.** Using the rubber curry comb, go over the body in a circular motion to remove dirt and sweat. Do not use this on sensitive or ticklish areas such as the face, lower legs and sheath/udder areas (If your horse becomes restless, shakes its head, pins its ears or kicks, you may be using too much pressure). This should lift up the dirt from the skin and bring it to the surface. Pay special attention to the areas under the harness or saddle and bridle areas where sweat can build up and cause matting of the hair.

**4.** Take the dandy brush with the hard bristles and remove the dirt using brisk, long strokes with a flick at the end. Do not use this brush on sensitive areas.

**5.** Take the dandy brush with the soft bristles and with long strokes, brush out the body of the horse, then with short strokes groom the face, and legs and other sensitive areas.

**6.** The small sponge can be dampened and used to gently wipe away debris from the horse's eyes and nostrils. The other sponge is used on the dock area. Rinse out both sponges well to ensure they are clean after use.

**7.** Using the comb, brush out the mane and tail, taking care that you do not pull out the hairs. This can also be done with the fingers to tease out the hairs one at a time to make sure the knots are removed but the hairs are not.

**8.** Finish with the soft, clean rag over the entire horse to put a final shine on the coat.

### Learning Activity

When there is time, ask an equine industry professional to watch you groom the horse. Are there helpful hints that he/she can offer that will improve your skills in grooming?

Write out the important points to remember in your personal learning journal.

You have learned to identify grooming tools and describe their use. You have also learned to describe the reasons for grooming and the techniques used for body grooming, mane and tail care and basic hoof care.

A well-groomed horse is healthier and reflects the standard of care that you give to in your horses!

### Taking Care of the Hooves

You may have heard the term “No Hoof, No Horse!” This is not just a saying but a true statement that underscores the importance of the hooves. A problem

with a hoof can quickly lead to performance problems, therefore daily care and monitoring of the hoof is very important for the health and performance of the horse.

Clean feet, clean stalls, good pasture are three priorities that will help prevent hoof problems. Wet soil/mud, manure and unsanitary footing can quickly lead to hoof problems such as thrush, a decomposition of the hoof. Daily cleaning of the hooves prevents hoof problems and alerts you to the first signs of a problem.

## Cleaning the Hoof

### Equipment Needed: Hoof pick

**1.** With the horse safely tied, either in the stall or on crossties, gently but firmly run your hand down the front leg to the hoof. Pick up the hoof, using the verbal command "Hoof" or "Pick it up". You may wish to have an equine professional demonstrate this to you and tell you what verbal cue they use with the horse (verbal cues may vary).

**2.** Hold the foot in a secure and comfortable position with one hand. With your other hand, take the hoof pick and loosen the dirt with the point of the hoof pick pointing away from the heel of the hoof. Using downward swipes, remove all the dirt from the sole and out of the cleft of the frog.

**3.** If the horse is shod, scrape around the inside of the shoe to loosen all dirt along the edge. Pay attention to the heel area to remove any mud from under the back of the shoe.

**4.** Place the foot gently down on the ground. Do not drop the hoof.

**5.** Some horses may need hoof dressings applied. Check with an equine professional before applying hoof dressings as not all horses will need them and there are many varieties available for specific uses. Hoof dressings are usually applied by a brush and covers the entire wall of the hoof with the treatment. Ensure the hoof is clean and dry before applying hoof treatments.

## Learning Activity

When there is time, ask an equine industry professional to watch you as you clean out the hooves. Are there helpful hints that he/she can offer that will improve your skills and make it safer as you clean out the hooves? Write out the important points in your personal learning journal.

You have now learned the procedures for daily care of the hooves and can describe some of the problems that lead to poor hoof health.

## Bathing the Horse and General Hygiene Procedures

Hygiene procedures are important for the horse, especially after the horse has been exercising and is sweating. Dirt and sweat buildup can cause problems with the skin; therefore, bathing after training or racing is an important part of general care. Bathing can be an important part of the management program for the health of the horse. Bathing removes built up oils and sweat and may prevent certain skin conditions. Cleaning of the sheath of the male horse and the udder and teats of the mare are part of the general hygiene procedures for the horse.



## When is Bathing Needed?

After the horse has been exercising and sweating, a good bath is recommended to remove the sweat and dirt (at the very least the horse should be hosed down). It is not recommended to let the sweat dry, as the salts can be irritating to the skin. If you are preparing a horse for a race or competition day, or to showcase the animal, then a good bath is necessary. Manure and grass stains can be spot-cleaned by bathing the area.

## When is Bathing Not Recommended?

Grooming well can often take the place of bathing. In cold weather, you should be cautious about bathing a horse or the horse can become chilled. If you have an indoor wash stall with heated water and absorbent blankets, this can generally be done safely.

## The Process of Regular Bathing

**1.** First, make sure the horse is safely tied, either by a slipknot or in the cross ties. Depending on the horse, it may be safer to have another person, familiar with horses, help you by holding the horse for you.

**2.** Begin with warm water in a bucket or from a hose. Monitor the temperature of the water to maintain a comfortable “bathtub warm” temperature. If using a hose, keep the water pressure low.

**3.** Use a non-irritating soap for horses or mild shampoo. Be very cautious around the eyes and ears and do not let soapy water get in the eyes or ears. Soap the horse using warm, sudsy water and a sponge and scrub gently at any stained areas. If you have a rubber grooming mitt, you can help provide a nice massage at the same time as cleaning the horse.

**4.** Rinse thoroughly using plenty of clean, warm water to ensure all the soap has been removed. Skin irritations can develop if soapy scum is left behind.

**5.** Use the sweat scraper in long sweeping motions going with the hair to remove the water. Use a clean sponge on the head, face and ears or a towel. Using the towel, dry the pasterns, particularly behind the pastern and the bulbs of the heels.

**6.** Walk the horse until dry and if cool or very windy, then a light fleece blanket can help to prevent a chill. Do not allow a wet horse to stand in its stall, particularly if the weather is cool.

If it is necessary to bathe a horse during the cold weather and chilling is likely, then the “Quarter Method of Bathing” can be adopted. Use warm water on one-quarter of the horse at a time (i.e., front shoulder and neck on left side), and when washed, keep the wet area covered with a thick fleece blanket until dry. Place a fleece blanket over the hindquarters, folded in half so it can be unfolded to cover the forequarters when ready. Bath the forequarters including the neck and chest, back to the withers and rinse well and scrape off the water. Unfold the fleece blanket and pull it up over the neck and shoulders, fastening it in front of the chest to close it. Fold the back half of the blanket up and over the neck and shoulders, and then bathe the hindquarters and rinse well and scrape water off. Unfold the blanket so the horse is now fully covered in the fleece and walk the horse till dry. Periodically check the temperature of the skin under the blanket to determine body temperature. Check the fleece to see how wet it has become, as it may be necessary to change to a dry blanket to help dry the horse. Be prepared to place another blanket over the fleece if the skin temperature of the horse feels cool.

## **Cleaning the Udder of the Mare**

In the mare, oily secretions can build up on the udder and this needs to be cleaned out, at least every two weeks or more if necessary. Some mares have a faster buildup than other mares, so check this area when grooming. Using warm sudsy water with a very mild soap (lanolin-based or non-irritating) and a sponge, first soak, then gently rub the udder to dislodge the build up of dirt and oils. With a clean sponge and clean warm water, rinse well. Dry with a soft towel.

## **Cleaning the Perineal Area of the Mare (Under the tail)**

You may need to clean the perineal area (under the tail, below the anus) of the mare from time to time, particularly if the mare is to be used for breeding or is near foaling.

This process may be done by the more experienced grooms and usually not part of a “new groom” job, but it is good to know it and if required, ensure you are doing it with an experienced groom or your mentor the first time.

You will need to have a tail wrap, lots of warm water, mild soap or antibacterial soap, a clean sponge or soft terry cloth towels, paper towels, a small bucket and plastic cup. When doing this, stand to the side of the horse and never directly behind the horse.

**1.** Wrap the mare’s tail and raise it up so you can work.

**2.** Using the plastic cup, wet the mare’s rectal and genital area with warm water by slowly pouring the water over the area. This will help flush any loose debris away from the area. Do not use a hose, or debris could be forced into the vagina and cause an infection. Do not use cold water.

**3.** Using a small amount of mild soap, gently rub the area. Do not open the labia (the lips of the external genital area). Clean only the “outside” area, you do not want to get any soap inside the labia. Clean from the centre outwards.

**4.** Using the cup with clean, warm water, rinse repeatedly.

**5.** Using the paper towels, dry the area from the midline outwards. Do not wipe across the labia.

**Safety Note!** The above are directions for general hygiene. If you are preparing a mare for foaling or breeding, consult with your veterinarian for directions. A more thorough cleaning with an antibacterial soap will be needed.

**Safety Note!** If you have never done this before, work with an equine industry professional. Some mares may be resentful of this process, particularly the first few times. You may wish to have someone with experience assist you by holding the mare at the head or lifting a front leg while you are cleaning. If you are not gentle while doing this, you will create a resentful mare.

### **Cleaning the Sheath of the Male**

The sheath can become filled with dirt, urine residues and oily buildup and needs to be cleaned periodically. Horses kept in clean stalls generally need less cleaning of the sheath. The buildup is called “smegma” and has a foul odour. This is a good sign that the sheath needs cleaning! The sheath may only require cleaning when there is buildup and should not be overdone as that can cause problems, so only do as often as needed. Horses that lie down in their stalls or outside in the dirt may need more regular cleaning.

This is not usually a job required of a new groom, but an awareness of the procedure is worth it.

A gentle sheath cleaning solution with warm water and a pair of disposable gloves will make this process easier. Gentle soaping (using irritation-free soap or products designed for this) of the sheath and along the penis will remove the buildup. A scaly build up along the penis should be gently removed.

Many horse owners prefer to have the veterinarian do this during a procedure when the horse will be sedated (such as the same time dental check ups are done).

Some horses will retract the penis; therefore, you may not be able to do this on all horses. Within the tip of the penis, a small bead of smegma, called a “bean” can build up around the urethra, this needs to be gently removed with your fingers. Infection can develop if this is not done. Be very gentle and patient when you are cleaning the sheath. Ensure that plenty of clean, warm water is used to rinse the area. It may be helpful to have someone stand at the head of the horse to assist you with this process. If you are gentle, many horses will stand quietly for this procedure after a few repeats. If this causes discomfort to the horse, it will make it more difficult each time.

**Safety Note!** If you have never done this before, get proper training from your veterinarian or work with an equine industry professional. Some geldings and stallions may be resentful of this process, particularly the first few times. It may be necessary to have

the horse sedated, so this can be done safely, so a discussion with the veterinarian can be helpful for new grooms and new horse owners.

When there is time, and you have gained experience and grooming expertise, ask an equine industry professional if you are ready to take on this procedure. Review the procedure with the equine industry professional/veterinarian to ensure that you are aware of any details required for specific horses or other circumstances. You have now learned to properly bath the horse along with other hygiene procedures that contribute to a clean and healthy horse. Monitor the behaviour of the horse so you are aware of a stressed or anxious horse and can keep yourself safe.



### **Techniques in Blanketing the Horse**

At times, it is necessary to keep the horse from losing body heat. Special blankets designed for horses come in various weights and sizes to help keep the horse warm or for other reasons. In this section, you will learn about the purpose of various blankets and when they should be used. Putting a blanket on the horse requires specific procedures for safety so this will be demonstrated as well.

Body temperature is a critical component for health. If you are too hot, or too cold, there can be health and performance problems. A wild horse will grow a winter coat in the cold season to stay warm and will shed out for the hot summer to stay cool. This is an effective way for the horse to keep its body temperature within specific limits needed for optimal health. For the performance horse, there are many situations where this “natural” approach is not helpful. If we need to bathe a horse in the winter to rid the horse of sweat and dirt, the horse can get chilled from

the winter temperatures, therefore, blankets are used to keep the body heat in. In this section, you will learn about the use of horse blankets so you can keep the horse's temperature within optimal ranges.

### **What is a Horse Blanket and Why is it Used?**

A horse blanket is used to cover up the body of the horse and may be used for:

- protection from the elements (wind or rain)
- protection from insects (biting insects)
- keeping the horse warm
- protection from the sun (bleaching of the haircoat)

### **What are the Different Types of Blankets?**

Take a trip to a tack store and check out the various blankets that are available when you are able to do so. There are many varieties of blankets, and each has a specific purpose.

- A wool blanket may be used to keep the horse warm or to prevent the horse from becoming chilled. There are different thicknesses of blankets for mild cold to very cold conditions, so be sure to check the label and use appropriately.

- A "fly sheet" may be made of a mesh material that keeps the body of the horse covered and reduces the irritation from flies and mosquitoes landing and biting. The mesh allows heat to escape so the horse does not get overheated.

- There are blankets used in the stable and these are called "stable blankets". There are several varieties, and they can be of different weights and materials. The blanket will have straps to keep the blanket in place, with some at the front, including one or two straps that pass under the girth and/or abdomen, and there may be two back leg straps.

Others may have one wide belly strap to help keep the blanket in place.

- A "rain sheet" is designed from waterproof material without a lining. It usually does not have a girth or leg straps and is used to temporarily keep a horse dry.

There are blankets that are waterproof, and these can be worn when the weather outside includes rain, snow, wind or other chilling weather conditions.

- "Turnout" blankets are often cut to fit the contours of the horse's body and may have pleats to ease movement along with straps and girth to keep the blanket in place while in the paddock. Turnout blankets may be quilted and made out of nylon with a lining or wool. They keep the cold wind from chilling a

horse and are used to keep a horse from growing in a full winter coat (if the horse is in active training).

- Light, absorbent sheets, called "sweat sheets" or "coolers" may help absorb the moisture from the skin and can be used after bathing to help dry the horse quickly. These types of blankets are large rectangles that cover the horse from the neck to the rump. They may have only a tie or clip closure at the front without straps and they sometimes have a strap that goes over the ears. Do not turn a horse loose while wearing one of these as they will slip off and the horse can get tangled.

### **When do I Need to Use a Blanket?**

Not all horses need to be blanketed. Older horses or unhealthy horses may benefit from wearing a blanket. A "hard keeper" or a horse that has a hard time maintaining its weight can benefit from wearing a blanket in the winter as fewer calories are needed to keep warm. A horse with a blanket will develop less hair coat and will sweat less during workouts in the winter. The use of blankets adds considerable time to the day and management, so they should be used only as necessary for the health and management of the horse.

### **DLO Learning Activity -**

#### **How do I Put a Blanket on the Horse?**

Visit the course site and watch the video on the DLO showing the safe and proper method of putting a blanket on a horse. Then review the procedure by reading the following text.

- First, put the horse in crossties or tie up the horse in the stall.

- Next, fold the blanket in half from the back to the front with the inside of the blanket facing out. Make sure the straps are untangled and not left dangling.

- Quietly approach the horse on the nearside. It helps to let the horse sniff the blanket, so that it knows the blanket is coming.

- Lift the blanket up over the withers and slowly place the blanket over the horse. Unfold the blanket and adjust it so the blanket is in place. Fasten the blanket across the chest (the type of fastener may vary according to the blanket but are often straps with buckles), and then the belly bands are fastened, followed by the back leg straps. There should be a bit of slack left when you have fastened the straps, enough to allow comfortable movement for the horse. Check all the straps once more, and then you are done.

## **How Do I Keep Blankets Clean and Maintained?**

To keep the dust out of your blankets, always shake them out prior to putting them on the horse. Light coolers and blankets can and should be washed regularly. Sweat, dirt and manure can build up on the inside of the blanket and will rub or chafe the skin. Follow the manufacturers' direction to keep blankets clean and dry. There are commercial companies that will clean the heavier blankets in industrial washing machines.

## **How Do I Select the Right Size for a Blanket?**

Just like human clothing, horse blankets come in different sizes. To select the right size, you must have the measurements of your horse.

Take a measuring tape and measure from the centre of the horse's chest and around the widest part of the shoulder, barrel and hindquarters. Stretch the tape to the centre of the tail and record the measurement in inches. This will be the size of blanket needed for that horse.

As an example, for one horse, a 16 hand gelding weighing approximately 1250 pounds measures 80 inches from the centre of the chest to the middle of the tail. The blanket size will be 80.

The blanket should have enough room to allow the horse to move freely and to lower its head for drinking or grazing. A blanket that is too small will rub and chafe the skin and will cause discomfort. A blanket that is too big is risky as the blanket can slip off or get caught on fences and other objects.

**Safety Note!** If the blanket is not designed for turnout (with girth straps), never leave a horse unattended or in the pasture. The blanket may slip off to one side and this poses a serious situation if the horse is spooked and running with a blanket trailing. Follow the directions from the manufacturer for use, the way to fasten the straps and to measure for correct blanket size.

You may also like to visit the Equine Guelph Horse Blanketing Tool  
<https://equineguelph.ca/Tools/HorseBlanketingTool.php>

## **Health Considerations when Using a Blanket**

Skin conditions can develop from poorly maintained and ill-fitting blankets. Dirty blankets can cause skin irritations that can have serious consequences for health or performance, particularly if the harness or

tack rubs the area. Blankets that are too tight and bind or chafe the skin can rub the hair off, with the risk of infection if the area is irritated. Blankets that are not the right size and safely done up with the belly bands, chest bands and leg straps, can slip off, causing skin abrasions and injury if the horse trips on a trailing blanket and falls down or spooks and runs. Keep your blankets clean and in good repair and make sure they fit the horse!

Another consideration to keep in mind is the temperature swings that can occur during the day or night. Leaving a heavy winter blanket on the horse when the sun comes out and the temperature is rising, can cause the horse to get overheated and sweating. The blanket becomes wet, and now the horse is facing a cold winter night with a wet blanket. If you are using blankets, you must monitor the horse to decide if the blanket needs to come off, or a lighter blanket is used for the next part of the day.

## **Identifying Types of Blankets**

Review the types of blankets in the tack room in the place you are employed or in your own barn. Alternately, pick up a catalogue selling horse tack and review the many types of horse blankets that are available and their purposes.

You have now learned to identify different types of horse blankets and describe when each one might be used. You have also been introduced to measurement procedures for choosing the correct blanket size and the care and basic maintenance of horse blankets. The proper use and care of horse blankets is an important part of general care of the horse.

## **Bandaging and its Applications for Leg Wraps**

There are many types of leg wraps and indications for use. The materials used can vary according to the intended use. Inappropriate use or application of a leg wrap can cause serious damage to legs and tendons. You should find an opportunity to talk to a knowledgeable equine industry professional to ask questions about the different types of wraps.

## **Types of Leg Wraps**

There are many types of leg wrap. Each has a specific use. The main types of leg wraps are described below.

**Exercise Wrap** – This type of leg wrap is designed to give support to the leg and to protect the tendons of the lower leg when the horse is working or training.

Generally, stretchy knit cotton is used; however, you will find several variations. Exercise wraps tend to be put on with more tension, therefore it is important to use a thin leg pad underneath and to ensure that the tension is even and there are no creases or folds.

**Stable Wrap** – A stable wrap is one that is used for general purpose protection around the stable. A quilted rectangle is first placed on the leg followed by a stretchy roll bandage. All stable wraps should be removed, and the legs inspected at least every 12 hours.

### **Learning Activity**

Speak with an equine industry professional to organize a time to review and practice wrapping under supervision (once you are in a position to do so). After you have practiced several wraps, ask him/her to review your work and give you pointers. The direction of wrapping may be different from one equine industry professional to another. This may be because there are different equine disciplines.

The critical points are as follows:

- You must develop a feel for the appropriate and even tension throughout the area bandaged.
- Do not exert strong pressure on any area when you are wrapping. An area of tightness can damage a tendon.
- Do not exert sideways pressure while wrapping that would pull a tendon to the inside or outside; this can also cause damage.
- Wrap the bandage in the same direction as the underlying cotton quilt or other underlay material.
- Never leave creases, wrinkles or lumps in the material. This can cause pressure points and restrict blood flow.
- Use the right bandage for the right application, and make sure that the tension is even throughout.

Practice, practice, practice! Always have an experienced person review your work so you can improve your skills.

You have now learned about different leg wraps and the various materials used for bandaging the horse's legs. Leg wraps can provide protection for the horse for various applications; however, it is important to apply leg wraps properly. Badly wrapped legs or bandages that are too tight can cause serious damage to the tendons. You will need to practice your skill

at using and applying different types of leg wraps before doing this without supervision. So, take every opportunity to practice and get feedback on your technique.

### **Learning Journal - Leg Wraps and Bandaging**

Once you have had an equine industry professional review your skills at leg wraps and bandaging, write out their feedback below for review. When there is time available, ask him/her to show you the different types of leg wraps available and what they are for. If you are not able to do this with an equine industry professional, schedule some time to visit the tack store and talk to a knowledgeable salesclerk about the different types of wraps. Record your answers in your personal learning journal and include:

- Name of Bandage
- Purpose
- Special Notes

### **Learning Activity**

#### **Basic Handling Skills**

Conduct a small "safety survey of horse handling skills" in your barn. Watch while several people conduct the skills that you have just learned. Pay close attention to their awareness of safety. What advice would you give those people you observed if you were invited to help them improve their handling skills?

Ask your equine industry professional to watch you perform the skills of approaching a horse, placing a halter on the horse, and then leading the horse out of the stall. Ask for their input on how you can do this in a quiet, safe manner for a calm and willing horse.

#### **Summary**

In this unit you have learned the basic handling techniques that you will need daily. You should strive to improve your skills to become a safe and competent horse handler and an important part of the team when caring for the horse. Good skills in horse handling are in high demand in the equine industry!



### HORSE HEALTH

#### Introduction

Good health equals optimal performance. A horse that is not healthy will not perform at its best. This seems to be obvious, yet health problems often are not detected early which has led to more serious problems. An equine professional who is vigilant and knowledgeable will know the signs of good health and will be attentive to the health of the horse. Changes will then be noticed, and appropriate management can prevent more serious situations. In this section, you will learn the basics of health monitoring at three levels.



#### Learning Objectives

Upon successful completion of this section, you will be able to:

- Identify the basic signs of good health (eating, drinking, urination, defecation)
- Describe the procedures for monitoring TPR's (temperature, pulse and respiration)
- Describe the normal values for TPR's
- Describe procedures to follow when TPR's or basic health signs are of concern
- Perform the procedures and record information for a Horse Health Check
- Identify and describe the normal parameters for the Horse Health Check

#### DLO Learning Activity

In your course site, open your DLO and review the material on Care of the Horse-Horse Health. You will find material that will help you to understand the signs of good health, identify the steps to taking temperature, pulse and respiration, and how to complete a Horse Health Check.

#### Signs of Good Health (EDPP):

#### Recognizing Good Health – Going Beyond “Bright Eyed and Bushy Tailed!”

When you are not feeling well, you can tell someone and explain what you are feeling; it may be a headache, a tummy ache, or some other ailment. Unfortunately, the horse cannot tell us in words that something is wrong, but the horse speaks to us in other ways. In this section, you will learn to observe the everyday behaviour of the horse to look for signs of good health. It is important to observe the horse every day, with practice, this skill will become second nature to you. At any point during the day's activities, you will develop an eye for abnormal behaviour and know what steps to take.

In this section, you will learn to describe and identify the basic signs of good health, the “EDPP” system. With experience, you will be able to recognize a horse that is not healthy and will be quick to observe changes in its health status.

You are the frontline defense of the horse's health! An old phrase for describing good health is “Bright eyed and bushy tailed”. It is important that you understand good health in more detail!

#### Learning About “EDPP”

EDPP stands for Eating, Drinking, Peeing, Pooping!!! Using the short form “EDPP” is a quick way for you to remember this part. At the most basic level of monitoring health, it is important to monitor these functions.

The healthy horse should be:

- Interested in eating,
- Drinking several times per day,
- Peeing or urinating several times per day; and
- Passing manure frequently

## Remember the Basics:

- If the horse is normally a good eater, and one day walks away from the grain bucket, you know there may be a problem.

- If the horse does not consume its normal amount of water, then this could indicate a problem exists or soon may exist due to increased dehydration.

- If the horse does not urinate as often throughout the day or night, this can indicate that something is wrong. Most horses will urinate once or twice overnight in their stalls, and this will be obvious by the wet spots in the bedding. Part of cleaning the stall is looking for the “regular” wet spots and being aware if they are missing.

- If the horse does not pass manure regularly throughout the day or night, this may indicate a problem as well. So, when walking into the stall in the morning, notice the number of manure piles. If they are absent or very few, this may indicate a problem.

Also notice the type of manure. It should be well-formed balls that are moist but hold their shape. Too much moisture in the manure means the manure pile will be wet without fully formed balls of manure. Too little moisture and the balls will fall apart into dry fibrous material.

Other signs: The horse should appear bright and alert. The horse should be interested in what is going on in the barn. The eyes and nose should be free of discharge. The hair coat should shine when clean and be free of flaky or scurfy skin, lesions or scabbing. The mane and tail should be shiny when clean and without flakiness or indications of rubbing.

## The following is a list of things to observe:

- a bright, alert expression with active ears and attentive to surroundings
- eyes are clear, and the membrane of the eye should be pale salmon/pink in colour with no discharge
- nose should not have a discharge
- the coat should be glossy with a natural shine and should not be sweaty or lathered when resting (unless the weather is hot and humid)
- the horse should stand relaxed and evenly on all four legs. If standing relaxed, then the horse may stand with one hind leg resting
- the breathing should be relaxed and regular without effort
- the limbs should be cool to the touch with no hot or painful areas or swelling



- the horse should urinate frequently through the day with no straining or signs of discomfort
- the urine should be free-flowing and a pale-yellow colour and clear
- manure should be easily passed several times a day without straining and should be in formed balls. It should be free of offensive odours (beyond the normal odour). The odour, colour and consistency may vary according to the diet, so it is important to learn what is normal for each horse
- the horse should have a good appetite for its food and water consumption

## Signs of a possible problem include:

- The horse standing with its head drooping and taking no interest in its surroundings
- Dry, dull hair coat or broken hairs in mane or tail where the horse has been scratching
- Little interest in feed or water
- Nasal discharge of white or yellow, discharge from the eyes.
- Change in breathing pattern, effort of breathing or flared, red nostrils
- Loss of weight
- Stiff, limping or unusual stance with a shift of weight off one leg
- Change in behaviour leading to the horse starting to stall walk, paw at the ground, getting down and trying to roll repeatedly, kicking or biting at its belly or sides.

These are some of the main problems that may be seen if the horse is not well; however, there are additional problems that you will see over time with more experience. You may wish to ask equine industry professionals what signs they have noticed in sick horses and what happened to the horse. Now that we have learned the absolute basics, let us move to the next level for monitoring health.

The next level is to monitor the TPR of the horse.

## Learning about “TPR”

TPR stands for

- Temperature
- Pulse
- Respiration

### Temperature

“Temperature” is the body temperature of the horse, and it is measured using a rectal thermometer. Measuring the horse’s temperature is demonstrated on the CD. The normal body temperature of a resting horse will be in the range of 37.5 to 38.3 degrees Celsius (C) or 99 to 101.5 degrees Fahrenheit (F). It is important that you take the temperature a few times when the horse is healthy and write this down for reference.

### Pulse

Pulse is another name for the heart rate of the horse. It is measured by counting the number of heart beats per minute. If you have your fingers on a pulse point, you will feel a slight pulsing under your fingers. This is counted as one, and then you continue to count for one minute. Or, you can count for 15 seconds, and then multiply the number of heart beats by 4 to get the number per minute. You can also use a stethoscope and listen to the heart. The resting heart rate will be in the range of 25 to 40 beats per minute. If the resting heart rate is above 60 beats per minute in a quietly resting horse, this alerts you to a serious problem and you should tell an equine industry professional and a veterinarian.

### Respiration

Respiration is the number of breaths taken by the horse per minute. It is measured by counting the number of breaths by watching the movement of the flank, when the horse is standing quietly. If the horse is standing very quietly, without moving its head around,

you can also watch the flare of the nostrils, but this is more difficult to get an accurate count.

The normal range for respiratory rate is 12 to 15 breaths per minute. If the horse is a bit excited or nervous, the rate may be higher.

## Moving to the Next Level

The next level, to gather important information about the horse, is to conduct the Horse Health Check.

### DLO Learning Activity

In the course site, open the DLO for this unit. This section of the DLO contains information to help you learn how to perform the Horse Health Check. Refer to your DLO – Care of the Horse-The Horse Health Check.

You will want to refer to the following chart as you watch the CD. You will notice that the information on the CD is provided in colour. You may want to indicate what colours are present and what these colours stand for on the chart in the manual. After you have completed this Learning Activity you will find an article that provides a review of the material.

## Learning From Your Instructors

### The Horse Health Check

As part of your job placement or employment, you will have a mentor and if you have any questions about the techniques or the interpretation of the Horse Health Check, go to your course website and post these in the Questions to the Instructor. If a veterinarian is on-site, there may be time to ask the veterinarian as well.

As an example of things you may want to ask:

- I saw a horse that had pale mucous membranes. What might that mean?
- How serious is it if the skin stays tented when I pinch it for the skin pinch test?
- If a horse had dehydration and heat stress, how would the parameters change?

Write down any questions you have before you go to the Mentor/Instructor discussion area.

### Some Helpful Hints about Stethoscopes

When you first attempt to use a stethoscope, you may find it a bit challenging but do not worry, you will quickly learn. The following may be of assistance if you are having some initial problems with using your stethoscope.

#### Which Stethoscope Do I Need?

As a groom that is employed by a stable, you will not be required to have your own personal stethoscope, however, if you are a horse owner, then you should invest in one for your own horse, so you always have one available when you need to check your horse.

You will need a stethoscope that allows you to hear the horse's heartbeat and gut sounds! It does not have to be an expensive stethoscope. You can purchase a stethoscope in the \$30-60 dollar range that will let you listen to gut sounds and monitor the heart. A Littmann brand will run into the \$150 range and higher, however, that is not necessary for our purposes. If you go to a pharmacy, try out the stethoscope to make sure that you can hear (take a friend and listen to their heart!) with that model. There are a few stethoscopes in the \$20-40 range, but remember, you do get what you pay for, and you will not likely be happy with one like this. If you cannot hear anything with it, it is not worth the price. You can also ask your veterinarian about obtaining a stethoscope.

The scope needs to be tucked right in the groove

between the barrel and the elbow, and up a bit. If you are not hearing gut sounds your placement is too far to the back. If at first it does not work, then move the scope a couple of inches, and systematically work a pattern until you find it. Also, if the gut sounds in that area are a concern, try again a few hours after your horse has eaten a meal.



### Helpful Hints for Counting the Respiratory Rate

The first time you try to count the respiratory rate by observing the movement at the flank, you may not see anything. Take your time and keep watching for the respiratory movements. This is a valuable skill for you to learn and can be done without the use of a stethoscope. Stand in the stall while the horse is eating hay, and just observe the flank for a good five minutes. You will see the movement once you "train" your eye.

Remember that a respiratory rate may be very low in a resting horse, 12-15 breaths per minute. So, you may only see one breath every 5 seconds. When the horse is taken out for a workout, watch the respiratory movements when the horse has just finished the exercise. You will see greater flank movement due to the increased respiratory rate.

Measuring the respiratory rate can also be done by placing the scope on the neck over the trachea. If your vet comes by, you may ask him/her to show you how it is done. But in the field, after exercise, most horses are moving their heads around, and keeping an accurate count from the trachea during movement takes practice. So, you can watch the flank with less disruption of counting. If you are standing near the head, and the head is still, you can count the flare of the nostril, but again, if the horse moves the head away from you, you lose accurate count. You may want to get a friend to watch the stopwatch for you. They

can call out “start” and “stop” and you can concentrate on watching the flank movement. Once you get comfortable with the process, you may want to use a stopwatch. Hold the watch in front of your face at arm’s length and start the watch while watching the flank movement. You should be able to check the watch and the flank with the watch held near the flank area. Alternatively, use a sports watch that has a “countdown” feature, where you can set it for one minute (or for 15 seconds) and it will beep when it reaches the set time. This way you do not have to even look at the stopwatch, it will tell you when to stop counting. Once you get into it, try out other methods and you will quickly learn what works best for you.

### **My Earpieces Hurt!**

If your stethoscope is painful on your ears, gently (really gently!) bend the earpieces outward at the base. This will help to take the pressure off. Even with the adjustments, at the end of the day, your ears may get sore from the pressure of the earpieces. You need enough pressure to seat them into your ear canal firmly to block out other noises and channel the sound down into your ear canal. It should not be so tight as to be painful when you first put them on.

It is important that you have the stethoscope planted firmly in your ears. Try turning it around and doing it again. The earpieces must be pointing into your ear canal. If you are still having problems, see if someone has a different stethoscope and try theirs. There are good and bad stethoscopes. When your vet is out, get him/her to show you.

You will get onto it, we promise! With the earpieces in, gently tap the round end of the scope with your finger first to see if it is ‘on’. If you do not hear the tap, turn the round end (diaphragm) and try again. Some scopes work this way. Practice is the key to learning.

### **Heart Rates of Horses - Optional**

If you have run up the stairs or trained by jogging or participated in other physical activity, you have no doubt felt your heart pounding in your chest. Each time you hear or feel that pounding, this is the heart beating. With each beat, the heart contracts or squeezes, and the blood is pushed into the arteries. When the horse is standing quietly, the heart does not have to work very hard. When the horse becomes active, then the heart speeds up. When the horse is racing, the heart is beating as fast as it can. We call this

the maximum heart rate. In the table below, there are heart rates typical of the various activities. These values were obtained by running Thoroughbred horses on the treadmill at the University of Guelph.

<b>Gait/Speed</b>	<b>Average Heart Rate (b.p.m.)</b>
Rest (standing quietly)	34
Walking	78
Trotting	125
Cantering at 7m/s (16 mph)	170
Cantering at 10m/s (22 mph)	201
Cantering at 12m/s (27 mph)	224
Walking for 1 min	110
Walking for 2 min	85
Walking for 10 min	79

### **Learning Activity**

If you can, obtain a stethoscope from an equine industry professional or your veterinarian. Have them show you how to use the stethoscope to listen to the heart. You may wish to practice on yourself first by placing the head of the stethoscope on your chest and moving it gently to the spot where you hear the heart rate the best.

Listen to the sound your heart makes. Describe it in your own words. What sounds do you hear? Write this in your personal Learning Journal as below:

Measure your heart beat for one minute. What is your resting heart rate?

Now, climb a flight of stairs and measure your heart rate again. What is it now?

Did it change? Why?

You may want to ask permission of an equine industry professional if there is a quiet and safe horse to practice taking a heart rate. If this is not possible, then the veterinarian may be able to let you try their stethoscope on a quiet and safe horse.

### **Summary**

In this section you have learned to identify the basic signs of health and how to evaluate health at three different levels – EPP, TPR and the Horse Health Check. You have also been introduced to the signs of good health and procedures to follow if you detect signs that may indicate a problem. This section is important as you will be able to monitor the health of the horse daily and ‘advocate’ for proper care of horses.

## Unit 3.2 Diseases and Prevention

### FIRST AID AND EMERGENCY CARE

#### Introduction

If you have owned horses for any length of time you will have encountered an emergency situation. Kicks, cuts, injuries from fighting, encounters with fences or trailer mishaps are all common situations. At some point, you may face an equine emergency. Be prepared! In this section, you will be introduced to emergency care, understand how you can be prepared for emergencies, and explore the first aid kit and its contents.



#### Learning Objectives

Upon successful completion of this section, you will be able to:

- Describe emergency care
- Identify the requirements for being prepared for emergencies
- List the items in a First Aid Kit

Let us learn about First Aid and Emergency response. Read through the following material to develop an introductory knowledge of emergency care.

#### Learning About Emergency Care

Know what to do before it happens! Due to the “fight or flight” behaviour trait of horses, they are prone to accidents when we keep horses in domestic situations. Fleeing from scary situations, establishing a ranking order in the herd and natural curiosity can all lead to high-risk situations.

#### Recognizing Signs of Distress

- Recognize “red alarm” situations. These are situations where IMMEDIATE assistance is required. (Review the Horse Health Check for the “red alarm” parameters in red text)

- Know the Vital Signs of your horse.

Some emergency situations are obviously a “red alarm” situation. Profuse bleeding is an example. At times, the signs may be more subtle. Knowing the normal vital signs for your horse is important for determining whether this is a true equine emergency.

#### What are the Vital Signs?

Vital signs include temperature, pulse and respiration, as well as other behavioural clues and patterns. Good observational skills and attention to detail will help you pick up the first signs of injury or illness.

#### Normal Parameters

Start by measuring the vital signs on your horse while it is healthy. Repeat this several times so you can see the normal variation that occurs. Record these values on the health records of each horse and refer to them when needed. It is helpful to keep a binder on each horse for easy reference. You may wish to review the Horse Health Check to refresh your memory of these parameters.

#### What is Your Plan of Action?

- A lack of preparation will make the emergency worse.
- Often the groom is the one who will be first on the scene.
- It is important for the groom to learn how to respond to emergency situations before they happen.

#### Securing the Scene

Remain calm and think clearly about what must be

done to prevent further damage. This will be different for every situation, but you may need to keep the horse calm and under control. It may be advisable not to move the horse. For other situations, it may be necessary to move the horse away from the danger or into the barn. It is not possible to give you every scenario; therefore, you must think clearly about what is best for the safety of yourself, others and the horse to prevent injury.

### The First Aid Kit

The First Aid Kit is designed to give you the basic tools to help respond to an emergency situation. Large or small, you will find variations in First Aid Kits, depending on where you work. Regardless of contents, ALWAYS replace the contents that have been used as soon as the emergency has been resolved. If you are faced with profuse bleeding, it is important that you have the equipment you need ready for you in the First Aid Kit.

The following is a list of basic items that all First Aid Kits should have:

- Gauze pads in assorted sizes (sterile)
- Gauze wraps (sterile)
- Surgical scrub with antiseptic solution
- Adhesive tape
- Adhesive wraps
- Cotton roll (sterile)
- Cling wrap (sterile)
- Contact bandage
- Pliers
- Sharp scissors
- Flashlight with spare set of new batteries
- Bandage scissors
- Hemostats
- Stainless steel cup or small bowl
- Rectal thermometer  
(digital or alcohol with string attached)
- Pen, permanent marker, note pad
- Latex gloves
- Leg wraps
- Cotton/quilted wraps
- Material for splints (see below)

Splint material can be made out of 6-inch diameter PVC tube. Cut the tubing into 1 ½ and 2-foot sections. Then, cut each piece in half lengthwise so it can fit around a leg, if necessary, as an emergency splint.

You will notice on the list that some items have the word “sterile” in brackets. These are items that will

be in contact with the wound site, so they must come from sterile (sterilized in sealed packages) packages to help reduce the chance of infection.

### Wound Care

When confronted by deep wounds and bleeding, your quick action can save your horse’s life and prevent further damage.

There is no one answer to all situations. You will need to understand the reasons behind some of the common situations and actions taken so you can make the right decisions.

So, what do you do when a horse has a wound?

**1.** Move slowly and calmly to catch the horse and keep it still. You may need grain or treats to help you catch the horse. If movement is possible without further injury to horse or handler, move the horse slowly into a stall or barn aisle. Providing hay may help keep the horse calm.

**2.** Seek the help of another person. Do not start treatment while you are on your own. If you get hurt, you have made the situation worse. A horse in pain can be very dangerous so get someone to help you hold the horse.

**3.** Observe the colour and quantity of blood. Observe the depth of the wound and its location. If in doubt, always seek veterinary advice. You should always call the veterinarian if:

- there is excessive bleeding or if the wound is large or deep
- the skin has been penetrated through the entire skin layer
- the wound is near or on a joint, tendon or coronet
- you can see muscle, tendon, or bone under the open skin
- there is a puncture wound
- there is any severe wound in the legs
- if the wound is contaminated by dirt, manure or other debris
- wounds that are not healing or have become infected or seeping

**4.** Discuss wound care with the veterinarian before you try to clean up the wound. This is a serious stage, as the wrong action can aggravate the damage and cause uncontrolled bleeding.

**5.** Do not put any ointments or other substances on the wound except a cold compress or cold water. If the wound is bleeding, do not flush with water or it may start the bleeding again.

**6.** If the bleeding continues, then cover the wound with a sterile, absorbent cloth pad from your First Aid Kit. Do not use cotton. Apply firm pressure evenly on the wound and keep it steady for at least 10-15 minutes. Do not pull back the dressing to check on bleeding as doing so will remove the blood clot and start the bleeding again.

### **Other Emergency Situations**

When it comes to managing emergency situations, years of training are needed. Even then, you may be presented with challenging situations, and you will have to think your way through. Situations like trailer accidents, heat stroke, bone fractures, colic and many others will unfortunately occur, and one course will not be able to prepare you for all that you may face. There are some common points to keep in mind:

**1.** Remain calm. THINK about what needs to be done by assessing the major and immediate risks (i.e., profuse bleeding, fire).

**2.** Keep the horse as calm as possible. If you are calm, that will help the horse remain calm.

**3.** It may be necessary to move the horse to a safer location to get away from danger or if the horse goes down.

**4.** Get help. Call out for help and tell them what you need them to do, such as calling for the veterinarian or calling 911 for other emergencies. Ensure that the person helping you knows the phone number, the location of the phone and the specific address of your location before they call to prevent a waste of time.

**5.** Notify the veterinarian immediately and provide specific information about the condition of the horse. This information will be important to the veterinarian who can then help you. Follow the advice of the veterinarian carefully. Ask the veterinarian to repeat the instructions if necessary so you are clear on how to proceed.

**6.** Do not attempt to give the horse any medication, drugs or tranquilizers unless the veterinarian has given you directions to do so. Drugs can mask symptoms the veterinarian needs to see to make an accurate assessment.

**7.** Follow the directions given to you by the veterinarian. On-going care will take time and you should not try to find shortcuts or do an incomplete job. Follow-up treatment and care will be important, so pay attention and do what is required to give the horse the best chance of full recovery!

## **Learning From Your Mentors or Instructors**

### **Emergency Situations**

Ask your mentors or employers about their experiences with emergency situations. In addition, ask them for any advice they can give you, based on their experience that might help you if you face a similar problem.

Write out your questions in your personal Learning Journal and then go to the course website and place your questions in the Mentor/Instructor Discussion area.

### **Summary**

This section provided you with an introduction to First Aid & Emergency Care. This is just the beginning as there is more to learn in this area. Continue to talk to your online mentors, veterinarians and equine industry professionals when possible. If there are any seminars, attend the seminars and learn as much as you can. Locate books on first aid and borrow them to learn more. Many horse magazines have articles about first aid and emergencies so read these and if possible, photocopy them and put them in a binder.

You can also visit websites such as [www.thehorse.com](http://www.thehorse.com) or [www.myhorsematters.com](http://www.myhorsematters.com) for more information. Equine Guelph offers a short course on TheHorsePortal for First Aid and Emergency Preparedness that may be of interest to help you continue your learning journey.

Learn as much as you can. Your horse's life depends on it!

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### **3.3 Common Diseases/Injuries and Prevention**

In your role as groom, you are the caretaker of the horse and the one who knows the horse as you care for it each day. Developing an eye for detail is important. You will be able to notice when the horse is not acting as it normally does.

This part of the course introduces you to some of the major or common diseases of which you need to be aware. As this is an introductory course, the following is not a complete list. You are encouraged to continue learning about health and disease prevention through discussions with your instructors, mentors, and veterinarians or by taking further courses, such as the ones offered by Equine Guelph for continuing education.



## Learning Objectives

Upon successful completion of this section, you will be able to:

- Identify the signs of colic and steps for prevention of colic
- Identify some of the indicators of pain
- Understand some of the common diseases and their prevention
- Describe methods for decreasing the risk of parasites in horses

## Learning About Colic

Colic is pain in the abdomen and can be caused by many things, including a lack of forage in the diet, dehydration, sudden change in diet, stress and anxiety, parasite load and many others. Colic is not really a disease, but rather a symptom or a sign that something is wrong in the abdomen. It is important to learn how to recognize colic as this condition can become life threatening in a very short time.

### Signs that your horse may be suffering from Colic:

- sweating, pawing, rolling, looking at flank, kicking at belly, restless and getting up and down
- elevated heart rate (32 to 110 beats per minute), the higher the heart rate the more serious the colic is likely to be
- temperature may be 37.5 to 39.5 degrees Celsius, but it can also be less than normal temperature if the horse is in shock
- respiration is often shallow and rapid, with flared nostrils
- you may observe a distended abdomen (big belly)
- the mucus membranes may be dry, pale and refill may be slower than 1.5 seconds
- the manure may change in consistency, colour and odour and may be reduced
- there can be dehydration and you may notice the skin fold is greater than 2 seconds to return to the flat position
- gut sounds may be decreased or increased more than normal, and there may be “pinging” or a sound like “water dripping in a cave” when you listen with the stethoscope
- the eyes may be glassy or anxious, the ears may be drooping out to the sides, and the horse may not be responsive

### If you suspect colic:

- remove from field if the horse is outside
- call the owner of the horse, your veterinarian or an equine industry professional
- remove all feed, but offer water
- keep the horse warm and relaxed, in its stall if possible
- hand walk the horse to keep it from rolling and injuring itself
- record the TPR and other health parameters if you can do so safely, and report these to the veterinarian. Monitoring the change in these parameters and the time period can be helpful information for the vet.

Do NOT try to replace the veterinarian and care for this on your own. Consult with a vet.

Your horse’s life may be at stake!

### To prevent colic:

- provide as much turnout as possible as exercise decreases the risk of colic
- a regular, effective deworming program is important, based on your veterinarian’s advice and parasite testing program
- clean pastures of manure and keep stalls and buckets clean of manure
- keep at least 50% (by weight) of the diet in forage, with the majority of this in long stem hay

## Learning from Your Mentors and Your Instructors About Colic

After reading the above information, you may have questions about colic in horses and how to recognize it. Write your questions in your personal Learning Journal. After you have completed your questions, you can go to the Instructor Discussion area and post your questions.

For more information on colic, visit The Horse Portal site and look for the Colic Risk Rater tool.

## Recognizing a Horse in Pain

Horses are prey animals, and that means they are hard-wired to be aware of predators and not show any sign of weakness. Despite their ability to hide pain, the attentive and educated groom or owner will learn to pick up signs of pain. It is very disconcerting to know that many people who own and handle horses are not able to detect if the horse is in pain. Many will attribute the horse’s reaction as “bad behaviour” or “just tired”.

As you are the advocate for the horse, it is important that you learn how to recognize when the horse is in discomfort or pain. This will not happen overnight, but as you gain experience and learn more in the field or through courses, concentrate on observing the behaviour of the horse under many conditions and you will begin to develop this ability.

For more information on colic, visit The Horse Portal site and look for the Colic Risk Rater tool.

### **What Does a Horse in Pain Look Like?**

There are many degrees of pain; from mild to debilitating. The clinical signs you observe will vary.

Some horses are very good at hiding their pain. A horse with a glassy eye is often an indication that there may be pain. An awake but unresponsive horse may be experiencing pain. Usually, the ears are back or loose and drooping to the sides, the lip may be curled, and the eyes may be closed. The body may be tense, and the horse may show irritation or an anxious expression. Some horses may grind their teeth. Pain can also cause profuse sweating and restlessness and if you measure pulse and respiration, they are generally elevated.

The horse can also give indications of pain when the groom is putting the bit in the mouth or tacking up. Sometimes the “bad behaviour” is pain-related, and it is important to rule out pain before “treating” the “bad behaviour”.

Your course site provides many other useful articles and activities to learn more. Check out the Colic Risk Rater from Equine Guelph.

### **Learning About Some Common Diseases or Health Problems**

When horses are kept in high density housing conditions, such as at the racetrack, at boarding facilities or sales arenas, then the risk of disease transmission is very high. The stress of horses kept in stabled conditions plus the heavy training and competition schedules contributes to many conditions and diseases.

The following section will introduce you to some of the common problems that may be encountered while working as a groom. There are many others that you will learn more about as you gain more experience and pursue further study.

### **Bleeders (Exercise Induced Pulmonary Hemorrhage)**

A common disorder in racehorses, and sometimes in other horses, is called EIPH, which stands for Exercise

Induced Pulmonary Hemorrhage. This means the horse bleeds from the lungs as a result of a race or hard workout. It appears as a nosebleed, and you may see blood dripping out of the nose. If you observe blood dripping from the nose, immediately call your veterinarian. The horse will need rest for several weeks to allow the capillaries (blood vessels) to heal.



### **Choke**

When the horse swallows, the food passes down the esophagus to the stomach. A horse that eats too fast (bolts its food) or does not chew the food can swallow too much food at one time. The food can become stuck in the esophagus, particularly when dry. If food has been withheld from the horse, it can eat too fast when food is offered again. The horse may eat the food too fast, then it gets stuck in the esophagus. If this happens the horse may appear anxious and stop eating. Saliva (drooling) may be seen out of the mouth or nostrils and the horse may stretch its neck out and be sweating. If you suspect choke, call your veterinarian right away. Choke can result in severe lung damage due to pneumonia, so it is important to take action as soon as possible.

### **Tying-Up (Acute rhabdomyolysis)**

Severe cramping of the muscles can follow a race, competition or training session. Muscle cramping can appear within 10 to 20 minutes of exercise, or it may not appear until after the exercise has stopped. The horse becomes stiff and unwilling to move or bend its legs. You may see tense muscles over the back and hindquarters and any pressure on these cramped muscles will cause pain to the horse. If the horse

urinates and the urine is brownish, or reddish, this is a definite sign of tying-up. The pulse and respiration rate may be elevated, the legs may be rigid, and the horse may show pain, nervousness, sweating and may be unwilling to move.

If you observe these signs, contact your veterinarian immediately. Do not try to move the horse unless absolutely necessary until given direction by the veterinarian. Tying-up can be very serious and can have a long-term impact on the health of the horse if untreated, including kidney damage. Regular exercise, feed adjusted for exercise level and proper cooling and hydration can help prevent tying-up.

### **Respiratory Conditions**

Coughs, nasal discharge and high rectal temperatures (fever) may indicate respiratory problems. If you observe, eye or nasal discharge, coughing, laboured breathing, or swelling of the glands in the throat latch area, then contact your veterinarian so the horse can be properly assessed.

### **Skin Conditions**

There are many problems that can affect the skin, including fungus, bacteria or external parasites. If you see open sores, crusty scabs, loss of hair, swelling or tenderness of the skin, notify your veterinarian to have the skin lesions assessed. Watch for rubbing or hair loss in the mane and tail as well. Some skin conditions, like ringworm, can be very contagious to other horses and to the caretakers.

### **Digestive Disorders**

One of the most serious digestive disorders: colic, has been covered elsewhere, but there are other potential problems of the digestive tract to watch out for.

Problems with the mouth or teeth can show you signs such as dropping of food (called quidding), fighting the bit, head tossing or sensitivity. Any of these should be reported to your veterinarian, as horses can experience dental problems. Other digestive disorders can include diarrhea or constipation. If you notice any change in the consistency of the manure, alert your veterinarian. If the horse is normally a good eater, then goes "off feed" or stops eating contact your veterinarian.

### **Hoof Conditions**

The hoof of the athletic horse takes a great deal of pounding due to the training and surfaces for racing

and competitions. The groom should inspect the hooves of the horse each day to observe for strange odours, cracks, chips, black softening of the frog or cleft, or other changes.

### **Vaccinations**

At the racetrack, or at many horse-related events, horses come together from different locations. Vaccinations are a necessary part of the health program. The management of many racetracks, horse sales and other competitions may require vaccinations before horses are allowed on the premises.

Vaccinations are given to the horse by an injection in the neck (called intra-muscular as it is injected into the muscle of the neck). The immune system is then "primed" or readied to prevent diseases from making the horse sick after immunity from the vaccination builds up.

### **Learning from Your Instructors or Your Mentors Common Diseases and Prevention**

List the questions you would like to ask of your mentors in the Mentor/Instructor Discussion area of the course website. Or you can record these in your personal Learning Journal and do some searches on sites like TheHorse.com or veterinary sites to help you learn more in-depth information about the common diseases. There are also courses that can take your learning to the next level, so check with your instructors for possible avenues.

### **Learning Activity**

When there is time, ask an equine industry professional and veterinarian about vaccination programs at your facility. What vaccinations are recommended for horses in your area? Alternatively, if you are not working at a horse facility, do some research on the recommended core vaccinations for Ontario horses. Record the recommended vaccinations and when to give them in your personal Learning Journal for future reference.

Learn more by visiting the Vaccination Equi-Planner tool!

<https://equineguelph.ca/Tools/equiplanner.php>

### **Reducing the Spread of Parasites and Deworming**

Parasites are an unfortunate reality for the horse and the role of the groom is important in reducing the incidence of parasites.

The more changes in the horse population in your barn, the more important it becomes to

monitor the horses for parasites. Once a problem has been identified, then it is time to carefully carry out deworming procedures. In this section, you will learn to describe and identify common parasites that affect stabled horses and the appropriate procedures for correcting the problem. As a groom, you are the first line of defense to protect the horse's health!

Upon successful completion of this section, you will have an awareness of the prevention of parasite infections in horses

### Summary

In this section you have learned about parasites and their impact on health and performance. As a groom or caretaker, you can make a difference reducing the risk of parasites.

## 3.4 Learning About Lameness

Just like a human athlete, a racehorse or any high-performance horse will at some time suffer damage or injury that will lead to lameness. A new groom is not expected to be fully knowledgeable about all the types and variations of lameness but a good groom will work on developing an "eye for lameness" through paying attention, learning from his or her mentors, taking more courses or reading, so that you will be able to identify a horse that is not moving right and be able to help by either letting the owner/mentor know or alerting your veterinarian.

### Learning Objectives

*Upon successful completion of this section, you will be able to:*

- Learn to define and describe a lame horse
- Describe the appropriate steps to take when lameness is suspected

### DLO Learning Activity

Lameness is defined as any alteration of the horse's gait. These alterations can be caused by pain or damage in the legs, hooves, hips, loin, back, shoulders, withers or neck.

Sometimes a horse with dental problems may also show an altered gait. Determining the specific site or sites causing or contributing to the lameness takes specialized training that is given to veterinarians, followed by more years of experience and training.

Open your DLO on the course site. There is a short

learning activity on lameness under Care of the Horse-Disease Prevention-Lameness that includes a video showing a sound horse and a lame horse. Watch these videos before moving ahead. Pay attention to the head movement of the lame horse.

### The Extra Mile

Equine Guelph has a horse owner tool, called The Lameness Lab ([https://equineguelph.ca/Tools/lameness\\_lab.php](https://equineguelph.ca/Tools/lameness_lab.php)). Take some time to learn more about Lameness by going through this learning experience. There is also an excellent description for lameness that has been developed by the American Association of Equine Practitioners. Read through this to learn more about terms that are used to describe the different degrees of lameness.

### The AAEP Lameness Scale

Assessing lameness is very challenging and requires the correct tools and training so a veterinarian can make a diagnosis. It is not up to the groom to even attempt to diagnose lameness, but rather to recognize when the horse is not moving normally and then report this to your veterinarian.

The American Association of Equine Practitioners has developed a "Lameness Scale" to help describe lameness, as follows:

- 0 – Lameness is not perceptible under any circumstances.
- 1 – Lameness is difficult to observe and is not consistently apparent, regardless of circumstances (e.g., weight carrying, circling, inclines, hard surface, etc.).
- 2 – Lameness is difficult to observe at a walk or when trotting in a straight line but consistently apparent under certain circumstances (e.g., weight carrying, circling, inclines, hard surface, etc.).
- 3 – Lameness is consistently observable at a trot under all circumstances.
- 4 – Lameness is obvious at a walk
- 5 – Lameness produces minimal weight bearing in motion and/or at rest or a complete inability to move.

If you are asked to assist the veterinarian, listen carefully and watch, as this is an opportunity to learn more. The veterinarian may ask you to trot the horse down the path or aisle, then turn and trot back as part of the assessment. The veterinarian may also need your assistance to hold the horse safely while the diagnostic procedures are being used. Be prepared to help as requested by the owner of the horse, your mentor and/or the attending veterinarian.

**Nutrition****4.1 Feeds and Water - Forages and the Important Role of Forage in the diet****Introduction**

In the previous units, you have been introduced to the horse – its anatomy, physiology and care of the horse. Recall back to the sections in Anatomy and Physiology on the Digestive System. The horse has a very extended digestive system as it has evolved over thousands of years to depend on forage for the diet. Roaming around vast grass fields in the mild seasons and migrating to areas with winter pastures, the wild horse spends the day eating a high forage diet 16-20 hours a day!

You may be more familiar with the phrase “hay” when it comes to horses. This is one type of forage; grass would be another. Forage refers to the fibrous (fibre containing) vegetation that horses eat. Forage is also available as a high fibre feed from feed manufacturers now.

In this section you will learn to describe and identify the main types of forage used in Ontario. You will also learn how to do a visual hay assessment. You are the person that will be delivering the meals to the horse, so it is important to understand the basics of feeding forage.

**Learning Objectives**

*Upon successful completion of this section, you will be able to:*

- Identify and describe the common types of forage available for horses
- Identify the steps for visually assessing hay
- Identify the importance of including forage in the diet of the horse

**DLO Learning Activity**

In your course site, open the DLO, open Nutrition-Feeds-Forages, and you will find a section that will introduce you to the topic of Forages that are commonly used for horses.

**Visual Assessment of Forage**

When you have a chance, spend some time looking at the hay being used to feed the horses under your care. Below, you will find the Visual Hay Assessment. Take the manual with you to the stable and assess the hay. Try to look at other samples of hay to see the variability that may exist from one supplier to another. What variations did you see? What impact would these variations have on the health and performance of the horse eating that hay? Share your observations about this in the Group Discussion area of the course website.

**Visual Hay Assessment Score Card**

Hay should make up at least 50% of the diet, therefore it is important to know its quality.

As a new groom in the industry, you probably would not be involved in the purchase of hay, however, this is an important area for you to begin your studies, as one day you may be the one purchasing the hay. Knowing how to find good hay supplies is an important part of the overall care of the horse. This activity will help you learn this, and you can keep the score sheet for an opportunity to assess hay where you are working.

There are two important steps for assessing forage. When selecting your hay, do a Visual Assessment to choose the best quality hay that you can. Then arrange for a Forage Test with your equine nutritionist to determine protein, fiber, calcium, and other minerals plus mould counts. Then you are ready to develop a balanced diet based on your hay quality and the needs of your horse. Use the chart below to score your hay.

<https://thehorseportal.ca/wp-content/uploads/2018/01/Visual-Hay-Assessment.pdf>

**Summary**

In this section, you have learned about the importance of forage and its role in the diet of the horse. You have also been given a tool to use when visually assessing hay. While a groom is generally not able to be finding and purchasing good quality hay for the horses, you may be in a position where you can make improvements to the feeding of forage to the horse. More resources can be found on the course site.



# What's with all the water?

## Eight Glasses a Day?

On the average, a person should drink 2 L or eight 8-ounce glasses every day. That's about 2 quarts.

Most adult horses need at least 37-45L (10 - 12 gallons) of water every day!!

A human must drink 156 glasses of water to equal what a horse needs to drink.

The body cannot store water so it must take it in every day. Part of the brain tells us when we need to drink water, this is why we and our horses get thirsty!

## Let Them Eat Snow? **NO!**

Do you think snow is a good source of water for your horse in the winter?



The average amount of water found in snow is 1 inch of water per 10 inches of snow!  
If 2 inches of snow fell, a horse would have to Hoover over 4 football fields to get enough water!!



## Did you know...

2/3 of a horse's body is composed of water?!  
That means an average adult horse that weighs 450-500kg has 350kg (or 350L) of water inside them!

## Hot Hazy days of Summer...

Horses can sweat at a rate of 10L per hour if they are working very hard in hot weather.

When they sweat this much, they lose a lot of water and body salts that will need to be replaced.

After a summer workout, your horse will be very thirsty! Make sure they have access to clean, cool water and a salt!

## Why is Water Important?

Water is important for many functions in the body, including:

- proper circulation of the blood
- proper muscle function
- digestion of food & proper digestive function
- cleansing the body of toxin & other waste products
- skin elasticity
- cooling the body

## So?

Always provide lots of clean, fresh water to your horse everyday.

Equine Guelph, University of Guelph  
www.EquineGuelph.ca  
www.EquiMania.ca

## Water – The Important Role of Water in the Diet

### Introduction

You have no doubt heard the phrase “You can lead a horse to water, but you can’t make it drink!” Water is a critical part of the horse’s daily diet and plays a major role in health and performance. In this section, you will learn about the role of water in the daily health and performance of the horse. You will also learn about the importance of good quality water available to the horse throughout the day.

### Learning Objectives

Upon successful completion of this section, you will be able to:

- Identify the need for water in the daily diet of the horse
- Identify the problems that can develop when water supply is minimized

### DLO Learning Activity

On the course site, open your DLO and you will find a section on Nutrition-Feeds-Water section.

### Learning Activity

When you are working with horses, keep a diary of the water consumption of three or more horses in your care. Compare the amount of water consumed by each horse over several days. Is there a difference between the water intake between horses? Is there a difference in water intake when the horses are worked/raced? When the weather is hot? Or when out on pasture vs. eating hay in the stall?

It is a good process to keep records on your horses once you are either employed or have your own horses, as this can help you pick on trends and “normal” behaviour of your horses. When things change, you will notice it sooner!

### Summary

In this section, you have learned about the importance of water in the health and performance of the horse. You should now be able to explain and discuss ways of monitoring the hydration status of the horse and what you can do as a groom, to ensure the horse stays properly hydrated.

## 4.1 Concentrates and Supplements

### The Important Role of Concentrates in the Diet

#### Introduction

Many of you may not be familiar with the term concentrates. You may be more familiar with the term “grain” or “grain ration”. These terms are referring generally to the oats, or mixture of oats and other grains, or processed feeds commonly fed to the horse along with forage (hay and grass). The term “concentrates” is used as the energy content of these feeds is much greater than the energy in hay. There are so many varieties available today that they cannot be covered in one course. This section will introduce you to the role of concentrates in the diet and the precautions necessary when using concentrates. In this section, you will learn the main types of concentrates used in Ontario and elsewhere.

One of the early morning pleasures is the feeding of the morning meal to the horse in your care. The warm and welcoming nicker from the horse shows its eagerness at your arrival with breakfast!

#### Learning Objectives

*Upon successful completion of this section, you will be able to:*

- Identify and describe the common types of concentrates used for horses
- Identify the role of concentrates in the diet of the horse

#### DLO Learning Activity

On the course site, open your DLO, you will find a section under Nutrition- Feeds- Concentrates. In this section you will see examples of different types of grains and processed feeds commonly used for feeding horses. The following information will help you as you review the material on the DLO

#### The Common Textures of Horse Feed

**Sweet Feed** – Sweet feed is a mixture of grains like oats and corn with added molasses to improve palatability. Sweet feeds often contain a pellet that has added vitamins and minerals to balance the nutrients in the feed.

**Pellets** – Pellets are tiny uniform pieces that have been processed from many grains and other ingredients. They are usually about 1 cm in length (less than ½ inch). The cooking process helps to increase the digestibility of pellets. Pellets are easier for a horse to eat than straight grains as they break down quicker.

**Chunks** – Chunks are similar to pellets but much larger, about 2 ½ cm or 1 inch in length and diameter. Chunks are made from cooked and processed grains and other ingredients. Chunks take much longer for the horse to eat as they have to chew more.

**Extruded Feed** – Extruded feeds are made of mixed grains and fibre, then cooked under steam pressure and extruded through a special process. The cooking and extrusion process increases the digestibility of the feed. Extruded feed also takes the horse longer to eat.

**Multi-Particle** – This is a feed made by combining several of the above types of feeds.

#### Learning From Your Mentors - The Important Role of Concentrates in the Diet

Now that you have looked at different feeds, do you have any questions that you would like to ask? Write your questions down and then post them in the Mentor/Instructor Discussion area.

#### Summary

In this section, you have learned about providing energy to the horse through the feeding of concentrates. You have also been introduced to some of the guidelines about the use of concentrates for horses. This knowledge may help you to understand some of the decisions to be made when choosing feed concentrates for the horse.

#### Supplements – The Important Role of Vitamins, Mineral and other Supplements in the Diet

#### Introduction

If you have ever gone to a feed store, or a tack store that sells supplements, you will be amazed and confused by the huge number of supplements available for purchase.

Supplements are available for a huge variety of needs and situations. In this section, you will learn about some of the main types of supplements that are available.

#### Learning Objectives

*Upon successful completion of this section, you will be able to*

- Describe some of the common types of supplements available for horses

## DLO Learning Activity

On the course site, open your DLO, you will find a section on Supplements, under Nutrition-Feeds-Supplements. This section will introduce you to the available types of supplements. It is certainly not an exhaustive list, but a beginning awareness for some of the major types in use.

### Vitamins

Vitamins are substances or chemicals required by the body for proper functioning. Vitamins are classified as “fat-soluble” or “water-soluble”. Fat-soluble vitamins are vitamins A, D, E, and K. Water-soluble vitamins include thiamine, riboflavin, niacin, pantothenic acid, biotin, folacin, ascorbic acid (also called Vitamin C), choline and Vitamin B12.

### Minerals

Minerals are an important part of the diet and contribute to the horse’s health including energy transfer, hormones, and amino acids. Minerals come from the pasture, forage and concentrates. Minerals needed in large quantities are called macrominerals.

Minerals needed in tiny quantities are called microminerals. Each mineral has a short form which is included in the brackets following the name.

Macrominerals include:

- Calcium (Ca)
- Phosphorous (P)
- Sodium (Na)
- Chloride (Cl)
- Magnesium (Mg)
- Sulfur (S)

Microminerals include:

- Copper (Cu)
- Iodine (I)
- Iron (Fe)
- Selenium (Se)
- Cobalt (Co)
- Manganese (Mn)
- Fluorine (F)
- Zinc (Zn)

This is an introduction to vitamins and minerals. You are encouraged to learn more about the critical role of vitamins and minerals as this becomes important when you are determining the feeds needed for your horse.

## Learning From Your Mentors - Taking Stock of Supplements

There will likely be different types of supplements used for the horses in your stable. When you can, take a look at the labels of the various supplements and read the label directions to find out the purpose of the supplement, how to use it, and any precautions that might be on the label. Take a piece of paper and a pencil or pen with you, and jot down the names and the indicated use and any limitations or warnings to remember when you are feeding. If you have any additional questions, ask the mentors in the Mentor/Instructor Discussion area.

### Summary

In this section, you have had a brief introduction to the many and varied supplements that are available, and the critical role of vitamins and minerals. As you gain experience in the horse industry, you will gain a better understanding of the types and uses of supplements. You are encouraged to take additional courses to learn more about feeding the horse for optimal health and performance.

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## 4.2 Feeding

### Introduction

Feeding horses can be very simple for healthy horses that are not in high performance activities. It can become more complicated once a horse is doing high intensity training, challenging competitions or develops special needs or health/injuries. Many horses may have specific feeding needs, so it is important that you follow directions for feeding very carefully.

This section will introduce you to some of the major guidelines for feeding for best practices.

### Basic guidelines for Feeding

- The diet should contain a lot of forage (hay or roughage feeds). At least half the total weight of the diet should be fed as forage for the digestive tract to function well.
- When feeding grain or concentrates, feed small amounts frequently rather than large meals. Grain and concentrates should make up less than half the total weight of the daily feed. Divide concentrates into two or even three meals per day for better digestive function.
- Do not make sudden changes in the feeding regime.



- Do not make sudden changes with the feeds or forage used.

- Feed the horse according to how much work is being done.

- Provide access to clean, fresh water always throughout the year. Do not depend on snow to provide the water intake as it will not provide enough water for daily needs. More water is needed for each horse in the summer when there is heat and humidity. More water is also needed for the horse that is sweating for prolonged periods from exercise or training.

- Do not work a horse immediately after it has eaten a meal. Wait 1 to 2 hours. Do not feed a horse immediately after exercise but wait 1 to 2 hours so the horse can cool out and relax. Providing hay during this time is recommended to help restore digestive function.

- Always provide free choice salt with a salt lick or loose salt in a small bucket (salt = sodium chloride).

- Feed only clean, good quality hay. Dust and mould can cause respiratory problems.

- Use feeds appropriate to the life stage of the horse.

- Use only quality feeds and do not use any feed that is old or mouldy.

- Work with a nutritionist to develop a balanced ration for your horse.

- Stabled horses need daily exercise and daily turnout, as this decreases risks like colic and abnormal behaviours.

- Feed salt free choice as loose salt or at least a salt block.

- Check the teeth regularly, at least once per year or more often if the horse is having problems or is a young, growing horse.

- If it is necessary to change feeds, do this gradually over at least 2 weeks.

### **Cold Weather Feeding Programs**

During cold weather, be prepared to increase the amount of forage (hay) that the horse receives. The extra hay will help the horse to stay warm. If the horse begins to lose weight during the cold weather, then the forage needs to be increased, the concentrates may have to be decreased, and/or the horse may need to be blanketed during the cold weather to maintain weight. A horse that is losing weight due to the cold will not perform at its optimal level. If the horse continues to lose weight despite the increase in forage

and feed, consult with the veterinarian and equine nutritionist.

### **Hot Weather Feeding Programs**

During the heat and humidity of the summer, it is even more important to provide a lot of clean, fresh water. When horses exercise in the heat, they will sweat to cool themselves. Large amounts of water and salts are lost in the sweating horse.

During hot weather, heat stress and dehydration are two things to watch for. Always ensure that clean fresh water is available to the horse throughout the day. Ensure access to loose table salt (sodium chloride) in a small bucket in the stall or run-in sheds, or make sure that there are salt blocks (also called salt licks, large blocks composed of sodium chloride) available for the horse near the water source. It may be necessary to add electrolytes (salts) to the daily diet of the horse to replace the salts lost in the sweat of the working horse.



### **Summary**

In this section you have been introduced to the basic guidelines of feeding. You have had a chance to discuss feeding problems with your mentors in the online discussion forum. While a groom is rarely asked to design the feeding programs for horses, it is a good time to start learning about nutrition of the horse so that you will be able to make educated decisions about nutrition. When you progress to positions such as trainer, barn manager, owner, coach or other positions, this basic knowledge will help you prepare for further education and training on nutrition and feeding horses as it is such an important foundation piece for all people caring for horses. Further resources are included on the course page.

### Introduction

In a domestic situation, horses become accustomed to set routines. Feeding, work and relaxation should be kept on a schedule as much as possible. Changes in routine may create stress for the horse, particularly in the nervous and high-strung horse.

It is important that you are aware of your horse's personality. You will learn which horses tolerate changes and which horses do not, and knowing this, you will be able to compensate for unavoidable changes in scheduling of barn activities. In this section, you will learn the typical routine for daily procedures and care of horses in the barn.

### Learning Objectives

*Upon successful completion of this section, you will be able to:*

- Describe the general procedures that take place as part of the daily routine
- Describe and define routines for daily care and jobs in the stable
- Describe and identify good qualities in a groom that many trainers desire

### DLO Learning Activity

On the course site, open your DLO, click Facilities and Management-Daily Routine-Average Day. This section introduces you to the "average day" for a groom.

### An Average Day

Upon arrival to the stable, the first priority is the health of the horse. Start off with the EDPP check up.

### Is the horse(s) Eating? Drinking? Peeing? Pooping?

As silly as this may sound, these are very important observations that the groom needs to make upon arrival to the stable. Once you have spent some time with each horse, you will learn the specific behaviour patterns that are normal for each horse. (You may wish to review: Care of the Horse, Horse Health, EDPP.) The observant and caring groom has picked up many potential issues at the early stages by their attention to detail, thus preventing more serious conditions to develop.

### Feeding

The morning feed needs to be completed with attention to detail for the nutritional health of each horse. Forage, the long stemmed, fibrous hay that is fed, is a critical part of the diet, for it is needed to help support digestive health. (You may wish to review: Nutrition.)

### Clean Facilities

When owners and visitors arrive at the stable, they will be impressed with clean and tidy facilities. The stable needs to be fully cleaned from top to bottom, with particular attention paid to the cleanliness of the stall and bedding. You may remember walking into some barns where the smell of ammonia and manure made your nose wrinkle up at the smell. Just think if you had to live and sleep in that stall!

Air quality is critical for the horse, just as it is for a human athlete. A horse that cannot breathe cannot run.

Keeping the stall and facilities ammonia and dust-free as much as possible, is one of the many critical jobs performed by the groom each morning. A review of the process of stall-cleaning will be included in the next part of this section.

### What's Next?

Now that the horse has been fed and the stall cleaned out, what comes next? The exact order of your daily routine will vary from stable to stable, but it is likely that you will be involved in many of the following routines:

- grooming the horse and putting on the harness/tack for the daily work or training
- bathing and walking the horse after it has been working or training
- sweeping the barn aisle, taking down cobwebs, cleaning out feed rooms
- removing manure from the pasture to reduce parasites
- repairing and mending fences or stalls
- using tractors or other machinery to move hay, feed or bedding materials
- measuring and setting out the feed rations
- feeding the horses at other times during the day
- doing an inspection for other damage or safety problems
- final check of the horses and evening lock up of the barn

(Detailed information on the above can be found

in the sections: Basic Handling, Horse Health, Nutrition, Basic Safety and Cleaning a Stall. Now might be a good time to review these sections.)

### Summary

In this section you have learned about general routines in the stable, from arrival to feeding to grooming and bathing and final procedures of the day. You have also had the chance to hear from different trainers as they describe what they expect from grooms.

### Gathering the Equipment to Clean a Stall

In this section, you will learn about the equipment needed for cleaning the stall and preparing the stall for the horse. Good hygiene in the stall can prevent many problems for the horse, including hoof problems, parasite infections, respiratory health and many others. Your effort to maintain and clean a fresh stall will pay off with the health and performance of your horse. You will also learn about the equipment needed to efficiently clean the stall.

### Preventing disease is important for all horses.

When horses are going off to races, competitions or other events where there is mingling, disease spread is always a risk. Bringing a new horse into a stall that has been occupied by a different horse, can predispose the new horse to potential health threats, so extra cleaning is needed in these situations for high standards of biosecurity and disease prevention.

In many barns, it is encouraged to check the stall during the day, or at the last feeding of the day, and just pick out the manure and wet spots, if there is some downtime, as this keeps the stall fresher and can save on bedding costs over the long run.

### DLO Learning Activity

On your course site, open your DLO, click Facilities and Management-Daily Routine, and you will find the section that introduces you to the equipment and procedures for cleaning a stall.

### Learning Activity

You will need to ask an equine industry professional to review the procedures for cleaning the stall once you are out on the job. Different barns may have different set-ups for barn and stall cleaning but a clean stall at the end of the job is the common goal. Write out the important points for you to remember in your Personal Learning Journal, so you can review these prior to

going to your first job where stall cleaning is one of the tasks.

### Summary

In this section you have learned about the equipment needed to clean a stall and how it is used to help create a clean and fresh stall environment for the horse. The horse that is living in a stall has a combined bedroom and bathroom! Attention to the cleanliness of the stall will be a good investment for the groom, as a clean stall contributes to good health and continued performance for the horse.

### Proper Procedures for Cleaning a Stall and Putting in New Bedding

In this section, you will learn about the necessity for a clean stall for health and hygiene of the horse. You will learn about different bedding materials and why you might choose one type over the other. The techniques for cleaning out the stall and the proper disposal of manure will be discussed as well as bedding the stall with clean bedding and odour control.

### Learning Objectives

*Upon successful completion of this section, you will be able to:*

- Describe procedures for cleaning out a stall
- Describe and define different bedding materials that can be used
- Describe and identify procedures for bedding a stall with clean bedding
- Describe and identify procedures for odour control in the stall and barn

### DLO Learning Activity

On the course site, open the DLO, and click Facilities and Management-Daily Routine-Cleaning a Stall, and you will find a section that introduces you to options in "bedding". The following information will be helpful for you to learn more about the daily routine of cleaning a stall.



## The Process of Stall-Cleaning

One of the more time-consuming chores is the cleaning of the stalls. Yet, it is also one of the more important functions that you will do on behalf of your horse. Your efforts at maintaining a fresh-smelling and dust-free stall will pay off with fewer problems in the horse's respiratory system.

Remember that the horse's stall is also its eating area, bedroom and bathroom! Keeping a clean stall is one of the most important things we can do for horse health and welfare.

Take the horse out of the stall before you start to clean the stall. You will want to do this for three reasons. First, it is not safe to use shovels or pitchforks while the horse is in the stall. Second, it is more efficient to clean a stall without the horse in it. Third, large amounts of dust and ammonia are released into the air while cleaning and this is not good for the health of the horse.

You should also consider wearing a mask to help minimize the dust you are breathing. Just consider the number of stalls you clean day after day, year after year. It is your responsibility to protect yourself.

To start, assemble the equipment you will need. The piles of manure need to be picked up first, then the wet areas need to be cleaned out and the floor beneath these wet areas scraped clean. The rest of the bedding needs to be turned over. If your bedding is composed of shavings, you will use a shavings fork to sift out the balls of manure and other debris such as soiled hay. Once all the manure has been tossed into the manure wheelbarrow or muck bucket, then it is time to move to the next step.

At this point, many grooms find it convenient to pile clean bedding up against the back wall. This helps you as you take care of the horse for the daily routine, such as removing leg wraps or blankets or picking out the feet before the horse leaves the stall.

The next step is to use one of the many products available for controlling ammonia on the wet areas. Remember, it is best to have the horse out of the stall while you are doing this step. This may require you to apply a powder or spray liquid on these areas. In some stables, the preference is to leave the bedding piled along the back wall to allow the floor to fully dry while the horse is in the pasture or being trained.

Once the stall is dry and clean, and before the horse is turned back into the stall, you need to spread the bedding over the floor and possibly add some new bedding. A hard floor contributes to leg and hoof

problems and can result in sores on the body from laying on the hard surface. Remember, horses may want to sleep laying down for a period of time each night, so having a soft bedding beneath them will help them rest and recover better from the day's work.

## Bedding Choices

The choice of bedding will depend on a combination of personal preference, cost effectiveness, local availability and type of horse housed. Bedding should be dust and mould free, absorbent, supportive and easy to use and dispose of.

**Shavings** – Shavings are leftover products from the wood industry. They are the shaved pieces of wood that can provide dry fluffy bedding for horses. Dust can be a problem, but this can be reduced by sprinkling the shavings.

Bagged shavings are useful as they are protected from rain and moisture and usually have the type of wood used listed on the package. Bulk shavings can be delivered and can be a more cost-effective alternative, provided that the shavings are not exposed to rain. Softwoods (i.e., pine) are more suitable to be used for horse bedding as they are very absorbent. Hardwoods are not suitable to be used for horse bedding as they are not very absorbent and specific types will cause health disorders (i.e., Black Walnut and Yellow Poplar).

**Sawdust** – While sawdust is sometimes used for horses, it is too dusty and cannot be recommended for use. It may contain a variety of wood types; some of them may cause problems for horses (see above).

**Peat Moss** – Peat moss can be used successfully as horse bedding. It is low in dust and is absorbent despite it looking dirty.

**Straw** – Straw is the stem portion of the oat plant (or barley or wheat). Once the grain seed has been cut off and collected, the stems are cut, dried and baled. Baled straw has been used as a bedding material for horses for many generations.

It is not as absorbent as shavings. Most horses will not eat the bedding, but this can occur. Even the cleanest of straw can contain high levels of dust. Since straw grows in the field it is subjected to a range of weather conditions that can affect its quality.

The quality of other types of bedding such as shavings, peat, wood pellets, paper, hemp and flax will depend on production and storage.

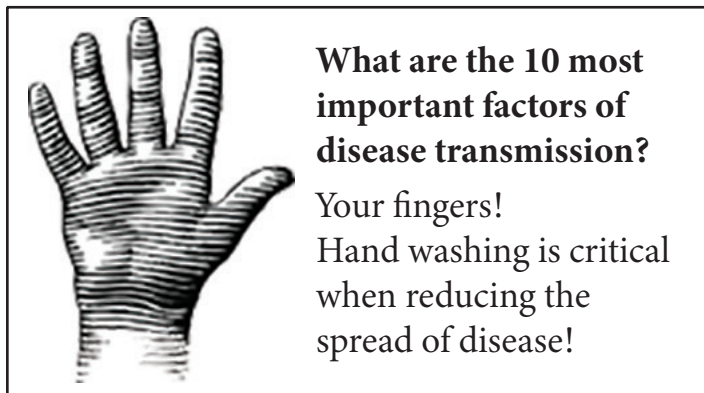
## Summary

In this section you have learned about proper cleaning of the stall and bedding down the stall. You have also been introduced to different beddings, the uses and procedures, and products that help control ammonia and other odours.

## Stable Hygiene

### Introduction

When a horse becomes ill, it can affect long-term health and performance. It can also spread disease and illness to other horses in the stable, affecting their health and performance. The down time of the horse can be a significant financial loss. You can help reduce the risk of disease and help prevent its spread. A small amount of effort can make a significant difference in the health of horses in your barn. The more changes in the horse population in your barn, the more important it becomes to pay attention to stable hygiene. In this section, you will learn to describe and identify the steps for maintaining good hygiene in the stable including cleaning and disinfecting of equipment and the stalls. You may want to review Disease Prevention, to review common illnesses and disease that can affect stabled horses. As a groom, you are the first line of defense to protect the horse's health!



### Learning Objectives

Upon successful completion of this section, you will be able to:

- Identify the meanings of terms used when describing cleaning and disinfecting
- List the steps and procedures for cleaning and disinfecting the stable

### DLO Learning Activity

More information can be found on your DLO (Facilities and Management-Daily Routine–Stable Hygiene).

- Cleaning the Stable: 3 main levels of cleaning
- Cleaning: removal of visible debris

- Disinfection: removal of most live organisms
- Sterilization: complete elimination of all life

In a stable, unless the horse has or is suspected of having an infectious disease, cleaning is adequate for most situations. Once daily general cleaning of items like the water bowls is adequate. Cleaning of most visible debris is all that is really required. Periodically, more thorough cleaning is useful to keep the facilities looking professional and clean.

Although sometimes required, disinfection of stall items is often difficult. Routine use of disinfectants is often not effective. This is particularly true with permanently fixed automatic waterers because the dilution effect of the water will interfere with the use of most disinfectants.

One other general principle of infection control/cleaning to remember:

- Physical scrubbing & rinsing removes 90% of organisms (normally a good daily practice)
- Disinfectants remove 6-8%
- Remaining 2-4% very difficult to remove

This highlights the importance and effectiveness of a good thorough clean, as long as important infectious agents are not present. If there is an infectious disease in the barn, the veterinarian is the best source for a discussion on what is the best way to reduce the risk in your barn, given the layout and the disease of concern (as some diseases are transmitted by contact, while others can be airborne and contact).

It has been said that the 10 most important factors of disease transmission are your fingers. A variety of infectious diseases that affect horses can be spread by people. This happens when people handle the infected horse, its environment or stall items, and then touch other horses without washing their hands. Hand washing is critical for disease transmission. All barns should have convenient, accessible hand washing facilities. In addition, it is helpful if alcohol-based hand disinfectant gels are placed within barns for easy hand disinfection or provided near the barn sink or wash station.

### DLO Learning Activity

Open the DLO on your course site, you will be able to access the following guidelines:

- Preventing Disease Spread: Personal Hygiene and Disinfectants around Horse Barns.
- Biosecurity for Horse Farms.
- Disease Control at Racetracks and Horse Events.

Keep in mind that clothing and boots can be the cause of disease spread. Horses may snort or cough near you, spreading mucous and saliva on your clothing, and this can infect the next horse that sniffs or licks your clothing. It is also possible that boots can spread disease after walking through manure/contaminated bedding. Bits, reins, bridles, cross-ties, buckets and trailers can also pose disease risks.

### The Extra Mile

There are many other resources available where you can learn more about this priority area.

Canada has published a standard for Equine Biosecurity and that can be accessed from this link:

<https://inspection.canada.ca/animal-health/terrestrial-animals/biosecurity/standards-and-principles/equine-sector/eng/1460662612042/1460662650577>

Equine Guelph also offers a short course with practical information and best practices, called Disease Prevention, on TheHorsePortal.ca, providing a quick way to enhance your knowledge of everyday practices that can be included in the barn to decrease the risk of disease transmission. Visit [www.TheHorsePortal](http://www.TheHorsePortal) to learn more.

### Summary

In this section, you have learned the steps and procedures for cleaning and disinfecting the stable, including the stalls and the equipment used for each horse.

### Prevention of Injury

In this section, you will learn about safety in the stable and prevention of injury through diligence and prevention. Prevention of fire and injury is an important part of the groom's role in the stable. Barn fires are often caused by carelessness or negligence, and it is an important responsibility for the groom to identify situations that may increase the risk of fire in the barn and take appropriate actions to minimize the risk. It is also important that the groom be able to identify dangerous situations that lead to injury and take appropriate steps to prevent injury or damage.

### Learning Objectives

*Upon successful completion of this section, you will be able to:*

- Describe risks that may lead to injury, damage or fire
- Describe and define methods of prevention of fire

- Describe and identify procedures for prevention of injury to workers and horses
- Describe and identify procedures for reporting dangerous situations

On your DLO, click Facilities and Management-Safety, and you will find a section that introduces you to procedures for keeping a barn safe. You may wish to learn more about fire safety and prevention. If you get injured, you may not be able to work. Keeping yourself safe is a priority.

### The Extra Mile

Equine Guelph has more safety courses on TheHorsePortal.ca, including Fire and Emergency Preparedness.

Know any youth interested in the horse industry? Introduce them safely by encouraging them to take the Youth Horse Behaviour and Safety course from Equine Guelph. Check out the courses at TheHorsePortal.ca for more information

### Summary

In this section, you have learned to identify unsafe conditions that may lead to fire or injury. You have also been introduced to methods for prevention of fire and injury so that you may take an active role in prevention for your horses and stable. This is important because the groom is the first line of defense in the barn and can play a critical role in safety.

## 5.2 Safety in the Stable

### Introduction

Dealing with horses can be a dangerous business! The average horse weighs around 1000 lbs, or 500 kg, and that far outweighs any human that may be working with the horse. The horse also has strength, agility and speed that far outstrips the ability of a human.

The horse has been domesticated for five thousand years, but it is important to remember that the horse still retains many of its natural "flight or fight" instincts of the prey animal. The world of horses can be a dangerous environment and you probably know of someone that has been hurt while handling a horse. This risk can be greatly minimized by a good groom and caretaker.

In this section, you will learn the basic safety procedures and rules so that the risk of injury to the handler and the horse are minimized.

## Learning Objectives

Upon successful completion of this section, you will be able to:

- Describe the basic safety procedures for handling horses
- Define the risks that are associated with various procedures of handling the horse
- Identify unsafe procedures and describe how to change them to reduce the safety risks and increase the safety for the horse and handlers

## DLO Learning Activity

On the DLO, find the section on Safety. Review the material included in the DLO.

## Learning Activity

When you have the opportunity in your workplace, or if you can visit a horse stable, look around the barn or stable, including outside and around the buildings. Take your time and really look at all the areas. What potential safety hazards can you see? How should they be corrected? Record your answers in your personal learning journal for future reference on safety issues. Consider making two columns labelled "Safety Hazard" followed by "Possible/Recommended Correction". If you cannot visit a horse facility, then do some web searches for articles about horse safety around the horse itself and around the stable.

## The Extra Mile

Equine Guelph has more safety courses on [TheHorsePortal.ca](http://TheHorsePortal.ca), including Horse Behaviour and Safety.

Know any youth interested in the horse industry? Introduce them safely by encouraging them to take the Youth Horse Behaviour and Safety course from Equine Guelph. Check out the courses at [TheHorsePortal.ca](http://TheHorsePortal.ca) for more information.

## Summary

In this section, you have learned basic safety procedures and have had a chance to identify unsafe procedures and make recommendations for decreasing the risk.

It is important for you to take your "safety radar" with you whenever you are dealing with horses at the track or the stable, so that you can do your part at reducing the risks and increasing safety. Your safety depends on your awareness of unsafe conditions and your knowledge on how to make them safe.

Be aware. Be safe. Be knowledgeable!

## Basic Safety

In this section, you will learn about safety in the stable and prevention of injury through due diligence. It is important that you can identify dangerous situations that may lead to injury and take appropriate steps to prevent injury or damage. Attitude is everything when it comes to working safely. Think about the following points – does this sound like you when you are working?

- Do you consider safety first when planning a task?
- Do you see yourself as part of a team when dealing with workplace safety?
- Do you consider yourself primarily responsible for your own safety?
- Do you feel responsible for keeping your co-workers safe in connection with your work?
- Are you not afraid to admit when you do not understand or do not feel comfortable working on a certain task?
- Do you make a practice of reading instructions and make use of personal protective equipment?
- Do you practice good housekeeping as you work, picking up after yourself and not taking short-cuts?
- Do you treat all coworkers with respect?

Remember - An accident is only an attitude away!

## Learning Objectives

Upon successful completion of this section, you will be able to:

- Describe and identify procedures for prevention of injury to workers and horses
- Describe and identify dangerous situations to report

## DLO Learning Activity

On the DLO, click on Facilities and Management-Safety-Basic Safety and you will find a section that introduces you to procedures for keeping a barn a safe working environment.

From the DLO you will be able to access the following guidelines for addressing potential safety hazards commonly encountered on a horse farm:

- Agricultural Machinery Hazards
- Agricultural Mower Safety
- Farm Accident Rescue
- Farmer's Lung
- Handling Big Bales Safely

- Power Take Off Safety
- Safety with Agricultural Tractors
- Fire Safety and Prevention (see Facilities & Management, Safety: Fire Prevention)
- Safety around Horses (see Handling the Horse, Basic Handling and The Horse, Equine Behaviour)

### Learning Activity

As of June 30, 2006, farm operations are covered under the Occupational Health & Safety Act (OHSA). This means that the rights and duties for workers and employers outlined in the OHSA will apply; inspection and enforcement will apply; and both workers and employers will participate in workplace health and safety matters. Check out the following websites.

- Farm Safety Association: [www.farmsafety.ca](http://www.farmsafety.ca)
- Ministry of Labour: [www.labour.on.ca](http://www.labour.on.ca)
- WSIB: [www.wsib.on.ca](http://www.wsib.on.ca)

### Summary

In this section, you have learned to identify potential safety concerns in the stable and prevention of injury through due diligence. It is important that a groom be able to identify dangerous situations that may lead to injury and take appropriate steps to prevent injury or damage.

## FIRE PREVENTION

### Introduction

Anyone who has spent any time at the racetrack have heard horrendous stories of when fire has swept through the stables, killing and maiming horses, injuring employees and destroying lifetimes. Over the last 10 years there have been several fires in Ontario, at racetracks, training centres and private horse facilities. Fires start so easily and cause damage quickly.

The restriction of the horse in a stall prevents the animal from having any hope of survival without human intervention. Usually, the fire sweeps through the barn so quickly that few horses are spared and many die then or later of terrible injuries. The vigilant groom can literally be the lifeline for the horse when they work hard to prevent fires.

Planning is the greatest asset in fire prevention. Your safety and the safety of the horses depend on you to always reduce the risk of fire. It is your responsibility to know the risks and follow best practices as closely as possible.

The purpose of this section is to educate and encourage those involved in the equine community to

incorporate fire prevention into their everyday routine. Risks that are ignored can often lead to fires.

“Hope is not a strategy!”

We cannot simply “hope it never happens to me”. In this section, you will learn fire prevention from common risks and will learn to take appropriate steps when a fire hazard has been identified.

### DLO Learning Activity

On your course DLO, click Facilities & Management – Safety - Fire Prevention, and you will find a section that introduces you to fire safety and prevention. View the following DLO learning objects:

- What a Fire Needs to Burn
- Classes of Fires
- Fire: Key Points

Read the following after you have finished viewing the DLO section.



### Fires

A fire occurs when a fuel source comes in contact with an ignition source. Examples of fuel sources include wood and plant material, such as, material found in most barns.

An ignition source is anything that can cause the fuel to burn, for example, a cigarette, match or spark from an electrical source such as a hot plate or frayed wiring. After contact occurs, the fuel will smoulder. Smouldering can vary from minutes to hours.

Fires caught during this stage have the greatest chance of being controlled. Flames occur when sufficient heat has been generated. The time it takes a fire to grow, and spread is dependent on a number of factors including fuel source and fire temperature.





What a fire needs to burn is three things – heat, fuel and oxygen. Disrupt one side of the triangle and the fire will go out.

**Fire: Key Points**

- Early detection is crucial
- Every 3 minutes a fire doubles in size
- The first 3 minutes is critical
- Average fire temperature is 1000 degrees F
- Toxic smoke can kill with a few breaths

**DLO Learning Activity**

On the DLO you can learn more about Fire Extinguishers and then read the summary below.

Monthly inspections: ABC type fire extinguishers should be available near each entrance of a stable. It is recommended that every month a 5-point inspection of each extinguisher be conducted.

**The Review of the 5-point check:**

1. Is pin in place?
2. Is plastic wire in place?
3. Is yellow arrow in green area?
4. Is nozzle tight and clear?
5. Is cylinder in good shape?

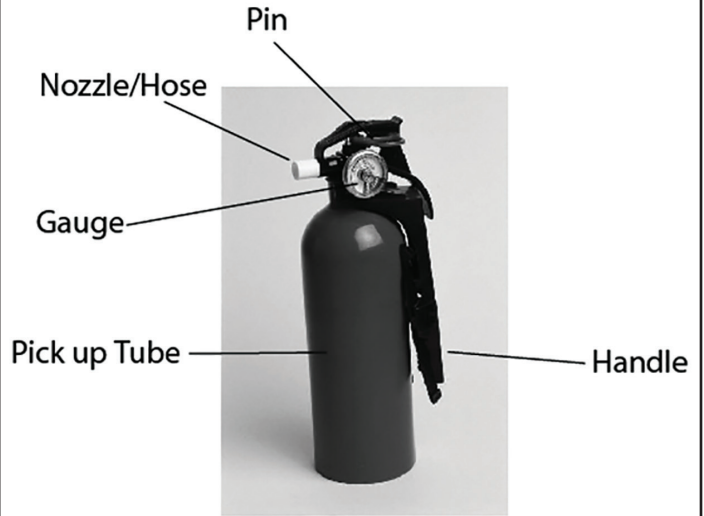
**Proper use:** A fire extinguisher is only effective if:

- the fire is caught in the beginning stages,
  - the extinguisher is charged, and
  - the person operating it knows how to use it.
- Have you every discharged a fire extinguisher?

**DLO Learning Activity**

On the DLO there is more about Preventing Fires in a Horse Stable. What can you do to prevent a fire? Learn to identify areas of risk before a problem occurs. Remember, planning ahead is your greatest asset to prevent a fire from starting in the stable where you work. Preview the DLO, and then continue to read through the following information.

**Extinguisher Components**



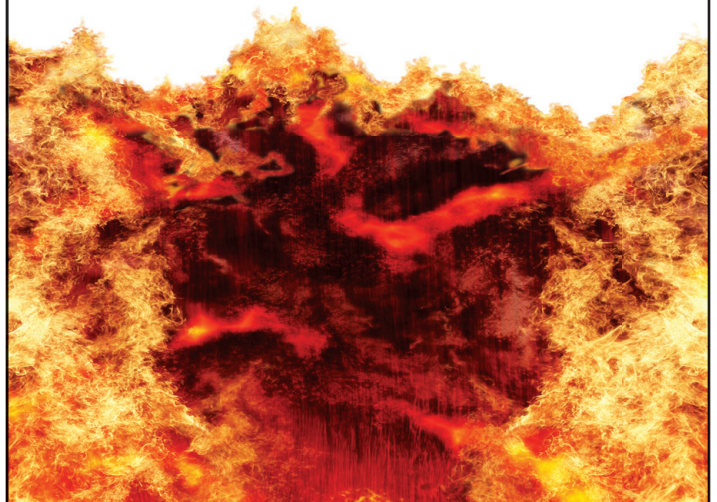
**How to Operate an Extinguisher**

PASS

- P – Pull the pin
- A – Aim the nozzle
- S – Squeeze the handle
- S – Sweep the nozzle

**Guidelines for Operating an Extinguisher**

- call for help
- use the proper extinguisher
- test spray to ensure it will work
- keep the wind at your back
- have an escape route behind you
- watch where you are standing
- keep the extinguisher upright
- fully depress the handle and use the whole extinguisher
- never turn your back on a fire
- know your limitations



## Fire Prevention Check List

### ✓ No Smoking in any building!

Where is it safe to smoke? Smoking is prohibited in any building 10 feet from any combustible. There may be fines or dismissal if a rule is disobeyed in the workplace.

### ✓ Safe Use of extension cords

Extensions cords are for temporary use only. Use heavy duty outdoor-use cords. Avoid pinching of wiring and "octopus" wiring. Do not rest cords on nails, they will wear and "arc and spark". The swaying of wires that pull and release as the building "breathes" will wear away the insulation and can start a fire. Install wiring in electrical safety-approved conduit and never put an extension cord over a nail.

### ✓ Safe Use of electrical devices

What electrical appliances & equipment are safe to use? Coffee maker? Heater? Electric clippers? Radio? All electrical equipment & appliances must have an approved label of a recognized certification agency. These include CSA, ULC. Do not allow use of hot plates in the barn. In hot weather what type of fan can be used safely? Fans must be CSA or ULC approved for hazardous atmospheres, dust, straw and hay. Fans must be on a sturdy stand and located safely by the stall with the electric cord out of the way.

### ✓ Safe storage of paints and chemicals in a separate building.

Gasoline, solvents and other chemicals should be stored in a separate detached building or shed, as these can be fire risks that threaten the entire barn if stored in the equipment or tack room.

### ✓ Proper storage of hay and bedding

(see learning object 4, "Hay and bedding storage") We have learned that hay is a very efficient fuel source and hay that is heating up is a definite fire risk when more than a day or two's supply is stored in the barn.

### ✓ Safe practices are used in the barn

Keep aisles clear and dispose of rags and paper towels properly. Oily tack or hoof cleaning rags, soiled paper towels -- Rags or paper towels soiled with oil or petroleum products, including tack and hoof-cleaning products, can go through a "heat" and catch fire. Do not pile rags and towels in a heap. As long as the heat of decomposition of these materials is dissipated into the air, there's little risk; piling up means there is no place for the heat to go, and a fire can result.

### ✓ Inspect wiring regularly

Check that there are no frays or crimped wires, no sparking, damaged coverings on wall sockets are

kept clear, dry and dust free and electrical boxes are inspected and cleaned out from rodent nests and spider webs.

### ✓ Always follow best practices as closely as possible.

Best practices in the barn include trained staff with periodic reviews of barn safety along with regular inspection and maintenance. Logs can be kept on these inspections/repairs to ensure that this is being done regularly.

## Learning Journal - Identifying Potential Hazards in the Stable

Take a walk through the stable and see how many potential hazards you can find. What are the practical alternatives that can be suggested to make the stable safer? Make notes in your personal Learning Journal so you can go back and check these when you are in an employment situation.

## DLO Learning Activity

On the course DLO, learn more about Hay and Bedding Storage. After viewing this, continue to read the following information to learn more details and further your knowledge.



## Hay Fires

The majority of hay fires will occur within six weeks of baling due to excessive moisture in the hay bale. Baled hay can be its own fuel and ignition source. The ideal moisture range for hay at baling is 13 to 15% and good hay producers will have monitoring equipment to measure moisture content. High moisture content allows excessive heat to be generated due to normal plant cell respiration and micro-organism activity. This in turn heats up the bale. Keep an eye on bale moisture and core temperatures, when storing baled hay. Hay core temperatures can be monitored to ensure that critical levels are not reached.

## Hay Core Temperatures

55C (130F)- Temperature is okay.

55 – 60C (130 – 140F)- Should be okay but recheck in a few hours.

65C (150F)- Monitor the interior bale temperature frequently. Move the hay to provide air circulation and cooling.

80 – 88C (175 - 190F)- A fire is imminent. Call the fire department! Continue monitoring temperature.

93C (200F)- Fire has begun. Call the fire department! Use water to cool hay before moving, have a hose ready to control blaze and it may be dangerous to move hay as that can introduce oxygen and make the blaze worse.

### Best practices:

- Store excess hay and bedding in a separate building.
- Store only daily requirements in stable area.
- Stack bales on their sides with the stems of the cut hay running up and down (allows warm air to rise up and out of bale).
- Increase ventilation of the storage facility
- Pack bales more loosely to allow more cooling to occur
- Use pallets under the bottom row to reduce storage losses from ground moisture.

## DLO Learning Activity

On the DLO learn more about Emergency Planning and Evacuation of a Stable. While you may not have input on this as a new groom/caretaker in the industry, this is valuable knowledge for you to develop so you can be more aware of emergency planning and possible evacuation priorities. After viewing the DLO, continue to learn more by reading the following information.

## Emergency Planning

What would you do if you saw a fire in the stable?

Know the plan for your facility before this happens.

- Emergency procedures should be posted and reviewed by all who are regularly in the stable
- Know where the fire extinguishers are, locate these when you enter a barn/stable
- Know who is designated to contact fire department in the event of an emergency
- Make sure emergency numbers are available beside the phone and add them to your cell phone call list.

## Question: Should horses wear halters in the stall overnight?

There will be different opinions on this question, so here are some things to think about:

- One concern is that a horse could hook a halter overnight while unobserved. If a halter is left on overnight, it should be leather as it will more easily break than nylon. It should also have a breakaway strap over the top for safety. Every stall should be checked for any areas/nails/broken boards where a halter could snag.

- A haltered horse is more easily evacuated in event of emergency – safer removal and means of identifying the horse. Taking time to put a halter on a nervous horse means slower evacuation and may be more dangerous for the handler.

- If un-haltered overnight, the halter with lead should be beside the stall (easily seen hanging near the stall door) with identification of the horse (name tag on halter, or you can use engraved dog tags attached to the cheek ring of a halter with name and phone number).

## Evacuation of a Stable

- Fire drills and evacuations should be practiced before an emergency occurs. In the event of a fire:

- Remain calm and yell “fire”
- Survey the scene and call 911 or your local emergency response number
- Evacuation - If it is safe to do so
- Make sure a lead and halter (if not already on horse) is easily accessible for each horse
- Horses might be afraid to come out of the stall, so exercise caution as you encourage the horse and “practice evacuations” ahead of time is a best practice method

- Horses may try to return to stall if able, therefore, the stall door should be closed, the barn door should be closed and the horse must be secured in a safe location once outside the barn, such as a round pen or gated field away from the fire area.

## The First 30 Seconds!

First 30 seconds of a fire is a critical time for the chance of successful evacuation. The following gives a timeline of a “typical” timeline of a fire in a barn, so you can see how fast the fire can build and cause damage:

- In 2-3 minutes, straw bedding will burn an area ten feet in diameter (the common size of a box stall is 10 x 10 or 12 x 12)

- By the time the fire has spread to four feet diameter, most horses are injured
- By 6 feet, a horse's lungs are seared
- By eight feet, the horse will start to suffocate
- By ten feet, the horse is probably dead

In summary, the horse's best chance of survival is to be evacuated within the first 30 seconds of the start of a fire. As you can appreciate, this is very difficult to achieve in a barn, so prevention of the fire is the critical component.

Be aware. Be safe. Be knowledgeable.

### Summary

In this section, you have learned to identify and describe common risks for fire in the barn. You have had a chance to identify high risk situations and understand the procedures for decreasing or eliminating fire risk. It is important for you to look for fire risks when you are at the track or the stable, so that you can do your part to reduce the risks of fire.

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## 5.3 Tack and Equipment

Sometime around 6000 years ago, the first wild horses were domesticated. It is interesting to ponder what was used to corral, contain then control the wild horses, until they were quiet enough for the mares to be milked in order to make "koumiss" – a fermented mare's milk product that could be stored for long periods in earthenware pottery. Then the next step was finding a way to ride the horse while controlling it, although there are suggestions that horses were trained for harness and pulling before the brave souls that first started riding horses! The earliest methods may have included the use of thin leather straps, called thongs that may have been used to make halters or even bridles.

There have been many changes in tack and equipment throughout the ages, and these changes continue into today's horse industry for both the racing and non-racing sectors.

Throughout the horse industry, you will find specialized equipment for each of the different sports or disciplines. The saddle used for dressage, side-saddle or three-day eventing is very different from the saddle used for Thoroughbred or Quarter Horse racehorses. There are many variations of western saddles as well, and the harness used for Standardbred racehorses, while similar, has many variations when compared to cart or draft horses.

In this section, we will be discussing the general equipment common to all equine sports. You have already learned about some of this equipment, such as the halter, lead rope and grooming kit, in the section on Handling the Horse. Once you have learned about some of the basic equipment, we encourage you to continue learning about other types of saddles, bridles, and harness. You will no doubt have the opportunity to do this when you find employment in the horse industry.

### DLO Learning Activity

On the DLO learn more about Tack & Equipment – General Equipment. Then continue to learn more after this introduction by continuing with the section that follows.

### Standardbred Equipment

Some sports or disciplines require simple tack or equipment. Therefore, the process of tacking up is also simple. The equipment used on a Standardbred is more complex and there are many areas on the harness that need proper adjustment. In this section, you will see the process of harnessing the Standardbred and hooking it up to a jog cart. The purpose of this section is to let you watch the process as demonstrated in the video.

There may be different pieces of equipment required by different horses, so this is an introduction to the basic equipment only.

### Learning Activity

When you have some time with an equine industry professional or with another experienced groom, ask to see a set of harness for a Standardbred racehorse if there is one available. As an alternative, visit a tack shop that stocks Standardbred racing harness and ask for a catalogue. You may also have a chance to go to the racetrack and watch Standardbreds and you will be able to look at the harness that they wear. With help from an equine industry professional, identify the parts of the harness.

### Learning Activity

Now that you have identified the parts of the harness and other tack/equipment, ask an equine industry professional if you can watch them place the harness and equipment on a horse. Watch carefully for the order of how it is done and the technique for putting on the bridle and other equipment. There may be

several websites that can help you, so you may want to search for websites. The address below is one example.

<https://www.youtube.com/watch?v=xX2U0iz5O8E&t=23s>

Then read the following summary steps for harnessing the Standardbred racehorse.

## **General Steps for Harnessing the Standardbred**

This is a list of the steps for harnessing, so simply review this for now, and some further resources will be provided later in this section.

**1.** Collect all harness pieces and other equipment you will need. This should be placed in a safe spot away from the horse but convenient to reach. Many stables have special harness hooks near the cross-ties for this purpose; take a look for this the next time you are in a stable.

**2.** The horse should be placed in the cross-ties or securely tied in its stall or designated harnessing area.

**3.** The horse should first be well-groomed. Any dirt, matted hair or debris should be removed, particularly from areas that will be under the harness or this may cause rubbing and irritate the skin. Its hooves should be picked out and the mane and tail cleaned of debris.

**4.** The first piece of equipment to put on is the breast collar and this is buckled around the horse's neck and should lay flat and even.

**5.** The harness should then be placed (do not throw this over the back) over the back of the horse and moved back to the loin (hip) area. Take the crouper in your left hand. Gather the tail in your right hand and gently move the tail to the left of the horse and through the crouper (the "key whole" opening at the end of the strap) then snug the crouper up to the base of the tail. Ensure that no hair is caught or turned backward in the crouper. Keep your left hand on the crouper strap firmly to the rump so the crouper remains snug and does not fall down.

**6.** Pull the harness forward to just behind the withers. Make sure that you have this position checked by someone the first few times, as this position is important. If the harness is too far forward or too far behind the withers, this will affect the comfort of the horse and the safety of the harness.

**7.** Check on both sides to ensure that the straps and lines are free and not twisted.

**8.** Standing on the left side of the horse, carefully reach under the horse for the girth which should be

hanging down below the belly.

**9.** Run the strap through the buckle and tighten enough that the harness will not slide backwards, but it must not be too tight or it will restrict breathing (try breathing with a belt tied very tightly around your middle!). Have an equine professional check the snugness of the girth for the first few times. It is sometimes better for the horse to snug the girth at this point, and then do a final tightening of the girth when you hitch the horse to the jog cart.

**10.** If you are harnessing a pacer, the next step is to place the hopple carriers. The front hopple carrier is placed over the horse's neck so the side carriers (side straps) hang down. The back hopple carrier goes through the crouper strap and the side carriers hang down each side.

**11.** Attach the side carriers to the hopples. Make sure you do this with the supervision of an equine industry professional the first few times. Ask them about the length of the side carriers, as this distance affects the height of the hopples and these need to be adjusted to the individual horse.

**12.** Pick up the rear foot and insert the foot into the hind loop of the hopple and fasten the back carrier strap through the buckle. Pick up the front foot and insert it into the front loop of the hopple and fasten the buckle through the front carrier strap. Do the same on the other side of the horse. Have an equine professional check the hopples again to ensure they are hanging at the right height. You should record or mark the proper hole for that horse so you can do it correctly each time. This is important for the horse so make sure you do this correctly every time.

**13.** Now, pick up the bridle and hold the top or crown of the bridle in your right hand and steady the bit in your left hand. From the left side of the horse, gently apply pressure at the corner of the mouth with your left thumb and encourage the horse to open its mouth. You should then smoothly slide the bit into its mouth and pull the crown of the bridle up to the ears. Keep enough tightness just to keep the bit in the mouth. Move the left ear forward gently and move it into the left ear hole of the crown. Then quickly move to the other side of the horse and move the right ear into position. Do not be rough with the ears or you will create a horse that will shy away and be uncooperative.

**14.** Move back to the left side of the horse and straighten the forelock so that no hairs are caught in the equipment. Buckle the throat latch. Attach the driving lines (long reins) to the driving bit.

This is a basic introduction to the harness, but there may be other pieces of equipment used for each horse. It is good practice for you to demonstrate your skill to harness and bridle a horse in front of an equine industry professional who will review your work to ensure that you are not forgetting anything.

There is a great deal to learn and there may be additional equipment specific to a horse that you are required to know. Once you have completed harnessing and bridling the horse five or six times you will begin to feel confident that you have mastered the process and you will be able to do this task without supervision.

### **The Extra Mile**

Pennsylvania's standardbred horse professionals explain their craft.

<https://www.youtube.com/watch?v=CUsE6pPmqJU>

About the Standardbred

<https://www.youtube.com/watch?v=6W1ur7HicWs>

USTA Presents The Difference Between a Trotter and Pacer

<https://www.youtube.com/watch?v=bzSWSBizssY>

Standardbred Canada info sheet on equipment

<https://standardbredcanada.ca/files/sc-trainer-guide-equipment.pdf#:~:text=The%20quick%20hitch%20is%20where%20the%20sulky%20attaches,overcheck%2C%20the%20overcheck%20bit%20and%20the%20driving%20bit.>

### **The Thoroughbred/Quarter Horse Racehorse Equipment**

The Thoroughbred racehorse and the Quarter Horse racehorse has a selection of tack unique to the galloping race horse. You may have seen various saddles in use for different sports and each one has their own characteristics defined by their intended use. There is one distinguishing characteristic of the Thoroughbred racehorse saddle: SMALL!

The weight carried by a Thoroughbred is critical to performance, and it is important that all excess weight be minimized. The saddle for a Thoroughbred is incredibly small when compared to saddles of other disciplines and is made of lightweight but durable material. In this section, you will be introduced to the equipment specifically used for the Thoroughbred at the track.

When saddling the Thoroughbred for training sessions or for race day, the procedure for putting a saddle on is one of the most important of the day. As

a new groom, it is unlikely that you will be required to saddle up the Quarter Horse or Thoroughbred racehorse, but this section is provided to build your awareness of this, and there may be opportunities for you as you gain experience and skill in your employment. Thoroughbreds are typically more high-strung and nervous, particularly when at the track. This part of the routine requires a more experienced groom to saddle the horse for safety reasons.

When you can, ask an equine professional if you can observe the procedure so that you can start to learn about it. You may encounter slight differences from horse to horse, as different horses and situations may require specific or unique procedures.

### **Learning From Your Mentors - Thoroughbred: Saddling and Equipment**

In your personal Learning Journal, write down any questions and then discuss these questions in the Mentor/ Instructor Discussion area of the course website.

### **Learning Activity**

If you have access to a Thoroughbred stable or training facility, ask if you can observe a horse being saddled and prepared for training or racing. Watch carefully so that you can learn the steps for saddling and you can identify the pieces of equipment. This video gives you an introduction to the process of saddling up a race horse and you see the different parts of the saddle and bridle.

### **Learning Journal - Equipment**

Here are some questions for you. Record your answers in your personal Learning Journal.

- What are the pieces of equipment used when saddling a Thoroughbred racehorse?
- Is there a difference between an exercise saddle and a racing saddle? If yes, describe those differences.
- What is the difference in weight between an exercise saddle and a racing saddle?
  - An exercise saddle weighs:
  - A racing saddle weighs:
- What are the different saddle pads that can be used?
- Are there different girths and girth covers? Why?

**Did You Know?** In Canada, we have racetracks for Thoroughbreds, Quarter Horses and Standardbreds. In other countries, there may be Arabian racing on the track with betting as well. There are other "racing"

events, but these do not have organized betting on the horses and these may include chuckwagon races, endurance races (where horses cover distances of 100 miles in one day!), and various other timed events where speed is the factor for the competition.



### **Tack and Equipment for the Non-Racing Sector**

You have had a brief introduction to the basic equipment used for Standardbred horses and for Quarter Horse/Thoroughbred racing horses, but there will be much more to learn for those areas.

There are many other horse sports besides racing! This section will introduce you to some of the other saddles and tack that are common in the non-racing sector of the horse industry. The basic separation is English and Western styles of riding, but there is some cross-over and variations on this theme.

If you are ever able to try this, do take some time to try out both Western and English styles of riding, as often people tend to like one more than the other, but learning to ride both ways is never a waste of time!

### **Western**

Western-style saddles are also called stock saddles. They are solid and heavy and have a specific configuration that makes them distinctive – the saddle horn (also known as the “panic post” when you are trying to stay in the saddle!).

Western saddles are used for events like roping, western equitation, barrel racing, and trail riding to name a few. There are also bronc saddles made specifically for the rodeo event called bronc riding.

### **English**

English saddles come in many varieties and are set up with things like knee rolls, for jumping, or flatter saddles for events like dressage. Then there are polo saddles, cavalry saddles, side-saddles, park saddles and more! They are light weight, and there is the obvious absence of the saddle horn as the front of the saddle is fairly flat except for the rise of the withers which is called the pommel.

**Did You Know?** It is important that the saddle be fitted to the horse AND the rider for best comfort and performance. Ill-fitting saddles can cause pain, discomfort and saddle sores.

There are also different bridles for each of these disciplines and a very large collection of different bits, depending on the sport, the style of riding, and the experience and training of the horse and the rider. Bits must also be fitted to the horse and most importantly, used in a compassionate manner to support the health and welfare of the horse.

Once you are in a position to do so, have your mentor/employer go through the process of putting a bridle on the horse as well as putting a saddle on and off the horse. Watch carefully and learn the priorities for this (such as not “dropping” the saddle on the back but placing it on the horse).

### **The Extra Mile**

Saddle fitters and saddle makers are a niche market in the horse world and a good grasp of anatomy, gaits and physiology, as well as years of riding experience help prepare you for that field.

You may wish to do some research on the important points of saddle fit on the web.

### **Summary**

In this section, you have been introduced to the tack and equipment commonly used for racehorses and for some other types of horses in the non-racing sector. There is a great deal more to learn in this area as there are many different pieces of equipment that can be used for specific reasons. You are encouraged to learn more about the specialized racehorse equipment as well as equipment for the non-racing sector.

**INTRODUCTION TO THE ONTARIO HORSE INDUSTRY**

In Ontario, there are three horse racing breeds/types of racing – Thoroughbred, Standardbred (also known as Harness Racing) and Quarter Horse. Ontario also has a strong non-racing horse industry including a wide range of performance and breeding disciplines.

**Learning Objective:**

- To become familiar with the major associations that play a role within the Ontario Horse Industry.
- To learn about EquineJobTrack.ca as a tool to help find employment.

**Tips for starting a career in the horse racing industry with Ron and Liz Waples**

Canadian Horse Racing Hall of Fame, harness racing driver, Ron Waples and wife Liz give tips based on their experience for those thinking of starting a career in the horse racing industry.

<https://www.youtube.com/watch?v=seljCtXKl1w>

**Ontario Equine Industry Associations**

Finding employment in the industry is an important step for you now that you have worked your way through the course materials. In this section, you will be introduced to the various associations involved with the Ontario Horse Industry. Visit the websites of the associations involved in your area of interest to learn more. Find out what your association can offer you!



**Racing – Provincial Associations**



**The Alcohol and Gaming Commission of Ontario**

The Alcohol and Gaming Commission of Ontario (AGCO) acts in the public interest to govern, direct, control and regulate horse racing in all its forms in Ontario, the operation of racetracks and the licensing of racetracks and racing participants. AGCO <https://www.agco.ca/horse-racing/industry-information>

email: customer.service@agco.ca



**Central Ontario Standardbred Association**

(COSA) was formed in the spring of 2009 to provide a united voice for

harness horsepeople racing at Ontario racetracks. COSA represents the interests of horsepeople racing at Ontario racetracks. COSA Membership is a free lifetime membership. By joining COSA, you will receive Liability Insurance, Members Liability Insurance, Fire and Transportation Insurance and Supplemental Disability Insurance.

<https://www.cosaonline.com/>

Email: cathy@cosaonline.com

**The Horsemen’s Benevolent and Protective Association of Ontario**



The Horsemen’s Benevolent and Protective Association of Ontario (HBPA) has represented Owners and/or Trainers of thoroughbred racehorses since 1950. Membership in the HBPA begins when becoming

licensed with the Alcohol and Gaming Commission of



Ontario (AGCO) as an Owner and/or Trainer. There is no membership fee.

<https://hbpa.on.ca/>

Email: general@hbpa.on.ca

### Tips for getting into the horse industry with Liz Elder, thoroughbred trainer

Liz gives tips based on her experience and insights into the horse industry.

<https://www.youtube.com/watch?v=zwV3RV9Aa0Q>



### Ontario Harness Horse Association

Ontario Harness Horse Association (OHHA) was formed in 1961 with the purpose to represent Ontario harness horsepeople in negotiations of purses, racing

conditions, and all matters affecting the industry as a whole with the tracks, Standardbred Canada, AGCO, and the Provincial and Federal governments.

<https://www.ohha.ca/>

Email: info@ohha.ca

### Tips for getting into the horse industry with Cameron Lago

Standardbred breeder, owner, and groom, Cameron Lago shares his career journey into the world of harness racing and the role continuing education has played.

<https://www.youtube.com/watch?v=QFkL-jySDZc>



### Ontario Racing

Ontario Racing (OR) is a non-profit association that represents the horse racing industry to the public, industry partners and government.

Ontario Racing is recognized by the provincial government as the authority for horse racing in Ontario.

[ontarioracing.com](http://ontarioracing.com)

<https://ontarioracing.com/home>

Email: info@ontarioracing.com



(QROOI) represents Quarter horse racing in Ontario, taking place at Ajax Downs, the only Quarter Horse racetrack in Ontario.

<https://qrooi.com/>

Email: qrooiheadoffice@gmail.com



### Standardbred Breeders of Ontario Association

Standardbred Breeders of Ontario Association (SBOA) supports the

growth of a financially viable and sustainable breeding industry while representing the breeders' position on major issues to industry partners, government and regulators. It also aims to provide breeders with improved communications and education resources.

<https://www.standardbredbreeders.com/>

Email: aimee@sboa.info

### Racing – National Associations



### Canadian Thoroughbred Horse Society – Ontario Division (CTHS)

The CTHS Ontario is a membership-based organization formed to promote, support, and improve the breeding of thoroughbred racehorses in Ontario.

<https://www.cthsont.com/>

Email: cthsont@idirect.com



### Standardbred Canada

Standardbred Canada is an incorporated non-profit

organization whose mandate is to supervise, record, store and distribute information on all registered Standardbreds and to promote harness racing in Canada and beyond.

<https://standardbredcanada.ca/>

## Non-racing - Provincial:



Ontario Equestrian Ontario (OE) is the provincial non-racing sport organization. OE formed in 1977 dedicated to promoting the sport and providing programs, while establishing supports and guidelines for a safe and level field of play for both equine and human athletes.

Join OE to gain access to innovative rider-centered programming, provincial and national certification for riders, coaches and facilities and much more.

<https://ontarioequestrian.ca/>

Email: [info@ontarioequestrian.ca](mailto:info@ontarioequestrian.ca)

## Non-racing – National:



### **Equestrian Canada**

Equestrian Canada (EC) is the national governing body for equestrian sport and horse welfare. EC has a mandate to represent, promote and advance all equine and equestrian interests. EC has many provincial and national partners.

<https://www.equestrian.ca/>

Contact: form: <https://app.smartsheet.com/b/form/a252c9a3357d4fe691638a209317e9bf>

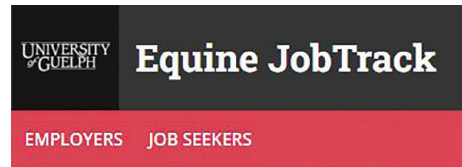
## Rules

As with many sports, all horse sports have their own set of rules. The rules will be very different from one sport to the next. As a groom, it is important that you learn the rules of your sport.

Rules of individual horse sports and disciplines ensure fairness and safety in the specific sport, as well as, ensuring the welfare of the horses participating in the sport. Rules ensure a standard of equine and human health and safety, and accountability across the industry.

Rules could include equine drug testing programs to prevent the misuse of equine drugs. Guidelines

for safe competition could include safety measures if weather is too hot or cold. Guidelines could also include concussion safety for riders. It is your job to research the rules provided by the associations of the sport that you are involved.



## Equine JobTrack

Equine JobTrack is our online searchable source for industry jobs.

<https://equinejobtrack.com/>

### **The Extra Mile:**

You will also find several industry related resources on Equine JobTrack:

<https://equinejobtrack.com/category/jobseeker-resources/>

## Final Course Summary

Upon completion of all units, you will have completed the course materials provided for the Ontario Equine Education and Employment Program! If you have any final questions, make sure that you ask these in the online discussion forum.

You are encouraged to learn from equine industry professionals to develop your skills and knowledge for the benefit of your career, the industry and most importantly for the horses' health, welfare and safety. Consider being a "lifelong student of the horse" and continue to challenge yourself by taking more courses to advance your skills and knowledge to develop your career pathways and for self-development.

We invite you to stay connected with Equine Guelph by signing-up for our free monthly e-news, as your Centre for the Horse Owner at the University of Guelph.

All the best for  
your future career  
in the horse  
industry!



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This e-Manual has been developed by Equine Guelph for the OEEEEP program, as a companion document for the online training program and has been developed for the students of the program for reference and review.

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