



Kidney Disease

Dogs and cats, like people, have two kidneys which:

- Filter out waste products from the blood and excrete them in urine
- Regulate water and electrolyte balance in the body
- Produce various hormones
- Help control red blood cell production

What causes kidney disease?

Many factors can be responsible for kidney damage, such as infection, genetic predisposition, dehydration, bladder obstruction, trauma, various toxins and neoplasia (cancer).

However, in many older dogs and cats, kidney failure develops simply as a result of “wear and tear” on the kidneys – a gradual degeneration over time. Chronic kidney disease (also known as chronic renal disease) is more common in cats than dogs and as many as 50% of cats over 15 years of age have some chronic kidney disease.

The signs of kidney disease

The earliest signs of kidney disease are:

- Increased thirst (polydipsia)
- Increased urine volume (polyuria)

These symptoms result from impairment of the kidneys’ ability to produce concentrated urine. These signs can be more challenging to pick up in cats as many of them drink and urinate outside.

Unfortunately other signs may not be seen until more than 2/3 of the kidneys are damaged. Other common problems include the following:

- Weight loss
- Poor hair coat
- Increasingly selective appetite

Further decline in kidney function results in progressive inability to eliminate waste products, leading to retention of toxic wastes in blood and tissue in the body. This condition is called uraemia and symptoms include:

- Further loss of appetite and weight loss
- Vomiting
- Ulcers in the mouth
- “Uraemic” (foul ammonia-smelling) breath
- Lethargy and muscle weakness

High blood pressure occasionally develops secondary to kidney failure and this may lead to additional problems such as heart failure or blindness.

How is kidney failure diagnosed?

Your vet may be suspicious from the symptoms and their clinical examination that your pet has kidney problems. In some cases abnormally small or large kidneys can be felt on abdominal examination depending on the size and shape of your pet.

Other useful test are as follows:

- Urine testing

Poorly concentrated urine can be an indicator of kidney disease. This will actually detect changes before a blood test. The urine can also be tested for infection, protein loss and blood. This is a very useful non-invasive test.

- Blood tests – the following can be helpful indicators of kidney problems:

Blood urea nitrogen (BUN): this is a late marker of kidney disease and can also be influenced by other things e.g. liver problems, a high protein meal, dehydration and gastrointestinal bleeding.

Creatinine: this is more specific to kidney function but can be influenced by the amount of muscle your pet has. It also doesn't increase until later on in kidney disease.

SMDA (Symmetric dimethylarginine) is excreted by the kidneys and elevations can be detected much earlier (with 40% loss of kidney function rather than 75%). This blood test has recently become available and enables us to detect kidney problems much earlier than before.

Other parameters which may indicate kidney problems on the blood test (but are not specific to kidney disease) are a low red blood cell count (anaemia) a high phosphate and abnormal potassium levels.

- Ultrasound

An ultrasound exam is an excellent way to non-invasively assess the size and shape of the kidneys. An ultrasound can tell you if there are cysts present in the kidneys, it can assess for tumours and look at the definition of the kidney layers.

Once kidney disease has been confirmed, other tests can be used to determine how advanced the kidney disease is and “stage” the kidney disease. These are measuring your pets blood pressure and also carrying out a urine test called a Urine Protein Creatinine Ratio. This measures protein loss in the urine, increased protein levels can damage the kidneys so this test is used to diagnose protein in the urine and monitor response to treatment.

Treatment of kidney disease

Kidney infections can be treated with antibiotics and any toxicity or blockage may be treated without any permanent damage in some cases. If there is chronic renal disease then this must be managed but can't be cured. Treatment is aimed at slowing progression of the disease, improving appetite, activity levels, weight gain and decreasing thirst. Many animals go on to enjoy months or years of good quality life after diagnosis.

The following treatment options may be considered:

1. Intravenous fluid therapy (IVFT) and maintaining hydration.

If your pet is very dehydrated or if there is suspected toxic damage to the kidneys then a drip will be recommended. This is not the same as dialysis as the drip can't extract any toxins which have built up but it helps flush them out and will almost always make your pet feel better. Following IVFT (if needed) maintaining good hydration is essential as the kidneys find it difficult to manage hydration. Always let your pet drink what they want. Never restrict water.

2. Dietary Control

Dietary manipulation is probably the single most important aspect of treatment for dogs and cats with kidney failure. Specially prepared diets low in protein and phosphate help to prevent the build up of toxins in the blood and mean that the kidneys do not have to work as hard. Prescription diets are available in wet and dry forms. These diets have been proven to slow down the rate of progression into serious kidney failure and to significantly improve the quality of life and life expectancy of dogs and cats with renal failure.

3. Controlling blood pressure

High blood pressure is common with kidney problems and can lead to further kidney damage. Blood pressure should be checked regularly and if needed tablets can be given to reduce the blood pressure.

4. Use of phosphate binders

If the phosphate level is too high in the blood this can cause problems. A dietary supplement can be used to reduce the amount of phosphate that can be absorbed from the food. Pronefra is a liquid formulation which can be used in dogs and cats, Ipakitine is a powder which can also be used in cats and dogs.

If a cat or dog will not eat their kidney diet, this can be added to their normal food to make it more kidney friendly.

5. Controlling proteinuria.

If protein is present in the urine this can cause further kidney damage.

Fortekor is an ACE inhibitor which improves blood flow to the kidneys and reduces protein levels in the urine in dogs and cats. Recently a new product called Semintra has been launched for cats which is more receptor specific.

6. Vitamin B12 injections and oral vitamin supplementation

The increased urine output seen in renal failure means that more water soluble vitamins are lost in the urine. This can contribute to the lack of appetite. B12 can be given by injection and oral vitamins can be given to help with this.

7. Antacids

If your pet is suffering from stomach ulceration associated with the kidney disease then medication can be given to help protect the stomach lining.

8. Potassium supplementation

A proportion of cats with renal failure will develop low potassium levels, because their kidneys "leak" too much potassium into the urine. Signs of low potassium are weakness and possibly vomiting. The problem can be addressed by supplementing potassium levels with Kaminox, a liquid. This also contains B vitamins.

9. Manage anaemia

In some cases of renal problems your pet may develop anaemia due to decreased erythropoietin produced by the kidneys. If this is mild then treatment is not needed but in some cases severe anaemia can result. This can be managed with a blood transfusion or by administering erythropoietin by injection – however antibodies to this can develop very quickly which can result in worsening of the anaemia so this is often used as a last resort.