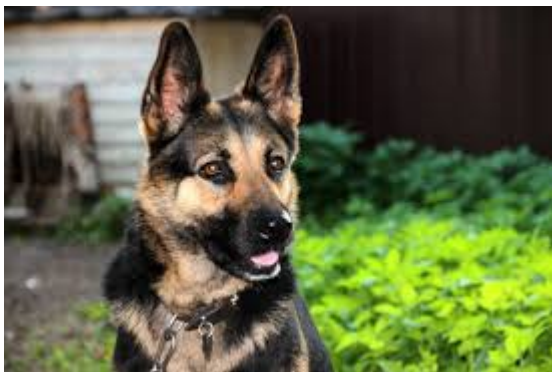


Bedside Tests in Veterinary Emergency Rooms

When you go to the emergency room, your medical team performs some non-invasive tests to help assess your clinical condition. Some of these bedside tests are similarly performed in cats and dogs who are presented to veterinary emergency rooms. So, this week I wanted to share some information about these painless point-of-care tests to increase your familiarity with them. I hope you find this post insightful. Happy reading!



Test #1 - Blood pressure

Blood pressure is the product of the volume of blood pumped by the heart in one minute (called cardiac output or CO) and the resistance against which the left side of the heart must overcome to pump blood to vital organs (called systemic vascular resistance or SVR). This relationship is described with the following equation: $BP = CO \times SVR$. Many factors influence both CO and SVR, and thus positively or negatively affect BP.

Blood pressure can be measured via two general methods: direct measurement and indirect measurement. To directly measure blood pressure, a veterinarian must place a catheter directly into an artery in a leg. The catheter is then

connected to a specialized monitor that provides a blood pressure measurement. Direct blood pressure monitoring is not routinely performed in primary care practice, but is quite common in intensive care units. Blood pressure is most commonly measured indirectly in dogs and cats by placing a special cuff around a limb over an artery. The two indirect monitoring methods are the use of a Doppler machine and the use of an oscillometer.



Image credit: SimplyCats21

Test #2 - Pulse oximetry

Pulse oximetry is a non-invasive test that measures the degree to which hemoglobin in the body is saturated with oxygen. Hemoglobin is the major protein that carries oxygen to vital organs and tissues. A clip-like device called a probe is placed on a body part like an ear flap, tongue, or paw. The probe uses light to measure how saturated hemoglobin is with oxygen and is often called oxygen saturation and “pulse ox.” This information helps veterinarians decide if your pet needs extra oxygen.

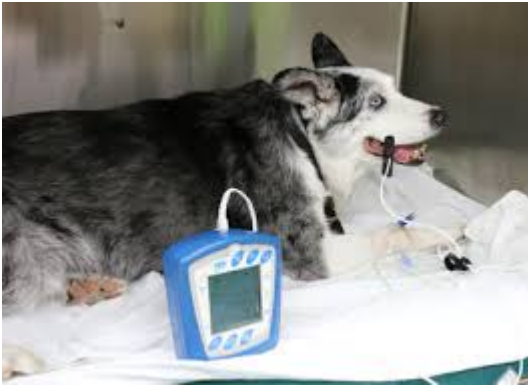


Image credit: Animal Medical Center of New York

Test #3 - Electrocardiography

Electrocardiography - also commonly referred to as ECG or EKG - is a non-invasive way to record the electrical activity of the heart. This painless testing may be recommended by veterinarians, including board-certified veterinary cardiologists, for a variety of reasons such as:

- Patient is suspected of having heart disease - compatible clinical signs include weakness, lethargy, exercise intolerance, abnormal breathing, and coughing
- The veterinarian found certain abnormalities (e.g.: abnormal heartbeat, murmur, irregular pulses, abnormal lung sounds) during a patient's physical examination
- To screen patients prior to sedation and anesthesia
- To monitor patients during sedation and anesthesia
- To accurately measure a pet's heart rate
- To determine if a pet's heart rhythm is normal
- To help determine if the heart is enlarged



Measuring electrocardiography (ECG/EKG) in a dog. Image credit: Alexandria Animal Hospital

Test #4 - Bedside rapid blood & urine tests

Understandably, veterinarians often need to evaluate a pet's blood and urine to help them determine the cause of illness. While most diagnostic tests are typically performed at veterinary reference laboratories, occasionally results are needed STATE, necessitating the use of bedside tests to help make vital treatment decisions. Common tests include:

- Packed cell volume (PCV) & total solids (TS) - PCV is the percentage of red blood cells and TS is a measure of plasma proteins, including albumin, globulins, and fibrinogen. Results provide information about anemia and a pet's hydration status.

- Glucose - Blood glucose - often simply called blood sugar - is a very important value to measure in sick patients. Both high and low glucose are common biochemical abnormalities and help influence both further recommended testing and treatments.
- Electrolytes - Sodium, potassium, calcium, and chloride are essential minerals vital to many key functions in the body and help balance the amount of water the body.
- Blood gases - This group of blood tests measure the pH (degree of acidity or alkalinity), as well as the amount of oxygen and carbon dioxide in the blood. This testing is often performed to help evaluate lung function and determine if there is an imbalance of between acids and bases in the body.
- Lactate - Lactate is produced by most tissues in the body during metabolism. Elevations in lactate may indicate tissues are not getting adequate oxygen.
- Urine specific gravity (USG) - One of the many functions of the kidneys is to conserve water. Measuring USG is a quick way to determine how efficiently this conservation process is occurring in the body.

Test #5: Ultrasonography

Ultrasonography is a painless method of imaging the body using very high-pitched sound waves. These sound waves are emitted from a hand-held transducer (often called a probe). Some waves are transmitted through the body and some are subsequently reflected by the body back to transducer to create an image of the inside of the body.

Bedside sonographic evaluations of the abdominal and chest cavities provide invaluable information to veterinary medical teams. This non-invasive testing is often referred to as FAST, an acronym that stands for focused assessment with sonography for trauma/triage/tracking. Veterinarians perform FAST scans to look for abnormal fluid accumulation around the heart, in the lungs, and in the abdominal cavity.



Image credit: EI Medical Imaging

The take-away message about bedside point-of-care tests in veterinary ERs...

Bedside point-of-care tests are commonly performed in veterinary emergency rooms around the globe. They are non-invasive, painless, and provide your pet's medical team with a tremendous amount of important information that can help them most appropriately treat your furry family members.

To find a board-certified veterinary emergency and critical care specialist, please visit the [American College of Veterinary Emergency and Critical Care](#).

Wishing you wet-nosed kisses,

CriticalCareDVM