Equine Welfare Assessment Training

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1.0 INTRODUCTION TO EQUINE WELFARE ASSESSMENT

INTRODUCTION


photo by D. Landry

The goals of the Equine Welfare Assessment course and the companion course e-manual are to prepare the welfare investigations officer and others with the tools and knowledge needed for evaluation of the horse and its welfare based on the Canadian Code of Practice for the Care and Handling of Equines.

The course consists of readings and lectures combined with online facilitation and and in-class presentations. Various case studies will be presented, accompanied by discussions to facilitate understanding of scenarios. Training for horse handling and ands-on assessment of horses will be done as a separate module.

1.1 DEFINING AND ASSESSING ANIMAL WELFARE

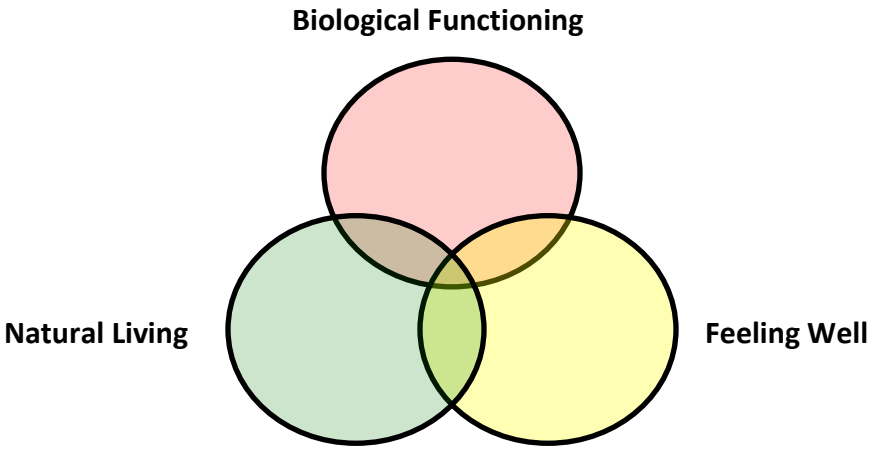
WHAT IS ANIMAL WELFARE?

Animal welfare is a difficult concept to define because it involves not only information about the animal, but also value judgments about what constitutes quality of life for an animal.

Various descriptions of good welfare include:

- Both the physical and mental state of the animal
- Having adequate food, water and a comfortable environment
- Being free from pain, suffering and distress
- Being protected from disease and predation

There are 3 different approaches for defining and assessing good animal welfare - these are:



Biological functioning - means the animal is healthy, growing and reproducing well. It includes the basic provisions that keep an animal healthy - food, water, appropriate temperature, good air quality and veterinary care. Using this approach we can assess the animal's welfare through health, mortality, body condition and productivity. In laboratory studies we can use measures of stress and disease resistance.

Feeling well - is based on basic emotional states so that the animal is free from pain, fear and frustration and may have feelings of pleasure or contentment. In laboratory studies we can measure animals' behaviour and use tests to identify their preferences and priorities. This approach may be difficult to use in practice except for some signs of pain or fear.

Natural living - is the idea that an animal should be able to live a relatively natural life and be able to behave in ways that are consistent with the nature of its species. These criteria for good welfare are the most controversial and difficult to assess in practice.

In some cases, there is overlap between the different approaches and in those cases, most people would easily agree that an animal is in a good or poor state of welfare. For example, an animal that is sick or in pain has poor biological function and feels badly.

Most Codes of Practice and animal care guidelines are based on the biological function and some aspects of feeling well. Animal care describes the actions taken by the person or persons responsible for the health and welfare of any animal. Animal care should be appropriate for the type of animal. Ideally, animals should be kept with the "natural life" in mind as much as possible.

CURRENT DEFINITIONS OF ANIMAL WELFARE

The World Animal Health Organization (OIE) is an intergovernmental organization that oversees global animal health issues and is a reference organization to the World Trade Organization (WTO). The OIE considers animal welfare to be closely linked to animal health and food safety issues. The OIE gives the following definition in its most recent Terrestrial Animal Health Code (2008).

"An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear, and stress. Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling and humane slaughter/killing. Animal welfare refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry and humane treatment."

The Five Freedoms developed by the Farm Animal Welfare Council in the UK are often used as a framework for describing what constitutes good welfare. They describe the **state of the animal** rather than standards for care.

1. Freedom from Hunger and Thirst - by ready access to fresh water and a diet to maintain full health and vigour

2. Freedom form Discomfort – by providing an appropriate environment including shelter and a comfortable resting area

3. Freedom from Pain, Injury or Disease – by prevention or rapid diagnosis and treatment

4. Freedom to Express Normal Behaviour – by providing sufficient space, proper facilities and company of the animal's own kind

5. Freedom from Fear and Distress – by ensuring conditions and treatment which avoid mental suffering

The "feelings-based" Approach to Animal Welfare was pioneered by Drs. Ian Duncan and Marian Dawkins in 1983, in which they said that the welfare of an animal is dependent on how it feels and whether it is suffering: "When we ask whether or not animals are suffering, we really want to know if they are having a particular type of unpleasant mental experience, if they are conscious of what is happening to them, if they are capable of subjective feelings".

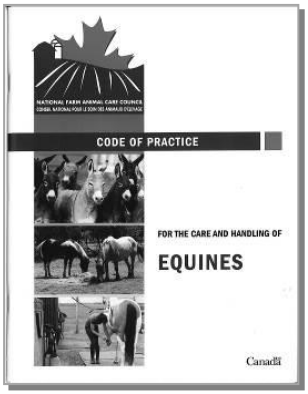
What is Distress? ***In the*** Provincial Animal Welfare Services Act, 2019, S.O. 2019, c. 13

> "critical distress" means distress that requires immediate intervention in order to prevent serious injury or to preserve life; ("détresse critique")
>
> "distress" means the state of being,
>
> (a) in need of proper care, water, food or shelter,
> (b) injured, sick, in pain or suffering, or
> (c) abused or subject to undue physical or psychological hardship, privation or neglect; ("détresse")

(Accessed 2023-08-08: https://www.ontario.ca/laws/statute/19p13#:~:text=%E2%80%9Cdistress%E2%80%9D%20means%20the%20state%20of,neglect%3B%20(%E2%80%9Cd%C3%A9tresse%E2%80%9D)

In the ONTARIO SPCA Act – "distress" means the state of being in need of proper care, water, food or shelter or being injured, sick or in pain or suffering or being abused or subject to undue or unnecessary hardship, privation or neglect".

The Canadian Recommended Codes of Practice for the Care and Handling of Farm Animals are the nationally developed **guidelines for the care** of different species of farmed animals. They were all developed through a consultative process with representation from animal commodity groups, scientists, veterinarians, federal and provincial governments and the Canadian Federation of Humane Societies. They contain recommendations for housing and management practices as well as transport and processing. The Codes are voluntary and designed primarily as an educational tool, but they are also accepted as the standard of practice. The codes are updated from time to time as industry practices evolve and our understanding of the welfare requirements for different species improves.



Currently Available Codes of Practice can be accessed on National Farm Animal Care Council web-site.

ASSESSING ANIMAL WELFARE

There are several different approaches that can be used for objectively assessing the welfare of animals.

ASSESSING ANIMAL WELFARE ON FARMS

In practical settings it can be difficult to assess the welfare of the animal by simply looking at it in a short period of time. In general, three different approaches or *types of* measures are used for assessing welfare in practical settings.

The first category involves specific ***measures of housing and management systems*.** These sorts of measures have been referred to as "design" standards or "resource" measures and are commonly referred to as ***"engineering measures".***

Animal based measures involve observation of the ***animals' reactions and responses*** to its environment. These been referred to as ***"animal-based"*** measures, measures of "outcome" or "performance" standards.

A third type of measure involves reviewing Standard Operating Procedures (SOP's) and protocols which would ensure good animal welfare if theses protocols were understood and followed. This type of measure is known as a "**management-based measure**" and is a common approach in the farming community.

Resource-based measures are prescriptions for features of the environment or husbandry practices that are generally thought to promote good welfare.

- Used in most animal care guidelines and Codes of Practice
- Examples include:
  - space requirements and stocking densities
  - numbers of feeders or number and flow rate of drinkers
  - temperature requirements

Advantages of resource-based measures:

- Clearly defined and relatively easy to assess
- Serve as a good basis for problem solving

Disadvantage of resource-based measures:

- Do not account for the level of stockmanship (best practices for handling and housing)
- Care and attention to detail by caregivers ***can be as, or more, important*** for the animal's welfare than its physical surroundings

Animal-based measures are:

- The *biological and behavioural responses* ***of the animal*** to its care
- Examples include:
    - health status and records of veterinary treatments
    - deaths and culls
    - incidence of disease and injury
    - body condition
    - signs of pain or distress
    - signs of undesirable behaviour (e.g., wounds from fighting).

Temple Grandin's welfare audit for slaughter plants is an example of a "animal-based" animal assessment system as it tracks the numbers of animals slipping or falling anywhere in the facility, vocalizing during handling and stunned correctly on the first attempt. Grandin developed these measures by identifying the critical control points for welfare during handling and stunning. (http://www.grandin.com/references/humane.slaughter.html)

Advantages of animal-based measures:

- They are more direct measures of welfare
- They allow for more flexibility in the design of housing and husbandry systems
- They acknowledge the fact that acceptable welfare can be achieved in more than one way

Disadvantages of animal-based measures:

- more time consuming and difficult to accomplish in practice
- may indicate the problem but not the source
- may require a well-trained eye and knowledge of the species

Management-based measures:

- ***protocols for feeding, watering and husbandry practices such as tail docking and including euthanasia***

Advantages:

- ***relatively easy to assess with minimal training***

Disadvantages;

- ***don't assess the welfare of the animals***
- ***there needs to be clear correct answers to improve inter-observer reliability***

A comparison of types of measures for assessing welfare

Welfare Factor	Animal-based Measure	Engineering Measure
Ventilation	Lying patterns	Maintenance records/air exchanges
Thermal comfort	Shivering, panting, huddling	Thermometer
Crowding	Lying postures, signs of aggression	Calculations of space allowance
Access to feed	Body condition Aggression at the feeder	Daily feed allotment, Calculation of feeding space

Welfare assessment on farms:

- Programs may emphasize resource based, management based or engineering measures but tend to be a combination of all three
- Measures chosen should be valid – they should actually reflect an animal's welfare
- Must be reliable and repeatable - different people viewing the same measure at different times would come up with the same assessment of welfare

1.2 ANIMAL CARE CONTROL POINTS

BASIC PROVISIONING

FEED AND WATER

One of the primary criteria for good welfare is that animals are provided adequate nutrition and access to good quality water. When determining whether an animal is receiving adequate feed and water there are several aspects to consider:

The volume and quality of the feedstuff that the animal is provided

- A variety of different feedstuffs may be appropriate for a given horse
- Horses should be fed diets that are formulated to match the nutritional requirements for their age, health status, housing and stage of production and exercise level
- Specific feed formulations and the amount provided to each animal should reflect its stage of growth or stage of pregnancy/lactation and work load/exercise demands

The volume and quality of the water that the animal is provided

- Water is the most important nutrient for all animals
- Horses should have access to fresh, potable water at all times
- Water requirements may vary according to how an animal is fed (higher forage diets may require more water intake)
- The mineral and/or microbiological content of water can make it unacceptable or unhealthy to an animal - water sources should not be contaminated
- A variety of different types of water delivery systems (drinkers or troughs) may be appropriate for horses, but all types should be clean and of a size and design that make it easily accessible and safe for the animal
- Water requirements will vary with temperature (greater in hot weather) and stage of production (lactating mares need more water to produce milk) and workload (exercised horses need more to replace sweat losses)

The volume and quality of feed and water the animal can consume

- The way in which feed and water are delivered to an animal can affect consumption level and adequate intake
- Recommended feeding space requirements for different species are given in the Codes of Practice
- Type and recommended numbers of drinkers for different species are given in the Codes of Practice

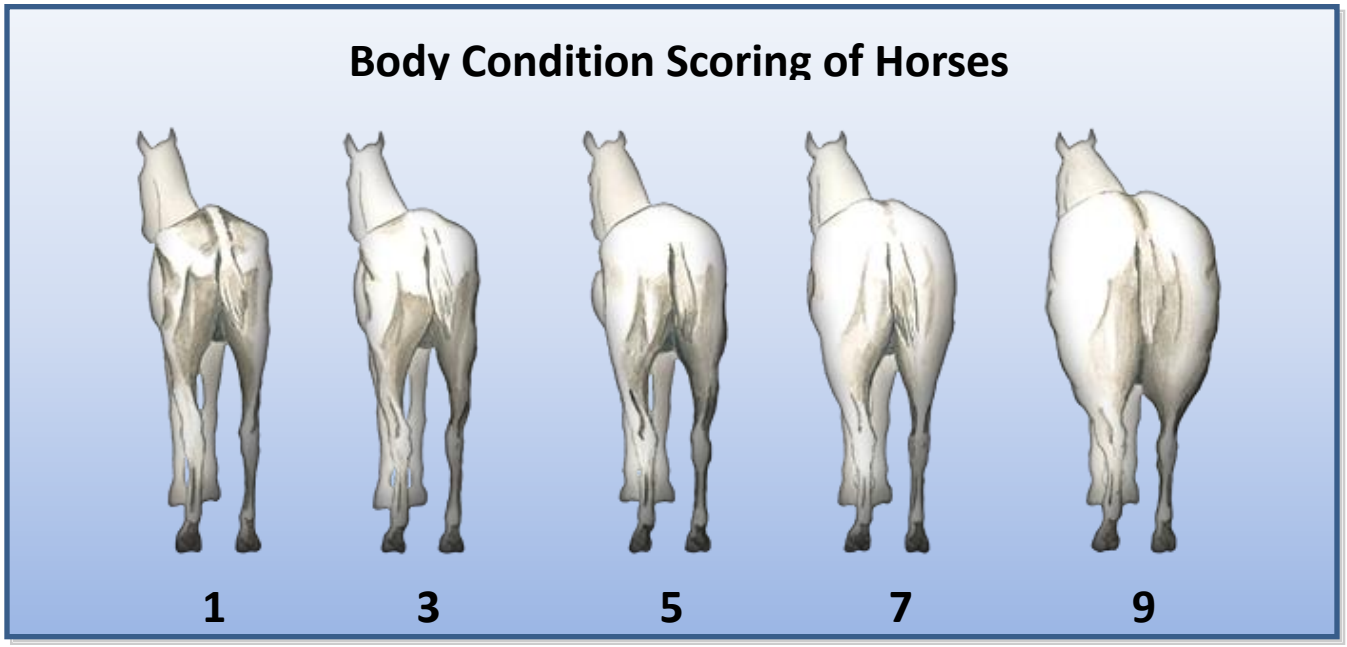
- When horses are kept in groups, all animals in a group should be able to access their daily allotment of feed and water
- When feed and water resources are limited, horses in groups may have to compete and aggression may occur
- A horse that cannot access the water it needs may reduce its feed intake
- Unequal access to feed and water can result in variation in body condition

Body Condition Scoring

Body condition scoring (BCS) can be used to assess if an animal is getting adequate nutrition and is in good health.

- Body condition scoring systems have been developed for most species including horses
- Most BCS systems, for a variety of species are usually based on a 4 or 5-point scale ranging from emaciated to obese. For the horse, the standard "Henneke method" uses a 1-9 point scale and is the method of choice.
- There is a range of acceptable body condition scores, which applies to all breeds. The Equine Code of Practice specifically states that "for horses, miniature horses and ponies: corrective action must be taken at a BCS of 3 or lower and at a BCS of 8 or higher (on the 1-9 scale)"
- BCS is done through a combination of visual assessment and palpation of specific areas of the body to determine amounts of muscling and fat deposition
- Visual assessment alone is not adequate to assess body condition as hair coat can conceal body condition
- It is important to recognize animals with poor body condition so that appropriate action can be taken

An example of the range of body condition for horses is shown below. Full descriptions and information on Body condition score for horses is included in the Appendices. Note: The BCS is not to be used as a diagnosis but may signal when more investigation and diagnostics may be required.



An example of the range of body condition for horses. Full descriptions and information on Body condition score for horses is included in the Appendices.

SHELTER

The shelter requirement of horses depends on their breed, health status, age, and body condition. Horses that are kept in pasture-based systems may not require access to a built structure, but in extreme weather conditions trees, hedges or primary structures such as wind breaks or shades should be provided for protection from the elements. Perimeter fencing should be used to keep horses contained and it must be safe for horses.

Acceptable types of shelter for horses include

- Barns with mechanical and/or natural ventilation that maintains a good quality of air in the building
- Range systems that provide access to a barn or other built structure (such as a run-in shed) as well as access to the outdoors
- Trees and/or bushes that provide an effective windbreak and shade

Factors to consider with any type of shelter, indoor or outdoor housing system

Hygiene and sanitation

- Outdoor areas should be well-drained to avoid muddy conditions and to provide dry areas for lying and laying down (also called loafing)
- Owners must have a plan for mud management and access to any equipment necessary to implement the plan.
- Any dead stock should be removed from animals' living areas and disposed of according to provincial deadstock regulations, according to the Ministry of the Environment
- An acceptable system for handling, removing or storing manure must be used to ensure a dry, comfortable resting area and to reduce disease and address any environmental concerns (i.e., manure drainage into waterways)
- A dry lying area must be available in each stall or pen with enough space for all horses

Air Quality

- In closed barns and shelters, airborne dust and gasses are produced from feeds, bedding, manure and the animals themselves
- High levels of dust and gasses increase the chances of respiratory problems and disease
- Airborne dust and ammonia are typically higher in the winter months when ventilation rates are reduced to conserve heat inside barns
- Ammonia is the most common gas inside animal quarters
- High levels of ammonia can cause irritation to eyes, throat and other mucus membranes
- Ammonia levels are higher when the bedding is damp or wet - keeping bedding dry is important for reducing ammonia production
- Ammonia levels above 20 ppm are *easily* detected by humans
- Ammonia levels above 25 ppm are considered to be unacceptable for the welfare of animals and stock people

Quality of lying/walking surfaces

There are many types of flooring commonly used in different animal quarters. Examples include:

- sand, dirt (but not mud)
- rough cut planked floors
- rubber mats
- stamped or grooved concrete
- For shod horses, the addition of rubber mats or epoxy flooring to concrete helps avoid slipping

Different types of flooring may be used in different parts of the barn. No matter the type of floor surface, if horses have access to it, the floor must be in good repair, and non-slip to provide safe footing.

With any type of flooring the following should be considered:

Lying areas

- Should be well-drained to allow horses the opportunity to rest in a clean and dry place
- Should allow all horses to get up and lie down without slipping or falling
- Should provide proper support to distribute the animal's weight when lying and allow animals to lie in the resting area without causing pressure sores, abrasion or injury

Walking areas

- Flooring should provide enough traction for the animal to walk using a natural gait and without slipping or falling
- The flooring in walking areas may have surface finishes that prevent slipping (e.g. scored or stamped concrete). The surface finish should not have sharp edges that can cause injury to the hooves

SPACE REQUIREMENTS

Minimum recommended space requirements in the Codes of Practice are usually given as square footage (the two-dimensional space allowance per animal) for different sizes of horses. Actual space requirements are determined by the amount of space needed to accommodate the animal's body size **plus** the space required for basic movement (including lying down and space to get back up, including head room) and activities **plus** the social spacing between animals when they are kept in groups.

Space requirements of individually-housed animals

- Animals housed in individual stalls should be provided the three- dimensional space that accommodates the basic dimensions of their body when standing and when lying on their sternum and on their side.
- This amount of space increases when animals gain weight or are pregnant.
- When animals change from standing to lying (and vice versa), the space envelope required to change postures is larger than their nominal body size (e.g. lunge space in front of a horse when getting up), housing should account for this increased space requirement
- Signs of inadequate space for posture changes include infrequent or difficulty changing postures and/or calluses, abrasions or injuries from repeatedly rubbing against parts of their enclosure.

Space requirements of group-housed animals

- Stall dimensions affect how well animals can use the space they are given.
- Stalls that are too narrow, for example narrow standing stalls, may not allow for the horse to lie down.
- Ceiling height must high enough to allow for normal head carriage.
- All horses in a group should be able to lie down at the same time.
- Space should be sufficient to ensure foals are not at risk of being stepped on by their dam or other horses if in groups.
- Overcrowding can lead to increased aggression, and limited access to feed resulting in reduced or variable body weights, and increased injury

1.3 BASIC BIOSECURITY

The Ontario Ministry of Agriculture, Food and Rural Affairs has published a Factsheet on "Biosecurity Fundamentals For Visitors To Livestock Facilities". (www.ontario.ca/page/biosecurity-fundamentals-visitors-livestock-facilities)

For biosecurity reasons, always arrive to a farm with clean coveralls and disinfected boots and hands. Wash hands and disinfect boots upon arrival at the farm, and before leaving. Disposable gloves are also recommended.

More information will be provided on biosecurity in the "Assessment for Biosecurity Concerns" section and in the Appendices.

2.0 HORSE USE INTRODUCTION

There are approximately 290,000 horses in Ontario (http://www.omafra.gov.on.ca/english/livestock/horses/facts/info_hay.htm) that are used in a wide variety of disciplines including racing (Quarter horse, Standardbred and Thoroughbred racing), many non-racing competitive events (e.g., eventing, dressage, jumping, western games, endurance, breed shows and others) and recreational events (e.g., trail riding).

There are about 40,000 horse farms in Ontario that engage in breeding, horse sales, showing and training of horses, coaching of riders and boarding.
(Note: current number are not available as no recent studies in Ontario are available.)

3.0 BIOLOGY BASICS, BEHAVIOUR AND HANDLING

BIOLOGY BASICS FOR THE HORSE

The horse is a herbivorous, ungulate, herd mammal which ranges tremendously in size. A horse can weigh a few hundred pounds, in the case of a miniature horse or pony, to over 2000 pounds for large draft breeds.
(Note: Herbivorous= plant/forage eating; Ungulate=single-toed; Herd anima=living in groups)

Breeds such as Arabian, Thoroughbred, Standardbred, Quarter Horse, Morgan, Friesian, Draft breeds, and many pony breeds (Shetland, Welsh, Hackney) can be found in the province. Please see Appendix 9 for a description of the common breeds of horses and websites where you can see pictures and learn more about horse breeds. "Purebreds" are horses that are 100% of that breed (i.e., a purebred Arabian) compared to a "mixed breed" or "halfbred" (i.e., a horse that is half Arabian and half Quarter Horse).

It is important to be able to describe and identify physical attributes of individual and groups of horses as well as observe and explain horse behaviors. In the next sections, we will introduce you to the horse in more detail including terms and descriptions used to identify horses, parts of the horse, colours and breeds, horse behaviour, movement and handling.

Equines are classified as follows (more detailed definitions are included in Appendix 1):
Ass/Donkey or burro – sub-groups of the family classified as Equidae. A donkey crossed with a horse results in a mule (male donkey + female horse) or a hinny (male horse + female donkey) which are sterile.
Foal – a baby horse that has not been separated from its mother or dam. A male foal is a colt, and a female foal is a filly.
Gelding – a male horse that has been castrated.
Mare – a female horse
Pony - any small horse measuring under 14.2 at the withers
Stallion – a male horse

HORSE IDENTIFICATION TERMS

Lists of common terms helpful in identification and description of horses can be found in the Appendix 1. A sample form that can be used for identification of individual horses is included as well.

TATTOOS AND BRANDS

Horses may be individually identified through the use of tattoos and brands. Ink tattoos, commonly seen on racing Thoroughbreds, are usually inside the upper lip and marked with an alpha-numeric code, depending on registration. Brands can be done through freeze-branding often along the neck and showing in white hairs or hot-branding, on the shoulder or lower rump area, area which does not change the colour of the hairs. When identifying a horse, all tattoos and brands should be recorded on the identification papers. An example of a freeze-brand on the neck of a Standardbred is shown on the photo below (Contact the Canadian Thoroughbred Horse Society or Standardbred Canada for assistance on identification for lip tattoos in Thoroughbreds and freeze brands in Standardbreds).

A freezebrand on the neck of a horse.


A hot-brand on the shoulder area of a horse.

BEHAVIOUR BASICS OF THE HORSE

The horse has evolved as a herd animal living out in large grassy areas, foraging (and sometimes browsing) throughout the day for food which includes mainly grasses as well as plants and shrubs.

HORSES ARE PREY ANIMALS AND DEPEND ON BEING A PART OF A HERD FOR THEIR SAFETY. WITHIN THE FERAL HERD ARE DEFINED ROLES AND HIERARCHIES THAT HELP TO PROTECT THE HERD FROM DANGERS AND PREDATORS. NORMAL BEHAVIOUR OF HORSES

Each species has its own "language" for communication. As a herd animal, horses have a language for communication and safety. Awareness of natural horse behavior plays an important part in horse and human handler safety. Accidental injuries with horses make up over 60% of injuries to humans by large animals. Furthermore, over 60% of injuries by horses are preventable (source UKHealthcare).

Observe:
-the eyes and ears
-the head carriage and movement including the lips/mouth/nostrils
-the stance and leg motion including tail position and movement
-the whole body (tenseness of muscles, shifting of weight)
-the vocalizations

Safety Note: Learning to spot the signs of stress and fear will assist handlers and reduces the risk of injury to humans and the horses.

The following sketches are examples of behavioural cues using the horse's head, ears and eyes. It is important to always observe the signs of the whole body. The ears, eyes and head carriage can be powerful signals but must also be interpreted by looking at the rest of the body.

Ears forward: The relaxed horse - The head is in a normal carriage position at or just above the withers, and there would be no tenseness in the body, and the tail would be relaxed. The eyes would be bright and alert with no tension around the eye. The horse would also be standing quietly with all four feet on the ground or one back foot may be rested on the toe.

The stressed horse - If the horse has its ears forward, eyes wide, but head is down, it may indicate the horse is "spooky" or nervous about something in front of him. Watch for wide-open eyes, flared nostrils and sometimes snorting and faster breathing. as this indicates the horse may be about to bolt away from the offending object or situation.

Ears relaxed: The relaxed horse - The ears are relaxed, and/or one is to the side. The horse is likely calm or perhaps sleepy. It could be listening to something from the side. Horse responds normally to a movement or voice from the front and moves the ears forward.

The ill horse - If this occurs and the horse does not respond to voice, it could mean the horse is ill or fatigued, particularly if the eyes are dull and the head is at or below the withers

Ears turned backwards: The relaxed horse - The ears are rotated backwards, not flat back or pinned to the head. If the horse is relaxed and the eyes are alert then the horse maybe listening to sounds coming from behind (as the ears turn back and forward) or showing submissiveness.

The stressed horse - Tense posture and tail swishing are signals that the horse may turn or run. Continual rotation of ears forward and backward together with a tense body and elevated head signals that the horse is stressed or overwhelmed. Eyes may be wider than usual, and quickly looking from side to side.

The horse in pain – A horse that suddenly raises its head and swivels its ears back may also be showing a pain response.

Ears pinned or flat back: The stressed or aggressive horse - A horse with the ears flat back is threatened or is giving a warning to stay away. This can be a sign of territorial protection, aggression or even fear. The aggressive horse may wave its neck in a "snake-like" motion as a warning sign that signals aggression or "herding" behaviour. Be very careful around a horse demonstrating this behavior, as the horse may kick or bite.

Head up, showing whites of eyes: The stressed horse - This horse is showing signs that it is on the verge of panic. The ears may be pointed towards the source causing the fear. The eyes are wide open and the "whites of the eye" may be showing. The head is held up or thrown upwards, and the neck muscles are tense. Often vocalizations accompany this type of behaviour.

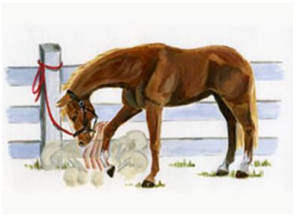
Watching the legs and body

A horse that is alert but relaxed and healthy, and watching its surroundings will stand on all four legs. The body is relaxed and the head is held above the withers and the tail is relaxed.

Standing in a tense posture with the front legs splayed out signals that the horse that may run within seconds. Standing relaxed with the front legs splayed out can also indicate health issues, particularly if the horse is unwilling to move.

Pawing at ground with front leg may indicate:

- Impatience
- Colic if accompanied by other colic signs
- Stress, if behavior escalates or becomes stomping
- Fly annoyance if behavior becomes stomping
- Aggression



Striking out with the front leg may indicate:

- Pain
- Territorial behaviour
- Frustration

Lifting back leg off the ground may indicate:

- Preparation to kick, especially if ears are pinned and head is moving rapidly
- This is very different than a horse that is relaxed and has one back leg resting on the toe.
- Pain, if horse is shifting from one leg to another

Other Behaviours

A droopy lip may indicate:

- Extreme relaxation or sleep, especially with a relaxed body. Horse will respond to sound.
- A health problem, especially if horse is unresponsive to sound or if the mouth remains open, horse is drooling.
- A tight or pinched mouth or nostril (sometimes accompanied by grinding of teeth) may indicate pain or annoyance.

Gentle swishing of tail may indicate:

- Fly removal

Rapid swishing wringing of the tail may indicate:

- irritation or pain

A raised tail may indicate:

- excitement
- urination/defecation

A tail that is held close to the body may indicate:

- stress or avoidance
- pain

SENSES OF THE HORSE

The five senses of the horse are very keen, and their sense of sight, hearing, smell, touch, and taste helps them survive in the wild. For safety purposes, it is very important to understand horse vision.

Horses have the largest eye of any land mammal, and the eyes are set high on the skull and out on the sides (not directly in front and close together like a human). This gives horses excellent vision and they can actually see almost all around them, as much as 350 degrees of the full circle (see diagram below). The horse cannot see directly behind them (about 10 degrees of arc) unless they turn their head to the side. The horse has a blind spot below and in front of the head.

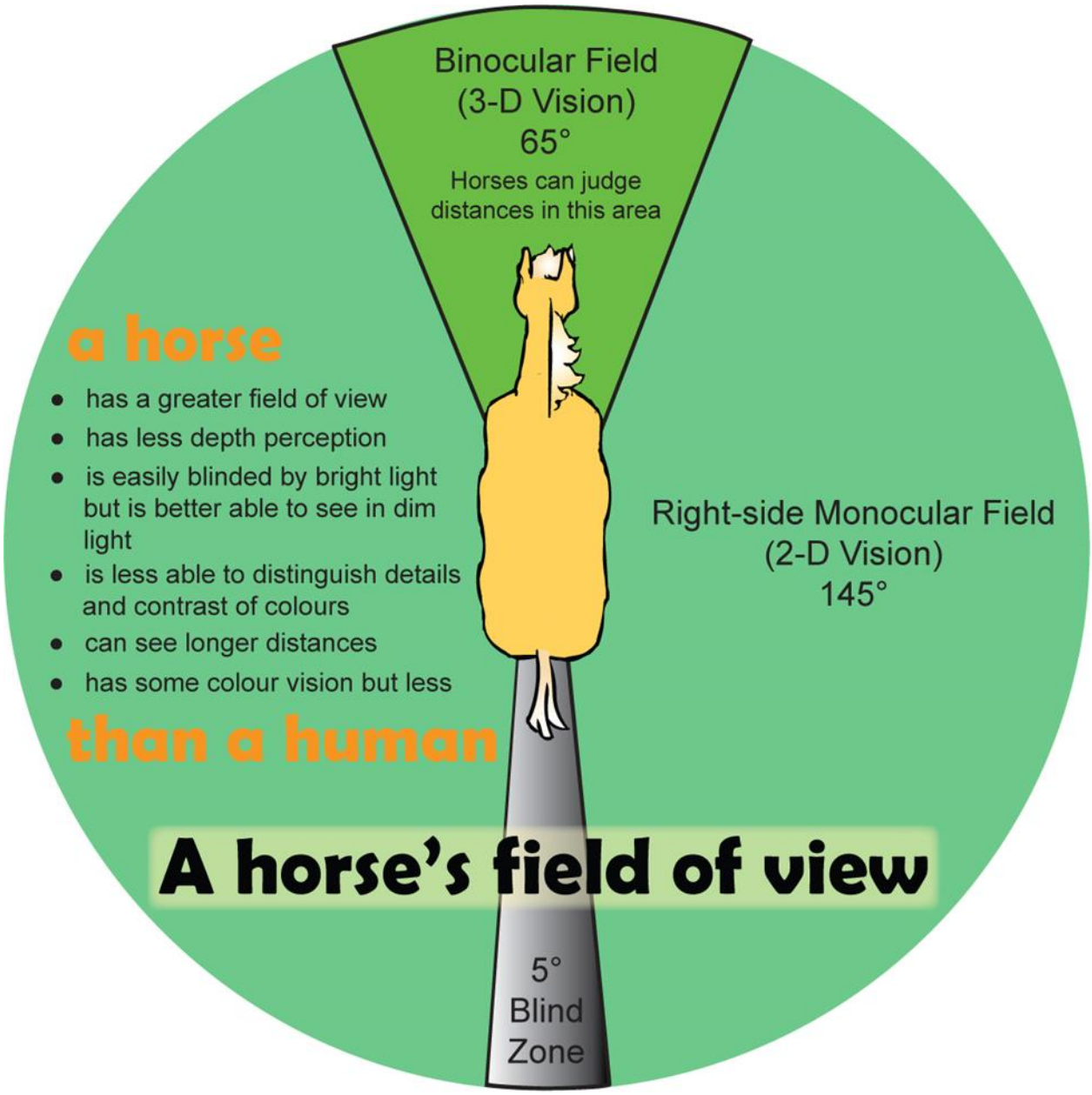
Use caution when moving things in and out of the blind spot areas, for example, do not duck under the head to change to the other side and do not stand behind a horse. The horse will move its head up or down or side to side in order to take a better look at objects and it can be stressful to the horse when it is not allowed to see things of interest.

Always make sure the horse can see you when handling a horse or moving around it.

SAFETY NOTE: Be aware of the blind spots of the horse for safety

1. In front of the head, about 4-6 feet
2. Under the head and under the neck
3. Over top of the head, neck and back
4. Directly behind the horse

Figure Showing Blind Spots: There is a blind spot directly in front of the forehead, and directly behind the horse (if the horse turns its head to the side, then it can see directly behind). The horse has binocular vision in front and monocular vision out to the sides and will turn its head to look at objects to get the best view.



Horses cannot see directly behind or directly below their nose (Blind Zone).

HORSE HANDLING AND SAFETY

When handling an unknown horse, safety of the handler and horse is paramount. A calm, quiet and confident demeanor can be very helpful when dealing with unknown horses. A soft voice and gentle touch can be very helpful under any circumstances when working with horses.

Horses that are in pain or fearful will likely resort to the flight response and this can be very dangerous and extremely quick. If the horse perceives no route of escape, then kicking, biting, and trampling may become options for the horse for self-protection.

HANDLING HORSES DURING RESCUES OR IN A DISASTER SITUATION

Stressed and anxious horses can be very dangerous. This is a large animal, often 1000 lbs or more, and their first instinct is to "flee". First, keep yourself safe, and then attend to the horses.

<u>Good horsemanship and quiet handling can substantially reduce the risk.</u>
-horses need to be kept in a safe enclosure until further arrangements can be made
-horses are safer and less anxious if they are kept in small groups with room to move, preferably with horses that they know rather than strange horses when possible. Strange horses kept together in tight quarters are highly likely to start fighting and serious injuries can occur even to the ones not engaging in the dispute for space.
-it is important to maintain the holding area by checking fencing, removing manure and providing daily water and feed. When feeding, observe behaviour, as more aggressive horses can push more submissive horses away from the feed and water, and fights can break out over food and water, resulting in more injuries. Separate horses when feeding or if possible, tie them up away from each other while they are eating.
-stressed horses are more likely to develop disease due to a compromised immune system and issues like salmonella can be a risk for horses and handlers. Horses with diarrhea should be treated as a biosecurity risk and be separated from other horses and only handled using biosecurity procedures.
-drought and heat waves can result in disasters from too little forage being available, lack of water intake and heat stress/stroke
-severe weather can result in injuries, isolation, unsafe/unhealthy conditions and lack of food and water, hypothermia, increased disease risk and abandonment

THE GAITS OF THE HORSE

The horse has four "natural" gaits called the walk, trot/jog, canter/lope and gallop. A description of the gaits can found in Appendix 4.

ABNORMAL BEHAVIOUR IN HORSES

Abnormal or undesirable behavior can be shown by horses. Animal welfare scientists cite the reasons of boredom, frustration, isolation, lack of forage, lack of locomotory opportunities, a poor stable environment and other behavioural frustrations (see "The Five Freedoms" from the first chapter). Often, abnormal behavior fits the definition of "stereotypic behavior" which is a repetitive, invariant behaviour pattern with no obvious goal or function. Examples of stereotypic behavior include:

Stall Walking – the horse repeatedly traces a circular pattern in the stall, even to the point of wearing a pathway into the floor. This can also be seen in the paddock/pasture as fence walking with a horse walking along the fence line often in a figure eight pattern or other pattern.

Weaving – lateral weaving of the head, progressing to the entire front end of the horse weaving side to side, including alternately picking up one front foot after the other. This can occur in an acute anxiety state as well as longer term.

Cribbing/Windsucking – Cribbing or crib-biting occurs when the horse grabs at a surface and holds on with its teeth, often the top of the stall door, and seems to "gulp" air. Windsucking is a similar behaviour where the horse seems to suck in air with an audible "grunt" but without the teeth gripping on a surface (although research has shown little air has been swallowed).

Wood chewing – the horse grabs onto surfaces and bites at the surface, sometimes ingesting the wood splinters. A wood chewing horse can quickly damage a stable.

Other repetitive behaviours can include pawing the ground, head nodding or shaking, door kicking or striking (with the hind legs or front legs, respectively) and can be associated with boredom, lack of forage intake, or in anticipation of feeding or turn-out time. Horses can also be seen engaging in repetitive licking of objects, and "teeth raking" where the teeth are run up and down the wall or the metal grid along the front of the stall. These behaviours can lead to several health concerns.

When you first walk into a barn, look at the condition of the stalls, the floor, the walls, and you can often spot signs that stereotypic behavior has been occurring. While horses displaying stereotypies are overt in their behaviour, we cannot discount that those horses who do not display stereotypies have less frustration or better welfare.

SAFETY NOTE: There are also horses that will reach out over the stall door, whenever a human and/or horse is nearby. These horses may be demonstrating frustration due to boredom, lack of locomotion, lack of social contact or anticipation of stressful/abusive handling. A very high degree of caution is needed around such a horse.

4.0 HEALTH AND DISEASE

A full review of equine disease is beyond the scope of this manual, and readers are encouraged to continue learning about equine disease by follow-up reading or courses (eg. TheHorsePortal.ca). The priority is not to diagnose, but to quickly recognize the signs of possible disease, distress or health issues and seek veterinary assistance.

MONITORING HEALTH AND DISEASE IN HORSES

The Code of Practice states that "Horses must be observed as often as required to maintain their health and well-being". If health issues are detected, appropriate measures should be taken, including contacting a veterinarian for advice as needed to remedy the problem.

As a first step, note the general behaviour of the horse – a change in the normal behaviour is often the very first sign that there is a problem, however, it is often missed and can be very subtle.

Health problems may include:

- **poor body condition** due to lack of proper care, feeding, disease, old age or dental issues
- **Hoof problems/lameness** due to lack of proper, regular hoof care or nutrition. Overgrown hooves require trimming or other farrier care on a regular schedule
- injuries/illnesses left untreated or poorly managed
- respiratory, metabolic, or other diseases left untreated
- skin conditions such as lice, open sores, infections
- hyperthermia or hypothermia
- digestive disorders such as colic, diarrhea, parasite burden and other nutritional deficits

Dehydration is a common finding with neglected and starved horses. This horse shows the classic prolonged "skin tenting" of a severely dehydrated horse. The skin on the shoulder remained in a "tented" position even after release.

More detailed information about indications of health issues, general signs of illness, and other stress is included in the Appendix 11. The Horse Health Check is included in Appendix 10 for more details on assessment of horses for normal parameters.

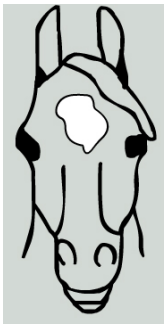
5.0 IDENTIFICATION AND DESCRIPTION

Proper identification of each individual horse in question is important. See Appendix 2 for a sample identification form. Identification of the specific horse should include a written record with a description of the horse including as many details as possible along with photographs of the horse (for follow-up and monitoring of the specific horse). A description should include the following:

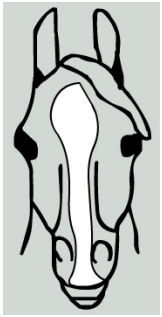
- General characteristics of the horse including gender, breed, age if known, colour (Appendix 8), all markings (see section below) and brands, tattoos or freeze brands (see Section 3.0).
- Behaviour (normal, abnormal like weaving/cribbing, lethargic, isolated, neurological signs like uncoordinated or erratic behaviour)
- Any health issues identified such as lameness, breathing problems, wounds/injuries
- Identify all scars, wounds, hair whorls, eye colour and any special comments on the eyes such as blindness/ulcers/weeping/swollen shut
- Coat condition (dull, losing hair, skin rashes or conditions, long hair, lice)
- Hoof condition (trimmed, overgrown, chipped or cracks)
- Body condition (Appendix 5)

WHITE MARKINGS ON THE FACE

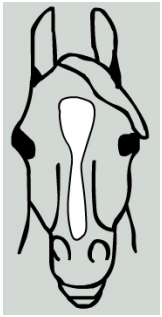
Horses can have specific white markings on the face and legs. These, along with scars and whorls in the hair, are important aspects for identification. White markings on the face generally fall into specific patterns, although there can be several variations and combinations. Examine the following diagrams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



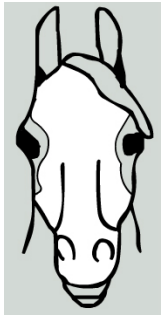
Star



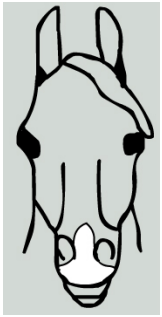
Blaze



Stripe



Bald



Snip

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. A photo is part of identification for future reference and documentation.

The picture below shows a horse with a combination of facial markings of a star, stripe and snip. Many variations and combinations are possible on white face markings. As part of the identification of the horse, describe these markings and take a picture if possible, for later reference to ensure correct horse identification.

WHITE MARKINGS ON THE LEGS AND HOOVES

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.

Stocking **Half-Stocking** **Sock** **Ankle** **Coronet** **Heel**

In the picture below, the white markings on the right front leg of this horse would be called a coronet. Notice the difference in the two legs, as the left front has no markings and has a full black hoof, whereas the right front hoof is striped. Photos are helpful to ensure correct identification of the horse.

MISCELLANEOUS MARKINGS OF THE HORSE

There are also other markings that are seen on horses. Horses may have white hairs in patches on the withers or other areas, which can be used as identification marks.

Ermine marks occur at the coronary band at the top of the hoof. These can lead to striping of the hoof in the area directly under the ermine mark.

Acquired marks and scars result from previous injuries. These acquired marks can be a focal area of white hairs or a bald spot as a result of scarring which can occur on any part of the body. One example is an area of white hairs on the withers which could be the result to damage from a poorly fitted saddle or harness

Birdspots occur as white or black circular spots on the body, and clearly stand out from the normal horse coat colour.

Hair whorls are isolated patches of hair growing in a swirling or circular pattern. These are an important part of identifying horses as they are distinctive for each horse and need to be recorded along with other identification marks and traits. Hair whorls can be found on the forehead, neck, chest, belly and other areas of the body such as over the hip region or legs.

COLORS OF HORSES

Horses show a wide variety of colour variations. "Colour breeds" also exist within the industry, with registries set up for specific colours or patterns (i.e., Palomino, Paint/Pinto or Appaloosa). This section outlines the major colours of horses.

The **base colour** (coat colour) and refers to the colour of the hair (and sometimes skin) on the body. The **points** colour refers to the mane, tail, lower legs and the rims of the ears. The Appendices contain descriptions of the main colours of the horse. When taking photos for horse identification of the horse, try to ensure proper lighting so the colour and markings are obvious.

6.0 HOUSING, NUTRITION AND THERMOREGULATION

A variety of housing types exist for horses even within specific sectors of the industry, including horses that are in the barn almost every hour of the day to horses that are out on pasture all day and all night. Typically, horses are fed 2 or 3 times per day with hay/forage and concentrates, with some or all-day turnout. Good quality forage (hay or pasture) should form the bulk of the diet for equines.

HOUSING OF HORSES

Generally, healthy horses in good body condition can adapt to a wide variety of weather extremes if they have appropriate shelter, are in good health, have a chance to acclimate to the weather and are on a good feeding program.

Outdoor Housing

- horses kept outside should be provided with adequate natural (shade, windbreak and cover offered by trees) or constructed shelters particularly if out overnight or during extreme weather (i.e., shade needed in summer, windbreaks/shelters from wind/rain and wind/sleet/snow during cold weather)
- space should be large enough to accommodate all horses and roomy enough so that horses are not fighting due to crowding
- open front sheds are helpful to provide shelter and must provide 120 sq. ft.(11.1 sq. m.) each for each of the first two horses and an additional 60 sq. ft. (5.6 sq. m.) for each additional horse
- it is possible to have the mare and foal outside if a dry, sheltered foaling area with ample space for locomotion and birthing is provided. Safe fencing is required so the mare and foal do not get entangled and protection from predators should be provided.

Indoor Housing

The Code of Practice states that: “For indoor facilities: each horse must have enough space to lie down in a normal resting posture, stand with the head fully raised, walk forward and turn around with ease. For tie stalls, each horse must have enough space to lie down in a normal resting posture, stand with the head fully raised and step forward in comfort. For group housing, there must also be sufficient space for subordinate horses to escape aggression.”

- if housed in stalls, the stall should be large enough to allow the horse to easily turn around and lie down. A 12 x 12-foot (3.7 x 3.7 m) stall will be adequate for most 1000 lb. horses
- broodmares about to foal or with foal at side require 30% larger stalls with solid walls and protection from predators

- foals must also be protected from chilling (use of foal blankets may be needed but must be monitored; if heat source used, it needs to be monitored and properly installed and the horses must be able to move away from the heat source)
- adequate clearance space for head movement should be provided. The ceiling/beams should exceed 3.3 feet or 1 m above the head (when standing normally, head above the withers)
- tie stalls (also called standing stalls) should be 5x12 ft. (1.5 x 3.7 m.) so the horse can lie down in a normal resting posture with enough slack in the tie rope, and safely get up
- doorways should be at least 3.9 ft. or 1.2 m. in width to safety allow the horse to walk through the door and clearance should be at least 12" or 30.5 cm above normal head position
- alleyways should be free from dangerous objects and should be 9.8 ft. or 3 m. in width)
- the stall should be well-drained and have non-slip footing/dry bedding
- Concrete flooring in stalls is not acceptable without deep bedding or mats
- stables/barns should be well-ventilated to prevent the onset of respiratory diseases. If the smell of ammonia is strong, this may be due to lack of drainage or lack of removal of manure and urine on a regular basis. Ventilation must be adequate inside each stall at the horses' level, and not just in the aisles
- stalls and aisles should be free from hazards such as clutter, electrical, flammable or hazardous materials
- lighting should provide enough illumination for effective observation of horses and it is not acceptable to keep horses in continuous darkness

Fencing and Pasture

Fencing must be maintained in a safe condition to prevent injury to horses or escape. All electrical fences must be kept in good repair and safely grounded. Small pastures that are overstocked will be prone to trampling, and therefore the pasture quality will greatly decrease, providing little or no nutritional value if the paddock is being used as a food source.

Seasonal issues include muddy areas where horses are more prone to disease when standing in mud and trampled manure. Horses must have access to mud-free areas and enough room to stand and lie down.

NUTRITION OF HORSES

Horses will naturally graze or forage over large territories of grass with its herd mates for 16-17 hours per day. The domestic horse is typically confined to smaller spaces and food restriction based on management preferences and convenience.

Nutrition, Feeds and Feeding

Horses need at least 50% (by weight) of their feed intake through the consumption of forage (pasture and forage/hay). Many horses can have almost all their diet provided by forage (hay and/or pasture), with a supplement for vitamins and minerals added. Seasonal variation will

occur due to feeding requirements. During the winter months (and late fall when grass loses its nutritional value), hay should be provided to horses on pasture at adequate levels to maintain body condition.

It is best for the digestive tract to be fed free-choice hay or pasture (although spring grass can pose risks of founder and obesity for some horses).

The general rule of thumb is to feed 2 lbs. of total food per day per 100 lbs. of body weight, or 2% of its weight for a "maintenance" level. This would not be adequate for a growing foal, a mare that is pregnant or lactating or for horses in hard work. Example: For a 1000 lb. horse – 1000 lbs. x 0.02 = 20 lbs. food per day (or 454 kg horse x 0.02 = 9 kg food per day). This equates to approximately half a bale per day per horse (although realize that "40 lb." bales can be highly variable).

- Hay can be increased to help keep weight on horses, and should be increased during cold weather, as it is an effective way to help the horse maintain proper body temperature.
- Hay is typically baled into small bales of about 40 lbs (with great variability) or large round bales of about 300 lbs.

Other Points on Forage:

- Large round bales are not ideal for horses as there is a high level of mold and spores in the hay (even in ideal baling conditions http://www.omafra.gov.on.ca/english/engineer/facts/01-073.htm). Horses "burrow" into the bale and inhale large amounts of dust and spores. Large bales on the ground or uncovered will have high spoilage from moisture/rain, manure/urine and mud. Feeders used for round bales must be designed and safe for horses.
- Ideally, the forage should be analyzed as this provides important information, but the hay can and should be visually assessed. A guide to visual hay assessment is provided in Appendix 7.
- It is important that there be several feeding stations available so that no single horse is pushed away from the hay by more dominant animals.
- Hay must be palatable for the horse. Moldy, dusty hay is not suitable for a horse (and even starving horses may not be able to eat it) and will cause health issues.
- Round bales are not recommended for horses as they can contribute to respiratory issues due to the mold spores. Consult the appendices for information on visual forage inspection details.

Feed/Concentrates/Supplements

Concentrates/supplements should only be fed to meet the needs of the horse as a complement to the forage/pasture. Supplements are usually needed for young growing horses, lactating mares and horses in hard work or those needing to gain weight, particularly over the winter.

Supplements should be fed according to product directions and according to Body Condition Score.

- Grain/concentrates should be fed in small meals of 5 lbs or less ("small amounts frequently").
- Grain must be free of mold and pests, and kept in a cool, dark storage area.
- Horses should not be fed off the ground (due to higher risk of parasites, sand ingestion and disease), but the grain should be provided in buckets, feeders or troughs, so that each horse can get its share without fighting other horses or being run off by herd mates.
- Older horses should be fed "senior" feeds to help maintain their weight and they should not have to "compete" for their feed with other horses.
- There are feeds sold as "complete" feeds, however, to reduce the risk of colic, long-stemmed forage needs to be part of the diet.
- Horses without long stemmed hay/grass in their diet are at higher risk of colic, dental issues and other digestive disturbances.

Water

Water is critical for survival and health. Clean, fresh water should be available at all times. Water intake needs to replace water loss from feces, urine, and sweat. Water requirements vary according to work level (and hence sweat losses), health, stage of production (growth, pregnancy, lactation), body weight, environmental factors and individual variations. A typical 1000 lb/450 kg idle, mature horse will require approximately 21-29 L per day depending on conditions (Equine Code of Practice, Appendix C). During lactation, due to increased milk production, the water requirement can increase by over 50%, and during work in the heat/humidity water requirement can increase from 20 to 300 %!

Snow is not an adequate source of water for horses. Horses outside in winter should have access to a heated water source to keep it from freezing over. The ingestion of large quantities of snow to get enough water will result in the need for greater forage supply to keep warm. In many areas, there will never be enough clean snow to meet water needs, and in paddocks the snow will quickly be trampled and muddied. Heated water should be provided in winter as horses are not equipped to break through the ice.

If horses are unwilling to approach water source, and electrical fencing is being used, it is possible that stray voltage is affecting the water source and the horses will not approach it despite their thirst and signs of dehydration. Water may also be contaminated or non-potable.

THERMOREGULATION

Healthy horses can maintain a fairly constant core body temperature over a range of environmental temperatures. Although they may be able to cope with many kinds of weather, extremes of heat or cold can impair their health and welfare. ***There are major species differences in temperature requirements and their ability to withstand hot or cold***

temperatures. Even within a species, horses of different breeds, sizes, or age may respond very differently to different temperatures. Therefore, is it important to understand the basics of how animals deal with heat and cold, the various environmental and animals factors that affect it and how to tell if an animal is experiencing thermal stress.

HEAT BALANCE: THE BASICS

A CRITICAL BALANCE

- Maintaining body temperature depends on a balance between the heat produced by the animal and the heat gained from and lost to the environment.
- If the amount of heat produced by the body plus that gained from the environment is greater than the heat that the animal is able to lose, then the animal will suffer from heat stress.
- If the animal loses more heat to the environment than it can produce, then the animal will suffer from cold stress.

HEAT GAIN

Heat gain comes from two sources:

1. **Animal Metabolism**
2. **Environmental Heat Gain**

ANIMAL METABOLISM

Metabolic heat is produced by the physiological processes of feeding and digestion, exercise, growth, lactation and gestation.

High levels of feed intake, activity and productive processes result in greater heat production so that the high producing animal also produces a great deal of heat.

ENVIRONMENTAL HEAT GAIN

For animals outside, nearly all of the heat gained from the environment comes from the sun. Most solar radiation comes from direct sunlight but heat can also be gained indirectly from sunlight reflected off clouds and the ground or from heat radiated off the ground or heated structures.

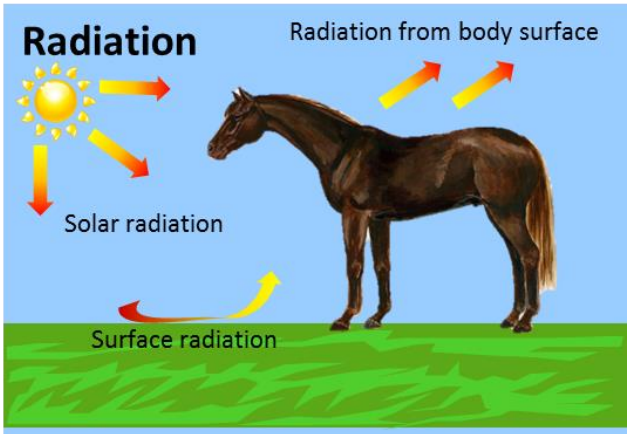
For animals inside, heat gained from the environment comes from the heat of collective animals housed in the barn, supplemental heaters in the winter, or warm un-insulated ceilings or walls in the summertime.

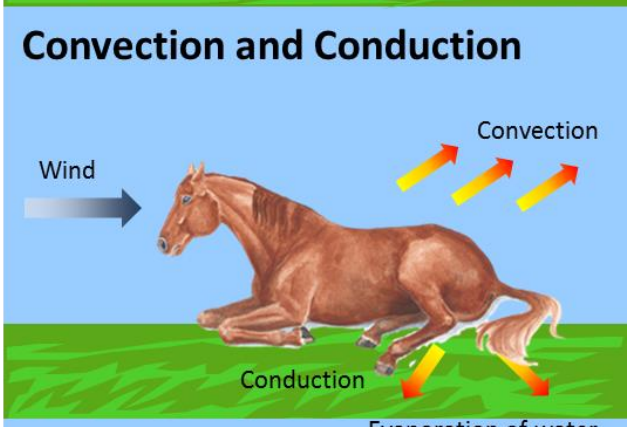
ENVIRONMENTAL HEAT LOSS

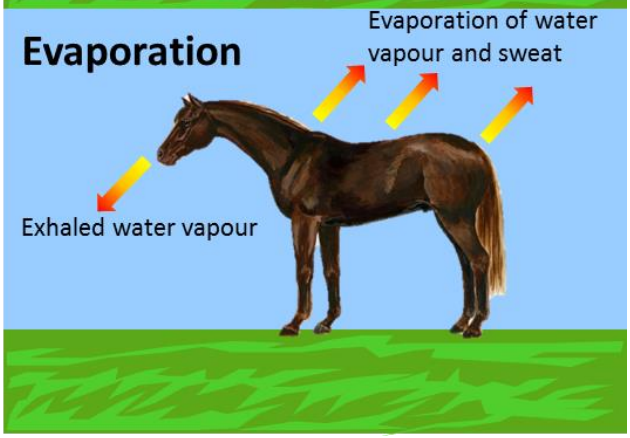
Heat is lost from an animal through four modes of heat transfer: radiation, convection, conduction and evaporation.

Four modes of heat flow

- **Radiant heat loss** occurs when all or part of the surroundings are cooler than the surface of the animal.
- **Convective heat loss** occurs when air moves around an animal's surface.
- **Conduction** of heat occurs when animals are in direct contact with hotter or cooler surfaces.
- **Evaporation** involves the loss of heat through vaporization of water or sweat. Its rate does not depend on temperature directly, but on the vapour pressure gradient (the relative humidity) between the air and the evaporative surface. In hot conditions, evaporation becomes the major route of heat loss, and animals must pant and/or sweat to lose heat. Evaporation of sweat is compromised for horses during conditions of high humidity, and therefore contributes less to heat loss but can rapidly dehydrate the horse.







FACTORS THAT INFLUENCE THE RATE OF HEAT LOSS FROM HORSES:

The amount of surface area involved

- The surface area to body weight ratio of the horse is less than other animals, therefore, they have less area to dissipate heat
- Tack and harness (like the saddle pad and harness) further restrict heat loss by covering up surface area
- Almost all muscle is used for locomotion, therefore heat production during exercise can be very high

The amount of insulation the horse has

- hair coat traps a layer of air that insulates the body, particularly winter coats
- horses fluff their hair coat in the winter to increase insulation in the cold
- wet, muddy hair coats reduce insulation and increase evaporative heat loss
- malnourished, unhealthy horses may not shed out their coats properly in the spring, thus increasing their risk of heat injury in the spring

The temperature gradient

- the difference in temperature between the horse and its environment affects how much heat the animal loses or gains from the environment
- horses can lose heat to cold walls, floors or ground even when the air temperature seems right
- deep bedding of straw or rubber matting with wood shavings reduces heat flow and keeps animals comfortable in the cold

Air movement

- Increased air movement due to drafts or wind increases convective heat loss (wind chill)
- Increased air movement increases evaporative heat loss
- A draft-free environment is important in the cold particularly for at-risk horses
- Increased air movement from fans or winds provides relief in the heat

Humidity and moisture

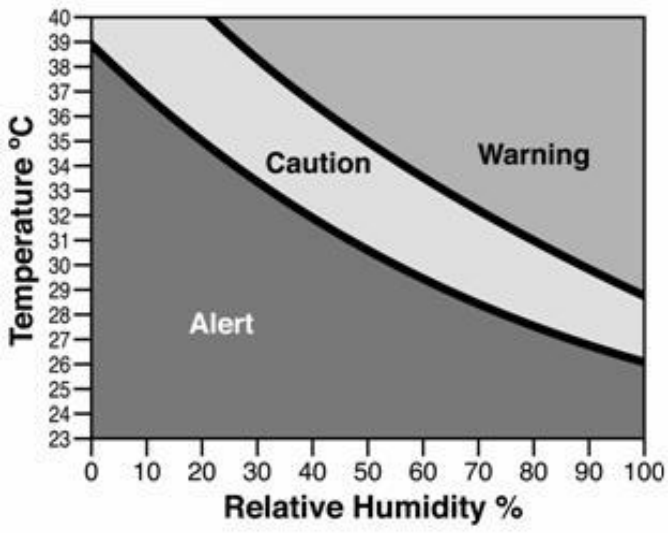
- High relative humidity reduces the rate of evaporation and makes sweating less effective on hot days
- Due to the decreased surface area, horses may be more susceptible to heat stress during high humidity and increased respiration will be observed (flaring of the nostrils while breathing, even though at rest)
- In the cold, a wet horse loses more heat

CLIMATIC FACTORS

While air temperature is an important determinant of an animal's thermal status, other environmental conditions influence heat flow and heat balance. The combination of factors

acting together is called the *effective environmental temperature*. It tells us much more than what the thermometer reads, it tells us is how cold or hot an animal feels.

Examples of effective environmental temperature are the temperature humidity index and wind chill index.



An example of a temperature humidity (THI) index for cattle (Livestock Trucking Guide, Livestock Conservation Institute).

Wind Speed (km/h)	Actual Air Temperature (°C) Windchill Factor									
	10	4	-1	-7	-12	-18	-23	-29	-34	-40
8	9	2	-3	-8	-15	-21	-26	-32	-37	-44
16	4	-2	-8	-15	-22	-29	-34	-43	-49	-57
24	2	-5	-12	-21	-28	-34	-41	-51	-57	-65
32	0	-8	-16	-23	-31	-37	-45	-56	-63	-71
40	-1	-9	-18	-26	-33	-39	-48	-59	-67	-76
49	-2	-11	-21	-28	-36	-42	-51	-61	-70	-78
56	-3	-12	-21	-29	-37	-44	-54	-64	-72	-81
64	-3	-12	-22	-29	-38	-47	-56	-66	-74	-82
72	-4	-13	-22	-30	-39	-48	-57	-68	-77	-85
80	-4	-13	-23	-31	-40	-48	-58	-70	-79	-87
	Little Danger			Increasing Danger				Great Danger (Death in younger animals)		

Wind Chill Index for Cattle (Facilities and Environment: Feeding Pen Design, Alberta Agriculture and Rural Development)

THERMOREGULATORY CONCERNS

With changes in the weather, horses can be susceptible to thermoregulatory issues due to difficulties maintaining body temperature within optimal range and the thermoregulatory mechanisms are overwhelmed. This can result in sudden drops of body temperature, called hypothermia, or increases in body temperature, called hyperthermia. Both can be critical depending on the degree and duration of temperature change and may need veterinary treatment. Chances of survival depend on the severity and duration of the temperature change.

When possible, a rectal temperature should be obtained, and concerns about hyperthermia or hypothermia should be reported to the attending veterinarian as soon as possible.

COPING IN A COLD ENVIRONMENT

Hypothermia occurs when the body cannot maintain the normal body temperatures and it begins to drop below optimal levels. Organ failure will progressively occur. Shivering will help to maintain body temperature, but it may not be enough (and is energy-expensive). Mild hypothermia is a body temperature of 32 to 37°C (89.6 – 98.6°F), moderate is 28 to 32°C (82.4 to 89.6°F) and severe is less than 28°C (82.4°F).

In cold environments horses use a variety or thermoregulatory mechanisms to increase heat production and conserve body heat to maintain body temperature.

Horses kept outdoors will:

- seek shelter from the wind and increase feed intake or seek more food
- orient their bodies away from the wind to reduce convective losses (tail to the wind)
- orient their bodies to the sun to increase solar heat gain

Horses kept indoors or outdoors will:

- huddle with other animals
- increase feed intake to increase heat production
- shiver to increase metabolic heat production

Hypothermia risks can occur:

- if the horse is in cold water or mud
- if the horse is wet and in a cold wind
- when the horse does not have an adequate winter hair coat for the cold and wet conditions
- when the winter hair coat is soaked or caked in mud and cannot insulate the body

Horses most susceptible to hypothermia include:

- very young animals/foals, as they have a greater surface area to volume ratio than adults which means that heat flows to and from their body more easily. Newborns and small animals are more sensitive to cold stress and generally have higher temperature requirements.
- older, sick, injured or metabolically compromised horses
- a BCS of 1-3 is a higher risk for hypothermia, although all horses can be susceptible under certain conditions
- lack of acclimation to the climate/weather conditions, lack of adequate winter hair coat
- certain breeds or body types that have thin skin and lack "bulky" bodies or muscle development (muscle helps heat the body, fat insulates the body to prevent heat loss)

When hypothermia is suspected, and shivering is observed, the horse should be moved if possible, to an area out of the wind/cold/rain and dried off as soon as possible. Warm, dry blankets can be placed over the horse if available and the rectal temperature should be taken and monitored and reported to the attending veterinarian. Warming efforts should continue with medical advice until body temperature reaches about 35°C or 95°F, and then blanketing may need to be continued with monitoring of body temperature (ensure they are not overheated as a result of your efforts). Veterinary assessment is necessary as many horses will develop further health issues (such as pneumonia) after hypothermia.

In general, if horses have a good winter coat, optimal body condition score, a good supply of forage, a dry, draft-free environment or a run-in shed and an insulated surface to lie on, they are much better able to deal with cold than with heat. Straw provides excellent insulation.

COPING IN A HOT ENVIRONMENT

In hot environments, horses use a variety of thermoregulatory mechanisms that serve to reduce heat gain and increase heat loss so that they can maintain body temperature.

Horses kept outdoors will:

- seek shade and water or cooler areas of the paddocks
- change their orientation to the sun to reduce solar heat gain

Horses kept indoors or outdoors will:

- reduce their activity during the hottest periods of the day
- lay down on cooler ground or floors
- increase evaporative heat loss by sweating and/or panting. Panting requires energy and actually increases the rate of heat production. When horses are panting it indicates difficulties with getting rid of body heat

In hot temperatures a noticeable reduction in feed intake may be observed and over time the body condition score will decrease.

IS SHADE NECESSARY?

On over half of the days during July and August in Ontario, temperatures during the hottest part of the day are high enough to put horses at risk of heat stress, particularly those involved in exercise or sporting events. Shade should be provided for horses during the summer.

HEAT STRESS OR HYPERTHERMIA

When the core body temperature exceeds the physiological range, this can result in heat stress, heat stroke and death. When the temperature exceeds 41.0°C or 105.8°F, this can result in protein damage in the organs of the body, resulting in multiple organ failure (although some horses may have heat stroke at lower temperatures).

- Heat stress occurs when effective environmental temperature becomes so high that an animal must use special mechanisms, like panting, sweating or reducing feed intake to maintain heat balance (note that horses do not pant with an open mouth, but increase respiration).
- The negative consequences of heat stress depend on its intensity and duration.
- **Mild heat stress** over a long period of time can result in discomfort but **is not life threatening** provided the animal has adequate drinking water and shade available.
- However, when factors of air temperature and humidity (and sun, if outside) combine to create an environment hot enough to exceed an animal's ability to maintain body temperature, the result can be heat stroke or heat death.
- Horses do not do well in high humidity as they have difficulty losing body heat as sweat does not evaporate effectively and may drip off, providing little or no cooling effect

Horses can be quite variable in their tolerance to heat. Those most susceptible to hyperthermia include:

- the older or young horse, particularly foals
- horses with a BCS of 7-9, especially the high-end scores, as obesity prevents heat loss from the body
- sick, injured or metabolically compromised including dehydrated or electrolyte imbalanced horses (this can result after prolonged exercise or transport)
- pregnant or lactating mares
- certain breeds or body types that have thick skin and “bulky” bodies or muscle development. Tropical breeds of horses (such as Arabians) can cope with heat much better than temperate breeds (ponies and draft horses). Temperate breeds do much better in the cold but are at higher risk of heat stress, particularly during exercise.
- horses exercising in heat/humidity, particularly when the conditions include moderate heat/moderate to high humidity or high heat/low humidity, and in extreme high-risk conditions of high heat/high humidity.
- lack of acclimation to the climate/weather conditions including building tolerance to working in the heat/humidity (horses with special training can be adapted to work in

high heat/high humidity but only about half the duration or intensity and lack of fitness is a high-risk factor)
- horses during transport in hot/humid weather in trailers without adequate ventilation are at high risk and need to be frequently monitored for signs of heat stress.
- Animals that are stressed from handling will find it more difficult to cope with the additional stress of high temperatures.

GUIDELINE FOR HEAT STRESS USING THE HEAT INDEX

A helpful guideline can be found by using the Heat Index. Add the actual temperature in Fahrenheit to the relative humidity in percent, and if the number is less than 130 then it is safe to ride a horse. If the heat index is 150 or over, then caution is indicated for exercising horses as some may have heat stress problems and over 180 sets up potentially life-threatening conditions, particularly with higher humidity conditions when the humidity makes up over half the sum. This is a general guide only.
(http://animalscience.ag.utk.edu/horse/pdf/HorseExpress/HrseExp%20V.21%20No.3.pdf).

SIGNS OF A HEAT STRESS EMERGENCY

Horses with hyperthermia will show the following signs:
- have noticeably hot skin, be sweating profusely (or in some cases not sweating at all), may show vasodilation of the blood vessels
- may be panting (nostrils flaring quickly) even though not exercising
- may appear depressed, agitated or may go into seizures or coma
- An animal that has become dull, stumbles while walking and lies down may be suffering from heat stroke
- A persistent rectal temperature of 41°C (105.8°F) is critical and veterinary care is required

Animals showing symptoms of a heat stress emergency must be cooled down.
It is important to quickly move the horse into a shady and breezy area and provide free-choice water.
- Further cool the horse by using sponges, hosing and cool water repeatedly on the skin to pull off body heat until the temperature has returned to about 38.5°C (101.3°F) or until the water coming off is not gaining heat
- Never dump cold water onto an animal with heat stroke as it can lead to shock and/or death. If using a hose, start with the legs and slowly move up
- Use fans to increase air movement or move pastured horses to a high, open area with plenty of air movement and shade
- Do not leave wet towels on the horse as this prevents heat loss
- Confer with veterinarian for advice on management

Note: Individual factors can affect thermal tolerance and each horse should be evaluated for their current abilities to cope with hot and cold temperatures. Old, young, pregnant or health-compromised horses will be more at risk, as will horses that are overweight and/or unfit and those with thicker hair coats in the heat or lack of thick hair coat in the cold.

ACCLIMATIZATION

Acclimatization refers to an animal's ability to adjust to environmental conditions over time. A horse acclimatized to hot conditions will be able to withstand hotter temperatures without heat stress. A horse acclimatized to cold will cope better in cold conditions. In most horses, acclimatization begins within two weeks after a change in temperature and is complete in about four to seven weeks. This is important to remember when sudden changes in weather occur as it takes several weeks to grow in the winter hair. Horses are much more vulnerable to heat stress when a wave of high temperature and humidity occurs after an extended period of cool weather. Animals in good health that have been exposed to gradually increasing temperatures over the spring and summer (and have lost their winter hair coats) are better able to cope with a heat wave. Horses involved in sporting events should be specifically trained to acclimate to the hot/humid conditions over 2-3 weeks.

7.0 TRAINING PRACTICES, PAINFUL PROCEDURES AND HORSE WELFARE

Certain traditional (and modern-day) training practices can compromise horse welfare. The Code of Practice states that "Horses must not be trained in a manner that subjects them to avoidable pain or that causes them injury as a direct result of the training method used. They must never be subjected to training methods which are abusive or intentionally injure the horse."

ABUSIVE TRAINING PRACTICES

- "mental confusion" in the horse (i.e., the horse is supposed to walk forward but the handler is causing pain to the nose or gums due to the handling of the halter/chain/cord/bit)
- causing pain as part of the training process through repeated striking of a whip, tripping, tight-tethering, "forced position" to be held for extended periods of time (i.e., rolkur, head down, tail up, head tied around to side or down to foot)
- purposely causing pain to alter the behaviour through chains on ankles, gingering, whipping, prodding, etc., causing emotional or psychological stress to the horse through isolation, terror, etc.
- procedures or practices that cause physical damage to any part of the animal (eg., leverage hackamores that can fracture the jaw bones or the nasal bones, repeated whipping on one part of the body leaving bruising and underlying skin and muscle damage, or hitting the legs as the horse goes over a jump to make them tuck up their legs)
- chemical means of behavioural modification such as sedation methods to make a horse calmer (this is dangerous for both rider and horse as horses are at high risk of tripping and falling)

PAINFUL PROCEDURES

Bobbing tails- also called tail docking, this procedure involves removal of a portion of a horse's tail and must be done by a veterinarian. Common in draft horses and some breeds of horses.
Soring – refers to the practice of applying caustic materials to the soles of the feet or legs of the horse. This causes pain in the leg of the horse and creates an over-exaggerated movement of the legs when the horse is moving and is considered to be an "ideal" for movement in the show ring. Also, called "The Big Lick" this exaggerated movement is also caused by applying weights and allowing excessive hoof growth to help exaggerate the movement. Chains are sometimes applied to the ankles of gaited horses (such as hackneys) to develop a "rotary" action when trotting. This can cause painful bruising on the ankles but also is a high risk for tripping with serious injury from the fall.
Caslick – The Caslick procedure is done on broodmares, particularly in the racing sector, and must be performed by a veterinarian. A Caslick involves stitching the vulva closed, leaving just enough room for urine to be excreted. It is done to prevent infections and "wind sucking" into

the vagina and uterus. Before foaling, the sutures of the Caslick must be removed. The repeated removal and re-suturing of the vulva each year leaves scarring, and its use is controversial.

Castration – The surgical removal of the testicles. This should be done by an equine veterinarian with appropriate pain management.

Pin-firing – Pin firing (thermocautery) involves a red-hot firing pin being applied down the front leg of a horse. Pin-firing is as highly controversial as it is painful. The American Association of Equine Practitioners (AAEP) has issued a statement regarding pin-firing:

"Thermocautery may have therapeutic value for certain conditions in the horse. When applied judiciously and in conjunction with appropriate analgesia and aftercare, the AAEP considers the modality an acceptable form of therapy in cases that have proven refractory to conventional treatment." http://www.aaep.org/pinfiring_position.htm. Other veterinary associations do not accept it and question its validity for therapeutic use in horses (http://www.ava.com.au/policy/71-thermocautery-horses http://www.beva.org.uk/news-and-events/news/view/130). It should only be done by a veterinarian and must have appropriate pain relief/wound care and extended rest under the supervision of a veterinarian. The use of nitrogen freezing for the same purpose also occurs.

Blistering – blistering involves the application of an irritating substance to the skin over an affected area such damaged/torn ligaments or joints. The idea is to cause an inflammatory process with the hope of speeding up the healing as more blood circulation occurs in the area. It is a very controversial practice. The process does cause pain to the horse and the use of painkillers/anti-inflammatory medications are considered to be counter-active to the "cure". Blistering causes pain and suffering and may result in further burning/scarring/infection/pain.

Flared hooves – a common practice in the draft horse sector, whereby the hoof is "encouraged" to grow wide and flat (referred to as "pancake feet") with a wide flare around the hoof. This practice is more common in North America and less common in Europe. The point is to have "big feet" on the draft horse, however, the balance of maintaining this flare can be problematic. Flared sections can suddenly break off, particularly if left neglected, and the break can include some of the soft, sensitive tissue inside the hoof, causing intense pain and infection.

Gingering – the practice of using ginger or ginger paste on the anus of the horse (or in the vagina of the mare). Irritation causes the horse to carry the tail higher and appear more energetic.

Hot-branding – a process used for identification of a horse by the use of a hot "branding iron" that is applied to the skin on the rump or shoulder area. The brand burns the skin, leaving a scar in the shape of the branding iron.

Freeze-branding – as an alternative to "hot-branding", the process of freeze-branding has been used as a method for identification of horses. This branding method kills the hair follicles, causing the hair to grow back white.

A note on branding: The Code of Practice states that, if branding is necessary, it should not be done on the jaw/cheek. When registering new brands, consultation should be made with the appropriate provincial regulatory authorities, breed registry or sport council. Horses must never be branded when they are wet.

8.0 ANIMAL CARE CONTROL POINTS

For a thorough assessment of the horse, it is important to assess the horse, its environment and the resources available. Identification of the horse(s) in question is an important step in the process.

Safety First!
When it is time to assess the horse, environment and resources, safety is a major concern.

PAIN ASSESSMENT

Abused or neglected horses and those suffering from injury or disease may be in various levels of pain. As a prey animal, the horse will instinctively "hide" the pain. Acute pain is likely present after an injury that causes tissue damage, or in cases of colic. Chronic pain is likely in cases of neglect or longer-term abuse or lameness, long standing infections and other scenarios. Horses in pain may not show "obvious" signs of pain until the pain becomes severe.

In general, a horse in pain may

- appear anxious, restless, or lethargic and unwilling to move,
- squint eyes or wider eyes
- have dull or unfocussed eyes
- tightness in the jaw muscles
- show limp ears limp and little response to sounds or movements.

It can be difficult to detect pain in horses as there can be varying degrees of responses and varying types and degrees of pain. A fearful horse may show fewer signs of pain when humans are nearby. (For more: https://www.researchgate.net/figure/The-Horse-Grimace-Pain-Scale-with-images-and-explanations-for-each-of-the-6-facial-action_fig2_260950013

<u>Other behavioural cues may include:</u>

- pain in the head region may result in head tossing, head shaking, head pressing against a wall, or avoidance when a human reaches towards the head
- pain in the stomach region (a sign of colic) may result in the horse looking anxious, restless, pawing with front legs, looking at belly, kicking up at stomach with the back legs, an awkward tail carriage, "stretching" as if about to urinate, rolling and thrashing, and there may be abdominal distension
- pain in a leg may be seen as the horse moving with a slight limp that may be irregular to a definite limping where the horse is attempting to minimize weight bearing on the affected leg, to "three-legged" lame where the horse will not put the foot down. The horse may also "guard" the leg if you move your hands near the painful leg by lifting it away or moving away from you (See the AAEP Grades of Lameness in the Appendix for description of degrees of lameness). Abnormal motion can be seen at a walk or a trot.

A typical lameness assessment may include the veterinarian trotting the horse away and then towards him/her, or on a circle to assess the gait, if it is not obvious at the walk.

- pain in the back may be exhibited by the horse moving away or attempting to bite the handler when the back is touched or girth is tightened, flinching down or away if pressure is placed on the withers, back or rump area, an abnormal carriage of the tail, and apparent lameness in a leg as the horse attempts to shift its movement to avoid the pain. The horse may also stand in an awkward position with the back arched or the hind legs stretched out or tucked under. The head may be held up higher or lower than usual.
- a horse in pain may also exhibit signs of sweating (inappropriate to the conditions such as sweating in a cool barn, or without previous exercise) and the heart rate may be slightly or significantly elevated above resting (generally 25-40 bpm is normal at rest). Resting heart rates of 60 indicate that pain/distress is present and rates closer to or above 80 are of grave concern. Respiratory rate may be elevated, panting, irregular or laboured.
- a horse that is lying down and is reluctant to get to its feet (persistent recumbancy) is also in serious condition and may be ill, in pain, or in shock. A horse that is unwilling to move or does not move away as you would expect for normal behaviour, may also be exhibiting signs of pain. A horse that looks like it is trying to lay down but does not, as it fears the difficulty of getting back up quickly or at all.
- a horse in pain is often off feed and water and shows little or no interest in eating or may eat very slowly or drop feed from its mouth.

Pain from Dental Problems

The teeth in the horse continuously erupt, pushing up through the gum (or down in the top set of teeth). (i.e., they do not "grow longer"). Dental problems in horses are common and can cause great pain. Sharp edges on the teeth from uneven wear can cause sores on the tongue or cheeks. Teeth can become infected and packed with feedstuffs. Indicators of pain in the mouth include:

- change in eating behaviour including difficulty eating, very slow eating, "quidding" or dropping food, avoiding hard feed, adverse effects with the bit including avoiding taking the bit, throwing the head and rearing, aversion to having pressure on the nose.
- weight loss despite good feeding program
- longer hay pieces than normal in the manure, un-chewed oats or other feeds
- discharge from eyes or nostrils or excessive drooling and bad breath
- lumps on jaw, and sensitivity in the jaw/cheek area, and may be able to feel heat/warmth
- unusual movement of the jaw/head while eating, such as extending the head while chewing

Record your observations on pain for veterinary consultation as necessary.

LAMENESS

A lame horse may exhibit varying degrees of gait change, from very subtle to complete gait change (non-weight bearing). A horse may stand with one back leg lifted or resting, or a front leg may be resting or pointed ahead. Lameness is most easily observed while the horse is trotting. A horse that shows lameness while walking is generally in more serious condition. A lame horse will show a "head bob" with each step. Videos will assist with detecting lameness in the horse. Appendix 6 has more detailed information on lameness in horses

Record your observations on lameness for veterinary consultation as necessary.

SICKNESS AND DISEASE

The Horse Health Check (see Appendix) gives an overview of potential warning signs of sickness or disease, but in addition to this are the following:

- lethargy
- presence of diarrhea (often with soiling of back legs)
- dull/dry coat, skin conditions
- poor body condition score (scores in the red zone)
- difficulty moving and getting up
- discharge from the eyes, nose, mouth or urinary/reproductive tract
- staying away from the herd or not showing concern if herd mates are moving away

If horses are observed to be sick, injured or in distress, they should be carefully removed from the group if possible and kept in a separate pen until veterinary assistance arrives. If in doubt, the advice from a veterinarian should be sought and the more details you can provide from your assessment the better.

Record your observations on sickness or disease for veterinary consultation as necessary.

BIOSECURITY

The goal of biosecurity is to manage an animal facility so that risks of disease are reduced and incidence of disease prevented.

A good biosecurity program at a horse farm/stable encompasses several aspects including disease control and prevention, isolation for specific risks when horses are moved in or out of the herd, vaccination protocols, training of staff, environmental cleaning protocols including horse trailers, stalls, and all equipment, nutritional management, pasture and manure management and control of visitors. For more information, please refer to Appendix 9.

Note:

- diseases can be transferred to horses from clothing, equipment, trailers and stall environment.
- bodily fluids from coughing or sneezing horses can easily be transferred to clothing, equipment, hands and boots and the disease organisms may stay alive for extended periods.
- it is difficult to detect if there is contagious disease present, therefore, caution must be taken to prevent the spread of disease.

It is important to arrive at any horse stable with clean overalls and boots, and then remove the overalls and disinfect the boots prior to leaving and before going to any other stable. If infectious disease is present at the farm being investigated, consultation with a veterinarian about further biosecurity measures should be considered. Carrying disposable gloves, a mask and plastic boot covers is a helpful measure, so they are available when necessary.

Record your observations on biosecurity issues for veterinary consultation as necessary.

ENVIRONMENT

An assessment of the environment includes the barn/stable and the outside areas where horses are kept (i.e., the paddocks/turn out areas and any shelters). These should be kept in good repair and free from hazards such as broken fencing, improper electrical fencing, and without hazard areas such as frozen ponds, mud holes, and others). Stalls must be an adequate size for the horse kept there, and ventilation, lighting and proper bedding need to be provided. For horses kept outside, adequate shelters must be provided.
Fire safety needs to be observed.

Record your observations on your environmental assessment as necessary.

ASSESSMENT OF NUTRITIONAL RESOURCES

The assessment of resources should include judgment of adequacy of water and food and include:

- water
- pasture
- forage/hay
- other feeds

Water

- Clean, palatable and safe water should be available free-choice. A minimum of 25 L is required per day for a 500 kg adult horse
- A heated source of water should be available for winter to prevent freezing over

Forage

- Adequate forage (hay/grass) must be provided to meet the needs of the horses on the property
- Hay must be palatable and free from excess mold and dust
- All horses must be able to access the forage supply

Feed/Concentrates/Supplements

- Grains/concentrates/vitamin-mineral supplements should be provided for mares that are lactating or in foal
- Growing or working horses should be getting enough to maintain a BCS of 4 or more but less than 8
- Grain/concentrates must be free from mold
- Horses at a BCS of 3 or lower should be getting grain/concentrates and a vitamin-mineral supplement

Record your observations on available resources as necessary.

In summary, there are some horses that are quite hardy and survive conditions that will leave other horses stressed and compromised and it is difficult to predict which horse is a survivor and which will not be adaptable to those conditions. Each horse must be assessed as an individual. As a general guideline, if a horse has access to forage and clean water free-choice and a sheltered area, many are capable of surviving extremes in weather for a short period of time, but it cannot be assumed that all horses will adapt to, nor survive, these weather extremes. Proper management includes daily observation, proper feeding and housing, health and foot care and a disease and parasite control program, along with appropriate shelter to provide for the welfare and well-being of each horse.

SUMMARY OF ANIMAL CARE CONTROL POINTS

Assessment of Horse

Identification and detailed description of each horse (include pictures)
Health Check as needed and BCS, including the hooves and skin
Assessment for signs of disease, injury, lesions, biosecurity risks
Pain assessment and general behavioural assessment
Veterinary and farrier care/records

Assessment of the Environment

Adequate shelter (outside or stable) including space, ventilation, lighting, footing and bedding, safety, maintenance
Feeding areas for space, safety, maintenance and hygiene
Pasture assessment (adequate pasture, space/stocking and mud/footing concerns, safe fencing)
Safety risks and concerns (holes, damaged fencing, improper electrical fencing, fire risks)

Assessment of Nutritional Resources

Adequate feed and forage available and accessible and method of storage/hygiene
Adequate water (quality and quantity), including access to the water for all horses and cleanliness of troughs/buckets
Assessment of storage areas for feeds

9.0 LOADING AND TRANSPORT OF HORSES

In some cases, a decision may be made that it is necessary for the welfare of the horse that it be removed from the premises. Before doing this, the horse must be assessed for suitability for transport. Consultation with an equine veterinarian may be required. The transport of horses is covered by the Health of Animals Regulations and enforced by CFIA (see resource section below and more detailed information about transport of horses can also be found in the Equine Code of Practice).

TRANSPORTING OF HORSES

There will be situations when it is not recommended to move horses.


Do NOT Transport a Horse if:

-it cannot be treated for any reason (a horse that has little chance of recovery should be euthanized)
-it cannot stand unaided or is non-ambulatory, unless under direct supervision of an attending veterinarian
- the journey will cause undue suffering due to illness, injury or any other infirmity
-a pregnant mare is likely to start foaling during the transporting (veterinary consultation may be needed)

It is very difficult to humanely move a horse that is non-ambulatory. In some cases, on-site euthanasia may be the only acceptable course of action. This must be done in consultation with a veterinarian and using specialized equipment and accepted procedures.

Note: *A horse that cannot be treated for any reason, or one that has little chance of recovery should be euthanized; a horse that cannot stand unaided or is non-ambulatory should not be transported, unless under the direct supervision of the attending veterinarian.*

LOADING HORSES FOR TRANSPORT

If the horse is judged suitable for transport, then care must be taken when loading for the safety of the horse and of the handlers. Appropriate training is required to safely load horses.

Only experienced horse handlers should load horses using humane methods. The use of whips, chains, electric prods and other inhumane methods are not appropriate.

Loading horses safely and humanely is a skill that must be demonstrated and then practiced with patience. This will be covered in the hands-on training sessions.

Further Resources for Transport:
(http://www.ncbi.nlm.nih.gov/pmc/articles/PMC340244/)
When transporting horses, the following must be adhered to:
http://www.inspection.gc.ca/english/anima/trans/20080430e.shtml
Transporting Horses in Canada: Is that Animal Fit for the Trip?
http://www.inspection.gc.ca/english/anima/trans/20080430e.shtml
Equine Code of Practice, 2013

10.0 EUTHANASIA

A highly important responsibility for the humane end of life is the necessary practice of euthanasia. The primary goal of euthanasia is to quickly and humanely end the suffering of the animal. Safety of those attending the procedure is also of the utmost importance.

When a horse is suffering or when proper care cannot be provided, a decision for euthanasia may be necessary in consultation with the attending veterinarian.

DEFINITION OF EUTHANASIA

The term 'euthanasia' is derived from Latin, "*eu*" = good, "*thanatos*" = death. It means inducing humane death in an animal.

Techniques for euthanasia should result in rapid loss of consciousness and loss of brain function followed by cardiac or respiratory arrest. They should occur with minimal pain and distress (AVMA, 2007).

APPROVED METHODS OF EUTHANASIA

The following techniques for performing euthanasia of horses by properly trained personnel, upon consultation with the attending veterinarian, are deemed acceptable by the American Association of Equine Practitioners (AAEP):

1. Intravenous administration of an overdose of barbiturates
2. Gunshot to the brain
3. Penetrating captive bolt to the brain
4. Intravenous administration of a solution of concentrated potassium chloride (KCl) with the horse in a surgical plane of general anaesthesia
5. Alternative methods may be necessary in special circumstances as determined by the attending veterinarian

(www.aaep.org/euthanasia_guidelines.htm)

What factors to consider when choosing a method for on-farm euthanasia

- Worker safety
- Animal welfare
    - Minimal pain and distress
    - Ability to induce loss of consciousness
    - Time to result in loss of consciousness
- Irreversibility - no chance that the animal will regain consciousness
- Practicality - cost

How to determine when a technique is effective (insensibility and loss of consciousness)

- No blink reflex - gently touching the cornea should get no response
- Loss of pupil constriction reflex - no response to light
- Loss of jaw tone
- Cessation of breathing (no or little gasping)
- **With physical means of euthanasia, loss of consciousness is often followed by exaggerated reflex muscular activity**

The heart may continue to beat for a period of time following loss of consciousness, and this should be assessed by the attending veterinarian.

NOTE!

Caution must be taken by the veterinarian, handlers and bystanders. Horses undergoing euthanasia may fall unpredictably or thrash their legs and this can pose serious risk of injury to people nearby. If you are not part of the designated handling team then stay more than 10' away from the horse and euthanasia team until the veterinarian deems it safe to approach.

APPENDICES

Appendix 1: Glossary of Common Terms and Definitions

Appendix 2: Forms for On-farm Identification and Assessment of the Horse and Site

Appendix 3: Parts of the Horse and Hoof, including regions and planes

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Appendix 7: Visual Assessment of Hay/Forage

Appendix 8: Common Colours and Colour Markings of Horses

Appendix 9: Common Breeds of Horses in Ontario

Appendix 10: The Horse Health Check

Appendix 11: Vital Signs and Indications of Health Issues

Appendix 12: Biosecurity Fundamentals

Appendix 13: Decision Tree for Transport of Horses

APPENDIX 1: GLOSSARY OF COMMON TERMS AND DEFINITIONS

Aged – as the horse grows older, the horse will be referred to as an "aged" horse. This usually is used for horses in their late teens and older. It may be used in horse shows to refer to horses over six years old.

Age of the Horse – the age of the horse for racing classification and breed registration is determined by the calendar year not date of birth. A racing foal born anytime in 2013 will be one year old (yearling) on January 1, 2014. The prime years are from about 6 to 10 years old, and they generally live into their 20's with good care, and even to over 40.

Alleyway – the aisle of the barn, usually in the centre of the barn with stalls on either side but can be down one side of the stalls as it would be in a shedrow barn such as they have at Thoroughbred racetracks.

Ass – also called a donkey; small donkeys are often called burros. The asses, with several sub-groups, are part of the family classified as Equidae. They are usually smaller than horses however there is a "mammoth" breed that is rare and can be over 16 hands in height. They have small hooves and slender legs. The mane stands upright, and they have a tufted tail, unlike the horse or pony. Many have a dorsal stripe, zebra markings on the legs, and/or a withers cross. A distinguishing feature is the long ears. Donkeys have a characteristic loud "braying" sound (often referred to as "heee-haw"). These animals have long been a beast of burden for humans, and this role continues in many countries today. The donkey can be crossed with horses to create a mule or a hinny. A "jack" is a male donkey. A "jennet" or "jenny" is a female donkey. The "mule" is the offspring of a male donkey and a female horse and is sterile (although rare exceptions have been found). A "hinny" is the offspring of a male horse and a female donkey, these are animals are sterile.

At pasture – when horses are kept at pasture, this generally refers to horses that are outside in fenced pasture areas and may or not be brought into stalls.

Bit – the bit is the part of the bridle, usually made of metal that goes into the horse's mouth to give the rider control of the horse. The reins are attached to the bit.

Bedding – the material used on the floor of the stall, which could include straw, wood shavings, peat moss, dirt, or variations of stall mats that should also have some sort of bedding (such as shavings) over the mat to soak up fluids.

Chestnut – the chestnut is a small callus or "horny" growth that can be found on the inside of the legs. Horses and ponies have a chestnut above the knee on the inside of the front leg, and below the hock on the inside of the hind leg. They are in layers that periodically slough off. The donkey does not have a chestnut on the hind legs. Zebras have chestnuts only on the front legs (the term "chestnut" is also used to denote a colour of horse)

Coldbloods – "cold-blooded" horse is one that is from draft or heavy horse breeding, such as Percherons, Clydesdales, Shires and Belgians. These horses are generally used for work such as pulling carts and transportation or agriculture. They are much taller (and may reach over 17 hands) and heavier (and may weigh over 2000 pounds) and their temperament is generally more docile and slower moving than other horses. It is important to realize that there can be

"highly strung" cold-blooded horses as the term is a generalization and temperaments can vary widely.

Colt – the term used for a male foal. The term will be used until he turns 4 or until it has been gelded.

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

Equine – this refers to a member of the family classified as Equidae, and includes horses, ponies and the other equids such as zebras and asses.

Feathers – the "feathers" refers to long hairs that grow down from the fetlock area, and are only found on specific breeds of horses such as Friesians, Clydesdales, Gypsy Vanners, and specific draft horses.

Filly – a term used for a female foal. The term applies until she turns 3, after which she is called a mare (in some countries, the age may be 4).

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

Gelding – a male horse that has been castrated. Colts are usually gelded about one year of age, but that can vary according to its maturity and rate of growth.

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 14.2.

Height – the height of the horse is measured from the top of the withers to the ground and is expressed in hands or metres. A height stick or "withers stick" is a tool used to measure the height.

Horse – the common name for members of Equus caballus. The term "horse" is commonly used for one that is more than 14.2 hands high at the withers to differentiate it from a pony which is under 14.2 hands.

Hotbloods – the "hot-blooded" horse comes from the Arabian horse. For example, the Thoroughbred is from Arabian blood and is considered to be a "hot-blooded" breed. This group includes the majority of light horse breeds (as opposed to draft or heavy horse breeds). This group tends to be more alert, faster and active than the draft breeds. It is important to know that this term is merely a generalization and there can be many quiet Arabians and Thoroughbreds as well as very "high strung" horses of these breeds.

Loose housing – horses may be kept in large open barns without individual stalls for the horses

Manger – the feeding area for hay, and sometimes other forage/concentrates

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.)

Miniature horse – a horse or pony that has been specifically bred to be very small.

Pony – a small horse measuring under 14.2 at the withers. There are many different varieties and breeds of ponies including Shetlands, Welsh, Hackney, along with several others.

Saddle – the saddle is placed on the back and has a cinch or girth that is tightened to keep the saddle on the back of the horse, and stirrups for the rider to place their feet for balance. There can be many variations on types of saddles. Usually a saddle pad and/or blanket is placed under the saddle to help prevent saddle sores and distribute the weight.

Shedrow – the term for the horse stable and stalls at the racetrack, usually down the outside of the barn with the stalls back-to-back in the centre, but variations occur. When at a shedrow

(i.e., at the Thoroughbred racetracks) always stand on the side of the stalls when in the shedrow as this is safer when horses are walking by.

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

Spayed Mare – a mare that has had the ovaries removed. This is done infrequently but may be done due to behavioural concerns or health reasons.

Stable – the word "stable" can be used in several ways. It may refer to the total barn area or riding establishment, or it can refer to the individual stall (or box or loose box) where the horse is kept.

Stall – also called horse box, this is the area where the horse is maintained within a barn.

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

Standing Stall – A narrow stall where the horse is tied at the wall with a manger or feeding area. The horse should be able to safely lie down and get up in such a stall, but it cannot turn around.

Warmbloods – The warmbloods are a mixed breeding from draft or light horse breeds, so for example a Clydesdale crossed with a Thoroughbred would be called a warmblood. There are many warmblood registries such as Hanoverian, Oldenburg, and others. Temperaments vary from very docile to very high strung.

Weanling – This term is used to describe a foal less than one year old that has been separated from its mother or dam. The process of weaning (cessation of nursing) generally occurs with permanent and abrupt physical separation and may occur about 6 months of age. Time of weaning can vary according to many factors.

Weight – the weight of the horse can be estimated using a weight tape designed for horses, or there are calculations that include the measurement of the horse from shoulder to hip plus height. Portable scales for horse can be obtained and provide an accurate weight.

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

Zebra – within the family of Equidae are black and white striped animals called zebras, or Equus zebra. There are several types of zebras, but they share the characteristics of the black/white striped hair coat, a tufted tail, upright manes, and generally ears that are larger than the horse and rounded at the tops. While there have been attempts to domesticate and train the zebra, these have been largely unsuccessful as the behaviour of the zebra is very different than that of the horse.

APPENDIX 2: FORMS FOR ON-FARM IDENTIFICATION AND ASSESSMENT OF THE HORSE AND SITE

As an equine welfare assessor, you may need to identify horses and keep accurate records on your observations. In the previous sections, you have learned the terms to describe parts of the horse and terms for the types of horses, including colours, markings and breeds. You should ensure that you have complete familiarity with the above sections before proceeding as they are important components of horse identification. When possible, take photographs of the horse (both sides, front and back, with close ups of distinguishing marks). This will enable a positive identification when you next observe the horse.

The next two pages present a sample of identification sheets that can be used as needed. This is followed by a sample form that can be used for Site Assessment.

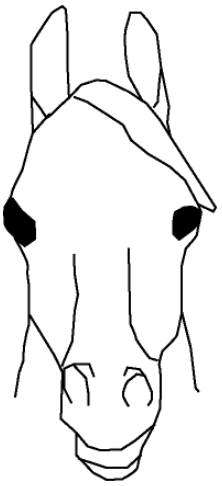
Equine Identification and Welfare Assessment Form

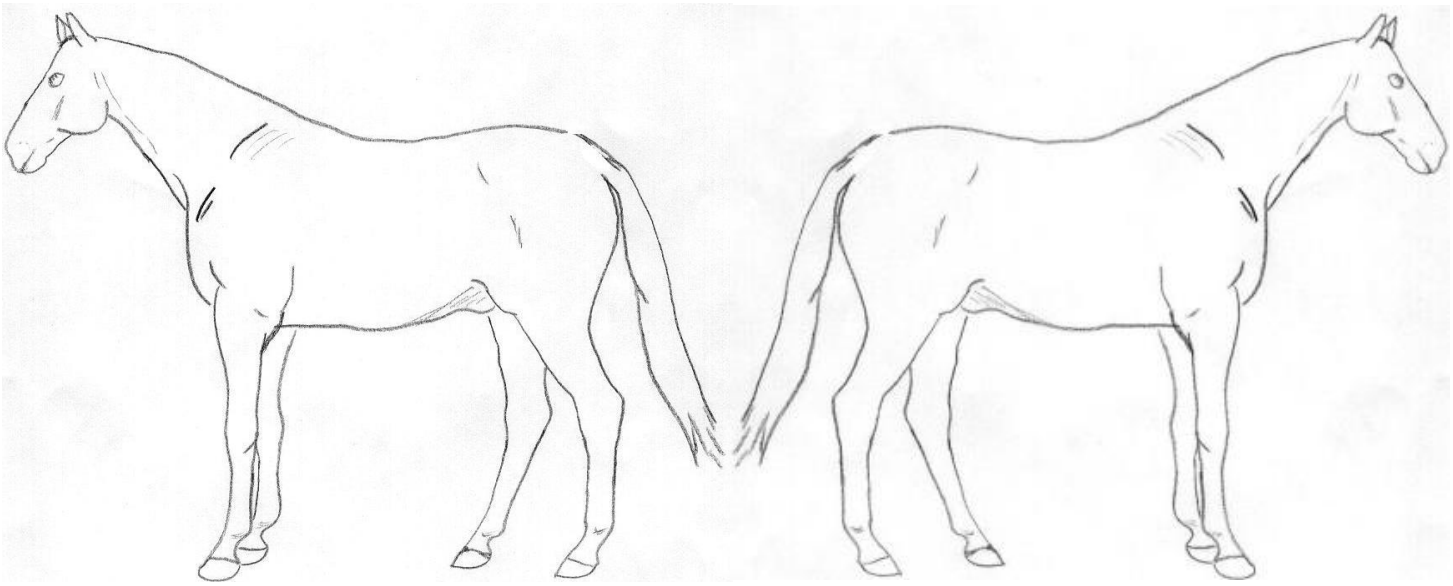
Date: **Time:**	**Officer:**	**Case:**
Owner's Name:		**Owner's Phone:**
Owner's Address:		
Name of Horse:		**Location of Horse:**

Description of Animal

Colour: **Age:**	**Breed:** **Markings:**	**Sex:**
Other ID marks (brands/tattoos, whirls, scars):		

Recording of TPR, BCS and Health Notes		
Temperature		
Pulse		
Respiratory Rate		
BCS (see other side)		
Other Notes on Health/Behaviour Assessment:		





Body Condition Scoring

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

Note: Score each area and calculate average as per description above and pictures from BCS poster. **Source:** Adapted from Body Condition Score: Henneke et al. Equine Vet J. (1983) 15 (4), 371-2.

Horse Name:	Neck	Withers	Loin	Tailhead	Ribs	Shoulder
Final Score						

Equine Welfare Inspection Checklist for Site Assessment

Case number: **Date:** **Time In:** **Time Out:**

1. PROPERTY INFORMATION

Owner of Property/Horses: _____

Address of Property _____

_____

Key: A = Acceptable (no distress); U = Unacceptable (distress)

Parameter to Assess	A	U	Description/ Comments
Size/acreage?			
Type of horse property/business			
Condition (re: debris, garbage, unsafe, etc.)?			
Owner or caregiver live onsite?			
Staffing for horse care?			
Other Information?			

2. HORSE INVENTORY

# of horses/ponies on property			
# of horses dead/in distress			
Individual Identity of each horse/pony & health/condition	(see other form for records on each individual horse)		

3. OTHER ANIMALS ON THE FARM

Type	
Overall Conditions	

4. FOOD

Hay	A	U	
Quality (re: mould, dust, dry)			
Quantity (adequate for number?)			
Type: round bale or small square?			
Available to horses?			
Adequate storage (re: dry?)			
Supplier information available?			
Other forage sources?			
Grain/Feed			
Amount on site?			
Storage (re: free from rodents, dry)?			
Appropriate for type of horse?			
Supplier information available?			
Empty bags present?			

5. WATER

Indoor water supply			
Buckets or Automatic Waterers?			
Source re: well, hoses pond, river, etc.?			
Accessibility – can the horses access it easily?			
Buckets cleanliness?			
Water quality concerns?			
Other:			
Outdoor water supply			
Troughs, buckets or other?			
Heated in inclement weather?			
How many are available/size?			
Clean?			
Condition of trough/buckets (safe for horses)?			
Filled, low, empty but wet, or empty and dry?			
If dry, are horses surrounding water source while officer			

standing at trough?			
Other:			

6. HOUSING/BARN

Condition overall/maintenance			
Safety			
Stalls			
Number of stalls			
Stall size/height			
Footing condition re: manure, urine, and odour?			
Stall condition re: safety			
Bedding type/adequate			
Amount of bedding on site			
Supplier information			
Lighting			
Windows			
Electricity available?			
Ventilation			
Open doors/windows			
Fans			
Aisles			
Free from debris			
Footing			
Sanitation			
Rodents re: rat holes in stalls, aisle			
Rodent droppings, pests?			
Insects			
Odour			
Manure/garbage/sanitation issues?			
Other:			

7. TURNOUT

Turnout available?			
Routine re: 24-hour turnout?			
Fencing – type, condition, safe?			
Size re: enough for all horses?			
Footing re: mud? drainage issues?			

Safety re: debris in paddock? manure cleanup			
Other:			

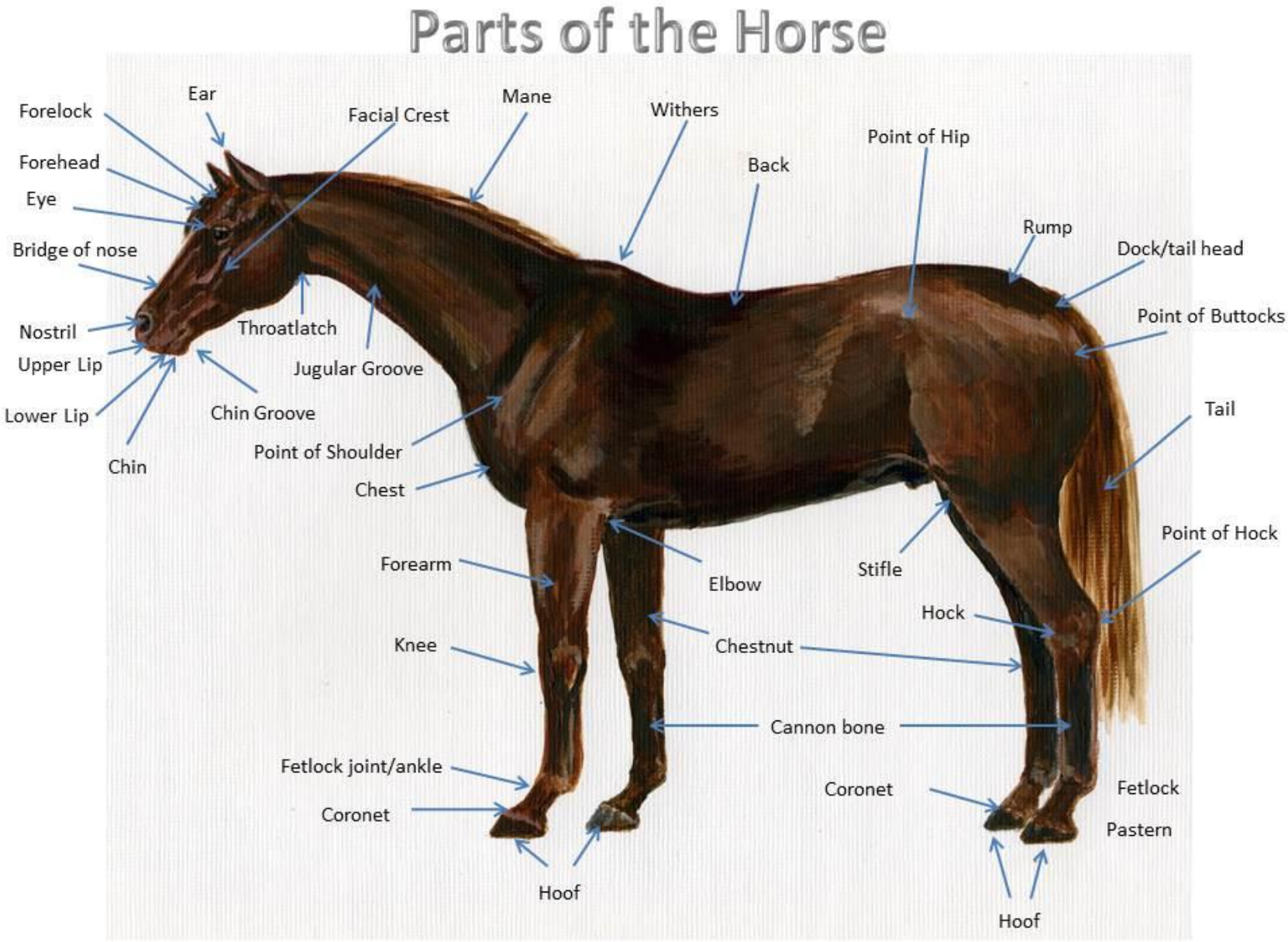
8. SHELTER

Accessible? Safe? Effective?			
Size of Shelter or Shade			
Large enough for all horses in paddock			
Footing in shelter			
Other:			

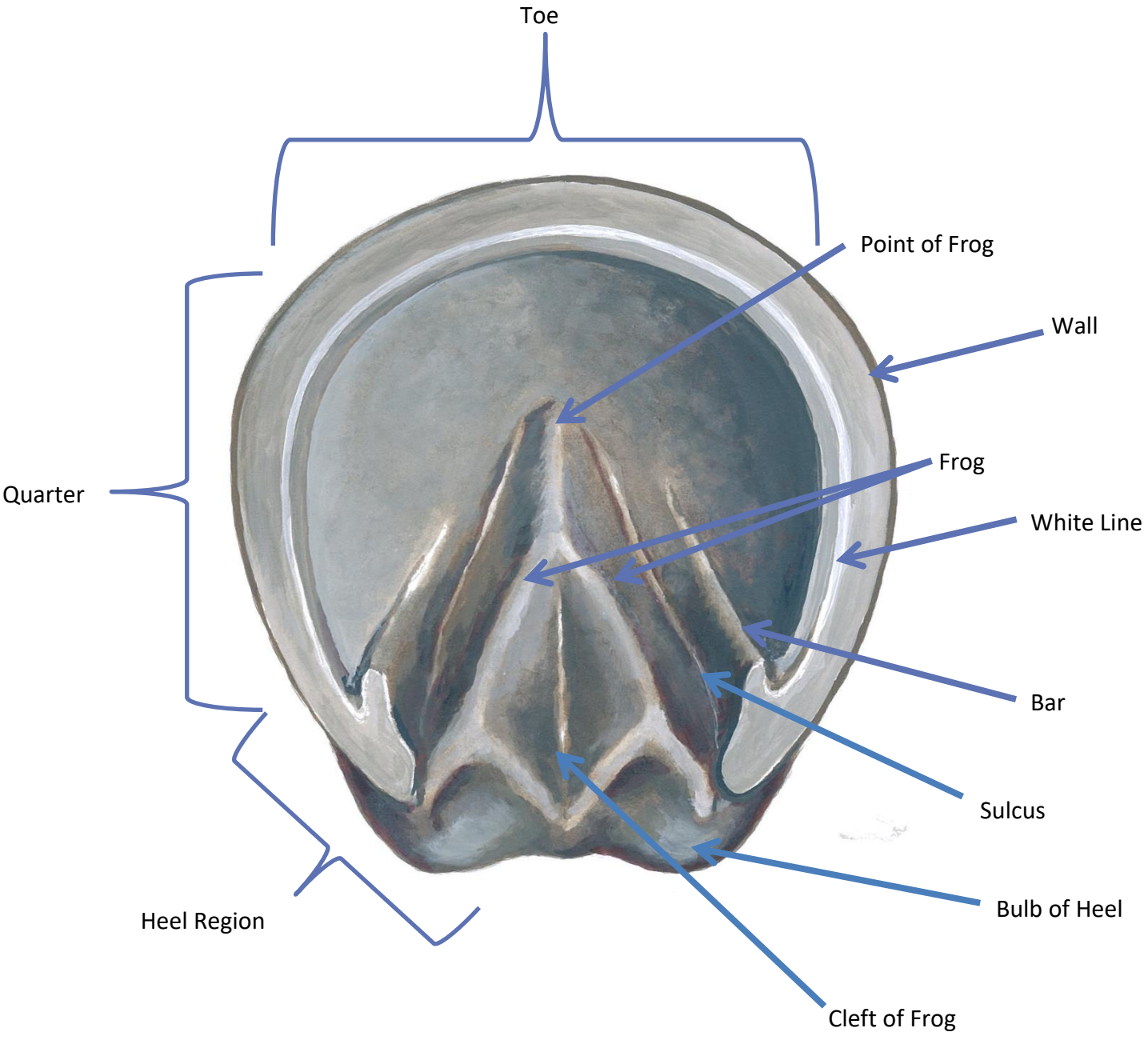
9: FINAL COMMENTS AND OTHER NOTES ON FOLLOW-UP NEEDED OR REPEATED ASSESSMENTS:

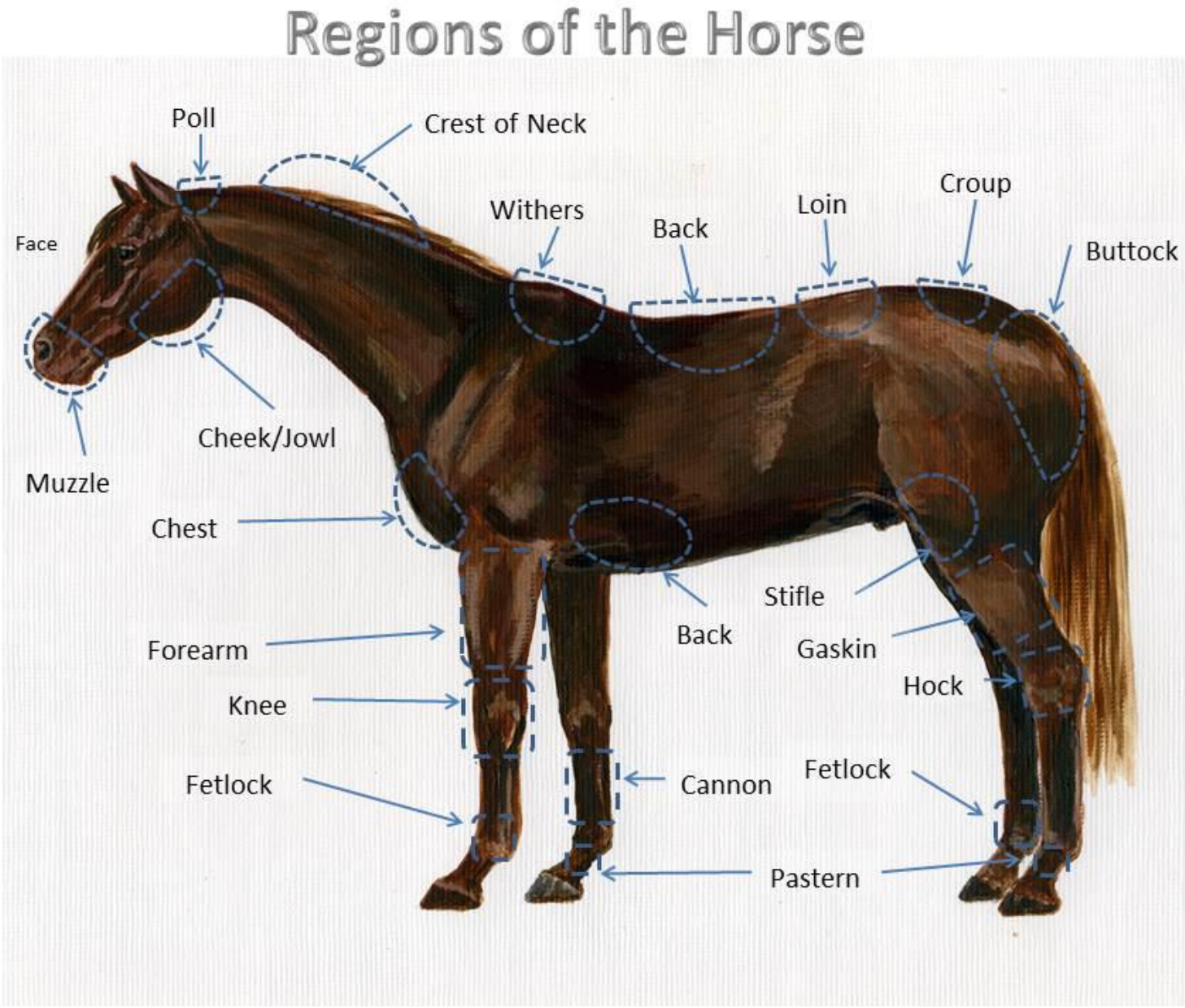
APPENDIX 3: PARTS OF THE HORSE AND HOOF, INCLUDING REGIONS AND PLAINS

On the next pages, you will find labelled diagrams of the parts of the horse, parts of the hoof, and the regions and planes of the horse. It will be helpful for you to become familiar with these terms as it will help with your descriptions and details.


Parts of the Horse
Forelock
Ear
Facial Crest
Mane
Withers
Point of Hip
Forehead
Back
Eye
Rump
Bridge of nose
Dock/tail head
Nostril
Throatlatch
Point of Buttocks
Upper Lip
Jugular Groove
Lower Lip
Chin Groove
Tail
Chin
Point of Shoulder
Chest
Point of Hock
Forearm
Elbow
Stifle
Hock
Knee
Chestnut
Cannon bone
Fetlock joint/ankle
Coronet
Fetlock
Coronet
Pastern
Hoof
Hoof

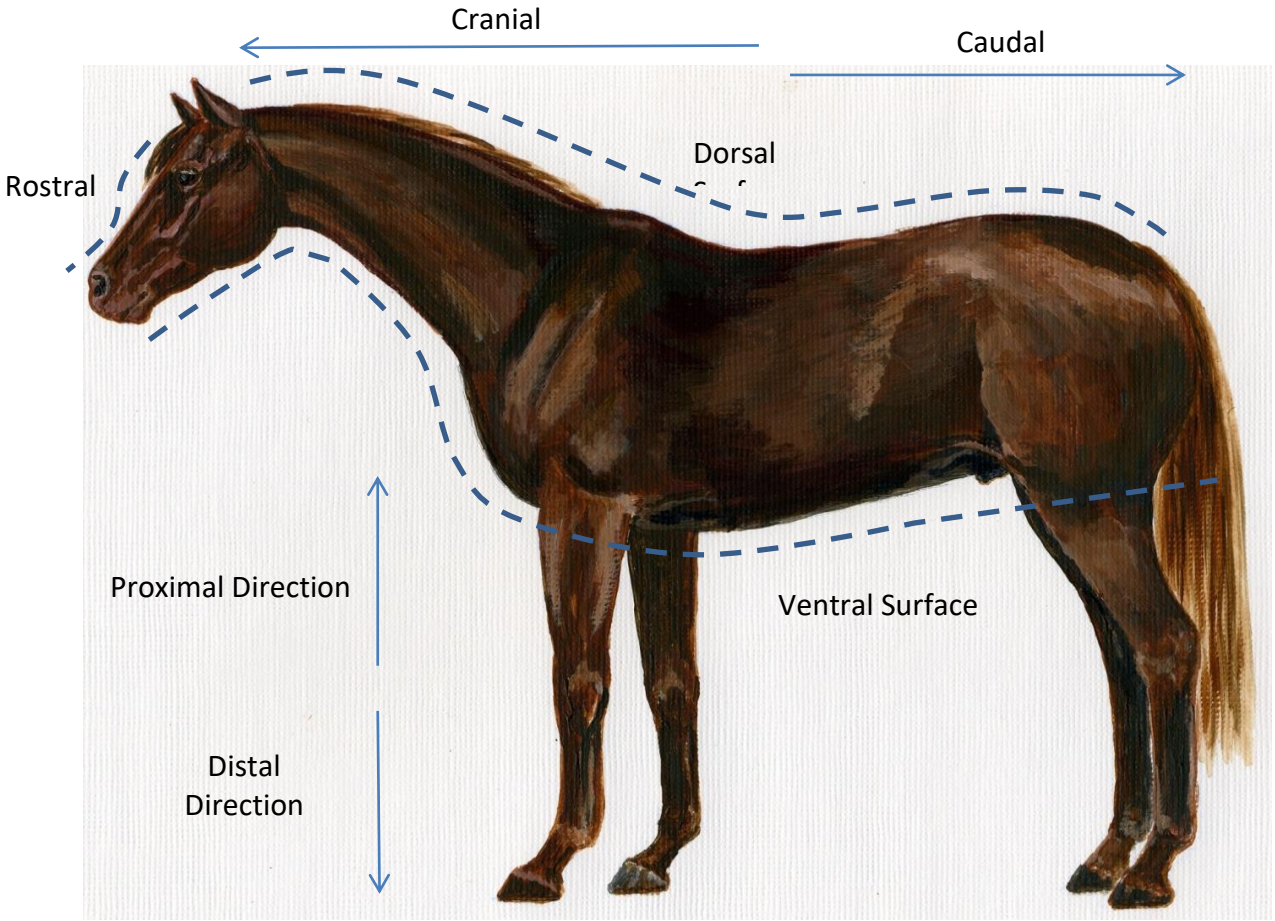
Parts of the Hoof




Regions of the Horse
Poll
Crest of Neck
Withers
Back
Loin
Croup
Buttock
Face
Muzzle
Cheek/Jowl
Chest
Forearm
Knee
Fetlock
Back
Stifle
Gaskin
Hock
Cannon
Fetlock
Pastern

Surfaces and Planes of the Horse

Dorsal – this describes the upper side of the body, or towards the back (the anatomical back, along the vertebrae) of the horse
Ventral – this term is used for the lower surface or side of the body, the abdominal side
Caudal – this term refers to the tail or rear (or back end) of the horse; also called posterior
Cranial – this term refers to the head area or towards 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 that is towards 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 refers to the area of the head of the horse or towards 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 Off side – the left side of the horse is the near side, and the right is the off side



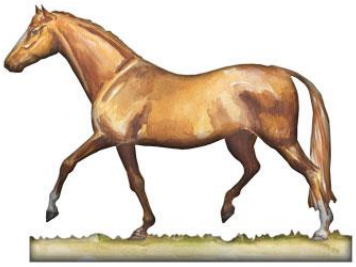
APPENDIX 4: GAITS OF THE HORSE

The horse has four "natural" gaits called the walk, trot/jog, canter/lope and gallop. In the table below, a short description can be found for each of these gaits.

Name of Gait Description

Walk Each foot is set down in sequence to make a 4-beat gait. This is a relaxed gait and slow moving of about 3-4 mph.

Trot or Jog The trot has a 2-beat gait with diagonal feet landing and moving forward at the same time (right front foot lands at the same time of the left hind). It is a more "bouncy" gait than the walk and is about 6-8 mph, although a trotting Standardbred can reach race speeds of 30 mph or more.



Canter or Lope The canter is a 3-beat gait with a moment of suspension before the next stride. It is described as a "rocking" gait, and is about 10-14 mph.

Gallop A gallop is a near or full-out gait with a 4-beat rhythm and the body is stretched out. Horses in the gallop can reach speeds of about 30-35 mph, but top sprinters can gallop at 50 mph for short distances.

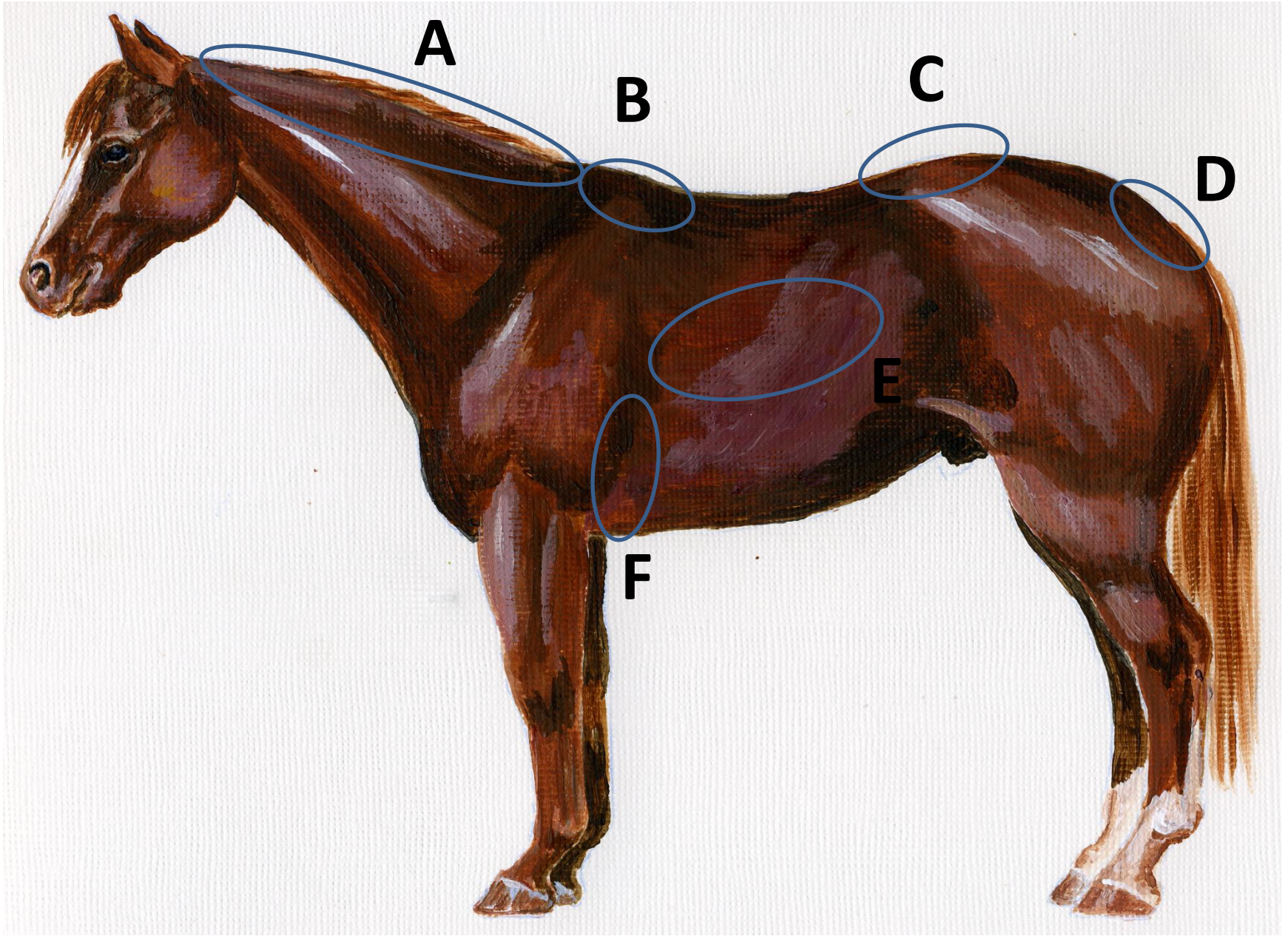
There is also the gait called the "pace" that is specific to Standardbred racing horses where the two legs on one side of the body move forward in unison. There are also "acquired" or "specialty" gaits found in specific breeds of horses such as the "rack" in gaited horses or the "tolte" in Icelandic horses, so you may wish to do some further research on your own to learn more about the different gaits beyond the basic ones described above. It is helpful to watch horses move at each of the gaits so that you will be able to detect lameness in horses as part of the lameness assessment.

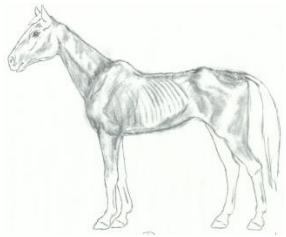
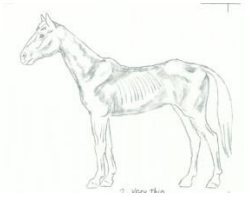
APPENDIX 5: BODY CONDITION SCORING

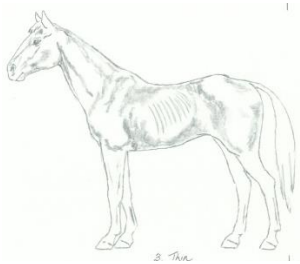
In the horse industry, people may use the terms “skinny” or “fat” to describe their horses but these terms are very subjective. The Body Condition Scoring System (BCS) was developed in the early 1980’s by Dr. Henneke as a method of introducing a universal, objective evaluation for the condition of horses. It is a standardized system that uses visual observation and palpation of six specific areas of the body where fat is generally laid down under the skin or removed during periods of excess or diminished nutrition, respectively. The chart below represents the description of each of the 6 areas and the BCS that is allocated to a horse fitting that description. It is independent of breed or physical size and can be used to assess horses of all ages. The scale is based on a rating of 1 to 9, with a BCS of 1 assigned to a horse that is a “walking skeleton” and extremely emaciated and near death, to a BCS of 9 which would describe a morbidly obese animal. For most horses, a score of 4-7 is acceptable, with the score of 5 considered an ideal for most animals. It is advisable for all horse owners to be trained in this system so they can effectively identify unhealthy loss or gain of body condition and take the appropriate steps of changing the feeding program, using appropriate blanketing in fall/winter/spring as needed by the horse, and to identify potential issues such as metabolic disease/illness, dental issues, parasites, reproductive status and more. It is important to change BCS slowly over 7-12 weeks for one score to avoid health issues such as colic or laminitis. For a standard sized horse of about 15 hands, a change of 1 on the score would represent approximately 100-150 pounds.

As a welfare assessment officer, you will be trained to complete a visual and hands-on inspection of a horse and assign a score. Palpation is an important part of the process (done on both sides of the body), as is assessing the six areas specifically for increased accuracy (scores tend to be overestimated if just done visually). Palpation is particularly important for horses with long hair coats as the hair will hide the protruding bone structures and hollow areas. Horses with high withers or with hay bellies (or pregnant mares) may be harder to score for newcomers. Each of the 6 areas is assessed and given a score. Next, all scores are added up then divided by 6 for the final BCS. Typically, what we would generally describe as “thin” horses would fall into the 1, 2, 3 or 4 range, and fat horses would fall into the 7, 8, 9 range.
The six areas for observation and palpation are outlined in the diagram below.

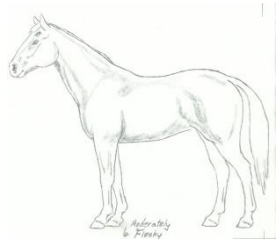
Key to 6 Areas outlined in the diagram:
A – Along the neck
B – Along the withers
C – Loin Area and Crease down the back
D – Tailhead (area above and around the attachment of the tail)
E – Ribs
F – Area behind the shoulder/elbow

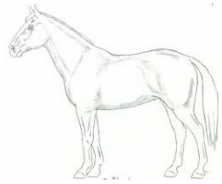

A
B
C
D
E
F

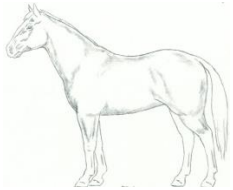
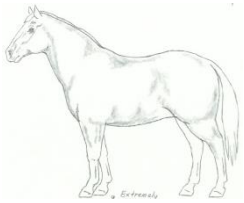
Characteristics of Individual Condition Scores						
Condition	**Neck**	**Withers**	**Loin**	**Tailhead**	**Ribs**	**Shoulder**
1-Poor  	Bone structure easily noticeable, animal extremely emaciated, no fatty tissue can be felt.	Bone structure easily noticeable.	Spinous processes (vertebrae along the back) project prominently.	Spinous processes project prominently.	Tailhead (pinbone) and hook bones (pelvis) project prominently.	Bone structure (scapula) easily noticeable.
Notes on BCS 1-Horses in a body condition score of 1 are critical cases of prolonged starvation, neglect and/or disease. No fatty tissue can be felt on the body and all reserves have been used up. Immediate veterinary care is required to determine the next steps. It is highly likely that this horse is in immediate danger of dying. A horse in this condition should not be moved unless with consultation or supervision by a veterinarian.						
2-Very Thin 	Faintly discernible, animal emaciated.	Faintly discernible.	Slight fat covering over base of spinous processes. Transverse processes of lumbar vertebrae feel rounded.	Tailhead prominent.	Slight fat cover over ribs. Ribs easily discernible.	Shoulder accentuated.

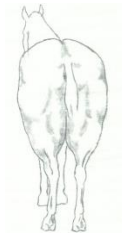
			Spinous processes are prominent.			
Notes on BCS 2-A horse in a condition score of 2 is in serious shape, from long-term malnutrition, dehydration, disease and/or illness. Immediate veterinary assistance is required.						
3 - Thin  	Neck accentuated.	Withers accentuated.	Fat buildup halfway on spinous processes but easily discernible. Transverse processes cannot be felt.	Tailhead prominent but individual vertebrae cannot be visually identified. Hook bones ("hip" bone of pelvis) appear rounded but are still easily discernible. Pin bones not distinguishable	Slight fat cover over ribs. Ribs easily discernible.	Shoulder accentuated.
Notes on BCS 3 All ribs can be seen on a horse with a score of 3. Veterinary consultation is required for a horse in a condition score of 3 as the horse does not have adequate fat stores to be healthy. Stallions may drop to a score of 3 by the end of the breeding season if not carefully managed, and below 3 there will be impairment of the reproductive capacity. Horses on winter pasture will lose condition and they have not enough reserves to maintain body temperature.						

4 -Moderately Thin  	Neck not obviously thin.	Withers not obviously thin.	Negative crease along back (spinous process of vertebrae protrude slightly).	Prominence depends on conformation; fat can be felt. Hook bones not discernible	Faint outline discernible of ribs.	Shoulder not obviously thin.
Notes on BCS 4-This is the minimum acceptable scores for horses, but they will not be able to handle any illness or stress safely. Horses that are 4 or less if not working will have varying degrees of malnutrition. Broodmares at 4 or less will have problems with reproduction and producing adequate milk, and if lactating will quickly lose more weight with a nursing foal at side. Horses in race training or endurance competition may be a 4.5, as they are fit and muscled but will not have much fat on the body due to the training schedule, and will not be able to thermoregulate in the winter or in cold/rainy conditions.						

5 -Moderate  	Neck blends smoothly into body.	Withers rounded over spinous processes.	Back level.	Fat around tailhead beginning to feel "spongy".	Ribs cannot be visually distinguished but can be easily felt.	Shoulder blends smoothly into body.
Notes on BCS 5-This is the ideal BCS for most horses, including broodmares and stallions and most performance horses. The average performance horse is usually in this range with a blended overall smooth body.						
6 -Moderately Fleshy 	Fat beginning to be deposited.	Fat beginning to be deposited.	May have slight positive crease down back (i.e., a depression along the midline).	Fat around tailhead feels soft.	Fat over ribs feels spongy.	Fat beginning to be deposited.

						
Notes on BCS 6-Breeding stallions can be at a 6-7 at the start of the breeding season as they generally lose weight over the season. Horses on pasture over the winter may start at a score of 6 or 7 as there may be loss over the winter depending on access to feed/forage. This is the ideal for mares going into the breeding season and a typical good score for horses on pasture or for pleasure horses. It is not ideal if higher athletic performance is expected.						
7 -Fleshy  	Fat deposited along neck.	Fat deposited along neck.	May have positive crease down back.	Fat around tailhead is soft.	Individual ribs can be felt, but noticeable filling between ribs with fat.	Fat deposited behind shoulder.
Notes on BCS 7-This is adequate condition for mares going into the foaling season, as they will lose condition with foaling and nursing. Horses in work should not be at this level as it imposes more stress on the supportive tissues and thermoregulation in the heat becomes more challenging, particularly with humidity. It can be acceptable for horses that are wintering outside.						

8 -Fat  	Noticeable thickening of neck, fat deposited along inner buttocks.	Area along withers filled with fat.	Positive crease down back.	Tailhead fat very soft.	Difficult to feel ribs.	Area behind shoulder filled in flush with body.
Notes on BCS 8-The ribs are difficult to feel and the crease down the back is easily viewed (think of it having the ability to "hold water" as the crease is deep). Inner thighs are rubbing together. Broodmares should not be allowed to reach this score as this is unhealthy for the mare and increases joint and skeletal stress due to the added weight on top of the foal weight. Breeding performance for the stallion can be compromised at 8 or higher. This puts a great deal of stress on the locomotor structures and predisposes a horse to lameness as well as greater heat stress.						
9 -Extremely Fat 	Bulging fat. Fat along inner buttocks may rub together. Flank filled in flush.	Bulging fat.	Obvious positive crease down back.	Building fat around tailhead.	Patchy fat appearing over ribs.	Bulging fat.

						
Notes on BCS 9-All definition of muscles and contours have been lost. A horse in a BCS of 9 is at very high risk of disease, injury and thermoregulatory issues in the summer heat/humidity. The crease down the back will actually "hold" water (frequently resulting in "rain rot" in the skin) and the inner thighs are pressed together when standing square. This is the result of little or no exercise and extreme overfeeding of calories and predisposes the horse to many health risks from the extreme obesity.						
Source of descriptions of Body Condition Score: Henneke et al. Equine Vet J. (1983) 15 (4), 371-2. Notes compiled from several sources and extension notes.						

Older horses may appear to have a decreased score (by about ½ point) as the muscles have softened. Also, be aware that due to hormonal changes in the late trimester broodmare, the hip bones will be more prominent as the weight of the foal is increasing and there will be less muscle tone due to the impending birth of the foal. Body Condition Scoring is a technique that needs to be practiced, and it is best to go out with a trained assessor to really learn to be consistent on this technique. As a trial, find 10-15 horses of varying BCS, and score them independently with notes, then compare your assessment with that of a trained person.

For a helpful video, please go to the following, with Dr. Bob Coleman.
http://www.thehorse.com/videos/30355/whats-your-horses-body-condition-score
Other sources of information for body condition score:
http://extension.umaine.edu/publications/1010e/
http://msucares.com/livestock/equine/pdfs/p2465-horses.pdf
http://msucares.com/livestock/equine/pdfs/p2465-horses.pdf
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex4830

APPENDIX 6: THE AAEP LAMENESS SCALE

As a welfare assessment officer for horses, you will not be required to diagnose the location and cause of lameness, but it will be helpful for you to be able to objectively describe the lameness as part of your assessment. Lameness can be very subtle and inconsistent, or it can range to a horse that is unable to put any weight on the leg. If you suspect the horse may be lame, this should be reported to the veterinarian.

1. Observing the horse at rest:
-is the horse "pointing" with one foot? This indicates pain in that foot and could indicate an abscess, fracture or other problem.
-is the horse shifting back on one foot? This may indicate pain in one front foot.
-is the horse standing with back legs tucked under and pushing back? This may indicate pain in both front feet, such as would be seen in a horse with laminitis or chronic founder.
-does the horse shift weight from one leg to another? This may indicate pain in both front and hind feet. Pain in more than one leg at a time is quite possible, and a horse will shift like this for pain in the body as well.

2. Observing the horse in motion:
-does the head raise up when one foot is stepped on? Is it weight-bearing on all legs?
-does the horse step shorter with one foot than the other?
-does one hip rise higher?
-does the horse carry its tail to one side?
-does the horse look "stilted" or stiff, or unwilling to move forward?
-does the horse become unwilling to back up?
-does the horse look stiff or limp on the first few steps then "move out of it"?

Should lameness be suspected, a veterinarian will need to do an assessment that may include observation of the horse at a walk and trot (and sometimes in circles) along with palpation for pain.

A grading system has been developed by the American Association of Equine Practitioners to standardize the description of lameness in horses (more information can be found at the AAEP website, and brochures are available. http://www.aaep.org/health_articles_view.php?id=280)

Lameness Scale developed by the AAEP:
1. Lameness not perceptible under any circumstances.
2. Lameness is difficult to observe and is not consistently apparent, regardless of circumstances (e.g., under saddle, circling, inclines, hard surface, etc.).
3. Lameness is difficult to observe at a walk or when trotting in a straight line, but it is consistently apparent under certain circumstances (e.g., weight-carrying, circling, inclines, hard surface, etc.).
4. Lameness is consistently observable at a trot under all circumstances.

5. Lameness is obvious at a walk.
6. Lameness produces minimal weight bearing in motion and/or at rest or a complete inability to move.

Non-weight bearing lameness may be due to a sole abscess (usually there is heat over the coronet band with an elevated digital pulse), a fracture, an infected joint (usually hot and swollen, and there is history of a puncture wound near the joint), or direct blunt trauma that damaged a nerve (and often the foreleg is dragged), subcutaneous infection (with the limb swollen and painful). This situation requires a veterinarian as soon as possible.

Learning to develop the observational skill to pick up a potential lameness requires training and practice. There is a "Lameness Lab" available on the Equine Guelph website that has videos of different lame horses that will be helpful (www.EquineGuelph.ca, see Horse Owner Tools).

Note that some lameness may be an indication of back pain rather than limb pain.

Terms for Movement of the Limbs
There are terms that are used to describe the movement of the body. These terms are similar to those used for humans and help to describe motion, or restriction of motion, in a consistent way.

• Abduction – bringing 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 – this is 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. After cleaning out the hoof, and you release the leg, the knee joint will extend or straighten out as it 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.

An example of the use of these terms would be "the horse is unwilling to flex its right front knee", or the horse was "standing with its front legs extended forward", or the horse was "standing with its left knee flexed, so its toe rested on the ground". When pain or discomfort is present, a restriction of the normal motion is often present, and it is helpful to know these terms when describing behaviour.

APPENDIX 7: VISUAL ASSESSMENT OF FORAGE

Hay should make up at least 50% of the diet, therefore it is important to know its quality. 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.

Visual Assessment of the Hay		Possible Score	Score of Your Hay
I. Stage of Harvest Example: Timothy Head Length 1. Pre-bud 2. Less than 1” 3. 1” to 4” 4. Over 4”	1. Before blossom or just heading	26-30	
	2. Early blossom stage or early heading	21-25	
	3. Mid to late bloom head	16-20	
	4. Seed stage (stemmy)	11-15	
II. Leafiness	1. Very leafy	26-30	
	2. Leafy	21-25	
	3. Slightly stemmy	16-20	
	4. Stemmy	0-15	
III. Colour Note: Check colour inside bale as bleaching occurs on outside of bale.	1. Natural green colour of crop	13-15	
	2. Light green	10-12	
	3. Yellow to slightly brownish	7-9	
	4. Brown or black	0-6	
IV. Odour	1. Clean smell of “fresh crop odour”	13-15	
	2. Dusty	10-12	
	3. Moldy- musty odour	7-9	
	4. Burnt (caramel smell/very musty)	0-6	
V. Softness	1. Very soft and pliable	9-10	
	2. Soft	7-8	
	3.Slightly harsh	5-6	
	4. Harsh and brittle	1-4	
		Sub-Total	
VI. Penalties	Deduct for trash, weeds, dirt, etc.	0-35	
Quality Standard	Relative Feed Value	Visual Grading Score	
Prime 1. 2. 3. 4. 5.	= >151 = 125=150 = 103-124 = 87-102 = 75-86 = <74	= 95-100 =85-94 =75-84 65-74 55-64 Below 54	My score is: _____ –

Sources: Visual assessment from University of Kentucky Fact Sheet AGR-62, Standards from Hay Market Task Force of AFGC, Grading scores from Buckeye Nutrition.

APPENDIX 8: COMMON COLOURS AND COLOUR MARKINGS OF HORSES

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.

Fleabitten – 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 "fleabitten 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 actually no true albino horses as they don't have pink eyes, just pink sclera.

APPENDIX 9: COMMON BREEDS OF HORSES IN ONTARIO

There are over 300 different breeds of horses and ponies in Canada, so a full description of all the breeds is beyond the scope of this manual. The reader is encouraged to do their own research on this topic and there are some helpful resources listed at the bottom of this section.

Appaloosa – The appaloosa is a stock horse type that has been bred to have a special colouration, that of "spots" either over the rump area or over the entire body (Leopard Appaloosa). Appaloosa horses are used for western shows and games, trail riding, and recreation, similar to the Quarter Horses.

Arabians – Arabians are one of the oldest pure breeds in the world, and many have pedigrees that can be traced back many, many generations. The Arabian is a very versatile breed that is used in many ways in Ontario, from endurance competition, show horses, recreational, dressage and eventing. In some jurisdictions, there are active Arabian horses in racing, although this does not happen in Ontario. One of the most easily identified breeds, the Arabian has a concave (or dished) face with large eyes and a small muzzle, small ears that almost point in, a compact body shape that is usually lean and muscled, and a distinctive high tail carriage.

Gaited Horses – there are several breeds that fall into the "gaited" horse breeds category. These breeds are distinguished from others due to their "specialized" gaits. American walking horse, Icelandics, Paso Finos, Tennessee Walking Horse, Kentucky Mountain Horse and several others can be found in Ontario. Examples of these specialty gaits include the "running walk", the "tolte", the "rack" and many others and descriptions/videos can be found on the breed websites.

Mixed Breed or Grade Horses – This type of horse is often a mixture of breeds and may be of unknown parentage. They are usually not registered and are often sold as recreational horses, trail or riding school horses and other general purposes.

Paint or Pinto Horses – The paint horse is actually a "colour breed" and Paint Horses are of Quarter Horse descent bred to have two colours of hair. Any two-coloured horse (brown or black with white, and variations) is called a "pinto" but if the offspring of two registered "Paint" horses, then the offspring can be registered as a Paint. There are several variations to the colouration including tobiano, overo, and others. Paint horses are used for many activities similar to the Quarter Horses.

Palomino – this is technically a "colour breed". The body of the horse is a shade of yellow/tan/straw with a creamy white mane and tail.

Quarter Horses – considered the "all-terrain vehicle" of the old west, the Quarter Horse has long been one of the most popular breeds in the U.S. and Canada. Originally developed in the west for working cattle and other duties on the farm, the Quarter Horse today is used in many different disciplines and is popular for the show circuit, trail riding, and school horses. There is also an active Quarter Horse racing industry in Ontario.

Standardbreds – Standardbreds are specifically bred for racing. The style of racing differs from that of Thoroughbreds, as the horse is placed into a harness to pull a race bike or sulky (a 2 wheeled cart) with the driver on a small seat over the axles of the sulky. Standardbreds are bred and trained as either a "trotter" or a "pacer" and will race in designated classes for the

gait, age, sex and previous winnings records, along with other types of designated conditions for each race. The distance raced is almost always over one mile of a stone dust track, although there are a few variations at different racetracks.

Thoroughbreds – Thoroughbreds can be bred specifically for racing but are also bred and used in the events of jumping, dressage, polo, hunting, and other riding disciplines. The thoroughbred racehorse has been bred to race various distances under saddle (a very small racing saddle) with a jockey controlling the horse, over a dirt or grass.

Warmbloods – Warmbloods are a type of specific mixed breed that combines two specific types of horses. Often, the warmblood is a mix of a thoroughbred and a draft-type horse, so that the resulting horse shares characteristics (both in behaviour and conformation) of both breeds. Common uses for warmbloods include dressage, eventing, jumping, and carriage driving. Some examples of warmbloods are Dutch Warmblood, Hanoverian, Westfalian, Trakehner, etc.

There are also many varieties that are pony breeds, such as Welsh, Shetland, Connemara, Hackney and others. Refer to the resources below for more information or consult books on horse breeds for more information.

Online Resources for more breed information:

http://www.extension.org/category/horse_breeds
http://www.ca.uky.edu/agripedia/breeds/HORSE.asp
http://www.ansi.okstate.edu/breeds/horses/

Note: You can also search online for the breed association for more information. The majority of breed associations have lots of information on their websites along with pictures and history of the breed.

APPENDIX 10: THE HORSE HEALTH CHECK: A SYSTEMATIC METHOD OF EXAMINATION

(written by Dr. Art King and Gayle Ecker. Provided with permission of the authors)

Every horse person should learn how to check a horse's physical condition for any tell-tale signs of illness, injury, or fatigue. The health check is a critical factor with all competitions, and it is very useful in day to day management as well. Many potentially serious conditions can be picked up at an early stage by this simple series of tests. No sophisticated equipment is required.

A stethoscope, a watch capable of indicating seconds and a thermometer (preferably with clip attached) is all the equipment one needs, along with a basic understanding of the difference between what is normal and abnormal for the various areas of the horse that can be examined. With a little practice, one can examine the horse in less than 5 minutes using a systematic method of examination. A complete examination involves two parts: an examination of the horse at rest and in motion.

The Horse at Rest

Choose an open area such as a large box stall or wide alley way. If the horse is quiet, it can be tied or have an assistant hold the horse for you. You should approach the horse's head from the front and to the left of the horse. First of all, note the horse's general condition and attitude. Is the horse over or underweight? You should be able to feel the ribs when you run your fingers across, but the ribs should not be obvious. Is the hair coat sleek or dull? Is the horse alert or lethargic? Since a temperature reading with a conventional mercury bulb thermometer takes about 1 minute, time can be saved if the thermometer is placed in the rectum and restrained there with the clip attached to the tail while continuing with the examination (a digital thermometer is a better option).

Eyes/Ears/Nose

Check the **eyes** for redness, puffiness or discharge as this indicates a problem. A glassy-eyed or sunken eyed look is also an indication of a problem. The **ears** should be alert and moving. Ears that are slow to respond or that are hanging loosely out to the sides can indicate a problem in the awake horse. The **nose** should be free of nasal discharge and the lining of the nasal passages should not be red. Check the nostrils for discharges. Normally there is no discharge, or a slight watery, clear discharge may be present. Any bloody, purulent, yellowish, creamy white or greenish coloured discharge is abnormal and should be investigated.

Mucous Membranes/Capillary Refill

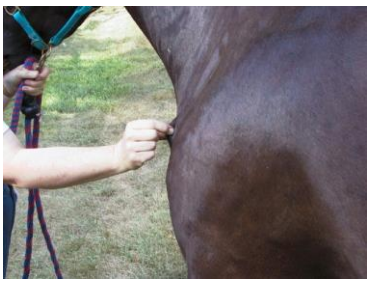
Lift the upper lip of the horse and look at the **gums** above the teeth (also called the **mucous membranes**). Mucous membranes should be a healthy pink, shiny, moist and slippery. If they are pale, dry or tacky this can indicate dehydration. Colours such as pale white, jaundiced, brick red, bluish, purplish, or muddy are indicative of a serious problem.

Next, press your thumb or finger on the gum to "blanch" the area (push the blood out from under the finger) to determine **capillary refill** time. Upon release of the pressure, count the seconds that elapse while the colour returns. Normal time is up to 1.5 seconds. Delays for 2 to 3 seconds are cause for concern. Delays beyond 4 seconds are serious. Delayed capillary refill time is an indication of reduced blood circulation due to reduced volume (blood loss or dehydration) and/or decreased blood pressure (shock).

Jugular Refill

The **jugular refill** time, like the capillary refill time, is an indicator of the status of the circulatory system. Find the jugular groove on the side of the neck. Run your thumb along the groove from the top to two-thirds down, then gently press your thumb on the jugular grove with enough pressure to squeeze the blood from the vein. The refilling is seen as the collapsed vein becomes distended as it refills. Watch how fast it "fills". A refill time of up to one or two seconds is normal. As with capillary refill time, a delay beyond four or five seconds is cause for concern.

Skin Pinch



While dehydration leads to changes in a number of the areas examined, the most common means to quickly check hydration is the **skin pinch** test. As the animal becomes dehydrated, the skin elasticity decreases due to loss of water from the skin. When the skin on the point of the shoulder is pinched and pulled gently away, it should then snap back quickly upon release. Take a fold of skin between the thumb and forefinger, lift it away from the underlying tissues, twist slightly and release. A skin fold or "tent" that remains for over two seconds indicates dehydration. A delay of 5 seconds is serious. It is important to know the normal skin pinch results on your horse as there can be a variation due to age and breed. For this reason, it is important to test the same area of the skin each time to maintain consistency of results.

Heart Rate/Pulse

To take the heart rate or pulse, place the bell of the stethoscope on the chest wall, just behind the elbow. The heart rate is heard as "lub-dup". Listen for the lub-dup which is one beat. You

should hear a clear two-beat sound for each heartbeat. Count the beats for 15 seconds and multiply by 4. Heart rates of 25-40 beats per minute are normal in resting horses. A persistent elevated resting heart rates (i.e., not from temporary excitement as may happen when the vet comes in the stall) would be cause for concern. A fit horse should recover to a rate of 64 to 68 beats per minute within 10 minutes of the exercise (extreme exercise may take longer for the heart rate to recover). After exercise has stopped, the heart rate should drop steadily. Higher rates during recovery from exercise may indicate over-work, fatigue, heat stress, dehydration, pain or illness.

Gut Sounds

Gut sounds are evaluated with the stethoscope by listening over the upper and lower flank on both left and right sides. Normal gut sounds are heard as bubbling and gurgling roughly every 5-10 seconds. The owner should practice listening to normal horses to get an understanding of normal gut sounds. Abnormal sounds such as pinging, ringing, or echoes of water dripping into a well would be cause for concern. The sounds can vary not only in quality and character but also in frequency. The absence of gut sounds is very serious and usually warrants treatment if no improvement is noted within 30 minutes or other signs of colic are observed.

Respiration Rate

To measure the respiratory rate, watch the flank movement or the flare of the nostrils. Count the number of breaths the horse has taken in 15 seconds and multiply by 4. Normally, the respiratory to heart rate is one to four at rest(about 8 - 15 breaths per minute). Elevated respiratory rates may be observed in excitable horses or during hot/humid weather when the horse is trying to cool itself by panting. Breathing in and out should be regular and without effort or sound. Laboured breathing, wheezing, grunting, groaning, coughing or other sounds indicate a problem. The rate and depth of respiration can vary widely among horses. Because so many factors affect the respiratory rate at any one time, it is not possible to correlate respiratory rate and depth to physical fitness.

Checking the Body

The withers, shoulders, back, croup/rump and girth areas should be palpated for evidence of sores, pain, bumps and tight musculature. The aim is to detect any pain, sensitivity, or tightness that would impair the horse's athletic ability or cause pain and suffering during exercise. The left foreleg is palpated for pain, swelling or heat, especially in the joints, ligaments and tendons, and splint area. Lift the foot and check the condition, type, and general fit of the shoe. Note any cracks, founder lines, etc. that may be evident on the hoof. Repeat this examination on the left hind limb and then go to the right fore and right hind limb.

Heat/Pain/Swelling

Evidence of heat or swelling evident in any area on the body is cause for concern. If the horse is in pain or exhibits a response such as pulling away due to pain, this needs to be investigated by a veterinarian. Move your hands down the legs and joints to find heat or swollen areas and compare one leg to the opposite leg as part of your judgment for finding heat.

Temperature

To take the temperature, place the lubricated thermometer into the anus and gently press it against the wall of the rectum. Normal temperature for a resting horse is 37.5 to 38˚C (99.5 to 100.5˚F). Rectal temperature of > 40.5˚C (104.9 F) is serious. If the horse has been exercising it may increase to 39.6˚C (103.3 F) but should not exceed 40.5˚C (104.9 F) and should fall quickly when exercise has stopped.
Remove the thermometer, note the temperature, and check the tail and anal tone. The anus should constrict immediately in response to slight digital pressure. The tail should clamp in reflex when first touched. A flaccid tail and loose anus are found in exhausted horses as well as in some nervous system diseases.

Appetite and Water Consumption

Normal horses eagerly anticipate the daily feeding. Horses that exhibit disinterest in their food, become picky eaters or go off feed completely may be developing a problem and this needs to be investigated. The horse will generally drink roughly equivalent amounts of water daily, with adjustments for temperature, diet, seasonal and exercise changes. It is important to monitor water consumption daily for optimal health.

Manure/Urination

The manure should be formed into moist balls. If the manure is too dry, or too loose, this may be an indication of a problem or change in diet, water consumption, or other factors. The amount of manure passed each day is also important to notice. The amount, colour and frequency of urination should be noted as well as posture while urinating.

Skin/Mane/Tail

The skin should be observed for flaking, oozing or signs of irritation or lesions. Hair loss (and condition of hair) should also be noted. Look for signs of tail rubbing.

The Horse in Motion

The next part of the examination is to assess the horse while trotting. Have an assistant trot the horse away from you on a loose lead and then back towards you again so you can assess the parameters described in the sections below.

Gait / Attitude/ Impulsion

The examination in motion is done with the assistance of the handler who will trot the horse in a straight line for approximately 40 meters (125') away from and then toward the owner. The footing in the trotting area should be level, even and reasonably firm. Trot the horse on a loose rein at a steady slow trot, taking care to travel to the left of the horse, rather than in front of the horse. This ensures that the view is not obstructed. Do not hold the horse with a short lead as this exaggerates or restricts normal head motion.

Note any of the following motions in the **gait**: hiking, head bobbing or swaying, hopping, as well as head, back and tail carriage. Listen for any unevenness of hoof beats on the ground.

Learn the normal **attitude** of your horse. Step back and look at the whole horse. The horse should be bright and alert and willing to trot. A horse that seems sour, disinterested, dull or unwilling to move may not be feeling well.

Impulsion is shown when the horse pushes off energetically from the ground. The horse's movement should be free, willing and eager. Stride length and height should also be noted as this relates to quality of gait.

Cardiac Recovery Index (CRI)

The cardiac recovery index is a useful indicator of a horse's condition, especially if it is used at rest intervals during or after exercise/competition. The Cardiac Recovery Index was initially developed for monitoring endurance horses, but it is an effective tool that can be used on other athletic horses. It can help determine if the horse has been over-worked or if the horse is overly fatigued. It is commonly done by veterinarians at endurance or competitive trail rides.

The owner takes the horse's heart rate immediately prior to trotting the horse a distance of 38 meters (125') away and then back to the starting point (76m/250' total). The heart rate is re-taken exactly 60 seconds (one minute) from the **start** of the trot. The two heart rates are compared and should be within a few beats of one another. If the post-trot reading is eight or more beats/minute higher than the pre-trot reading, the horse should be carefully evaluated. Assuming that excitement did not cause the higher reading, one should consider injury, fatigue, dehydration or other causes that may be the underlying cause of the elevated reading.

- Equal or lower than 1st reading = Fit to continue
- 4 bpm higher than 1st reading = Not fully recovered/repeat test after additional 10 minutes of rest.
- 8 bpm higher than 1st reading = Not recovering/cease exercise or workout
- A horse that does not pass the CRI test within 30 minutes of rest should cease all exercise and be carefully monitored by a veterinarian.

Conclusion

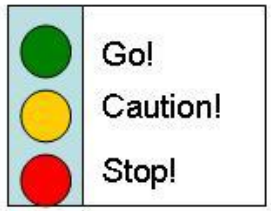
Compare the results of your assessment to the colour-coded chart called The Horse Health Check. When all the parameters are in the green zone, then you have a healthy horse with no signs of a problem. If any of the parameters are in the Yellow zone, then you need to slow

down and/or stop your horse so that it can be further assessed or to give it appropriate recovery time. If any of the parameters are in the red zone, you need to contact a veterinarian as soon as possible so the horse can medically assessed, as there could be a serious condition present and medical assistance is required. Have the complete results of the Horse Health Check written down and available so you can report this to the veterinarian.

You are now on your way to being an educated horse owner who will be able to pick up warning signs before they become more serious.
A companion poster and digital learning object can be found under the Education Resources page of Equine Guelph (www.EquineGuelph.ca)

Information provided in this article is intended to assist the horse owner and is not for medical diagnosis. Discuss your findings with your veterinarian. For further information, please contact Equine Guelph. E-mail: gecker@uoguelph.ca. This material is protected and may not be reproduced without permission of the authors. For more learning opportunities, see the www.TheHorsePortal.ca or the Education section of www.EquineGuelph.ca

The Horse Health Check



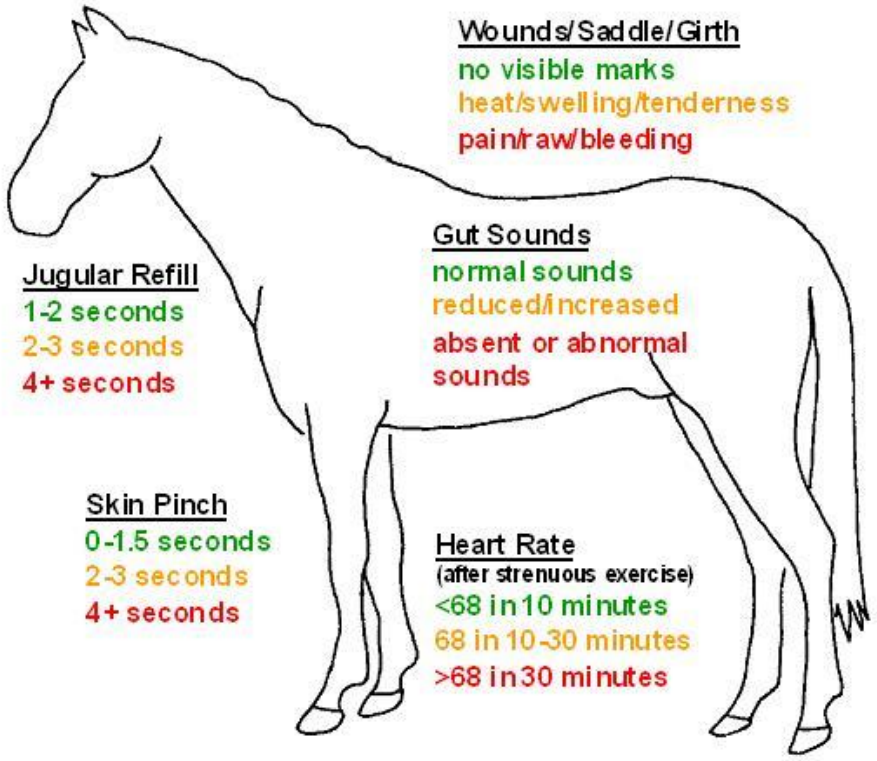
Eyes
bright, clear
glassy
fixed stare, sunken eye

Capillary Refill
0-1 seconds
2-3 seconds
4+ seconds

Mucous Membranes
pink, moist
pale, tacky
dry, purple, blue

Jugular Refill
1-2 seconds
2-3 seconds
4+ seconds

Skin Pinch
0-1.5 seconds
2-3 seconds
4+ seconds



Wounds/Saddle/Girth
no visible marks
heat/swelling/tenderness
pain/raw/bleeding

Gut Sounds
normal sounds
reduced/increased
absent or abnormal sounds

Heart Rate
(after strenuous exercise)
<68 in 10 minutes
68 in 10-30 minutes
>68 in 30 minutes

Muscles/Back
relaxed
tight or tender
very tight and tender

Rectal Temperature
<38.6°C pre-ride
<39.6°C during ride
39.5-40.4°C during ride
>40.5°C

Anal Tone
tight
slight loose
anus/penis relaxed

Respiratory Rate
relaxed/regular
panting/inversion
laboured/abnormal

Gait
no abnormal gait
slight gait change
consistent gait change or non-weight bearing

Attitude
bright/eating/drinking
depressed/lethargic
dull, not interested, absence of thirst, appetite, urination or defecation

Impulsion
free, willing, eager
stumble/short stride
stiffness/limping

Joints/Legs
no heat or swelling
heat/swelling
pain/raw/bleeding

Developed by Art King, DVM and Gayle Ekker for the www.equinescienceertificate.com

APPENDIX 11: INDICATIONS OF HEALTH ISSUES

As a prey species, horses instinctively "hide" when they are in pain or sick. Broadcasting the "I am weak and in pain" message to the predators is the last thing a horse wants to do! Horses can be very stoic about pain, some much more than others, and therefore the signs are often missed by their owners. "Oh, he's just being lazy today" or "She's always a witch when I put the saddle on" and even, "He's always been that way". The Horse Health Check (HHC) (see Appendices) is a good tool to learn what is normal for the horse, but in your position as welfare assessment officer, it is important to go to the next level. Injuries and wounds are usually noticed with a thorough observation, but other issues can be much more subtle. In this section, you will be introduced to signs and clues that will alert you to the possibility that the horse is in pain or suffering. The signs described here along with the body language of the horse will give you important information on the health of the horse. Good observational skills will help the veterinarian ascertain a problem, as it is common that a "pattern" of signs and behavioural changes will help in the diagnosis.

The following is a brief summary of some of the more common signs of illness and disease. Veterinary consultation is the next step. Evidence of bleeding, heat and swelling anywhere on the body needs to be closely assessed and veterinary consultation is needed.

Head and Neck Region

- abnormal nasal discharge – horses can get nosebleeds, and these can be caused by several things, such as getting kicked, fractures, or cuts. Horses coming from the racetrack can be "bleeders" which means they will have blood dripping from their nose after exercise, indicating bleeding from the lungs. The occasional clear fluid from the nose may not be of concern but when it is continuous, copious, foamy or is white/yellow colour and thick, then this requires veterinary assessment. This should be checked by a veterinarian.
- abnormal colour/condition of the mucous membranes – Pale, dry or sticky, blue, brick-red membranes indicate a problem. Gums may also be slight bluish or blue (lack of oxygen, shock) and/or with a "toxic gum line" (which is a bluish to reddish line right along the gum above the teeth indicating poisoning or tying up, kidney or liver disease). Also very yellow gums can occur with kidney or liver disorders. Ulcers and abrasions are not normal and may be present on the gums and tongue.
- offensive, smelly breath – check the teeth as this can indicate a rotting tooth or other serious concerns.
- abnormal eye conditions – Swollen, irritated, watering or half-shut eyes indicate injury or health issues. Eye injuries can be very serious and very painful, so immediate veterinary consultation is required. Even small scratches can become painful ulcers. A "sunken" eye may indicate a problem such as dehydration or worse. If the third eyelid is creeping across the eyeball than this could indicate allergies, but this eyelid can be affected by disease as well, such as tetanus, so veterinary consultation is needed.

- lumps on throat area – act on this one right away as it could indicate "strangles", a serious bacterial infection of horses that is highly contagious.
- coughing – most horses will cough occasionally to help clear out the lungs, but when coughing is persistent (along with coughing up phlegm and difficult breathing), then it is time to pay attention. The respiratory system is affected, and this could be due to infection, viruses or allergies.
- laboured or noisy breathing, flared nostrils – breathing should be easy and regular so when you see the horse working at breathing in and out, or if there is noise, this can indicate a respiratory condition such as diseases or "heaves" (a lung disorder that makes breathing difficult) due to allergies. The horse may have a "double flank movement" when breathing out, and this is known as a "heavey" horse. Any exercise is difficult for this horse as it cannot get in enough oxygen and breathing can be painful and cause anxiousness. Flared nostrils indicate the horse is trying to get more oxygen into the lungs.
- cold ears and muzzle - if you feel the ears and muzzle of the horse and they are cold, this means that the body is trying to keep all the heat in the central part of the body. Possible reasons include shock, fever, hypothermia, poisoning and more; this is a medical emergency.

Body Region

- dull hair, abnormal hair coat - If the hair coat is long and shaggy, when all other horses have shed out their winter hair, this can be a metabolic disorder (Cushing's disease). A dull, dry hair coat can be a sign of parasites, malnutrition/dehydration, imbalance or deficiency/excess of vitamins and/or minerals, skin conditions and lack of proper grooming.
- loss of hair, hard patches of skin, scabbing or weeping areas – these all indicate skin conditions that could be due to many factors and need to be assessed by a veterinarian. Allergies, insect bites, malnutrition, fungal/bacterial infections and/or sarcoids can contribute to changes in the skin and hair.
- "quivering" muscles – if you see continual shivering or quivering of selected areas of muscles, this could indicate "tying-up" (severe muscle cramping), a serious medical emergency that may occur with exercise (either early onset or after prolonged exercise). It can be associated with dehydration and loss or disturbance of electrolyte levels.
- Shivering horse – if there is whole body shivering, then this will be seen in a horse that is very cold, often in very cold and wet conditions or with wind chill factors. A rectal temperature reading can help determine if this is a fever or hypothermia. If this occurs in the winter during the cold, the horse is shivering and trying to stay warm, so look at bringing the horse inside, providing a blanket for warmth, feeding more hay, and providing a shelter when outside as the horse is unable to cope with the low temperatures.
- abnormally coloured urine or abnormal smell – urine should be a "straw" yellow and voided without effort. If the urine is very pale, the horse may have kidney function problems or lack of salt intake. If the urine is dark yellow/amber with a strong smell, then it is possible that the horse is dehydrated. Dark red or coffee-coloured urine is a

serious concern and may indicate the muscle is heavily damaged from tying up or over-exertion and the dark colour may indicate myoglobin, a muscle protein. A very strong ammonia smell from the urine may indicate too much protein in the diet, kidney problems or sometimes drugs/medications.

- ❖ big bellied/hay belly – if the horse looks "pregnant" and is not, then consider other health issues such as parasites, malnutrition, and poor feed. Older horses not getting exercise will have a tendency to develop "pot-belly" due to lack of muscle tone and sagging of tendons and ligaments along with a swayback.
- ❖ rapid pulse – the normal pulse or heart rate is 25-40 bpm, but the heart is a very sensitive indicator of a problem. Elevations in resting heart rates (60+) should be checked a second time (after ensuring the horse is not suddenly excited about something) as this could indicate fever, pain, illness, or shock. A persistently high heart rate after exercise (staying above 60 bpm after 30 minutes) can also indicate a problem if it does not come down with rest. When listening to the heart rate, it is also important to hear the regularity of sound and rhythm. A "galloping" heart rate (speeding up then slowing down) or a heart rate with strange sounds (other than the regular "lub-dup" sound) can indicate a problem.
- ❖ kicking at belly, restless, rolling – this may indicate colic and veterinary advice should be obtained.
- ❖ stretched out as if to urinate could be belly pain, constant shifting and restlessness may indicate pain in more than one area of the body and the horse is shifting to try to reduce the pain. Horses have been observed to sit in "donkey sit" position when they have colic.
- ❖ abnormal patterns/type of sweat or patchy sweat – if the horse is highly stressed, it is not unusual for sweat to form and coat the body starting at the ears, neck and shoulders and continuing through the back, abdomen, and hindquarters. If the horse is sweaty during weather that is not making any other horse sweat, look for other indications of problems such as pain could be causing this as well as colic and other disease.

Leg Region

- ❖ heat, swelling, bleeding or sores – these can indicate fractures, infections and other injuries
- ❖ stiff legs or stilted gait – this type of motion indicates pain and possibly arthritis. Sometimes you can hear the joints creak or crackle. Tetanus can also cause a horse to become very stiff, and laminitis (a very painful hoof condition) can make the horse shift the weight back off the front legs and make the horse unwilling to walk forward due to the extreme pain.
- ❖ ridges or rings on the hoof – a horse will sometimes develop ridges on the hoof following a fever. Repeated rings can indicate founder and malnutrition.
- ❖ enlarged, puffy, painful joints – may indicate arthritis, joint-ill in foals, growth disorders, injury and malnutrition.
- ❖ Stocking up – a common problem in horses that are stall-bound or not allowed much movement as per veterinary advice. Fluid accumulates in the legs, and this can be a sign

of other issues such as circulatory or excretory problems. There are some diseases that present with stocking up as well.

Rump Region

- broken tail hairs and rubbing the tail/hindquarters – this often indicates the presence of parasites. If the horse does this while wearing a tail wrap, then loosen the wrap immediately as it is probably too tight. Horses may also rub their rump if they have scurfy dirt around the udder or sheath or in between the hind legs or pinworms.
- abnormal feces – dry, hard, falling apart can indicate prolonged dehydration and colic risk is very high. If the manure is mucous-covered then this may indicate disease, digestive upset and stress. Loose, smelly manure that is not formed in balls is also an indication of stress or disease or irritation of the digestive tract and needs to be assessed. Diarrhea (loose, watery feces) can be caused by many things such as infectious disease and parasites, and this can quickly leave the horse, particularly the foal, very dehydrated. Blood in the feces is a serious sign and needs to have veterinary evaluation. An abnormal odour from the manure can also signal disease or other problems. Certain drugs/medications may also change the odour.

Overall Behaviour

- not eating or drinking – if your horse has just arrived at a new location, excitement and anxiety can prevent your horse from eating or drinking. If the horse settles and begins to eat, all should be well. If the horse is not back to normal by the evening or next day, then you need to do a Horse Health Check. If you observe this at home, then there could be something brewing and again the HHC should be done on your horse, particularly looking for signs of dehydration and gut sounds.
- head down, showing disinterest, eyes vacant or glassy, ears floppy, general malaise and not responding – this is potentially a serious sign in a horse that is not having a quick snooze. Speak to the horse, and if the head comes up and the horse is now alert and acting normal, then carry on. If the horse continues this behaviour despite stimulation around him, then this could mean the horse is feeling sick, exhausted or in pain.
- unwilling to move, difficulty moving or walking, hunched back or awkward stance – this indicates a problem that needs veterinary assessment as the horse may be “tied-up” where the muscles going into painful contraction and feeling hard through the shoulders and hindquarters, with a higher-than-normal heart rate.
- limping, dragging a foot – injuries to the legs/back need to be assessed for any horse that is limping, unwilling to bear weight, or dragging a foot when moving (see AAEP Lameness scale in the Appendices)
- imbalanced or unsteady gait – injury to the body or head, exhaustion, fever, disease and neurological conditions may contribute to this unsteadiness or a wobbly gait. Be careful as the horse can fall. Veterinary assistance is needed immediately.
- a fall or trip resulting in a fall to the ground – anytime a horse crashes to the ground, there is a real risk of fractures and serious bruising of the body. If the horse falls without an obvious reason, this is also a potentially critical situation as it could be due to neurological problems (such as wobblers) or even poisoning.

- straining while peeing – if the horse stretches out and seems to have difficulty to urinate, i.e., seems to be straining, this could indicate infections or other issues. If the horse looks like it is trying to urinate, but no urine is coming out, this may indicate colic.
- Repetitive motions – constant playing with the water bucket if full, may show frustration as it wants to drink and cannot (for example, it could be choke or gastric distension)
- Head pressing – may be observed when horses press their face into a wall, and this may indicate pain in the head area (similar to salt poisoning in pigs).

APPENDIX 12: BIOSECURITY FUNDAMENTALS

Biosecurity for Horse Owners – Information Sheet

Introduction

The term *Biosecurity* refers to management practices that reduce the chance infectious disease will be carried onto a farm by animals or people and the spread of infectious disease on farms. All infectious diseases of horses result from the interactions between the animal and its ability to resist disease (immunity), an infectious agent (bacteria, viruses, fungi and parasites) and the environment. These relationships allow opportunities for preventing or reducing infectious diseases.

Horses

New Arrivals

The most common way infectious diseases are spread is when a new horse arrives at a property that is a carrier of the disease. A veterinary examination is recommended prior to purchasing a horse. Depending on where the horse has originated from, the veterinarian may advise for specific tests to be conducted to rule out infectious diseases. New horses should be isolated from resident horses for thirty days. The horse should be checked daily for signs of illness, including monitoring the horse's temperature, food and water intake. Separate stable/yard equipment, buckets, grooming supplies, tack, etc., should be used for new horses and marked with red tape. The new horse should be handled last, morning and night, and hands should be washed upon leaving the horse's stall or paddock. It is also helpful to consider using disposable gloves and plastic boot covers when you go into the stall, and these are removed when leaving the stall.

Vaccination

Vaccination can be a critical aspect of controlling infectious diseases because in many instances owners cannot prevent exposure. It is important to remember that vaccination cannot prevent disease. Vaccines perform best if the disease challenge is minimized. In some instances, vaccination does not provide protection against infection but merely decreases the severity of clinical disease. Vaccination serves to increase resistance against certain diseases in individual horses as well as horse populations. A vaccination program is most effective when it is planned to meet the particular needs of a farm.

Setting up a strategic vaccination program means:
1) determining what diseases to vaccinate against,
2) identify who will most benefit from vaccination, and
3) finding out when they will most need the protection that vaccines provide.

Your veterinarian will provide guidelines for a vaccination program that suits your needs.

Q*uarantine*

Quarantine, in which a horse is completely separated from contact with other horses, is a smart strategy for limiting the transmission of disease. It's a good idea to separate a sick horse from apparently healthy barn mates. New arrivals should be quarantined from resident horses. Quarantine facilities should be set up to limit the spread of infection.

- Limit the amount of shared airspace between quarantined horses and the general population – ideally by placing the isolation stalls in a separate building.
- Limit movement of insects, by screening doors and windows and using insecticidal sprays.
- Equip the quarantine facility with separate feeding, mucking and grooming equipment.
- If possible, your quarantine barn should be downwind of your main barn.

Quarantine is not strictly for sick or new horses, horses that have left the farm for showing or breeding purposes also have the potential to bring home germs. These horses should be isolated for at least two weeks, making sure there is no nose-to-nose contact. Not every farm has quarantine facilities, so study your farm layout and try to develop the best strategy to minimize contact and get as close to quarantine practices as possible. Every little bit helps!

Humans

Personnel

Specific individual(s) should be assigned to care for affected horses. Ideally a caretaker should not be responsible for both healthy and exposed/affected horses. If unavoidable, care of healthy animals should be completed first; exposed animals next; affected animals last. Disposable gloves, plastic booties and barrier clothing should be used when working with sick horses.

After handling sick horses, gloves and booties should be disposed of in a sealed trash container and clothing placed in a covered hamper. Hands must be washed under running water with liquid soap for a minimum of 15 seconds.

Visitors

Ideally there should be only one entrance / exit into the farm, marked as the main entrance. Parking should be away from horses to help keep disease-carrying organisms from being tracked from car floors or tires to your horses. If the farrier or veterinarian needs to park closer, tires and shoes should be disinfected. All visitors should wear clean clothes and shoes. Visitors should be given plastic shoe covers, or brush dirt off their shoes and spray with disinfectant. If many visitors are present, such as a farm tour or open house a footbath should be available for them to walk through. The use of signage ("All Visitors Must Check with Management Before Entering Barn") can help limit the risk from visitors.

Records of visitors to the farm with date, time, name and purpose of visit should be kept. On larger properties, details of horse(s) the visitor came in contact with should be recorded.

Away From Farm

Coming into contact with a diseased horse at an event/activity is another way in which horses can be infected with a disease. When attending events take your own equipment (buckets, tack, grooming supplies), do not share your equipment or use communal water troughs. Monitor your horse's health while at the event. Tying/yarding horses with unfamiliar horses should be avoided, thereby minimizing direct contact. Good records of horse movement should be kept as well as disinfecting equipment, tack and transport vehicles after returning from the event.

Management Practices

Manure and Bedding
Waste management procedures are not limited to organisms shed in feces but are applicable to all infectious agents. Manure on wheelbarrow tires, tractor tires etc is a potential source of the infectious agent and can be tracked everywhere on the grounds if tires are not properly cleaned and disinfected.
Do not put waste material from the stalls of affected horses onto open-air manure piles/pits. Do not spread manure from affected horses onto pastures.

Equipment/Supplies
Horse-specific equipment (fed-tubs, water buckets, halters etc.) should be clearly identified as belonging to an individual horse and be used only by that horse. Shared equipment (lead shanks, lip chains, bits, twitches, thermometers etc.) should be cleaned of organic debris and disinfected between horses.

All equipment should be thoroughly scrubbed and cleaned with detergent and water, rinsed, disinfected and followed by a final rinse. This should be done in an area with minimal foot and traffic flow that can be cleaned and disinfected after this procedure. Cloth items (saddle pads, towels, bandages) should be laundered and thoroughly dried between each use (disinfectant may be added to rinse water). Equipment that cannot be effectively disinfected (sponges, brushes) should not be shared between horses. Multiple dose medications should be labeled for use by a specific horse and not shared. Needles should not be used on more than one horse.

Disinfecting
The number one rule for disease control is cleaning. This means the removal of all manure and feed, followed by washing, scrubbing, rinsing or pressure washing, all surfaces with hot water and detergent. This is followed by the use of a disinfectant.
There are three steps in order for this process to be effective.
• **Step one: remove loose material.** Surfaces must first be cleaned in order for disinfectants to be effective. Ensure all manure and dirt is brushed off the surface.
• **Step two: wash.** Wash the item or surface with warm soapy water. Rinse thoroughly and dry.
• **Step three: disinfect.** Once the item or surface is dry, disinfectant can be applied.

Tack items and footwear can be wiped with a disinfectant wipe or can be sprayed with disinfectant and wiped over with a clean dry cloth. Horse transport vehicles and floors of stables can be sprayed with disinfectant made up in a spray bottle or large surface sprayer. When

choosing a disinfectant, it is also important to refer to the specific product claim including the spectrum of activity. It is important to read the labels carefully and to follow the directions including accurately calculating the dilutions and respecting the recommended contact time.

Environment
Vermin control is critical, as pests can transmit a number of diseases. Rodent, bird and insect control should be evaluated and upgraded as necessary. Screens should be installed in stall windows. A control program may include the use of traps, repellants and/or insecticides/rodenticides. Non-equines (goats, cats, dogs) should not be permitted within the primary perimeter.

Conclusion
Every horse owner needs to do everything they can to reduce the risk of an infectious disease from being introduced to their property and horses. Taking basic precautions is common sense and once you are in the habit, is quite easy to implement. Reducing the incidence of infectious disease in our animals saves time, money and enhances the quality of life for both horse and owner. Prevention is always easier than cleanup.

Other Resources for Equine Biosecurity:
Equine Guelph has an active Biosecurity program for the horse owner that includes posters, articles, a 2 week online short course on www.TheHorsePortal.ca, and Equine Guelph's Biosecurity Risk Calculator for the Horse Owner:
http://www.equineguelph.ca/Tools/biosecurity_2011.php

http://www.inspection.gc.ca/animals/terrestrial-animals/biosecurity/eng/1299868055616/1320534707863
http://www.inspection.gc.ca/animals/terrestrial-animals/diseases/eng/1300388388234/1300388449143

APPENDIX 13: DECISION TREE FOR TRANSPORT OF HORSES

The following table is designed to help with decision-making when the need arises to transport a horse. As per the Canadian Veterinary Medical Association (CVMA) policies, it is not possible to humanely transport an adult horse that is down or non-ambulatory without causing significant suffering due to transport. The Canadian Food Inspection Agency (CFIA) is the unit responsible for enforcement of animal transportation so that conditions comply with the federal "Health of Animals Regulations".

Transporting Decision Tree

Can I transport this horse?	
Yes	**No!**
The horse is standing upright and able to move without help	The horse is down on the ground and unable to rise
Under the direct supervision of the attending veterinarian, the horse is to be moved for immediate treatment	The horse is unable to stand or walk unaided, and unable to go up a ramp unaided
The condition is not going to get worse during transport	The mare is pregnant and may start foaling while enroute
	The journey will make the condition worse
	The horse is likely to die enroute
	The horse is likely to fall enroute
	The horse has become worse during the trip and needs veterinary treatment
	The trailer available does not allow the horse to stand with its head at normal level, or it does not have appropriate non-slip footing, bedding, ventilation or protection from the weather