

Hypertension

DID YOU KNOW?

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Hypertension (HTN) is prevalent in dogs and cats. There are two clear indications for evaluating a patient for HTN. The first is clinical evidence of target organ damage and the second is the existence of an illness that is associated with the development of HTN in dogs and cats.

Secondary HTN is much more common than primary HTN in dogs and cats. It occurs secondary to acute and chronic renal disease (especially glomerular origin), hyperadrenocorticism, diabetes mellitus, hyperaldosteronism (rare disease), pheochromocytoma (rare disease), and cardiac disease in dogs. In cats, renal disease and hyperthyroidism are most commonly associated with HTN, but it also occurs with hyperaldosteronism and pheochromocytoma (both very rare).

Hypertension can result in end organ damage to susceptible organs (target organ damage = TOD). In dogs and cats, these organs are the kidneys, eyes, brain, and heart/vessels:

Target Organ	Injury and clinical findings due to hypertension
Kidney	Progression of CKD => increased creatinine and proteinuria, decreased GFR
Eye	Retinopathy/choroidopathy => acute blindness, retinal hemorrhage and edema, retinal degeneration and vessel tortuosity, vitreal hemorrhage, hyphema, secondary glaucoma
Brain	Encephalopathy, stroke with brain or spinal cord signs that depend on area of injury.
Heart & Vessels	LV hypertrophy that can => failure, gallop rhythm, arrhythmia, systolic murmur, Epistaxis, stroke

Non-invasive blood pressure monitoring can be done via oscillometric (eg Dinamap, Cardell) or Doppler methods. Several studies have shown that Doppler measurement is much more accurate than oscillometric measurement for small dogs and cats. In small dogs and cats, oscillometric methods result in overestimation of blood pressure in hypotensive animals and underestimation (although more accurate) of blood pressure in hypertensive animals.

How to obtain the most accurate results:

- Blood pressure should be measured in a quiet area after the animal has had time to adjust to its surroundings for 10-15 minutes. Measuring blood pressure in the room with the client may be helpful.
- The cuff should be 40% of the limb (or tail) circumference in dogs and 30-40 % of the limb (or tail) circumference in cats.
- A cuff that is too small will falsely increase a reading, while a cuff that is too large will falsely decrease a reading.
- 5-7 measurements should be taken and then averaged after discarding the first measurement. The remaining measurements should have less than 20% variability between them.
- Record the limb/tail and cuff size in the record for consistency in future measurements.

Indications for treatment of hypertension:

- Minimal risk of TOD (BP < 150/95 mmHg) – Antihypertensive therapy is not recommended. This is the treatment goal for antihypertensive therapy.
- Mild risk of TOD (BP 150-159/90 mmHg) – Antihypertensive therapy is not recommended
- Moderate risk of TOD (BP 160-179/110-119 mmHg) – Treatment is recommended if there is any evidence of TOD. If there is no TOD, reassess blood pressure in a week. If persistent and/or TOD at that time, start treatment.
- Severe risk of TOD (BP >+ 180/120 mmHg) – A second measurement is recommended to confirm. If persistent, treat hypertension and any other underlying conditions. If TOD is already present, start treatment without a second confirmatory measurement session.