



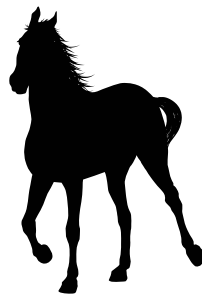
4H1748

4-H Equine Welfare Assessment



4-H Youth Development
Michigan State University Extension

4-H Equine Welfare Assessment



This publication is a revision of *A Guide to Equine Welfare Assessment*, 2008,
by the Michigan State University (MSU) Department of Animal Science

Authored and prepared by
Kimberly Andersen, MSU Master's Student, and Taylor Fabus, MSU Extension Educator

Reviewed by
Carissa Wickens, Assistant Professor and Extension Equine Specialist, University of Florida;
Janice Siegford, MSU Associate Professor; Camie Heleski, Equine Science & Management,
University of Kentucky; Karen Waite, Assistant Chair, MSU Animal Science Department;
and Alycia Drwencke, MSU Extension Student Intern

Table of Contents

Introduction	1	Production Measures (Biological Functioning)	27
• Purpose		• Leader Guide	
• Role of the Leader		• New Questions	
• Information About Life Skills		• Resource Information	
• Alignment to Science and Engineering Practices		• Activity Sheet: Evaluating Body Condition and Performance	
• References		• Let's Talk About It: Discussion Questions	
• Resources		• References	
Animal Welfare: An Introduction	3	Immunological Measures	32
• Leader Guide		• Leader Guide	
• New Questions		• New Questions	
• Resource Information		• Resource Information	
• Activity Sheet: Welfare or Rights?		• Activity Sheet: What Makes My Horse Sick?	
• Activity Sheet Answers: Welfare or Rights? (Five Freedoms)		• Let's Talk About It: Discussion Questions	
• Let's Talk About It: Discussion Questions		Human and Animals Interacting	35
• References		• Leader Guide	
Behavioral Indicators	7	• New Questions	
• Leader Guide		• Resource Information	
• New Questions		• Activity Sheet: Getting a Handle on It	
• Resource Information		• Let's Talk About It: Discussion Questions	
• Activity Sheet: Time to Investigate		Animal Ethics	41
• Activity Sheet: What Does My Horse Do?		• Leader Guide	
• Activity Sheet: Why Do They Do That?		• New Questions	
• Activity Sheet Answers: Why Do They Do That?		• Resource Information	
• Let's Talk About It: Discussion Questions		• Activity Sheet: Should We Do That?	
Physiological Indicators	16	• Let's Talk About It: Discussion Questions	
• Leader Guide		Evaluating the Welfare of Horses	46
• New Questions		• Leader Guide	
• Resource Information		• New Questions	
• Activity Sheet: Reading Your Horse's Biological Signs		• Resource Information	
• Activity Sheet: How Much Water Does My Horse Drink?		• Activity Sheet: Risk Assessment	
• Activity Sheet: How Much Stress Does My Horse Undergo in a Week?		• Let's Talk About It: Discussion Questions	
• Let's Talk About It: Discussion Questions		Glossary	50

Introduction

Millions of Americans are involved in the horse industry as owners, employees, volunteers, and service providers. This is not counting the many people who are spectators at equine events. (American Horse Council, 2005).

Equine welfare science is an emerging discipline. This guide will help youth learn equine welfare principles as well as how to better care for their own horses. It is designed to assist horse leaders in providing an interesting, fun, and valuable experience for youth. It also provides a way to teach and improve important skills for life such as clear oral communication, information gathering, analytical thinking, and observation. These skills, along with teamwork and a caring attitude, will assist youth in becoming productive, responsible horse owners and members of society.

Purpose

4-H volunteer leaders should use this guide with youth ages 14 and older to:

- Identify and apply principles of equine welfare science.
- Develop skills needed for success in the horse industry.
- Effectively communicate with those in and out of the equine industry about the welfare of horses.
- Identify normal physiological and behavioral indicators for horses in various situations.
- Develop decision-making skills, clear communication skills, and analytical thinking capabilities.
- Learn the value of equine welfare assessment and its importance to their interactions with their horses.

Role of the Leader

Your role as a leader is to guide, encourage, and facilitate. As a guide, you assist members in understanding the subject matter, help them find available resources, and aid them in understanding the purpose of equine welfare assessment. As an encourager, you celebrate success, encourage new ways of thinking, and support each member's search for what is right. As a facilitator, you help

members share their knowledge, aid in the mastering of life skills, and foster healthy discussion about ethical issues.

In the “New Questions” sections, youth are encouraged to capture their innate curiosity. Every day, hundreds of questions flash through our brains. In this section, youth will capture at least three questions that occur to them as they do each set of activities. For example, they might ask, “Do horses hide their pain like some people do?” Or, “Does the size of the horse affect how much it drinks?” The purpose is to help youth recognize and strengthen their interest in learning about our world. Encourage them to share some of these questions with the group and to try to find answers to share back to the whole group. Not every question needs to be answered! Part of learning is discovering we can't always find the answers. You may also encourage them to ask their questions to a group of nationally renowned Extension experts on the eXtension Ask An Expert website at <https://ask.extension.org>.

Information About Life Skills

By using the experiential learning model to deliver its programs, Michigan 4-H uses a learn-by-doing approach that offers youth hands-on activities in which they develop life skills. The foundation for a lifetime of success, these crucial life skills include practical skills such as problem solving, keeping records, and critical thinking, as well as personal and interpersonal skills such as conflict resolution, contributions to a group effort, empathy, communication, self-responsibility, and personal safety.

Alignment to Science and Engineering Practices

How Does 4-H Increase Science Literacy?

Nationally and in Michigan, 4-H has long enjoyed a reputation for engaging youth in positive, experiential (hands-on), and nonformal activities that are inquiry based. The activities in this guide can be used to enhance classroom science education. The activities are aligned with the eight Science and Engineering Practices (SEP) from *A Framework for K-12 Science Education* (National Research Council, 2012, p. 42).



The activities in the guide were evaluated for their alignment with the SEP by Michigan State University (MSU) Extension Educator Tracy D'Augustino.

Science and Engineering Practices

- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

References

American Horse Council. (2005). *National economic impact of the U.S. horse industry*. Washington, DC: Author.

National Research Council. (2012). *A framework for K-12 science education: Practices, crosscutting concepts, and core ideas*. Washington, DC: National Academies Press.

Resources

You may find these resources helpful:

American Youth Horse Council. (2011). *Horse industry handbook: A guide to equine care and management*.

Evans, J. W. (2000). *Horses: A guide to selection, care, and enjoyment* (3rd ed.). New York: W.H. Freeman and Company.

eXtension: Horses website: www.eXtension.org/horses.

Kiley-Worthington, M. (1997). *Equine welfare*. J. A. Allen & Company Ltd.

McDonnell, S. (1999). *Understanding horse behavior*.

My Horse University website: www.myhorseuniversity.com.



Animal Welfare: An Introduction

Leader Guide

Objectives:

- Identify basic equine welfare concepts.
- Recognize factors affecting equine welfare.
- Be able to communicate the difference between animal welfare and animal rights.

Life Skills:

- Learning to learn
- Communication
- Contributions to a group effort
- Empathy

Materials Needed:

Writing utensils

Copies of the “Welfare or Rights?” activity sheet

New Questions

In a given day, hundreds of questions will come to a young person’s mind. Give each participant a sheet of paper and have them capture at least three questions that occur to them as they do each set of activities.

Examples: Do some horses hide their pain like some people do? Does the size of the horse affect how much it drinks each day?

Alignment to the National Research Council Science and Engineering Practices

Science & Engineering Practice	Action	Activity Title
• Asking questions and defining problems	Youth evaluate the situation and consider what the horse might be feeling.	Welfare or Rights?
• Constructing explanations and designing solutions	Youth identify each statement as pertaining to animal welfare or animal rights and explain their decision.	Welfare or Rights?
• Engaging in argument from evidence	When giving their presentations, youth make a claim by choosing a statement and identifying it as animal welfare or animal rights. They also provide evidence to support their claim and explain their reason for using that evidence to support their stand on the statement.	Welfare or Rights?
• Obtaining, evaluating, and communicating information	Youth read and learn about animal welfare and animal rights during these activities. They also apply this knowledge and discuss their new understanding using specific situations with their peers and leaders.	Welfare or Rights?



Resource Information

(Leaders, use this information to help youth in discussing the topic and the following activities.)

Animal welfare is an important topic to understand. Society is becoming increasingly aware of how animals are cared for and the environment in which they are kept. People are concerned with being fair to animals, which is an extension of our feelings of fairness toward humans. It is the idea of “do unto others as you would have them do unto you.”

Animal Welfare vs. Animal Rights

The terms **animal welfare** and **animal rights** have different meanings.

Animal welfare allows humans to use animals while making sure animals are taken care of and are free from hunger, thirst, pain, and discomfort.

Animal rights deals more with treating animals as though they have the same kind of rights as humans. Animal rights does not allow for humans to use animals in any way, even riding horses or keeping dogs and cats as pets. Although this is the extreme, youth may encounter people with these beliefs.

The Five Freedoms

In 1965, a scientific committee chaired by Professor Roger Brambell, presented a report on animal freedom (Farm Animal Welfare Council, 1979). These freedoms became known as “Brambell’s Five Freedoms” or simply, “The Five Freedoms.” These five ideals cover the basic physical and mental needs of animals.

1. Freedom from hunger, thirst, and malnutrition

Animals should have access to clean water and should be fed to maintain a healthy weight.

2. Freedom from discomfort

Shelter should be provided where animals can escape from wind, rain, snow, or excessive sun. This may be a shed or a grove of trees.

3. Freedom from pain, injury, or disease

Animals should not be treated cruelly. People must do some things that are uncomfortable for the animal but necessary such as castration, vaccination, farrier work, and trailering, just to list a few.

4. Freedom to express normal behavior

Animals need to perform the behaviors they have a strong desire to do, or the behaviors their wild counterparts would do, within reason. This includes social interactions, grazing, running, playing, and other behaviors.

5. Freedom from fear and distress

Animals should not be afraid of humans. They should respect humans, but fear of humans often means mistreatment has occurred.

(Farm Animal Welfare Council, 1979)

Perhaps the best way in which to think about animal welfare is to look at the whole animal, taking many factors into account. This approach includes all of the factors that go into good welfare including behavior, physiology, production, immunology, human-animal interactions, and ethics.

Attaching human feelings, motivations, or characteristics to nonhumans is sometimes thought to be a bad practice. But since animals cannot speak to us in our language, this practice may be the only way we can begin to understand what an animal is feeling and, thus, improve its welfare.

Animal welfare is both an art and a science. Much of what is studied is difficult to quantify, or measure. Because of this, it is important for us to be able to get a feeling of how animals should be treated and to be able to “read” the animals. This will allow us to gain greater insight into what they need. The best equine enthusiasts are very skilled in reading their animals.



Activity Sheet

Welfare or Rights?

Identify whether each statement deals with animal rights or animal welfare. Then choose one statement from below. Use it to present for 5 to 7 minutes on why you agree or disagree with the statement. Explain your reasoning using facts and supporting information.

- It is okay for humans to use animals in whatever way they wish.
- It is okay for humans to use animals as long as they are not mistreated.
- Animals should not be used by humans for food.
- Animals should not be kept as pets or used for food.

Five Freedoms

Fill in the blanks below and then explain to the larger group what each of the freedoms means.

1. Freedom from _____, _____
and _____
2. Freedom from _____
3. Freedom from _____, _____
or _____
4. Freedom to _____ normal _____
5. Freedom from _____ and _____

Does A Horse Have Feelings?

Look at the following situation and list all of the emotions you might feel in this situation. Discuss in groups of 3 to 4 whether or not you think a horse would feel the same thing. How would you know?

Situation: Your horse is in the pasture with his buddy. You come to the barn to get your horse ready for a show. It is very hot and your horse has never been away from the barn before.



Activity Sheet

Activity Sheet Answers: Welfare or Rights? (Five Freedoms)

Make copies of the Five Freedoms exercise and see if the youth can fill in the blanks.

1. Freedom from hunger, thirst, and malnutrition
2. Freedom from discomfort
3. Freedom from pain, injury, or disease
4. Freedom to express normal behavior
5. Freedom from fear and distress

Let's Talk About It: Discussion Questions

Use the following questions to lead a discussion with youth about what they learned while working through these activities.

What did you learn about animal welfare?

What did you learn about animal rights?

What is the difference between animal rights and animal welfare?

Is there a definite line separating these two ideas?

What should your horse be free of?

How did you prepare for your presentation?

How did you feel about using your own emotions to decide the welfare of a horse?

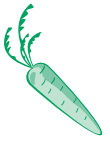
How did you make your decisions about animal welfare and animal rights?

How did it feel to speak in front of a group of people?

How will you apply what you have learned when making decisions about other difficult topics such as pesticide use on crops, confined animal feeding operations, or waste management?

References

Farm Animal Welfare Council. (1979). *Five freedoms*. Retrieved from the UK National Archives at <http://webarchive.nationalarchives.gov.uk/20121007104210/http://www.fawc.org.uk/freedoms.htm>



Behavioral Indicators

Leader Guide

Objectives:

- Identify normal equine behavior, including how much time horses spend performing normal behaviors.
- Identify how horses react in certain situations.
- Recognize abnormal (stereotypic) behaviors.

Life Skills:

- Keeping records
- Observation
- Planning and organizing
- Empathy
- Critical thinking
- Problem solving

Materials Needed:

- Writing utensils
- Three horse owners
- One horse

Copies of “Time to Investigate” activity sheet
 Copies of “What Does My Horse Do?” activity sheet
 Copies of “Why Do They Do That?” activity sheet

Optional:

Stereotypic behavior eXtension video: <https://www.youtube.com/watch?v=DJki-UhVTps>

New Questions

In a given day, hundreds of questions will come to a young person’s mind. Give each participant a sheet of paper and have them capture at least three questions that occur to them as they do each set of activities.

Examples: Do some horses exaggerate their pain like some people do? Does the size of the horse affect how much it eats each day?

Alignment to the National Research Council Science and Engineering Practices

Science & Engineering Practice	Action	Activity Title
• Asking questions and defining problems	Youth determine the questions to ask the owners.	Time to Investigate
• Planning and carrying out investigations	Youth make and record their observations.	What Does My Horse Do?
• Analyzing and interpreting data	Youth analyze the animal’s behavior using the information provided.	Why Do They Do That?
• Constructing explanations and designing solutions	Youth conclude the behavior is either normal or a problem.	Why Do They Do That?
• Engaging in argument from evidence	Youth state their conclusion, provide evidence to support their conclusion, and explain how the evidence supports their conclusion.	Why Do They Do That?



BEHAVIORAL INDICATORS

Resource Information

(Leaders, use this information to help youth in discussing the topic and the activities.)

Noticing the behavior of the horse under their care will allow youth to interact in a more positive and safe manner with the animal. It will also help them to notice when something may be wrong with a horse.

Behavioral Indicators

Behavioral indicators are aspects of an animal's behavior that vary from the normal behavior for that horse. They may indicate welfare status. A behavioral indicator of good welfare is an animal showing all of its expected behaviors.

Natural Behaviors

Be aware of the **natural behaviors** exhibited by the horse. Once you know what behaviors are shown naturally, you are ready to begin to understand the horse. These are behaviors horses have a strong desire or need to perform.

Vocalization

Horses will "call" to each other in a variety of ways. The vocalization may be one of warning, greeting, protection of a foal, or aggression.

Grazing

Horses in the wild graze all day. Domesticated horses will often spend 16 to 18 hours in one day grazing. They have a small stomach. What they eat passes through them quickly compared to cattle, sheep, and other grass-



Horse grazing. Horses should consume the majority of their diet in forages, such as grass.

eaters. This requires them to graze nearly constantly. If grass is not available, hay is another type of forage that encourages optimum health because it can be eaten slowly throughout the day, similar to grazing.

Mutual Grooming

Horses housed in groups will often engage in mutual grooming. This reinforces the bonds between horses and allows them to scratch where they would not be able to reach otherwise. When you scratch a horse, it will sometimes wiggle its lip on your hand, or if standing next to another horse, start scratching them. Foals often do this.



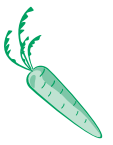
Three horses participating in mutual grooming.

Social Interactions (Play)

Young horses often socially interact, or play, but older horses play as well. Play helps youngsters establish dominance and learn what is acceptable and what is not. It includes rearing, kicking, play biting, or simply running around.

Dominance Behavior (Social Hierarchy)

Fighting does not occur often in well-established herds where dominance can be shown by a simple look from the dominant horse. This horse may have ears back and exude an assertive approach that tells others to get out of the way. The introduction of a new horse will create a struggle until that horse finds out where it fits within the



Two horses playing together.

herd. Often, the other horses may chase the new horse, and even bite and kick it.

Sleeping

Horses do not sleep for as long as humans do. In a 24-hour period, horses can spend 3 to 4 hours sleeping during the night and can spend another 2 to 3 hours dozing during the day. Their sleeping may be made up of a few minutes at a time. Domesticated horses tend to sleep for longer periods than their wild counterparts. The amount of time sleeping can depend on the proximity of danger or the availability of food. Horses will lie down to sleep, but can sleep standing up, as they have the ability to lock their knees.



Stallions fighting for territory.

Natural Behaviors

Once you know what kind of behaviors horses exhibit in general, you should have an understanding of how horses behave in certain situations.

Fear

Horses have the “fight or flight” response to something that might scare them in the environment. In most situations, a horse will exhibit a flight response rather than a fight response. Most horses will startle or run when something frightens them. However, some horses, particularly stallions, will fight the perceived threat, but normally this is done only when flight is not an option. In either case, when the horse is alerted to something, the body becomes tense, the ears prick forward, and the head is raised in preparation.



Two horses galloping through a field.

Sexual Behavior

- **Mares:** When mares are in heat, or receptive to stallions, they perform distinct behaviors. They will spread their hind legs, lift their tail, squat, and urinate. They will also often squeal when they smell other horses. This can pose a problem when ridden. Some mares will even stop or behave aggressively while being ridden if another horse passes close to her.



BEHAVIORAL INDICATORS



Stallion smelling mare.

- **Stallions:** Stallions may get aggressive when they are around mares, particularly mares in heat. They tend to forget other things, such as the handler. They may try to mount a mare or fight with a gelding. Many people ride and show stallions, but they are experienced, older individuals. Children should never try to handle a stallion.

Sickness

When horses are ill, they exhibit much the same behavior as humans do. They will decrease their feed intake, become inactive, and separate from the herd. Similarly, when humans are sick they eat less, sleep more, and tend to stay away from others.

Pain

Be careful to look out for the signs that a horse is in pain. They may sweat, limp, remain still for long periods, tremble, swish their tails, or have labored breathing. Consider **colic**, which is pain in the abdomen. When horses are colicky, they may roll, look at their flanks, stop eating, sweat, or they may just seem listless. (Leaders, you may want to explain colic more fully to the youth and ask if they have ever known a horse that has colicked).

Abundant Resources Present

When resources such as food, water, and shelter are readily available, horses will show normal behaviors, such as playing, grazing, walking, and interacting socially with the herd.

Stereotypic Behaviors

When a horse is in an environment such as in a stall that does not allow it to exhibit some natural behaviors, it may develop coping behaviors. These coping behaviors are called **stereotypic behaviors** or **stereotypies**. Stereotypic behaviors are repetitive, do not change, and have no obvious function. In other words, the horse will do the same thing over and over again for no apparent reason.

Depending on their severity, stereotypies can be irritating to owners and destructive to both property and the horse. These behaviors don't necessarily indicate that poor welfare is present, but may mean welfare was not good in the past. The horse may have started performing the stereotypic behavior in an attempt to cope with its environment, but then the behavior becomes a habit difficult to break.

Some common equine stereotypies are:

Weaving

The horse shifts its weight from one front leg to the other, and it often swings its head from side to side.

Cribbing

The horse places its teeth on an object, pulls back, arches the neck, and makes a grunting sound. Horses are often given cribbing collars to prevent the behavior. While the collar does prevent the horse from cribbing, when the collar is off, horses go back to cribbing. Like all stereotypies, often the "cures" stop the behavior, but not the motivation. It is unclear what the motivation for cribbing is, but it may be due to concentrate intake, ulcers, pain, or boredom.

Self-Mutilation

Some horses bite at parts of their bodies, often the flanks, causing removal of hair or skin.

Pacing or Stall-Walking

Stalled horses will sometimes develop the habit of walking the same path around the stall repeatedly.



Horse biting itself, an example of self-mutilation.

Wood-Chewing

This destructive behavior can cost owners money in property damage. The horse simply chews the wood in stalls or on fences. However, this behavior is not really a stereotypy. Horses perform this fairly normal behavior when they are bored or craving forage.

Keeping Track of Time and Frequency

We can record how much time horses spend performing certain behaviors or how many times within a set time limit horses perform certain behaviors. Knowing this information can help us to determine when something is wrong.

An **ethogram** is a catalog or table of all the different kinds of behavior or activities observed in an animal. The frequency of behaviors can be recorded in a **time budget**. This tells us how much time an animal spends performing certain behaviors.

When to Be Concerned

The most important thing to understand about behavioral indicators of welfare is that they can be a valuable tool in determining when to be concerned. Be sensitive to your horse and observe it so you can tell when something could be physically or mentally wrong.



Horse exhibiting wood-chewing behavior.

Anytime there is a change in behavior, it may be a red flag telling you something is wrong. Look for evidence of disturbance, pain, or sickness.

You can also watch for **suppression** of behavior, which is when the horse stops exhibiting a normal behavior or fails to develop normal behaviors. This could indicate stress.

Sometimes horses will **redirect** behaviors, such as aggression. For example, another horse might walk by and instead of biting that horse, your horse redirects its aggression toward you and bites you instead.



Activity Sheet

Time to Investigate

You are a top reporter with a mystery to solve. Your job is try to figure out the underlying cause of stereotypic behavior in two different horses. Talk to the owners and try to figure out how, when, and why the stereotypic behavior started.

Here are a few questions for the owners to get you started:

What is the stereotypy being performed?

How long has the horse shown this behavior?

What were the circumstances? (For example, where did the horse come from?)

What circumstances surround the behavior now?

Do you think the stereotypic behavior has become a habit? Why or why not?

Next interview at least three people, but as many as possible, whose horses perform the same stereotypy (for example, cribbing). Try to find out what is common among these horses. Then put together an informational article or presentation for your club about that particular behavior and tell what you learned. You could also get some other members to help you and present it as a breaking news story.



Activity Sheet

What Does My Horse Do?

This activity will help you discover what your horse does. You are going to build a time budget for your horse or a friend's horse. For this activity, you will watch the horse for two uninterrupted hours. You will record each behavior and the amount of time the horse performs each behavior. (see the chart below)

TIME BUDGET

Name of Horse: _____ Date: _____ Time: _____

Behavior	Time Spent Performing Behavior*

*You may have multiple times in this column if the horse repeats the behavior. Be sure to include units, such as seconds or minutes.



Activity Sheet

Why Do They Do That?

Analyze the data you collected for the time budget. Evaluate each behavior, using the information provided. Determine if the behavior is normal or if it might mean the horse has a problem. Discuss with your group the behaviors you saw and talk about what you think the behaviors mean. Does your group agree with your conclusions? Why or why not?

Answer the following questions concerning how horses might react to certain situations. Afterward, discuss with the group times you have seen or experienced horses acting in these ways.

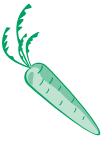
What do horses normally do when they are frightened? _____

How can you tell when a horse may be ready to run from something? _____

How do mares and stallions act differently when exhibiting sexual behavior? _____

What might a horse do when it is ill or in pain? _____

How do horses act when they have what they need (when abundant resources are present)? _____



Activity Sheet

Activity Sheet Answers: Why Do They Do That?

What do horses normally do when they are frightened?

Horses usually run, but they will fight if running is not possible.

How can you tell when a horse may be ready to run from something?

The body tenses, the ears prick forward, and the head rises in anticipation.

How do mares and stallions act differently when exhibiting sexual behavior?

Stallions become aggressive and will try to get to mares or fight with geldings. Mares will squeal and adopt a squatting position when in heat.

What might a horse do when it is ill or in pain?

When horses are ill, they may decrease feed intake, separate from the herd, or become inactive. When they are in pain, they may sweat, limp, remain still for long periods, tremble, swish their tails, or have labored breathing.

How do horses act when they have what they need (when abundant resources are present)?

Horses will show normal behaviors, such as playing, grazing, walking, and having social interactions with the herd when they have what they need.

Let's Talk About It: Discussion Questions

Use the following questions to lead a discussion with youth about what they learned while working through these activities.

1. What was most difficult about putting together the time budget?
2. What did you observe the horse doing?
3. Was what you observed normal or stereotypic behavior? Why?
4. Why was it important to find out about stereotypies?
5. What did you learn from their behavior about how you can be safer around horses?
6. How will the issues raised in these activities be helpful in the future?



Physiological Indicators

Leader Guide

Objectives:

- Be able to take a horse’s vital signs.
- Identify how much water a horse needs to drink in a day.
- Recognize and Identify common stressors.

Life Skills:

- Keeping records
- Problem solving
- Communication
- Conflict resolution

Materials Needed:

Copies of the “Reading Your Horse’s Biological Signs” activity sheet

Copies of the “How Much Water Does My Horse Drink?” activity sheet

Copies of the “How Much Stress Does My Horse Undergo in a Week?” activity sheet

Writing utensils

Colored pencils or markers

A horse for each member to observe

Large horse poster (optional)

New Questions

In a given day, hundreds of questions will come to a young person’s mind. Give each participant a sheet of paper and have them capture at least three questions that occur to them as they do each set of activities.

Examples: Do some horses respond differently than other horse to medicine? Does the age of the horse affect how much it needs to sleep each day?

Alignment to the National Research Council Science and Engineering Practices

Science & Engineering Practice	Action	Activity Title
• Planning and carrying out investigations	Youth collect data from horses in three different activities.	all
• Analyzing and interpreting data	Youth answer questions and discuss their data from the three activities.	all
• Using mathematics and computational thinking	Youth make a graph.	How Much Stress Does My Horse Undergo in a Week?
• Constructing explanations and designing solutions	Youth identify stressors to the horse along with ways that stress might be reduced or eliminated.	all
• Engaging in argument from evidence	Youth identify a stressor as good or bad, providing evidence, and explain, using the evidence, the reason the stressor is good or bad.	all



Resource Information

(Leaders, use this information to help youth in discussing the topic and the activities.)



Two horses drinking from a water trough.

People who work with horses should know the normal physical signs of a horse. These are things that can be measured and that can signify a horse is well, ill, or in pain.

Physiological Indicators

Physiological indicators are related to the normal functioning of the body. Some physiological indicators that you can measure on a horse are outlined following.

Heart Rate

The resting heart rate for a healthy, adult horse is 28 to 40 beats per minute. Find the resting heart rate by feeling for the pulse under the horse's cheek or at the back of the pastern, by the heel. To do this, feel for the slight throb under your fingers, then count the number of beats or throbs you feel in one minute. It may be easier to count the number of beats in 15 seconds and multiply that by four. You can also determine heart rate by listening through a stethoscope, but it can be difficult to hear. While an increased heart rate can indicate that a horse is under stress of some kind, many things can make the heart rate go up such as spooking, running around the pasture, or getting excited about being fed.



Jockey on racehorse.

Watch the following video from MSU Extension on measuring a horse's heart rate:

<https://www.youtube.com/watch?v=CxqUobWLMao&index=14&list=PLlyGxXr5CUt3P9ZPH-8ALUSexiGAFIv0j>

Respiration (Breathing)

Normal respiration for a healthy, adult horse at rest is 8 to 16 breaths per minute. Find it by watching the expansion of the rib cage or rise and fall of the flanks and counting the number of rise and fall cycles in one minute. When a horse shows labored breathing or fast breathing at rest, something could be wrong.

Watch the following video from MSU Extension on measuring a horse's respiration rate:

https://www.youtube.com/watch?v=9ITZG_5IkSo&index=13&list=PLlyGxXr5CUt3P9ZPH-8ALUSexiGAFIv0j

Temperature

The normal temperature of an adult horse is about 100 °F. The temperature can fluctuate throughout the day, but a temperature above 101.5 °F is usually a cause for concern. Taking the temperature is a quick way to determine if your horse is ill, especially if you notice it not behaving normally. To take the temperature, insert the thermometer into the horse's anus. Leave the thermometer in for about 3 minutes or wait for the beep.



Watch the following video from MSU Extension on measuring a horse's temperature:

<https://www.youtube.com/watch?v=uZjU4Jrp56l&index=15&list=PLlyGxXr5CUT3P9ZPH-8ALUSexiGAFiv0j>

Water Intake

A horse will normally consume 8 to 15 gallons of water per day. Take notice of your horse's water intake, especially on hot days. Horses should always have clean, fresh water available that is free of fecal matter or too much debris.

Feed Intake

Horses consume two primary types of feed: roughage (sometimes referred to as forage) and concentrate. Roughage (for example, hay or pasture) should make up the majority of the horse's diet. A horse needs to consume a minimum of 1 percent of its body weight in roughage per day. Concentrate (for example, corn, oats, barley, and other similar feed) should supplement the diet if needed. Feeding too much concentrate can lead to an overweight horse. It can also lead to something worse such as **colic** (abdominal pain) or **founder** (inflammation of the **laminae** of the hoof causing severe pain and potential rotation and sinking of the coffin bone).

Cortisol Levels

Cortisol is a hormone produced by the adrenal gland that is secreted when an animal experiences stress. Cortisol increases blood pressure, mobilizes fats and glucose for quick use by the body, reduces allergic reactions, and reduces inflammation. For these reasons, horses need cortisol. However, prolonged increased cortisol levels can suppress the immune system, making horses more susceptible to disease. Trained professionals can measure cortisol in the blood, saliva, urine, or feces.

Abnormalities in any of the above measures can mean that a horse is under stress. This could be from illness, pain, the environment, or handling by humans.

Stress

Stress is a symptom resulting from exposure of an animal to an unfavorable environment.

Horses can experience two types of stress. **Natural stress** takes place when a horse is reacting to its environment the way its wild counterparts would, for example, when

fleeing briefly. A horse experiences **unnatural stress** through various interactions with humans that cause discomfort such as farrier work, vaccinations, or riding.

Some common stressors horses experience are:

Limited or No Grazing

Horses naturally graze more than half of each day, so when they do not have access to pasture, they may experience stress from the inability to express their natural behavior. This can also lead to stereotypic behavior.

Transportation

Most horses get used to riding in trailers, but it still may cause them stress. Some never quite get over it and sweat in the trailer or refuse to load. Inappropriate handling while loading and unloading can exacerbate stress problems.

Mixing

Well-established herds have a definite **hierarchy** (ranking of horses in a herd) in place. In a hierarchy, all the horses know their place and things usually stay peaceful. When a new horse is introduced, the horses must decide where that horse fits into the hierarchy. The dominant horse may chase the new horse when it is added to an established group. Often there will be fighting and running when herds are mixed, and while it is important to watch to prevent serious injuries, groups of horses will usually work things out given time.



Two stallions fighting for dominance.



Isolation

Horses are extremely social creatures. When they are kept away from other horses, especially if they cannot see others, they can get nervous and agitated. This is sometimes seen in horses that are stalled a great deal who experience both less space and social isolation. Horses may also develop stereotypic behavior if they are kept isolated from other horses. However, an open stall front allows horses to see other horses across from it and may help it feel less isolated. Pastured horses usually have social contact or can at least see other horses.



Horse looking out a stall window.

Obesity and Malnutrition

An obese horse has a difficult time getting around. Obese horses tire more easily and are not as able to disperse body heat, making it difficult to cool down after working. A horse should have a body condition score of 5 on a 1 to 9 scale, with 1 being very thin and 9 being obese. Body condition scoring is a way for people to visually assess how much fat a horse has on its body by looking at the fat in the crest, over the shoulders, over the ribs, down the back, and at the tail head. The horse you see grazing in the photo “Overweight Horse Grazing” has a body condition score of 8. He has a crease down his back, and it would likely be difficult to feel his ribs. The neck is fleshy and it has fat deposits behind the shoulders and by the tail. It is also important that a horse not be too thin. If the horse is malnourished, it will not be able to stay warm in the winter, or have the energy to perform.



Overweight horse grazing.

Weaning

Weaning can be stressful for a foal and for a mare. It is particularly hard if the foal is separated from its dam and kept alone. However, keeping both foal and dam with other horses while they are separated from each other can reduce stress significantly. Foals can be weaned in stalls with other foals to make the experience less stressful, but a pasture setting with many other horses is ideal, even if the other horses are not foals. If you do not have a large group, you can put two foals in a stall when weaning to reduce stress.



Three foals being social.



Fear

Anything that frightens a horse causes it stress, although the stress may be temporary as opposed to long term. Of course, we cannot eliminate all things that a horse might fear. Fear causes a release of cortisol, which gets the horse's body ready to flee the situation if necessary.

Injury

Pain causes a horse to react much the same as you would. When you get hurt, your body tends to be more tense, and you compensate for the injured area. It is the same with horses.

Showing and Trail Riding

Although most horses become accustomed to shows or trail rides, the environment can sometimes be stressful. Some horses have been shown or trail ridden for most of their lives and have become used to it. However, the environment in these situations can still present horses with things that may cause them stress as they are prey animals prone to startling (an example of their flight response). For example, dogs, small children running around, or farm equipment can cause stress. Showing and trail riding combine multiple stressors like transportation, new horses, and being exercised by humans. Try to make showing and trail riding as positive as possible for the horse. Make the experience less stressful by being patient with a horse that is unaccustomed to showing or trail riding. To decrease stress you may decide to take along



Young equestrienne riding in a show.



Trail riding is a popular equine activity.

the horse's buddy while trail riding as well as making sure the horse is mentally and physically fit for the work.

Veterinary Care

Although necessary, veterinary care can be a stressor for horses. For example, horses are not generally given **analgesics** (painkillers) after castration and the wound is left open so it can heal. Is it painful for the horse? Yes. Is it necessary? In many cases, yes. Some horses begin to feel stress if they see the veterinarian because they have learned to associate the veterinarian with unpleasant feelings. More and more veterinarians are now giving



treats to horses or petting them before they have to do any work on a particular horse. This helps maintain a more positive relationship between the horse and the veterinarian.

Farrier Work

Farrier work is somewhat unnatural. Since wild horses do not get their feet trimmed or have shoes put on, domestic horses may experience stress when they know this will be done, especially if they have had unpleasant experiences in the past. The farrier holds the horse's foot in a mildly uncomfortable position sometimes for prolonged periods. However, most horses, with proper handling, learn to become comfortable with farrier procedures.

A lack of veterinary or farrier care can definitely result in poor welfare due to increased injury, disease, or discomfort.



Farrier nailing on a hind shoe.



Activity Sheet

Reading Your Horse's Biological Signs.

Heart rate, respiration, and temperature are all affected by activity and stress. Measure and record your horse's heart rate, respiration rate, and temperature at rest. Then record the same measurements after exercise and after a stressful situation, such as trailering.

Reading a Horse's Biological Signs

Biological Signs	At Rest	After Exercise	After Stress
Heart rate (beats per minute)			
Respiration (breaths per minute)			
Temperature (degrees Fahrenheit)			

What did you notice when comparing the data from the different situations?

Did your data match what you expected? Why or why not?

Did all three metabolic processes (heart rate, respiration, and temperature) change in a similar way when compared to the resting rates?



Activity Sheet

How Much Water Does My Horse Drink?

Try this short activity. Put lines on the inside of a bucket with black permanent marker marking one gallon, two gallons, and so on. Fill the bucket with water, and record how much your horse drinks in a day. This may not be as easy as you think. (If your horse is not used to buckets, make sure to put it in the stall for a few days so it gets used to drinking out of one.) Do you think the amount of water your horse drinks is influenced by where it is or what the outside temperature is? Find out by doing this activity in different circumstances, and record your results using the table below.

Amount of Water a Horse Drinks and the Influences Upon It

What was happening? (any unique or potentially stressful situations?)	Where was my horse?	What was the temperature of the environment?	How many gallons did my horse drink?

- Did your horse’s location seem to have an impact on the amount of water it drank?
- Did the outside temperature seem to have an impact on the amount of water your horse drank?
- Did any stressful situation (recorded under “What Was Happening?”) seem to have an impact on the amount of water your horse drank?



Activity Sheet

1. Were you surprised at how stressful your horse's week was?

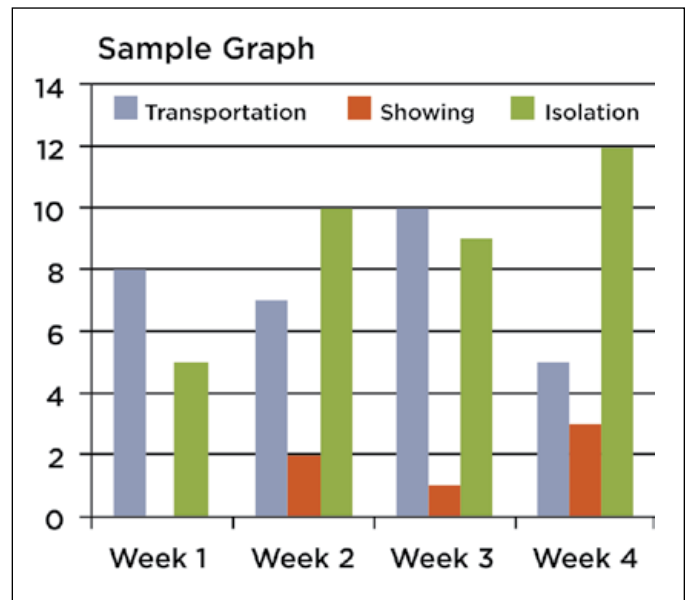
2. Did you observe stressors that you can work to change or eliminate?

3. What was the most surprising stressor?

4. Share your observations with your group and discuss whether each stressor is good or bad. Come to an agreement, and present it to the large group.

Opportunity to Expand

You can make a graph like the one on the right using the information from the table above. (If you create your table in Microsoft Excel, it can help create the graph for you.) Each color represents a stressor and the numbers along the side are the number of times the stressor is performed per week. You can even record data for several weeks to get a better idea of how much stress your horse goes through. Come together in small groups of 3 to 4 and discuss whether each stress is good or bad, come to an agreement, and present it to the large group.





Activity Sheet

Let's Talk About It: Discussion Questions

Use the following questions to lead a discussion with youth about what they learned while working through these activities.

What were the results of your water intake activity?

What was most difficult about identifying stressors?

Why was finding out what stress a horse goes through important?

What things led you to believe that a stressor was good or bad?

Why is it important to know what a horse's vital signs should be and how to take them?

How can you limit the amount of bad stress a horse feels in the future?

In what other situations might you notice a change in vital signs or water intake?



Production Measures (Biological Functioning)

Leader Guide

Objectives:

- Be able to body condition score horses.
- Determine how to use performance as an indicator of welfare.

Life Skills:

- Decision making
- Problem solving
- Concern for others

Materials Needed:

Copies of the “Evaluating Body Condition and Performance” activity sheet

Writing utensils

Paper

Four horses

Three horse owners

Pictures of horses with varying body condition scores (optional) (Part of the youth activity could involve youth arranging this group and assigning body condition scores.)

New Questions

In a given day, hundreds of questions will come to a young person’s mind. Give each participant a sheet of paper and have them capture at least three questions that occur to them as they do each set of activities.

Examples: Do some horses prefer to stay outside all the time? Why do horses let us ride them?

Alignment to the National Research Council Science and Engineering Practices

Science & Engineering Practice	Action	Activity Title
• Asking questions and defining problems	Youth develop questions to use in their horse performance interviews with owners.	Evaluating Body Condition and Performance
• Planning and carrying out investigations	Youth determine indicators for evaluating performance changes.	Evaluating Body Condition and Performance
• Constructing explanations and designing solutions	Youth evaluate the body condition of a horse using the provided information and identify possible problems.	Evaluating Body Condition and Performance
• Engaging in argument from evidence	Youth determine body condition, provide evidence for their determination and explain how the evidence supports their determination.	Evaluating Body Condition and Performance



Resource Information

(Leaders, use this information to help youth in discussing the topic and the activities.)

Production Measures

Production measures (biological functions) occasionally conflict with other welfare measures. For example, a young horse may be growing well but exhibiting behavioral problems due to environment. Therefore, production measures are not always the best indicators of good welfare. They can, however, tell us when welfare is poor. Some production measures are:

Reproduction

Reproduction can be evaluated from two aspects: **mortality** (death) of foals and pregnancy rate. Foals may die because of poor nutrition of the dam or foal, high stress on the dam causing reduced milk yield, or illness of the dam or foal. Pregnancy rate is affected by both the mare and the stallion. Nutrition, stress, illness, and human management all can affect fertility of both the mare and the stallion.

Growth

Young horses need more nutrients than mature horses in order to grow. A dam's poor milk yield can inhibit growth. If a young horse is not given enough to eat or is not given a balanced ration, its growth will be stunted. Both mare and foal must be healthy for growth to be maximized. (Giffin & Gore, 1989). On the other hand, overfeeding young horses can cause problems with their joints as they become overweight. Parasites and illness can also limit growth.



Mare and foal in a pasture.

Weight

When a horse is overweight or underweight they cannot perform at an optimum level. You can determine if your horse is at a good weight by giving them a body condition score (BCS). This score ranges from 1 to 9, with 1 being very thin and 9 being obese. A score of 5 is ideal. To determine your horse's BCS, look at and feel the crest, withers, behind the elbows, ribs, over the back, between the hind legs, and the tail head. For a more detailed description see the table "Equine Body Condition Scoring."

General Attitude

Be attentive to your horse's attitude. A change in attitude can indicate a problem. For example, if a normally friendly horse becomes aggressive, something is probably wrong.

Performance




Performance is difficult to quantify in most cases. Racing and endurance are two areas where it may be a little easier because you can measure speed. Changes in show ring performance, especially at lower levels, will probably be subtle. A horse that acts out in the show ring (such as a horse that bucks or flips its head) may be in pain. These changes will be more apparent over time, as it may be difficult to determine if there is really a problem or if the horse is just having a bad day. One bad day is normal, but if it becomes a pattern of behavior, investigate to discover the source of the problem.



Equestrienne competing in dressage.



Equine Body Condition Scoring

Body Condition Score	Name	Description	
1 to 2		<p>Poor or very thin</p>	<p>The horse is extremely thin with the bones easily seen. No fat can be felt. A score of 2 indicates that the condition is slightly better than a 1.</p>
3 to 4		<p>Thin to moderately thin</p>	<p>The ribs are visible, the spine sticks up slightly, and the tail head is prominent. The withers, shoulders, and neck have some fat but are accentuated.</p>
5		<p>Well-conditioned</p>	<p>The back is level. The ribs can be felt easily but not seen. There is a layer of fat around the tail head, and the withers are rounded. The shoulders and neck blend smoothly into the body.</p>
6 to 7		<p>Moderately fleshy to fleshy</p>	<p>There is a crease down the back and ribs can be felt, but there is noticeable fat over them. The fat around the tail head is soft and is apparent around the neck, over the withers, behind the shoulders and along the inside of the hind legs.</p>
8 to 9		<p>Obese to extremely obese</p>	<p>The fat noticed in obese horses is more obvious. The neck is thickened. The ribs cannot be felt, the fat on the inside of the hind legs may rub together, the tail head bulges, the flanks are full, and the abdomen is potbellied.</p>

Note: Horses with long or thick hair coats will need closer examination, especially in the rib area, to accurately determine BCS.

Adapted from “Relationship Between Condition Score, Physical Measurements and Body Fat Percentage In Mares,” by D. R Henneke, G. D. Potter, J. L. Kreider and B. F. Yeates, 1983, *Equine Veterinary Journal*, 15(4), pp. 371-372.



Activity Sheet

Evaluating Body Condition and Performance

Is My Horse in the Correct Weight Range?

It is important not to let horses get too fat or too thin. But how can we tell if they are in the correct weight range? Evaluate at least four horses around you using the body condition information provided in the table “Equine Body Condition Scoring.” What is the body condition score of each horse? Give them a score. Add a few notes as to why you scored them the way you did. The more you practice, the better you will be at determining a horse’s body condition.

Scoring Horses

Horse	Body condition score/notes

- How did you determine the body condition score for each horse?
- Why do you think each horse was in the condition you identified?
- What factors influenced the body condition of each horse?
- Are there concerns about the body condition of any of the horses you evaluated?
- If there are concerns, what would you recommend changing?
- Could the owner have an impact on a horse’s body condition? Why or why not?
- Could location have an impact on a horse’s body condition? Why or why not?



Activity Sheet

Is My Horse Having a Bad Day?

Using the performance of most horses to determine if something could be wrong can be difficult. Think of all the ways you could look at performance as an indicator. Think about horses you know that have something wrong and consider how their performance changed.

Interview three or more horse owners with horses that have performance issues to determine what they noticed before the problem began. Ask in-depth questions about the specific performance changes to get as many details as possible. Record the questions you asked and the answer you got for each horse owner.

- What indicators do you think can be used to measure performance?
- Will the indicators be the same for every horse? Why or why not?
- Are there some indicators that are only useful in specific situations?

Come together in the large group to discuss what you found and what criteria might be used in the future to look at performance.

Let's Talk About It: Discussion Questions

Use the following questions to lead a discussion with youth about what they learned while working through these activities.

What did you find out about body condition scores?

What did you find to be the easiest part of determining a horse's body condition scoring?

Did you find anything to be difficult with determining a horse's body condition scoring?

What problems occurred when thinking about performance as a welfare indicator?

Why is it important to be able to body condition score a horse?

What special considerations should be given when body condition scoring horses with thick haircoats?

How did you decide what aspects of performance could indicate a change in welfare?

Will you act differently toward a horse when it seems to be having a bad day?

How will you change how you interact with a horse appearing to have a bad day?

References

Giffin, J. M., & Gore, T. (1989). *Horse owner's veterinary handbook* (2nd ed.). New York: Howell Book House.

Henneke, D. R., Potter, G. D., Kreider, J. L., & Yeates B. F. (1983). Relationship between condition score, physical measurements and body fat percentage in mares. *Equine Veterinary Journal*, 15(4), 371–372.



Immunological Measures

Leader Guide

Objectives:

- Identify situations that could make a horse sick.
- Recognize the effect stress has on sickness.

Life Skills:

- Critical thinking
- Decision making
- Disease prevention

Materials Needed:

Copies of the “What Makes a Horse Sick?” activity sheet

Writing utensils

New Questions

In a given day, hundreds of questions will come to a young person’s mind. Give each participant a sheet of paper and have them capture at least three questions that occur to them as they do each set of activities.

Examples: Does the breed of the horse affect how much it exercises each day? Do horses enjoy being ridden?

Alignment to the National Research Council Science and Engineering Practices

Science & Engineering Practice	Action	Activity Title
Constructing explanations and designing solutions	Youth brainstorm causes of sicknesses.	What Makes a Horse Sick?
Engaging in argument from evidence	Youth explain why some situations or circumstances can increase a horse’s chance of sickness. They use evidence and explain how the evidence supports their reasoning.	What Makes a Horse Sick?



Resource Information

(Leaders, use this information to help youth in discussing the topic and the activities.)

Your horse's immune system should work properly. Just as with humans, if it is not, your horse will not be able to fight off disease.

Immunological Measures

Immunological measures have to do with the function of the immune system as an indicator of welfare.

Although it is impossible for most horse owners to know exactly how well their horse's immune system is working, there may be a way to tell whether or not it is working as well as it should be.

Incidence of Disease

Usually a decrease in immune function means an increased incidence of disease. If your horse cannot adequately fight off disease, it will get sick more often.

The immune system can be suppressed by genetic predisposition to disease causing frequent illness, malnutrition, and stress. Stress can have a big impact on how well a horse is able to fight off disease. You may have noticed that you tend to get sick when you are under a lot of stress. It is the same with a horse.

Stress and Disease

High levels of stress increase the level of cortisol in the blood. As you may recall, cortisol is a stress hormone. High levels of cortisol may suppress the immune system, which increases the likelihood for disease. High levels of cortisol in the blood may mean the horse is attempting to adapt and cope with a situation, and not necessarily that they have poor welfare at the time.

Chronic Stress

Not all stress is negative. There can be good stress and bad stress.

A horse running around playing puts stress on the body, but it is a positive activity for the horse. However, chronic stress may lead to increased infectious disease such as influenza, increased incidence of stereotypies, decreased production potential, or all of these issues.



Activity Sheet

What Makes a Horse Sick?

Brainstorm a list of (at least 5) things that could make a horse sick.

Changes in the routine or amount of traveling can predispose a horse to sickness due to the stress associated with these things.

Now think about when you were sick.

What was happening in your life when you got sick? Are there certain times when you get sick more often?

What might be significant about those times?

What things in your horse's life might increase its chance of sickness? Why?

When might you see sickness in your horse? Why?

What could you do to decrease the likelihood of sickness?

What can you do to help reduce some stress and help improve your horse's health?

Let's Talk About It: Discussion Questions

Use the following questions to lead a discussion with youth about what they learned while working through these activities.

What did you learn about how stress affects your horse's health?

Why is it important to understand when your horse might get sick?

How could you change what you do to decrease the incidence of disease in your horse? What other things might you consider when thinking about horse health?



Humans and Animals Interacting

Leader Guide

Objectives:

- Identify safe and dangerous methods of horse handling in common situations.
- Recognize signs of horses fearing humans and the causes of such fear.
- Examine the effect of human fear on horse behavior.

Life Skills:

- Personal safety
- Critical thinking
- Concern for others

Materials Needed:

Copies of the “Getting a Handle on It” activity sheet
Writing utensils



Young boy petting a horse.

New Questions

In a given day, hundreds of questions will come to a young person's mind. Give each participant a sheet of paper and have them capture at least three questions that occur to them as they do each set of activities.

Examples: Do horses get depressed? Does the size of the horse affect how much it sleeps each day?

Alignment to the National Research Council Science and Engineering Practices

Science & Engineering Practice	Action	Activity Title
• Constructing explanations and designing solutions	Youth make connections between human handling and a horse's behavior.	Getting a Handle on It
• Engaging in argument from evidence	Youth use evidence to explain why they made the connections between human handlings and horse behavior.	Getting a Handle on It



Resource Information

(Leaders, use this information to help youth in discussing the topic and the activities.)

With most domestic livestock species, interaction with humans is a frequent occurrence. This is especially true with horses. Humans have horses because we enjoy them and do many different things with them. Anything humans do with an animal can affect its welfare.

Interactions Between Horses and Humans

Interactions between horses and humans are often frequent and intense. They affect both partners. In addition, the relationship is dynamic, changing over time. It can become more or less healthy as interactions increase or decrease in frequency and duration.

The way in which we handle our horses has an impact on their welfare. A few of the major times when management and handling make a big difference are:

Training

Training methods can sometimes create problems for the horse. If young horses are pushed too hard, they can develop a poor attitude about work or even suffer physically with lameness.

People may use artificial training aids such as whips, draw reins, martingales, or spurs to get the horse to respond more readily. These artificial aids are not automatically harmful if used in a fair and appropriate manner. Potentially severe bits are sometimes used as a quick fix for head set problems or stopping problems. These devices are not necessarily bad if used properly and kindly. The human's use of the bit or training aid ultimately determines its severity.

Poor timing of reinforcement and punishment can also confuse horses. An uninformed trainer can confuse a horse with late or inappropriate reinforcement. When training horses, you must remain consistent and predictable in your use of cues and reinforcements. Though it is important to be fair to your horse during training, it is also important that horses perceive people as ranking top in the dominance hierarchy to truly have successful interactions. Fairness of training means using the

appropriate amount of force while giving the horse the opportunity to try to make the correct choice prior to being punished.

Transportation

Riding in a trailer can be a positive or a negative experience, depending on how the handler deals with the horse. Horses are naturally hesitant about getting into a trailer, especially for the first time. Patience and an understanding of the horse's nature are necessary to make future experiences easier for horse and handler. Harsh treatment will likely make future loading difficult or might cause anxiety while the horse is being hauled.



Draft horse standing tied to a trailer eating from a hay bag.

Veterinarian/Farrier

As mentioned previously, veterinarian and farrier visits are often uncomfortable experiences for horses. Patient handling can alleviate potential unpleasantness – at least somewhat. For example, although dental care is never pleasant for the horse, it may improve the horse's welfare. During dental work, either the horse is sedated or its head is held fairly immobile by a rope around its barrel and attached to the bottom of a special halter. The dentist then uses a variety of tools to smooth out the teeth.



Farrier nailing a shoe on to a horse's hoof.

Two Facets of Fear

Anything we do with horses can be made negative if fear or pain is involved. Two facets of fear will affect the horse's welfare: the horse's fear of humans and the human's fear of horses.

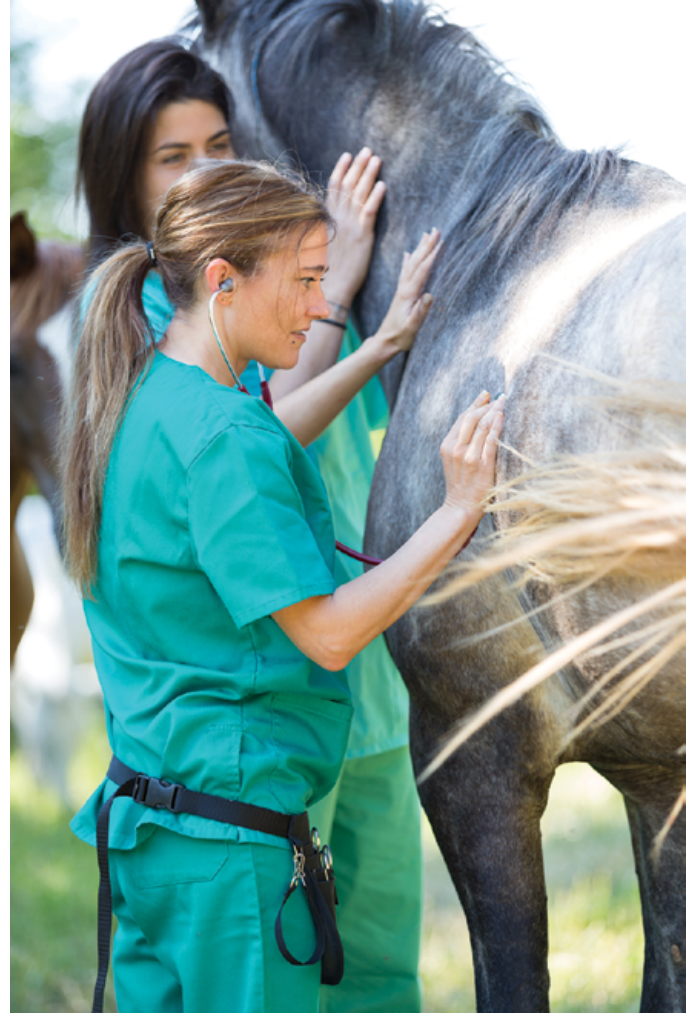
Horse's Fear of Humans

As prey animals, horses are naturally fearful. Humans can be seen as predators. It is important for the horse to trust us. As positive interactions increase, the horse becomes used to us, reducing fear.

Shying away from contact: Horses who have been abused may not allow themselves to be touched. Most horses like to be petted and scratched, but if they move away, they may either be in pain or might have been abused in the past. Head-shyness can be the result of rough handling of the head. It will take work to get the horse over this behavior.

Flinching: Flinching is another sign of past abuse or pain. If the horse is in pain and flinches when you touch a certain area, you should be sensitive around that area. A lack of sensitivity to the horse's discomfort can lead to a distrustful horse.

Aggression: Some horses will act aggressively toward what they fear. This is not safe for humans, as horses are much stronger than we are. If you find yourself around one of these horses, find someone more experienced than you to help you work with the horse. Unfortunately, a few horses cannot be safely cured of this behavior.



Veterinarian and horse.

Stress: Fear causes stress. Think about a time when you were afraid. You certainly felt stress in that situation. This would definitely be an example of bad stress, which is not good for the horse's health.

Human's Fear of Horses

It may not be as obvious, but a fearful human can lead to negative experiences for the horse. Horses are sensitive creatures and notice our moods. We give off subtle cues we may not recognize, but the horse does. It is unclear whether or not they know exactly what our mood is, but they can tell when something is different. They seem to recognize if we fear them.



Effects on husbandry: Fear leads us to act tentatively around horses, which means they may learn that they can take advantage of us. When fearful, we are not able to give clear signals to direct the horse. This leads to a confused horse that may get punished for not performing the correct action.

Safety: If you are afraid of a certain horse, get someone to help you or stay away from the horse. If the horse is dangerous, do not try to get over your fear by being around it. If you have a fear of horses because of a bad experience, find a quiet horse to help you work through the fear.

Horses can have a calming effect on people and bring joy into many lives. They can teach responsibility, patience, and empathy. It is our job to treat them with respect and care. We take care of them and make sure they are free from disease and pain. There can be negative aspects to the relationship, though. Sometimes what we do with horses can be done in harsh or unfair ways. This leads to fear and stress for the horse. Horses can become quite scary animals if they become aggressive or if an accident happens. Sometimes horses hurt people, not because they meant to, but because they are large prey animals and will react to stimuli without thinking.



Activity Sheet

Getting a Handle on It

Make a list of the good and bad ways people could handle horses in these three situations. Talk about these ways in the large group. There may be different ideas as to what is good and what is bad handling. Talk about how the horse might act if treated in the ways you listed.

Situation: Training

Good handling	Bad handling	Horse's likely response

Situation: Transportation

Good handling	Bad handling	Horse's likely response



Activity Sheet

Situation: Veterinarian/Farrier

Good handling	Bad handling	Horse's likely response

Choose two types of handling you identified above and explain how they contribute to the horse's behavior.

What do you think might be the underlying feeling the horse has during stressful situations like those in the tables?

What might a fearful horse do when being handled by humans?

Do you think humans affect how a horse behaves in a specific situation?

Have you ever been afraid of a horse or know someone who was?

How did you or they show fear of the horse?

How did the fear make the horse behave?

Discuss in your group the impact fear can have on both horse and human behavior.

Let's Talk About It: Discussion Questions

Use the following questions to lead a discussion with youth about what they learned while working through these activities.

How did it feel to talk about your fears?

How did it make you feel to consider how you handle horses?

What similar experiences have you had to being afraid of horses?

Do you think fear works the same in other animals?

What did you learn about the way you handle your horse?

How might you handle horses differently in the future?

Animal Ethics

Leader Guide

Objectives:

- Identify ethical issues in the horse industry.
- Think and discuss about purposes for equine practices.

Life Skills:

- Empathy
- Responsible citizenship
- Concern for others
- Self-responsibility

Materials Needed:

Writing utensils
Copies of “Should We Do That?” activity sheet

New Questions

In a given day, hundreds of questions will come to a young person’s mind. Give each participant a sheet of paper and have them capture at least three questions that occur to them as they do each set of activities.

Examples: What makes horses happy? Do horses prefer one type of feed over another?

Alignment to the National Research Council Science and Engineering Practices

Science & Engineering Practice	Action	Activity Title
• Constructing explanations and designing solutions	Youth list and discuss the pros and cons around some horse issues.	Should We Do That?
• Engaging in argument from evidence	Youth use evidence to support their stand on horse issues and to explain their reasoning.	Should We Do That?



Resource Information

(Leaders, use this information to help youth in discussing the topic and the activities.)

Some activities we do with horses raise ethical questions. They are questions of “should we?” not “can we?” Generally, anything that makes you uncomfortable or that you are not sure you want others to know about could be an ethical issue.

Animal Ethics

Animal ethics is the endeavor to determine our responsibilities or duties toward nonhumans and to establish principles that serve to guide our moral interactions with them.

Some practices you might see in different types of horses are:

Tail Docking

In **tail docking**, the dock of the tail is cut short. This is seen mostly in draft horses such as the one shown here, but also in other cart horses such as hackneys. The purpose was originally to keep the tail from getting caught in tack and farm equipment. Now tails are often docked for show horses, considered by some to be more visually appealing and a nod to tradition. A potential problem is the limited ability the horse now has to swish away flies. This practice is illegal in some states.



Draft horse with a docked tail.

Tail Carriage

There are two extremes that some people prefer their horses exhibit when carrying their tails. Some want the tail to be low and quiet, while others desire the tail to be carried high. Stock horses sometimes have their tails **blocked**. A substance is injected at the base of the tail to encourage a low, quiet tail carriage. People may put ginger under the tail of society breeds such as Arabians, Morgans, and saddlebreds to encourage high tail carriage. Both practices appear to cause the horse at least some discomfort.



Arabian with high tail carriage.



An American Quarter Horse with a low, quiet tail carriage.



Drugging Horses for Performance

People may administer drugs to a performance horse for a variety of reasons. Some horses are drugged to make them quiet and slow. Others are drugged for the opposite reason – to make them more alert, even hyperactive. Still others are given drugs to mask pain. You may see this with a horse that is mildly lame upon arrival at the horse show. Depending on the specific situation and severity, using drugs to improve a horse's performance would generally be considered unacceptable. Occasionally, there are acceptable uses of drugs for therapeutic purposes. An example of this would be an older horse with mild arthritis that receives low levels of **bute** (phenylbutazone, an anti-inflammatory painkiller) to increase comfort. Always be sure to know your show association's rules about the use of medications and consult a veterinarian before you administer any medications.

Movement

In some of the English disciplines, high knee action is desired. The horse is supposed to look flashy, so some people will try various methods of making their horse pick its feet up higher. Heavy shoes with thick pads may be used, in certain breeds (such as the American Saddlebred horse shown here). Chains may be used around the pasterns to encourage lift. One problem with horses shod in this manner is that they rarely receive turnout due to the risk of pulling the shoes off and damaging the hooves.



High trotting American Saddlebred.



Activity Sheet

Should We Do That?

How do we decide if what we do to horses is ethical? Look at the list of practices listed in the first column. List the possible pros and cons for each practice. Try to think of as many as possible. These are arguments people may make when explaining why they do certain things.

Pros and Cons of Animal Practices

Practices	Pros	Cons
Tail docking		
Tail carriage		
Drugging show horses		
Movement		



Activity Sheet

Discuss each of these topics. You may not be able to come to an agreement in answering the questions below. Be respectful of all opinions as there may be disagreements. Some important questions to ask are:

Does this choice negatively affect my horse's welfare?

Does this choice leave me stressed or anxious?

Does this choice involve breaking the law?

Does this choice involve breaking a rule (of a breed association or show organization)?

Does this choice hinder my ability to demonstrate good sportsmanship?

Do other individuals or organized groups feel strongly that the choice I have made is unethical?

Does this choice give me an advantage over my competitor?

Is this choice something I feel compelled to keep a secret?

Let's Talk About It: Discussion Questions

Use the following questions to lead a discussion with youth about what they learned while working through these activities.

How do you feel about each of the issues after doing this activity?

What was the most difficult topic to discuss during this activity?

Why do you think that topic was difficult to discuss?

Were there problems that occurred over and over?

Why was this activity important?

What did you learn about looking at an issue from both sides?

How will the issues raised and discussion be useful in the future?



Evaluating the Welfare of Horses

Leader Guide

Objectives:

- Perform risk assessments.
- Present reasons for your decisions.

Life Skills:

- Critical thinking
- Decision making
- Planning and organizing
- Communication

Materials Needed:

- Writing utensils
- Copies of “Risk Assessment” activity sheet
- Paper

New Questions

In a given day, hundreds of questions will come to a young person’s mind. Give each participant a sheet of paper and have them capture at least three questions that occur to them as they do each set of activities.

Examples: How do horses communicate? In a group of horses, is there always a boss or dominant horse?

Alignment to the National Research Council Science and Engineering Practices

Science & Engineering Practice	Action	Activity Title
• Analyze and interpreting data	Youth make observations and evaluate the welfare of the horse. Youth evaluate the environment of the horse and determine how that contributes to its overall welfare.	Risk Assessment
• Engaging in argument from evidence	Youth provide evidence and explain their reasoning from their evaluation of the welfare of the horse.	Risk Assessment



Resource Information

(Leaders, use this information to help youth in discussing the topic and the activities.)

You've almost completed *A Guide to Equine Welfare Assessment!* The objective of this section is to present opportunities for youth to use their new knowledge. In this section, youth will be asked to take the information learned in the previous sections and apply it to real-life situations. Youth will complete a risk assessment, which is a process of evaluating the potential risks that may be involved in a projected activity, a horse farm in this case.

Risk Assessment

Now that they know what to look for, youth can take this knowledge and transfer it to their own farms or animals, applying it to a variety of situations. As youth travel through the checklist of helpful questions on the "Risk Assessment" activity sheet, have them think about how each answer could affect the welfare of the animals under their care. A great resource for many of the answers to these questions would be the Generally Accepted Agricultural and Management Practices for the Care of Farm Animals (GAAMPS). You can find a complete guide to these GAAMPS by visiting <http://www.michigan.gov/mdard/>.

Remember that each horse's job will affect its individual needs. For example, is this horse actively showing, racing, trail riding, or in training? On the other hand, is this horse an older retired show horse or a pasture pet? Not every horse requires the same diet or the same exercise regimen.

Conditions Affecting Welfare

Fencing should be in good condition – free from protruding objects such as nails, bolts, and latches. These protrusions can cause injury to the horse or damage to equipment if not properly eliminated. The perimeter barrier fence should be strong enough and not dependent on electricity for containment. If woven wire is used, the holes should be small enough that a horse cannot get its foot through.

Overcrowding can present a number of problems including an increase of incidences of injuries from kicking and biting, and sickness related to parasite overload. Additionally, overcrowding can lead to problems with pasture management due to overuse of the ground.

Each pasture should be equipped with some sort of shelter or windbreak. Provide a clean, dry area where the horse can be protected from extreme weather. In the summer months, an area of shade should prevent overheating. Horses should also be protected from heavy rains. In the winter months, protect the horse from the wind or snow. Examples of shelters are lean-tos, constructed windbreaks, open barns and woodlots. Each pasture should have access to clean fresh water.

If horses are stalled, does their bedding look dry and clean? Is the barn well ventilated? Poor ventilation can create respiratory problems for animals. How often are these horses exercised?

While evaluating the nutritional needs of horses, it is important to evaluate their body condition score as discussed in the section "Production Measures (Biological Functioning)." The body condition score will tell a lot about how the horse is coping with its current situation. Remember also that each horse will have different requirements based on age, activity level, and reproductive status. Horses should be provided the majority of their nutrition through roughage (approximately 1.5 percent to 2 percent of their body weight everyday).

When evaluating the safety of horse trailers or vans, make sure they are free from protruding sharp objects on all sides as well as the ceiling. When necessary, provide horses with safety equipment, such as leg wraps, helmets, blankets, and tail wraps to further prevent possible injury. Trailers should be properly ventilated to prevent the exhaust gas from filling up the trailer.



Activity Sheet

Risk Assessment

Visit a farm of your choice and using the provided checklist of questions, determine certain safety risk factors that the farm may or may not have. Remember, this is only a partial list of possible questions. What might be some other good questions to ask yourself?

Rick Assessment Checklist

As you answer each question, think about how each might affect a horse's welfare positively or negatively.

Facilities & Housing

- ✓ Are all fences in good condition?
 - What type of fencing is used?
 - Are there any sharp protrusions?
 - Are any repairs needed?
- ✓ Are the pastures overcrowded?
 - What are the pasture dimensions? How many horses are there?
- ✓ Is there shelter or windbreak provided in each pasture?
 - If so, what type?
- ✓ Are the horses stalled?
 - If so, do they have appropriate bedding?

Nutrition

- ✓ Evaluate the body condition score (BCS) of the horses.
 - Does there appear to be any problems with BCS?
- ✓ What type of feed are the animals receiving?
 - Grass, alfalfa, or mix?
 - Oats or sweet feed?
 - Pasture only?
- ✓ How often are the horses fed?

Exercise

- ✓ How often are the horses exercised?
 - What type of exercise?



Activity Sheet

Transportation

- ✓ Do the trailers appear to be in safe, working condition?

Health & Medical

- ✓ Does the horses' behavior suggest that they are healthy?
- ✓ How often are the horses checked for farrier or dental needs?
- ✓ What is the farm's parasite control protocol?

Let's Talk About It: Discussion Questions

Use the following questions to lead a discussion with youth about what they learned while working through these activities.

How do you feel about each of the issues after doing this activity?

What was the most difficult topic to discuss during this activity?

Why do you think that topic was difficult to discuss?

Were there problems that occurred over and over?

Why was this activity important?

What did you learn about looking at an issue from both sides?

How will the issues raised and discussion be useful in the future?



Glossary

analgesics – painkillers

animal ethics – the endeavor to determine our responsibilities or duties toward nonhumans and to establish principles that serve to guide our moral interactions with them

animal rights – the treating of animals as though they are allowed the same things due them as humans, often not allowing for humans to use animals in any way, even riding horses or keeping dogs and cats as pets

animal welfare – how an animal copes with the conditions in which it lives

behavioral indicator – an aspect of an animal's way of acting that varies from the normal for that horse

bute – phenylbutazone, an anti-inflammatory painkiller used to increase comfort

colic – pain in the abdomen

cortisol – a hormone produced by the adrenal gland that is secreted when an animal experiences stress

ethogram – a catalog or table of all the different kinds of behavior or activities observed in an animal

founder – inflammation of the laminae of the hoof causing severe pain and potential rotation and sinking of the coffin bone

hierarchy – ranking of horses in a herd

laminae – part of a horse's hoof, the insensitive laminae and the sensitive laminae intermesh together to hold the hoof wall to the coffin bone

mortality – death

natural behavior – a way of acting that horses have a strong desire or need to perform

physiological indicator – an aspect related to the normal functioning of the body such as heart rate, respiration, temperature, water intake, feed intake, and cortisol levels

production measure – a biological function such as reproduction, growth, weight, general attitude, and performance

redirect – the changing of the direction of a certain behavior

stereotypy – a repetitive behavior that is a way of coping

stress – a biological response that an animal uses to defend its tendency to remain stable. (**Natural stress** takes place when a horse is reacting to its environment the way its wild counterparts would. A horse experiences **unnatural stress** through various interactions with humans that cause discomfort such as farrier work, vaccinations, or riding.)

suppression – the stopping of a normal behavior or the failing to develop normal behaviors

tail blocking – a practice in which a substance is injected at the base of the tail to encourage a low, quiet tail carriage

tail docking – a practice in which the dock of the tail is cut short

time budget – a recording of the different behaviors that a horse performs over a period of time, and how often each behavior is performed within that time period



MICHIGAN STATE
UNIVERSITY | **Extension**

MSU is an affirmative-action, equal-opportunity employer, committed to achieving excellence through a diverse workforce and inclusive culture that encourages all people to reach their full potential. Michigan State University Extension programs and materials are open to all without regard to race, color, national origin, gender, gender identity, religion, age, height, weight, disability, political beliefs, sexual orientation, marital status, family status or veteran status. Issued in furtherance of MSU Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Jeffrey W. Dwyer, Director, MSU Extension, East Lansing, MI 48824. This information is for educational purposes only. Reference to commercial products or trade names does not imply endorsement by MSU Extension or bias against those not mentioned. The 4-H Name and Emblem have special protections from Congress, protected by code 18 USC 707. CYI 126-1P-09:2017-Web-PA/AB WCAG 2.0