

Monitoring Livestock Vital Signs

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Introduction

Taking temperature, pulse rate, and respiration readings can help you gauge an animal's overall health. In general, abnormal readings in animal blood pressure, pulse rate, temperature, and vital signs could indicate a larger problem. Monitoring livestock vital signs can help you identify potential issues early so you can contact your veterinarian for further diagnosis. Your veterinarian may also ask you to measure and report vital signs when you call for assistance in the event of an emergency, illness, or injury.

Monitoring an Animal's Temperature

To determine whether your animal's body temperature is normal, follow these steps to take a temperature reading.

- Use a veterinary thermometer—conventional and digital types are acceptable.
- Tie a long string securely to the end of the thermometer.
- Moisten or lubricate the end of the thermometer.
- Insert the thermometer into the rectum (figure 1). Ensure that the thermometer does not get pulled into the rectum or broken; the string provides a backup means for removal. For horses, you may clip the thermometer string onto a portion of the tail.
- Remove in 2 to 3 minutes and read or use the time interval recommended by the manufacturer.





Figure 1. You may opt to use a digital thermometer.

Interpreting Thermometer Readings

Be mindful that external temperatures can influence thermometer readings. Similarly, a healthy animal may appear to have a fever after a period of activity, for example, a horse shortly after it is ridden, or cattle after they are moved or worked on a hot day. If a resting animal has an abnormally high body temperature apart from normal fluctuation and environmental conditions, this may indicate that the animal is fighting an infection or suffering from heatstroke. This is known as "having a fever" in humans. When temperature deviates by one degree from the normal range, the animal is considered to have a fever. Abnormally low temperature readings occur less often and can indicate problems but can also be the result of external factors and normal fluctuation.

Table 1. Normal Adult Animal Body Temperature by Species

Animal	Cattle
Normal Rectal Temperature Range (°F)	100.4-103.1
Animal	Sheep and Goats
Normal Rectal Temperature Range (°F)	102.2-104.9
Animal	Swine
Normal Rectal Temperature Range (°F)	100.4-104
Animal	Horses
Normal Rectal Temperature Range (°F)	99.5-101.3
Animal	Foals
Normal Rectal Temperature Range (°F)	99.5.0-102.2

Values taken from Vital Signs in Animals: What Cattle Producers Should Know About Them, LeViness, University of Arizona, publication number BCH-3000

Monitoring an Animal's Pulse

For each species, use a stopwatch to measure pulses that occur in one minute (60 seconds). Use gentle, steady pressure to palpate the artery (figure 2) and count pulses. Ensure that you do not palpate and measure using your thumb, as you may interpret your own pulse as that of the animal's. If you have a stethoscope available, you may also be able to listen for a pulse on the left side of an animal's chest, just behind the elbow or at what is considered the "girth line" on a horse

Cattle

The external maxillary artery crosses the lower edge of the jaw, just in front of the masseter (cheek) muscle. When you place your fingers flat on the cheek in front of the masseter muscle and move them back and forth, you can easily feel the artery.

Sheep and Goats

Place your hand on the inside of the animal's thigh—the saphenous artery runs down the inside of the hind leg.

Swine

In swine, the heart must be palpated directly to feel a pulse. Researchers and others sometimes use heart rate monitoring devices when measuring heart rates in swine.

Horses

As with cattle, the external maxillary artery crosses the lower edge of the jaw, just in front of the masseter (cheek) muscle. When you place your fingers flat on the cheek in front of the masseter muscle and move them back and forth, you can easily feel the artery. You can also measure pulse on a horse on the left side of the chest, just under the elbow, in which case it may be helpful to ask the horse to step a bit forward on the left side. Some horse owners measure the digital pulse—this can be felt on the back of the pastern above the coronary band or just above the pastern joint. However, digital pulse can be more difficult to locate than the pulse behind the elbow or on the edge of the jaw. This reading is used by some horse owners to indicate possible cases of laminitis, as a horse with laminitis may experience a throbbing digital pulse.



Figure 2. You can locate an artery on the edge of the jaw.

Interpreting Pulse Measurements

Pulse can vary from the listed normal ranges for a number of reasons, including recent exercise or activity, animal age, size, external conditions, and more. However, a pulse rate that falls outside of the normal range for your animal at rest can be indicative of a problem and pulse rate may be useful information to provide to a veterinarian in case of an emergency.

Table 2. Normal Animal Pulse Rate by Species

Animal	Cattle
Heart Beats per Minute	40-70
Animal	Sheep and Goats
Heart Beats per Minute	60-90
Animal	Swine
Heart Beats per Minute	60-100
Animal	Horses
Heart Beats per Minute	28-40
Animal	Foals
Heart Beats per Minute	100 for newborn foals; 45-60 for weanlings and yearlings

Values taken from *Vital Signs in Animals: What Cattle Producers Should Know About Them*, LeViness, University of Arizona, publication number BCH-3000

Monitoring an Animal's Respiration Rate

For most animals, you may observe or palpate the rise and fall of the animal's flank, using a stopwatch to take a count of breaths over the course of one minute (figure 3). You may also observe breaths at the nostrils (figure 4). Take note of any wheezing, rattling, groaning, or noisy breaths and try to determine if breathing is non-rhythmic, labored, or shallow.



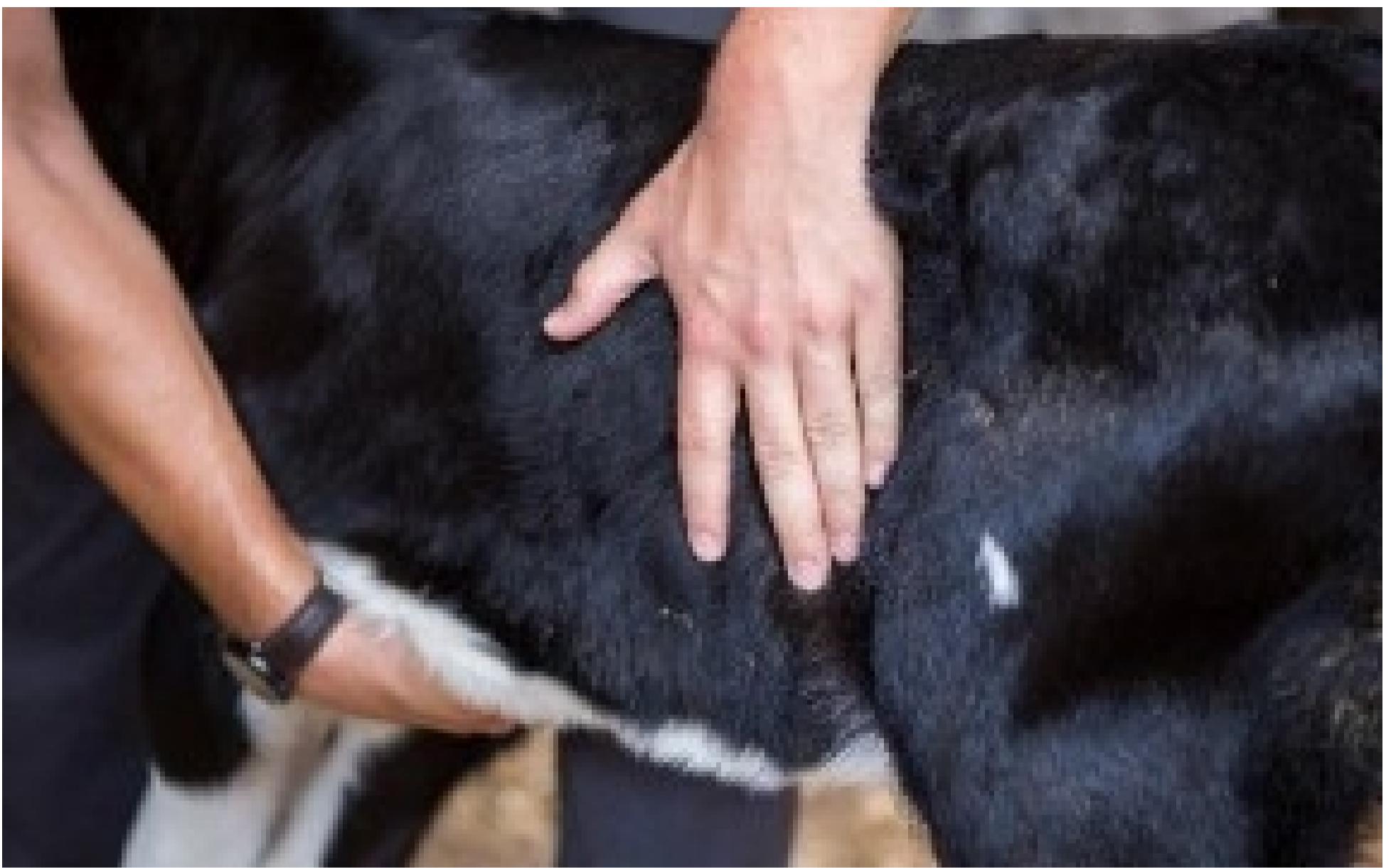


Figure 3. You can measure an animal's respiration rate by observing or palpating the rise and fall of an animal's flank.



Figure 4. You can measure an animal's respiration rate by observing breaths at the nostrils.

Interpreting Respiration Rates

Measure respiration rate when your animal is at rest. Respiration rate is influenced by stress, exercise, temperature, and more. Labored, shallow, or noisy respiration can indicate problems. Abnormal respiration may indicate pain or stress, and a number of livestock diseases are associated with abnormal respiration.

Table 3. Normal Resting Respiration Rate by Species

Animal	Cattle
Breaths per Minute	10-30 (beef); 18-28 (dairy)
Animal	Sheep and Goats
Breaths per Minute	12-20
Animal	Swine
Breaths per Minute	8-18
Animal	Horses
Breaths per Minute	8-16

Values taken from Vital Signs in Animals: What Cattle Producers Should Know About Them, LeViness, University of Arizona, publication number BCH-3000 and adapted from CATTLE PRODUCER'S LIBRARY CL610

Other Vital Signs

Animals can become dehydrated, particularly in the summer or when they are experiencing stress or illness. You can perform a skin pinch test to check for signs of dehydration (figure 5). Typically, this is done on the skin of the neck—pinch up a tent of skin between your thumb and forefinger, hold it for a few seconds, and release it. The skin should return to its place in one to two seconds. You may combine this with an assessment of the gums or nose. Gums and mucous membranes should be moist, not dry.



Figure 5. A skin pinch test can alert you to check for dehydration in an animal.

You can also assess capillary refill time. A horse or other animal with abnormal gum color and abnormal capillary refill time may be in shock or may be bleeding internally. Gums should appear medium pink in color, not whitish or red (figure 6). If you lift the lip and press a finger against the gums, color should return to the area within one to three seconds of releasing your finger.



Figure 6. Gum condition can be a measure of animal health.

You can gain a more complete picture of your animal's health by observing behavior, bowel movements, eating habits, skin and hair condition, and body condition. Are calves alert, or do they appear depressed with drooping ears? Can you observe gut sounds when your horse appears in distress? Has your animal refused food and water? Has it urinated more or less frequently than usual? Does your animal have a poor, unthrifty hair coat? These observations can all be an important part of the animal health puzzle. While pulse, temperature, and respiration rate are most commonly measured and reported as part of an animal emergency, these other animal health observations can be helpful as you consider your rations, health protocols, facilities, and other management factors that impact short-term and long-term animal health.

Adapted from:

"Vital Signs in Animals: What Cattle Producers Should Know About Them," Edward A. LeViness, Area livestock Specialist, University of Arizona, publication number BCH-3000.

"Livestock Care Guidelines," University of Arkansas Department of Animal Science, publication MP 520.

"Cattle First Aid, Basic Care, and Common Diseases in Show Cattle," Karah Nay, Matthew Garcia, Kerry Rood, DVM, and Chelsea Walker, Utah State University online workbook.

Equine Science, Jean T. Griffiths, published by Equine Network 2008.

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