

# Canine & Feline Hypertensive Retinopathy FAQs

## UTCVM OPHTHALMOLOGY

### How is high blood pressure related to the eye?

The retina is a very thin tissue at the back of the eye with many small blood vessels which supply it with oxygen and nutrients. The retina is the tissue that takes light, transforms it into an electrical impulse, and sends it to the brain to form an image for vision.

Systemic hypertension (high blood pressure) is a common problem in aging companion animals. When blood pressure rises to over ~160-180 mmHg changes occur in the small blood vessels of the retina. Think of the retinal vessels analogous to a hose and blood pressure analogous to water pressure; with elevated water pressure the hose becomes stiff and if the pressure stays high, the hose either leaks or could burst. This results in leakage of fluid under the retina and/or rupture of blood vessels causing bleeding. In both cases, the fluid or blood can lift the retina away from its position in the back of the eye, called a retinal detachment, which leads to vision loss. The amount of vision loss your pet experiences correlates with the amount of the retina that is detached and ranges from partial to complete.

### What causes high blood pressure?

Systemic hypertension, or high blood pressure, is rarely a spontaneous (primary) condition arising on its own. In a majority of cats high blood pressure is associated with kidney disease or hyperthyroidism with or without heart disease. Dogs can have underlying diseases such as kidney disease, diabetes, Cushing's disease or tumors of the adrenal gland.

### What signs of high blood pressure can I see?

Frequently there are no obvious outward signs indicating your pet has high blood pressure. Elevations in blood pressure lead to damage of the blood vessels throughout the whole body with the most commonly affected organs being the eye, brain, kidney and heart. Complete retinal detachments in both eyes will lead to blindness, which is sometimes the first sign noted. Some owners will notice that their pet's pupil is very large, that one pupil is a different size than in the other eye, or that the green "eye shine" is more obvious; all signs of possible retinal detachment. Other signs of high blood pressure may be bleeding within the eye or neurologic changes secondary to bleeding in the brain. Additionally, some pets may be agitated or restless as high blood pressure can make you feel "unwell".

### How do you test blood pressure in a dog or cat?

Normal systolic blood pressure in cats and dogs is similar to humans and should be around 120 mmHg. However, due to the effects of stress on our patients in the hospital even normal animals can have blood pressure readings higher than the normal range. It is important that your pet have the blood



*A lens is being used to look at the retina in a cat, known as a fundic examination.*

pressure monitored in a quiet setting and in a consistent manner with as little distress as possible for accurate measurements. There are several types of blood pressure machines. If possible, readings with the same type of machine at rechecks is best. A doppler is considered the most accurate indirect blood pressure monitor in dogs and cats.

### What treatment is recommended for high blood pressure?

Bloodwork needs to be performed to look for an underlying cause linked to systemic hypertension. Treatment is aimed at decreasing blood pressure with medications by mouth and treatment of any other underlying disease. Bloodwork will need to be repeated shortly after starting medication to ensure there are no negative side effects. Systemic hypertension is rarely curable and continued lifelong treatment is necessary. Systemic hypertension should be managed long-term with your primary veterinarian or an Internal Medicine specialist.

### What is the prognosis?

Depending on the duration and the severity of the retinal detachments or bleeding, your pet may regain vision after treatment. Eyes with complete (total) retinal detachments, and especially those with significant hemorrhage, are associated with a poorer visual prognosis. Regular eye examinations, recheck bloodwork and blood pressure monitoring will be required long term.