

CHRONIC KIDNEY DISEASE



Normal function of the kidneys

All mammals have two kidneys, which have a variety of different and important functions:

- Filtering and removing toxins from the blood
- Reabsorbing nutrients
- Maintaining water balance
- Maintaining electrolyte balance
- Releases hormones that regulate normal blood pressure

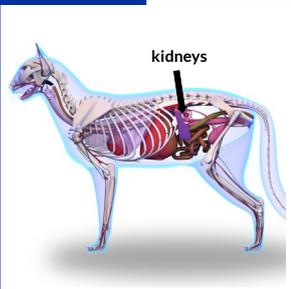
Electrolytes are salts and minerals that conduct electrical impulses in the body. They are needed for almost every biochemical reaction in the body. Important for muscle contraction & energy generation.



Blood is constantly filtered through the kidneys to remove the toxic waste products of metabolism (biological processes). The waste products are excreted in the form of urine which is stored in the bladder before leaving the body. As the blood is filtered, the kidneys also controls the return of water to the body according to the body's needs thus determining the concentration of urine. It is an important role to prevent dehydration and to regulate blood pressure.

What is kidney disease?

Chronic kidney disease (CKD), otherwise known as chronic renal failure (CRF), is one of the most common conditions affecting older cats and dogs. The normal kidney regulatory processes and functions are disrupted, causing a wide range of different signs.



In the majority of cases of CKD, the cause is unknown. Occasionally there is a known trigger of the condition - as the body's natural filtering system, the kidneys are susceptible to damage if the pet consumes a poisonous substance. Permanent damage can be done as the kidneys strive to expel the toxins and this can be the cause of CKD in some cases.

In most cases, kidney disease is progressive with a gradual deterioration of kidney function. This rate of decline varies considerably between individuals. Unfortunately, there is no cure and CKD cannot be reversed, but in many cases it can be managed and we can slow the progression.



Symptoms of kidney disease

As CKD is a progressive condition, the initial clinical signs are often very subtle and mild, but will gradually worsen over a long period of time. Many of the symptoms are vague and non-specific. This includes:

- Increased thirst (polydipsia)
- Increased urination (polyuria)
- Poor appetite
- Weight loss
- Lethargy
- High blood pressure (hypertension)
- Vomiting
- Bad smelling breath
- Poor coat quality
- Weakness

The increased production of urine occurs because kidneys begin to lose the ability to conserve the water in the body and therefore more is lost in urine. The body senses the dehydration and the pet has the urge to drink more to compensate.

A worsening of any of these problems is suggestive of disease progression.



How do we diagnose kidney disease?

A diagnosis of CKD is made by collection of a blood sample and a urine sample for analysis.

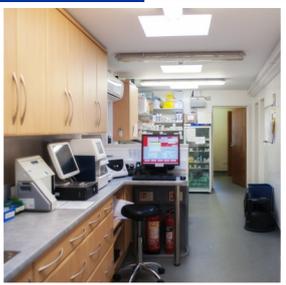
Blood

- **Urea and Creatinine** - These are waste products of metabolism (bodily processes) which the kidneys normally filter out. High levels within the blood demonstrates the kidneys inability to excrete waste products efficiently.
- **Electrolytes** - We look specifically at levels of phosphorous. A high level in the blood indicates the kidneys are no longer able to control amount of phosphate that is absorbed and excreted.
- **Full Blood Profile** - Many patients with CKD have concurrent conditions which may either relate directly to the kidneys (e.g. anaemia) or indirectly (e.g. thyroid disease). Other diseases can have similar clinical signs and even mask CKD if they occur together, making a full profile very important for the initial diagnosis.



Urine

- **Urine Specific Gravity (USG)** - How concentrated is the urine? Poorly concentrated urine is an early indicator of the kidneys struggling to conserve water in the body, allowing too much to pass out in the urine.
- **BM9 Dipstick Test** - As mentioned, other diseases can have similar signs, and even mask CKD. A urinary tract infection (UTI) is one of these conditions. A BM9 dipstick tests for a UTI.
- **Protein in the urine (proteinuria)** - Protein should normally be retained in the body, losing protein in the urine means the kidneys filtering process is not working efficiently. Proteinuria is termed a 'marker' of progressive CKD. Specific protein tests called 'UPC ratios' are beneficial for diagnosis and ongoing monitoring of the disease.



Sometimes, further diagnostic tests such as ultrasound scans, x-rays or biopsies may be required. These will be discussed with the Vet on an individual basis depending on the progress or specific requirements of each case.

Treatment of kidney disease

Initial treatment after diagnosis is to stabilise the pet, including combat any known poisonous substances and to rehydrate. Being a chronic progressive condition, CKD requires ongoing monitoring and treatment. This is aimed at treating the symptoms and provide supportive care throughout their lives.

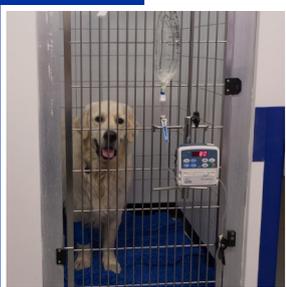
Initial stabilisation & treatment

Initial treatment may require hospitalisation to stabilise the pet's body functions such as dehydration and high blood pressure. Intravenous fluid therapy (IVFT or "a drip") is often administered to rehydrate and address electrolyte imbalances. In hospital the Vet is also able to monitor blood levels and pressure closely, treat the pet for any poisonous substances (if it is a known cause) and prepare a treatment plan moving forward.

If a hospital stay isn't appropriate and dehydration is minimal, fluids and electrolytes can be given by an injection under the skin (subcutaneous fluids) during a consultation appointment.

Ongoing treatment

Once your pet is stable, ongoing treatment is aimed at supporting kidney function. As mentioned previously, CKD is not reversible but is progressive over time. The ongoing treatment and support is designed to slow this progression and provide the best quality of life. It requires regular tests to monitor kidney function and appropriate management.



Monitoring of kidney disease

Regular blood and urine tests

Regular blood and urine tests are important to monitor any changes over time and check for any possible complications during treatment. Any changes in the levels in the blood and urine will indicate to the Vet how well the kidneys are functioning and if there has been any deterioration.



Blood Pressure

High blood pressure (hypertension) is often seen with CKD and needs careful monitoring. Blood pressure measurements are taken in the renal clinic appointments with your nurse. The process is usually well tolerated by cats and dogs. We try to make it fun for them!

A number of complications can be seen with high blood pressure, such as eye damage, worsening of kidney function and nerve damage. Several medications are available to help to lower blood pressure and therefore reduce the risk of these complications occurring.

Maintenance of kidney disease

Nutrition

As certain nutrients can be lost from the body via the inefficient kidneys - a good diet is important. An appropriately balanced diet can further support kidney function by providing the right nutrients and minerals without overworking the filtering process. The best way to do this is a specialist renal diet available from the Vets.

Specialist Kidney (renal) Diets

There are many specific diets for kidney disease available, which have the optimum balance and nutrient contents. Healthy cats require a very high protein content in their diet due to their metabolism (much higher than dogs) but in CKD patients the protein content ideally needs to be restricted. This is because protein breakdown relies on filtering by the kidneys. More protein requires the kidneys to have to work harder thus putting pressure on the already ailing kidneys of CKD sufferer. Having a diet with a low phosphate content and specifically balanced electrolytes, also aims to prevent the kidneys from having to work harder than necessary. Sometimes we need to add 'phosphate binders' to food to help reduce blood levels further. Anti-oxidants and essential fatty acids (EFAs) are also added to promote kidney health.

Water

Water intake is critical in the management of CKD. Preventing dehydration and maintaining water flow through the kidneys makes such a difference over time. You can encourage your pet to drink by having plenty of water sources around, providing water in different ways (metal bowl, plastic bowl, fountain etc.) or even hiding bowls (cats like to hide - have a water bowl in their favourite place).

Cats get much of their daily intake of water through their food. Wet or tinned diets naturally contain more water. If a dry food is to be fed, water can be added to this. Also, pet water fountains are available, which create a gentle stream of running water and can really encourage cats in particular to drink.

Medication

Along with water intake and diet, medications may be prescribed by your Vet depending on the blood and urine test results and your pet's condition.

If you have any questions about your renal disease, please speak to a member of our team and don't forget to ask about our Renal Clinic.



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