

Taking Accurate Blood Pressure Measurements

Devices using the oscillometric technique, such as Cardell monitors, detect pressure fluctuations in the occluding cuff resulting from the pressure pulse.

- ✓ **Patient Positioning:**
- ✓ The best position is the one in which the animal is most comfortable. The keys to patient positioning are that the patient should be in a sustainable, comfortable position; the extremity being cuffed must be readily accessible, relaxed and in a natural position and immobile; and stress should be minimised as much as possible.
- ✓ In the oscillometric technique the brachial or coccygeal arteries in cats and the median or coccygeal arteries in dogs seem to provide the most reliable readings.
- ✓ The cuff should be placed at, or close to, the level of the aortic valve. If this cannot be done, an adjustment should be made for gravitational effect, with 1.0mm Hg change in blood pressure expected for each 1.3cm of vertical distance between the level of the cuff and the level of the aortic valve (placing a cuff below heart level artificially raises measurements). This adjustment is generally necessary for large breed dogs only.
- ✓ **Cuff choice:**
- ✓ Cuff width is the most important characteristic. The site of cuff placement should be carefully measured and the cuff width should be 30% to 40% of limb circumference. An oversized cuff may give erroneously low recordings; an undersized cuff yields falsely high readings.
- ✓ Cardell cuffs indicate which side should face the patient, cuff size (a number), cuff width (in mm), portion of the cuff to place over the artery and/or the range of the limb circumferences for which the cuff should be used.

Blood Pressure (BP) measurement technique:

- ✓ Visits to the veterinary clinic, restraint, noises, odours and other unusual stimuli may induce anxiety and falsely elevate BP. Take all

measurements in a quiet room, allowing the animal to acclimate to its surroundings for at least 5-15 min before obtaining measurement. If possible the owner should be present.

- ✓ Using a cuff of appropriate width the operator should obtain at least 5-7 consistent measurements (< 20% variation in systolic readings) from the first cuff placement.
- ✓ The cuff should be removed and replaced and an additional 5-7 consistent measurements should be taken from the second cuff placement. Repeat if necessary
- ✓ The 1st value from each cuff placement is discarded; then the average of all the other values is calculated or all the values can be averaged after the first, highest and lowest readings are discarded. The overall average is considered the final value. If in doubt, repeat the entire procedure on another day or later on the same day.
- ✓ Measuring BP is a complex process and requires at least 15 minutes under ideal circumstances and perhaps 45 minutes or more in difficult cases.

Tips:

- ✓ BP that exceeds 150/95mm Hg poses some risk for hypertensive end-organ injury, and intervention should be considered.
- ✓ Values above 180/120 mm Hg pose a high risk, and intervention (e.g. administration of antihypertensive medication) is clearly indicated.
- ✓ BP below 100/60mm Hg poses risk for reduced organ perfusion; values below 70/40mm Hg pose a high risk that mandates intervention (e.g. IV fluid therapy and/or reduction of dosage of anaesthetic agent).
- ✓ A diagnosis of systemic hypertension should never be based solely on a single BP measurement session.
- ✓ Routine BP measurements are recommended for all anaesthetized animals, and because of the high prevalence of certain occult diseases in elderly patients, routine screening of geriatric cats and dogs is an appropriate consideration.

References:

- 1 Measuring Blood Pressure: NAVC Clinician's Brief, November 2004. Scott A. Brown, VMD, PhD, Diplomate ACVIM, University of Georgia