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Recording Vital Signs

Veterinary vital signs provide an index of an animal's essential bodily functions, including body temperature, pulse, respiratory rate (TPR) and body weight. The veterinary assistant is commonly responsible for monitoring and recording these parameters. A patient's vital signs are recorded each time they visit the veterinary clinic and on a recurring basis during hospitalization. It is extremely important that vital signs are monitored and recorded accurately and using the appropriate measurement system.

A table of normal Vital Signs, Metric conversions, and other information can be found within the ABC Appendix online in the Student Center.

Weight

Weight can be measured in both kilograms (kg) and pounds (lb). Kilograms, which are metric, are used widely around the world. The United States is one of the only countries that uses the standard or English system, which measures weight in pounds. Specific veterinary facilities may use both or either; determine which system is preferred before recording a patient's weight. In veterinary formularies, the drug dosages are usually indicated in kilograms, therefore, when you write the weight in the patient's record, record it in both pounds and kilograms.

1 kilogram is equal to 2.2 pounds.

To convert kilograms to pounds: Multiply by 2.2

To convert pounds to kilograms: Divide by 2.2

The veterinary assistant should weigh each patient before they are seen by the veterinarian. Larger patients are often weighed before they enter the examination room as floor scales are usually located in the entry area. Smaller animals may be weighed in the exam room on a pediatric scale. Use a pediatric scale for animals who weigh less than 20 pounds and a floor scale for those who weigh more than 20 pounds.^{13,14}

Canine patients on leashes are usually weighed on a digital floor scale outside of the examination room, if the facility has one. Digital scales should be calibrated to zero before the patient is placed on the platform to be weighed. Make sure to become familiar with the location of the scales in your clinic and which scale to use for which weight range.

To weigh a cat or rabbit without moving them from their carrier, weigh the cat or rabbit inside their carrier on the digital floor scale. Once inside the exam room, remove the cat or rabbit from the carrier, leaving any accompanying towels and/or blankets inside. The carrier, with any blankets or towels inside, can then be taken back out to the reception area and weighed. The difference between the weight of the carrier *with the pet* (plus any blankets or towels) and the weight of the carrier *without the pet* (plus any blankets or towels) is the weight of the pet.

This is a convenient way to weigh cats (if the scale is in the reception room) that minimizes the risk of them becoming stressed in the reception area, especially if other animals are present.

A patient's weight can help determine what types and dosages of medications should be prescribed, and it can also help the veterinary staff track the health of a returning patient. For example, significant weight loss in a patient between visits without any change to their eating habits or exercise could signal illness.

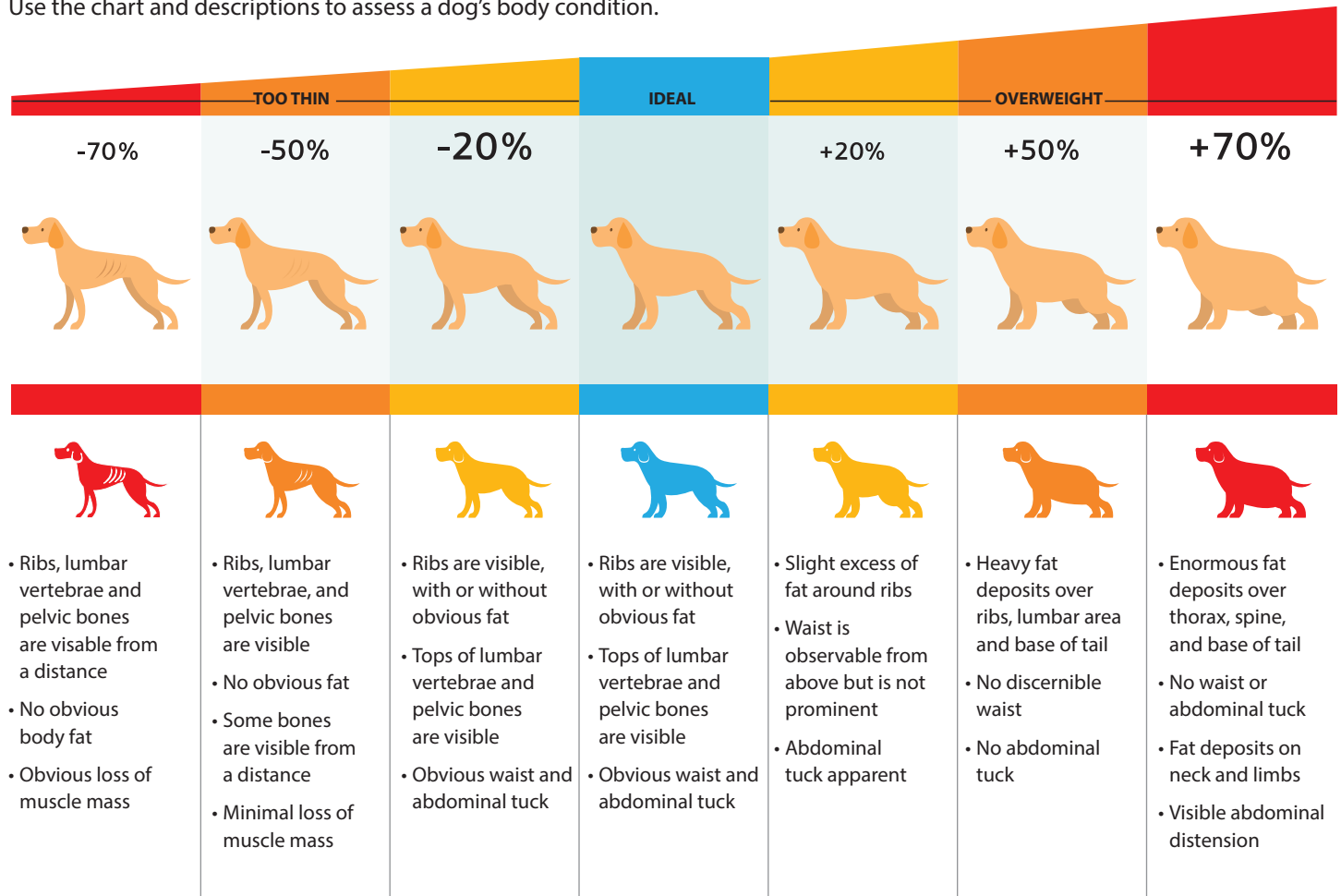
Body Conditioning Score

The Body Conditioning Score (BCS) is a numerical system used to evaluate and assess the amount of fat present on the pet. This is accomplished visually, as well as palpating the animal’s ribs to see if there is a normal layer or an abundance of fat.

Although most pet owners perceive their pets to be within a normal and healthy weight range, statistics estimate that as of 2020, 34 percent of dogs and 38 percent of cats in the U.S. were overweight or obese.¹⁵ The BCS is an excellent tool for educating pet owners about what a healthy weight for their pet should look and feel like.

Body Condition

Use the chart and descriptions to assess a dog’s body condition.



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Respiratory Rate

A patient's respiratory rate is the number of breaths they take in a minute. To determine a patient's respiratory rate, count their respirations, either inhales or exhales, for 15 seconds, and multiply by 4 (for the number of breaths taken in 60 seconds).

Determining a patient's respiratory rate should be done after the patient is weighed and before other vital signs are monitored so that the animal's stress levels are low. If the patient is in a carrier or cage, you can simply observe their breathing through the enclosure.

Observe the abdominal area behind the rib cage. You should see the patient's sides rising and falling as the lungs fill and empty. Count either the patient's inhales or exhales for a period of 15 seconds. Multiply by 4 to determine the number of breaths per minute. Record this information as "respirations per minute." If a patient is panting, make a note in their record, but do not attempt to determine their respiratory rate. The respiratory rate of a panting animal is too difficult to perceive.

Take Notice of Other Aspects of a Patient's Breathing

In the online article *The complete physical exam: empowering your team to do more than just a TPR* Certified Veterinary Technician Gina Falish acknowledges how easy it is to become caught up in the busyness of the daily schedule that compels you to speed through your initial evaluation of patients to be efficient. But, she warns, "limiting ourselves to a TPR may lead us to missing significant pieces of information about the medical condition of a pet, which as we all know can be subtle, yet profound." Then, she inspires by noting, "Subtle and obscure observations obtained and communicated by the veterinary technician and veterinary assistant can and will affect the outcome of a patient's presenting complaint."

Assessing the quality of a patient's respiration is one of the areas where a veterinary assistant can expand their observational range. Pay attention to more than just the number of breaths a patient takes in a minute; pay attention to the nature of the patient's breath; take note of the rhythm and whether there is evidence of labored breathing. For example, is the patient taking fast, shallow breaths? Or does the patient take labored, drawn-out inhales and exhales? Attempt to gauge the amount of the patient's respiratory effort by watching "the degree of chest movement (normal, shallow, deep) and the degree of involvement of secondary muscles like abdomen, brow, nares, etc."¹⁶

*TPR stands for baseline temperature, pulse and respiration.

Pulse or Heart Rate

The pulse or heart rate reading helps the veterinarian to determine the status of the patient's circulation and whether blood is sufficiently reaching the limbs. To take a patient's pulse move down to the patient's level rather than placing them on the examination table, which can cause them to become stressed, creating an inaccurate reading.

- To find a small animal's pulse, the patient should be in lateral recumbency or standing.
- If the patient is lying in lateral recumbency, slide your hand under whichever hind leg is on top while petting them to let them know you are there and keep them calm.
- If they are standing, use your index and middle finger to find the crease that separates the leg from the animal's body, deep within the groin area. The chief artery of the thigh, called the femoral artery,¹⁷ is located here.
- Apply pressure with your index and middle finger to find the pulse. You will feel a throbbing sensation coming from the artery. (Keep in mind that your thumb has a pulse, so you cannot use your thumb to take a patient's pulse.)
- Now, look at your watch, or use the timer feature on your phone, and count the number of times the heart beats in 15 seconds, and multiply by 4 to get the beats per minute. Record this information in the patient's record as "pulses per minute." If you are unsure of the result, take a second reading.

By palpating the pulse of ill patients and healthy old and young patients, you will soon feel the difference between a strong pulse and a weak or thread-like pulse and be able to record any abnormalities in the record.

The pulse should have the same pulsations per minute as the beats per minute of the heart. When the pulse is pumping in sync with the heart, it is normal. If the heart beats and the pulse lags behind, that is abnormal. If the circulatory system is functioning properly, the count of the pulse and the heart rate should be the same.

Pulse Definition

The American Heritage Dictionary defines a patient's pulse as "the rhythmical throbbing of arteries produced by the regular contractions of the heart."

The Dictionary of Veterinary Nursing provides a more comprehensive definition for *pulse*: "The palpable thrill that can be felt in a superficial artery where it passes over bone; in the normal animal there is a palpable thrill for each beat of the heart; pulse is usually referred to in terms of the rate (number of beats per minute), rhythm (regular, irregular, galloping, etc.) and character (weak, full, bounding, etc.)."

Sources:

The American Heritage Dictionary (Fifth Edition) (2012, June 26). Houghton Mifflin Company.

Guthrie, S., Lane, D.R., Griffith, S. (2016). Dictionary of Veterinary Nursing (4th Edition). Elsevier.

The lack of a pulse in the femoral artery might indicate that the animal is ill. If you cannot feel a pulse in the femoral artery, you will usually find that the patient's legs are cold and fairly immobile. These symptoms can indicate a blood clot in the groin area that blocks blood to the leg(s). This would be a simple but important parameter to monitor in a patient who cannot use their back legs.

If you have difficulty locating the femoral artery, you can auscultate, or listen to, the heart.¹⁸ This procedure requires a stethoscope and is recorded as the patient's heart rate (HR), rather than pulse rate.

To accomplish this, place the bell of the stethoscope in the space behind the patient's left front leg, close to the body. The bell should lie near the costochondral junction, where the rib cage meets the sternum.¹⁹ The heart rests in the chest cavity at about the sixth rib. (Or, bend the patient's elbow up to their chest; the point of the chest parallel to the elbow is the most accurate placement of the heart.)

Listen for a heartbeat. One heartbeat should consist of two distinct sounds: "lubb-dubb." Any other sounds could indicate a heart murmur.¹⁸ Count the number of heartbeats ("lubb-dubbs") that happen within 15 seconds, and multiply by 4 to get the beats per minute. Record this information in the patient's record as the heart rate, using HR (heart rate) to indicate it is the heart rate and not the pulse rate.

Temperature

Use a digital rectal thermometer to obtain the most accurate reading and the fastest result. The tip of a rectal thermometer is short and round as opposed to the longer, narrower tip of an oral thermometer. Only a rectal thermometer should be used to take a rectal temperature. Make sure the probe of the thermometer makes full contact with the anal mucous membrane.

Because most animals do not enjoy having their temperature taken, many veterinarians recommend holding off on this task until the end of the exam. If an animal becomes aggressive when you try to take their temperature, consult with a more experienced staff member or the veterinarian.



To view a short video on obtaining vital signs, please log into the Student Center, click Training Videos and choose *Vital Signs: The Complete Physical Exam of a Canine Patient* and *Vital Signs: The Complete Physical Exam of a Feline Patient*, respectively.

Following are instructions for taking a rectal temperature:

1. Use a digital rectal thermometer. Shake down the thermometer. Apply a water-soluble lubricant to the tip of the thermometer.
2. Place your hand at the base of the pet's tail; lift the tail so that the pet's anus is exposed.
3. Insert the thermometer into the rectum slowly and gently. According to VCA Animal Hospitals, "For small dogs and cats, the thermometer should be advanced slowly about an inch. For larger dogs, insert the thermometer about 2-3 inches into the rectum. Hang on to the end of the thermometer to steady it and make retraction easier. If you feel stool in the rectum, try to place thermometer around it rather than through fecal matter as this may give a falsely low temperature reading."¹⁹
4. Remove the thermometer. Remove the sheath if applicable, and clean the thermometer with an alcohol-soaked cotton ball.
5. Read the thermometer and record the temperature in the patient's record.

Temperature can be measured in either the Fahrenheit or Celsius scale. While the majority of the world uses the Celsius scale, the United States uses the Fahrenheit scale. Many thermometers will show both, and the temperature should be recorded in the patient's record using the scale that the veterinary staff is accustomed to using. Do not forget to write "F" or "C" next to the reading to denote which scale is being used.

The following formula will help you to convert a temperature recorded in Fahrenheit to degrees Celsius and vice versa. Or you can:

Celsius to Fahrenheit	Fahrenheit to Celsius
$F = \frac{9}{5} \times C + 32$	$C = (F - 32) \times \frac{5}{9}$

°F to °C	Deduct the temperature in Fahrenheit by 32, then multiply by 5, then divide by 9
°C to °F	Multiply the temperature in Celsius by 9, then divide by 5, then add 32

Here are a couple of sample conversions.

The patient's temperature is 100° Fahrenheit and you would like to convert this to degrees Celsius.

$$C = (F - 32) \times \frac{5}{9}$$

$$C = (100 - 32) \times \frac{5}{9}$$

$$C = 68 \times \frac{5}{9} = \frac{340}{9}$$

$$C = \frac{340}{9} = 37.77777777777778$$

The patient's temperature would be 37.7 °C

The patient's temperature is 38° Celsius and you would like to convert this to degrees Fahrenheit.

$$F = \frac{9}{5} \times C + 32$$

$$F = \frac{9}{5} \times 38 + 32$$

$$F = \frac{342}{5} + 32$$

$$F = 68.4 + 32 = 100.4$$

The patient's temperature would be 100.4°F

Table of Normal Vital Signs

Species	Temperature (Celsius)	Pulse/Heart Rate (BPM)	Respiration Rate (per minute)	Gestation Period	Life Span
Cat	100.5 – 103.0°F (38 - 39.5°C)	120-210* bpm *younger cats have faster heart rates	20-30/ min	63-65 days	12-16 yrs
Dog	99.0 - 102.2°F (37.5 - 39.0°C)	60-120* bpm *young and small dogs have faster rates than large breed dogs	15-30/ min	57-67 days	10-15 yrs **large breed dogs have shorter life spans
Rabbit	101.5–104.2°F (38.6–40.1°C)	130-300 bpm 205 average bpm	32-60/ min	25-31 days	6-8 yrs
Ferret	100-102.5° (37.8 - 39.4° C)	230-380 bpm	33-36/ min	40-44 days	5-11 yrs
Rat	99°F (37°C)	*too fast to count usually		21-23 days	3 yrs

Pattengale, P. (2009). *Tasks for the Veterinary Assistant* (p 599). Ames, IA: Blackwell Publishing