

Kidney Disease in dogs & cats





What is a kidney?

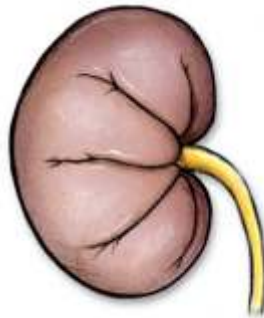
The kidney structure in each species does vary but all have essentially the same components to execute their function in the body.

Animals have 2 individual kidneys designed with an outer cortex and inner medulla and then internal renal pelvis.

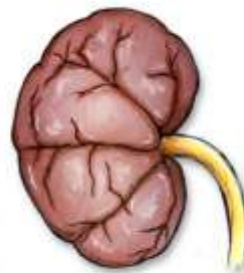
Kidneys receive fluids from the gastrointestinal blood vessels to produce urine. From the kidneys the urine flows down in the ureters to the bladder and then exits via the urethra.

The kidneys are responsible for the excretion of nitrogenous and other metabolic waste products, and for the regulation of water, electrolyte, and acid-base balance.

Acute Renal Failure



Normal Kidney



Chronic Renal Failure





“Clinical signs of disease do not usually occur until 75% of the kidney has been destroyed”

What is the function of the kidney?

The kidney is a complex organ with many functions;

- Producing urine and excreting waste products of protein metabolism (urea, creatinine, uric acid, phosphate, sulphate and toxins)
- Regulating fluid, electrolyte, and acid-base balance.
- Producing substances needed in the body - Renin – to help control thirst and water retention. Erythropoietin - for red blood cell production and Vitamin D3 conversion.

What is Renal Failure?

Renal failure is when the kidneys do not perform their normal function. This causes the development of azotemia (the loss of urine concentrating ability and disturbances of fluid, electrolyte, and acid-base balance).

As the kidney can cope with damage fairly well, clinical signs of disease do not usually occur until 75% of the kidney has been destroyed. Renal disease may therefore be occurring for a

long time before renal failure is detected. Renal failure can be classed as either acute or chronic. We'll explain these in more details later.

What are the signs of renal failure?

Clinical signs include;

- Polyuria (increased urination)
- Polydipsia (increased drinking)
- Inappetance (no appetite)
- Weight loss
- Tiredness
- Mouth or tongue ulcers
- Central nervous system signs





Acute Renal Failure

Acute renal failure occurs when the kidney *suddenly* cannot filter the blood.

This results in the retention of waste products which would usually be filtered by the kidneys and excreted in the urine. Pets with acute renal failure also lose their ability to concentrate urine which causes electrolyte imbalances.

What causes acute renal failure?

A thorough history is needed to determine whether there has been any damage to the kidneys, infections, stones or accidents. This will help determine the cause of the renal disease and assist us to treat the pet properly. Some of the possible causes, are;

- Some medications
- Accident or injury
- FLUTD (urinary tract disease)
- Infection
- Dehydration
- Blood loss
- Poisoning

What are the symptoms?

There are a number of symptoms, some of which are;

- Lethargy
- Loss of coordination
- Vomiting
- Not wanting to eat
- Seizures
- Decreased urination

How is it diagnosed?

Blood test

A complete blood count will provide information on any inflammation or infections present. Elevated blood urea nitrogen (BUN) and creatinine are also indicators of renal failure.

Urinalysis

A urine test will tell us whether there is infection, blood in the urine, crystals, diabetes and whether the kidneys are working properly. If collecting urine to bring in to your consultation, please bring as fresh a sample as you can collect. Samples taken some time prior to your appointment should be stored in the fridge. Sterile containers are best to use however you can use an old jar as long as it has been thoroughly washed, cleaned and dried.

Urine specific gravity is a test we may also perform to see how concentrated the urine is.

How is it treated?

Prognosis depends on the cause of the renal failure but treatment is to;

- Correct the dehydration via intravenous fluids (IV)
- Reduce the high potassium
- Correct the electrolyte imbalance via IV fluids
- Use anti vomiting drugs
- Correct the pets diet (this may involve artificial tube feeding)
- Antibiotics
- Remove the blockage if your cat has a urinary obstruction



Chronic Renal Failure

Chronic renal failure is a disorder caused by the *gradual* failure of the kidneys. It is a common problem in older animals and is progressive but can be controlled to some extent with diet.

What causes chronic renal failure?

The most common cause is the normal aging process in which pets gradually lose the function of their kidneys over time. Other causes can include;

- An immune based problem that causes inflammation to the kidney cells.
- A protein deposit in the kidneys.
- Infection
- Cancer
- A backflow pressure problem after a blockage
- Kidney stones
- Congenital deformities or conditions

What are the symptoms?

- Drinking and urinating a lot
- Anorexia (weight loss)
- Tiredness
- Mouth ulcers
- Vomiting
- Diarrhoea
- Change in size of kidneys
- Central nervous signs
- Exercise intolerance

How is it diagnosed?

Blood test

A complete blood count will provide information on any inflammation or infections present. Elevated blood urea nitrogen (BUN) and creatinine are also indicators of renal failure.

Urinalysis

A urine test will tell us whether there is infection, blood in the urine, crystals, diabetes and whether

the kidneys are working properly. If collecting urine to bring in to your consultation, please bring as fresh a sample as you can collect. Samples taken some time prior to your appointment should be stored in the fridge. Sterile containers are best to use however you can use an old jar as long as it has been thoroughly washed, cleaned and dried.

Urine specific gravity is a test we may also perform to see how concentrated the urine is.

How is it treated?

Diet is the most important factor in chronic renal disease to reduce the workload of the kidneys.

An intravenous drip will correct the dehydration and electrolyte imbalance and if the original cause is diagnosed, that too will need to be treated. Antibiotics may also be given.

What dietary change is needed?

A commercial renal (kidney) diet will supply all of your pets energy needs. It is more important that the patient is eating than specifically what they are eating but it is ideal to feed your pet a commercial renal diet.

These diets have electrolytes, vitamins and minerals in correct amounts, reduced protein breakdown and slow renal failure. The diet will also restrict phosphorous, maintain normal calcium levels, not overdose sodium, added vitamin B, and increased water soluble vitamin supply.



Royal Canin Renal Diet

Key Benefits:

- Supports kidney function
- Helps to maintain healthy digestive system
- Encourages healthy immune system

Available for both dogs and cats.