Basal Metabolic Rate and Basal Temperature.

What is the Big Deal?

Dr Amy Hayek, DVM, CVC, CVA
Dr. Bill Ormston, DVM, CVC, CVetHom
10771 Highway 6
Meridian TX, 76665
www.allcreatureseveryspine.com

BASAL METABOLIC RATE

Basal Metabolic Rate (BMR) is the amount of daily energy expended by animals at rest. Rest is defined as existing in a neutrally temperate environment while in the post-absorptive state. The release of energy in this state is sufficient only for the functioning of the vital organs, the heart, lungs, nervous system, kidneys, liver, intestine, sex organs, muscles, and skin.

Both basal metabolic rate and resting metabolic rate are usually expressed in terms of daily rates of energy expenditure. The primary organ responsible for regulating metabolism is the hypothalamus. The hypothalamus is located on the brain stem and forms the floor and part of the lateral walls of the third ventricle of the cerebrum. The chief functions of the hypothalamus are:

1. Control and integration of activities of the autonomic nervous system (ANS)
   -The ANS regulates contraction of smooth muscle and cardiac muscle, along with secretions of many endocrine organs such as the thyroid gland (associated with many metabolic disorders).
   -Through the ANS, the hypothalamus is the main regulator of visceral activities, such as heart rate, movement of food through the gastrointestinal tract, and contraction of the urinary bladder.
2. Production and regulation of feelings of rage and aggression.
3. Regulation of body temperature
4. Regulation of food intake, through two centers:
   - The feeding center or hunger center is responsible for the sensations that cause us to seek food. When sufficient food or substrates have been received and leptin is high, then the satiety center is stimulated and sends impulses that inhibit the feeding center. When insufficient food is present in the stomach and ghrelin levels are high, receptors in the hypothalamus initiate the sense of hunger.
   - The thirst center operates similarly when certain cells in the hypothalamus are stimulated by the rising osmotic pressure of the extracellular fluid. If thirst is satisfied, osmotic pressure decreases.

All of these functions taken together form a survival mechanism that causes us to sustain the body processes that BMR measures.

BASAL TEMPERATURE

Basal body temperature is the lowest temperature attained by the body during rest (usually during sleep). It is generally measured immediately after awakening and before any physical activity has been undertaken. For every decrease of 1.0°F in internal temperature of the body, the BMR decreases by about 7 percent. The chemical reactions in the body actually occur more quickly at higher temperatures. Just like baking a cake. If the temperature is too low, the cake will still be a cake it just won't be a great cake. Normal temperature for a dog should be between 101 to 101.5°F, and for a horse it should be 100°F.

BMR AND STRESS

The sympathetic nervous system (SNS) is one of the three parts of the autonomic nervous system, along with the enteric and parasympathetic systems. Its general action is to mobilize the body's resources under stress; to induce the fight-or-flight response. It is, however, constantly active at a basal level to maintain homeostasis. Alongside the other two components of the autonomic nervous system, the sympathetic nervous system aids in the control of most of the body's internal organs. Stress—as in the flight-or-fight response—is thought to counteract the parasympathetic system, which generally works to promote maintenance of the body at rest. In truth, the functions of both the parasympathetic and sympathetic nervous systems are not so straightforward, but this is a useful rule of thumb. The central nervous system is flooded with strong inputs of fear, anger or pain. These chemical changes cause the sympathetic stress response throughout the body. This response allows the body to perform physical activities at a much higher level and acts as a survival mechanism. It is the body's innate intelligence to survive in the current environment to which body, mind and spirit are subjected.

There are two basic responses of the system:

1. Acute life saving response - increase epineph rine (adrenaline), norepineprine and dopamine. This allows grandma to lift a car, your horse to escape the lion and your dog to drag you out of the burning building.
2. Chronic potentially life threatening response increase of mineral and glucocorticoids. This is why retired people need a hobby, your horse needs a stall with a window and your dog needs appropriate exercise for its breed. If the nervous system is not allowed to relax it will remain in a fight and flight mode, leading to fatigue.

Check any that apply.

____ My animal is gaining or losing weight inappropriately
____ My animal is unable to lose weight with diet/exercise
____ My animal is constipated, sometimes severely
____ My animal is fatigued, exhausted
____ My animal is feeling run down, sluggish, lethargic
____ My animal's hair is coarse and dry, breaking, brittle, falling out
____ My animal's skin is coarse, dry, scaly, and thick
____ My animal has a change in voice
____ My animal has puffiness and swelling around the eyes and face
____ My animal has abnormal greying of hair
____ My animal has abnormal hair growth
____ My animal has allergies
____ My animal has arthritis
____ My animal has autoimmune disease
____ My animal has a bloated appearance
____ My animal has chronic infections
____ My animal has craving for and consumption of abnormal feedstuff (wood, soil, manure, etc.)
____ My animal has Cushings
____ My animal has digestive problems
____ My animal has a dull look in eyes
____ My animal is an easy keeper
____ My animal has excessive gas
____ My animal has excessive thirst
____ My animal has extreme sensitivity to stimuli
____ My animal has eye problems, watery eyes
____ My animal has flabby muscles
____ My animal exhibits head shaking
____ My animal has hind limb paralysis
____ My animal has hives or severe welting
____ My animal has inflammation
____ My animal has Insulin Resistance
____ My animal has an irregular heart beat
____ My animal has a lameness (right hind or weak/short hind stride)
____ My animal has loss of appetite
____ My animal has low resistance to infection
____ My animal has lumps on its body (especially in the groin area, throat, and under tail)
____ My animal has muscle soreness
____ My animal exhibits nervous, irritable, or wild behavior
____ My animal has a non-healing wound
____ My animal has overall slow growth
____ My animal has reproductive problems (depressed estrus cycle, low fertility)
____ My animal has ulcers

Animal's Name: _____

Sex: M F Neutered

Species: _____

Breed: _____

5 days of Basal Temperatures (Morning Termperature) when your animal is acting normally

Date	Time	Animal Temperature	Ambient Temperature
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

To schedule at consultation with Dr. Amy or Dr. O go to

https://www.allcreatureseveryspine.com/nutrition-consultation