

Monitoring Your Horse's Vital Signs

Vital signs are measurements of body functions that indicate the health status of the animal. Body temperature, heart rate, and respiration (breathing) rate are some easily monitored and commonly used vital signs. A horse's vital signs usually fall within an average range for all horses. However, there are individual differences in vital signs, and some healthy horses may have a slightly higher or lower measurement than the average. Because of small individual differences in values of vital signs, it is important to know the usual value for your horse. Measuring your horse's vital signs occasionally will give you an indication of what is "normal" for your horse.

A change in vital signs from normal values may indicate a health problem with the animal. Generally, greater and more prolonged changes in vital signs indicate more severe health problems in horses. Monitoring vital signs can give you a good indication of your horse's basic health and can help you determine when professional veterinary care is needed. Knowledge of your horse's vital signs can help you detect a serious health problem early in its development when your veterinarian can more successfully treat the illness. Information about vital signs early in the course of a disease can help your veterinarian monitor the horse's response to treatment. Additionally, vital signs can be used in basic management decisions such as determining when the horse has cooled down after exercise.

Temperature

The internal body temperature of a healthy horse is maintained within a fairly narrow range. Normal rectal temperature for the horse ranges between 99.5 and 101.5 degrees F, with 100 degrees F the average. Environmental temperature extremes, exercise, and excitement may change an individual horse's body temperature slightly, but body temperature usually remains within the normal range during these conditions. Body temperature of a foal varies more than that of an adult horse and is more influenced by ambient temperature. Above-normal rectal temperatures in horses may indicate disease, overheating, or colic. Extremely high temperatures can lead to convulsions or death. A below-normal rectal temperature may indicate shock, chilling, or a critically ill animal. Generally a rectal temperature a few degrees above (102 degrees F) or below (98 degrees F) normal indicate the animal is ill and should be closely monitored. Horses with temperatures higher than 103 degrees F or lower than 97 degrees F need immediate, professional veterinary care.

You can take your horse's temperature with either a large animal veterinary thermometer or a thermometer designed for human beings. Veterinary thermometers are easier to handle. They have a loop on the end through which a string can be tied. The string can be fastened with a hair clip to the horse's tail, so you do not have to hold the thermometer. Use the following procedure for taking the horse's temperature:

1. Shake down a mercury thermometer so the mercury reads about 96°F, or clear a digital thermometer.
2. Lubricate the thermometer with petroleum jelly, mineral oil, or some other non-toxic lubricating substance.
3. Stand beside the horse's hip and as close to the horse as possible to reduce your chances of being kicked. Pull the horse's tail to the side and gently insert the thermometer into the rectum until only the tip is visible. If the thermometer does not easily slide into the rectum, change the angle of the thermometer slightly and rotate it during insertion.

4. If the thermometer has a string and hair clip attached, fasten the hair clip to the horse's tail. If the thermometer is not equipped with a string and hair clip, you must hold the thermometer while taking the horse's temperature.
5. If the horse's rectum is "ballooned" with air, the tip of the thermometer must be held against the inside rectal wall by gently shifting the outside portion of the thermometer to one side.
6. Leave a mercury thermometer in place for 3 minutes before removing it, wiping it off, and reading it. A digital thermometer usually has an auditory signal when the temperature reading has stabilized.

Pulse

Every beat of the horse's heart pushes a surge of blood through the arteries. This surge of blood can be felt as the pulse in arteries lying close to the body surface. The normal resting pulse rate of a mature horse ranges from 30 to 40 beats per minute (bpm) with an average of 35 bpm. Exercise, environmental temperature, disease, the horse's physical condition, excitement, and age (foals typically have a higher pulse rate than adults) can all affect the pulse rate. Pulse rates of more than 80 bpm for a prolonged time period in the absence of exercise or excitement can indicate illness or colic in the horse. Maximal heart rates during the start of exercise can be more than 200 bpm and are not a cause for alarm. These extremely high heart rates can be detected only with a heart rate monitor in place during exercise because the horse's heart rate will quickly drop when exercise is stopped.

You will need a watch with a second hand to take your horse's pulse on one of several arteries. Some easily detected arteries are found on the inside edge of the horse's lower jaw, just below the chestnut on the front leg, the inside surface of the cannon bone just below the knee, and the groove beneath the base of the tail. It takes some practice to consistently locate and count the horse's pulse, so you should practice this procedure until you are confident in locating an artery and feeling the pulse. Use the following procedure for taking your horse's pulse:

1. Locate one of the surface arteries with the flat side of your fingertips.
2. When you can consistently feel the pulse beat, count all beats for 30 seconds. Double the count to give you beats per minute.
3. Pulse rates can increase greatly when a horse becomes alert or excited, so you may need to take several readings over time to determine the resting pulse rate.

Respiration Rate

Respiration is movement of air in (inhalation) and out (exhalation) of the lungs. The respiration rate of the mature horse at rest is 8 to 16 complete breaths (inhalation and exhalation combined make up one complete breath) per minute. Exercise, high environmental temperatures, high humidity, excitement, pain, and illness will increase respiration rate. A high respiration rate may not be as indicative of illness as other vital signs because it is more influenced by environmental conditions. However, respiration rate in combination with other vital signs can be a good indication of health. The sound and pattern of respiration can be used to evaluate horse well-being. Generally, respiration is steady and effortless, and it produces little noise. Irregular, shallow, labored, or noisy respiration patterns can signify exhaustion or illness.

You can determine your horse's respiration rate by observing movements of the horse's rib cage, flank, or nostrils, or exhalations can be felt by holding your hand approximately 3 inches in front of the horse's nostril. You will need a watch with a second hand to determine respirations. Use the following procedure for determining your horse's respiration rate:

1. Locate respiratory movements in the horse's rib cage, flank, or nostrils or feel exhalations on your hand.
2. Count either the inspirations or exhalations for 30 seconds. Since a breath consists of an inhalation and exhalation, do not count both. Double the count to give breaths per minute.

Mucous Membrane Color

Mucous membranes line body cavities open to the air such as inside the mouth, nostrils, and eyelids. Mucous membrane color indicates the quantity and condition of the blood flowing through these areas. Healthy horses have pink mucous membranes, and changes from this color can indicate anemia, colic, illness, or shock. A bright-red color may signify illness and fever. A pale color may indicate anemia, and a bluish color indicates poor circulation and possibly shock. Practice checking the color of your horse's mucous membranes so that your horse is comfortable with the procedure, and you can recognize changes from the normal pink color. Use the following procedure for checking mucous membrane color:

1. Stand by the side of the horse (not directly in front) and pull its head toward you slightly.
2. Lift up the horse's upper lip in the area of the corner incisor tooth to inspect the color of the inside lip and gums, or gently pull down the horse's lower eyelid to check the color inside the eyelid.

Capillary Refill Time

Capillary refill time is the time it takes blood to return to a mucous membrane after pressure forces it out. When blood is forced out of a mucous membrane the area will look pale and be a yellow to white color. When blood returns to the area, the mucous membrane color reverts to its healthy pink color. The capillary refill time for a healthy horse is approximately 2 seconds. A capillary refill time of more than 2 seconds may indicate a circulatory problem, shock, or dehydration. Capillary refill time is usually checked on the horse's upper gum. Use the following procedure for checking your horse's capillary refill time:

1. Stand by your horse's shoulder and pull its head toward you slightly.
2. Lift up the horse's upper lip in the area of the corner incisor tooth and press your thumb firmly against the gum for 2 seconds.
3. Remove your thumb and count the seconds until the pink color returns to the area.

Hydration

Hydration refers to the amount of fluid in the body. Dehydration occurs when the fluid loss is greater than the amount absorbed by the body. Dehydration can be caused by lack of fluid intake, fever, diarrhea, sweating, blood loss, and urination. Horses worked in hot, humid conditions or confined to a trailer on a hot day often become dehydrated. Mild dehydration caused by lack of water can be treated by letting the

horse drink small amounts of water at frequent intervals. Dehydration due to other causes or severe dehydration requires immediate professional veterinary care.

A horse that is properly hydrated has pliable, elastic skin. A dehydrated horse's skin will lose pliability and become dry and wrinkled. The horse's eyes seem to sink into the skull, and its mucous membranes appear dry and sticky. Use the following procedure for checking hydration in the horse:

1. Stand by the horse's shoulder and pinch up the skin near the base of the horse's neck between your thumb and fingers for approximately 2 seconds.
2. Release the skin. A properly hydrated horse's skin will quickly flatten to its original position against the muscle mass of the neck. A dehydrated horse's skin will return to its normal position very slowly or may stay "tented up" rather than returning to its normal position.

Excreta Appearance and Patterns

The physical appearance and pattern of excreta (manure and urine) is not really considered a vital sign, but it can be a good indication of the overall health of the horse. Horses generally defecate every 2 to 3 hours and urinate every 4 to 6 hours. Any sudden change in color or consistency of urine or manure may signify illness. Elimination frequency will increase with excitement. Frequent eliminations in a calm horse or straining during urination or defecation are not common and could indicate muscular soreness or illness. Normal horse urine is cloudy in appearance because of the calcium carbonate crystals it contains. Coffee-colored or bloody urine, diarrhea, or failure to defecate indicate potentially serious problems that require professional veterinary attention.

Horse owners should know normal vital signs for horses and some methods of monitoring them. Practice monitoring your horse's vital signs so you and your horse are comfortable with the procedures and you have confidence in your results. Not every method of measuring vital signs is presented in this publication. However, if you become familiar with the simple methods presented here, you can easily monitor your horse's health status. Whenever you are in doubt about your horse's health, contact your veterinarian for advice.