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## **CHRONIC RENAL FAILURE IN CATS**

### ***What do my cat's kidneys do?***

The kidneys have many functions. They principally act to remove waste products from the blood stream, retain essential nutrients such as potassium at the correct level, maintain hydration and produce urine.

### ***What is chronic renal failure?***

The kidneys have a large amount of spare capacity to perform their various functions so at least 70% of the kidneys need to be dysfunctional before clinical signs are seen. In many cases this means that the damage to the kidneys has been occurring over a number of months or years (chronic) before failure is evident. Chronic renal failure (CRF) is most commonly seen in older cats (10% of cases occur in cats less than 3 years old). Early signs of disease such as weight loss and poor coat quality are often dismissed as normal aging changes. In the initial stages of kidney disease, the kidneys cope with their inability to concentrate waste products by excreting them at a lower concentration over a larger volume. This is known as compensated renal failure. After approximately 70% of the kidney tissues are destroyed, there is a rapid rise in waste products in the bloodstream and an apparent sudden onset of severe disease.

### ***What are the causes of CRF?***

A large number of different disease processes can eventually lead to CRF including:

1. Congenital malformations of the kidneys - e.g. polycystic kidneys in long haired cats
2. Bacterial kidney infections (pyelonephritis)
3. Glomerulonephritis - damage to the filtration membrane (often due to age)
4. Neoplasia - various tumors of the kidney, most commonly lymphosarcoma
5. Amyloidosis - this is the build-up of an unusual protein in the kidney that prevents the kidney from functioning normally
6. Viral infections such as feline leukemia virus or feline infectious peritonitis virus.

CRF is the end stage of a number of different disease processes rather than a specific condition in its own right.

### ***How is the disease diagnosed?***

Renal failure is usually diagnosed by looking at the level of two waste products in the bloodstream, blood urea nitrogen (BUN) and creatinine and the urine specific gravity (USpG). Tests to measure the blood levels of other substances e.g. potassium, phosphorus and calcium as well as the red and white blood cell counts can also be important in order to determine the best course of treatment.

### ***Could the renal failure have been diagnosed earlier?***

Unfortunately, this is very difficult as neither clinical signs of renal failure nor rises in BUN and creatinine are evident until significant loss of kidney function has occurred. In earlier stages of disease there are no clinical signs to indicate that sophisticated renal function tests, which can pick up early renal damage, are required. We recommend that all senior pets have at least annual urinalysis to diagnose kidney disease at its earliest detectable level. A low urine specific gravity may indicate that at least two-thirds of the kidney tissues are damaged.

### ***How does CRF affect my cat?***

Because the kidneys perform a variety of different functions, the clinical signs of renal failure can be somewhat variable. The most common changes seen are weight loss, poor hair quality, halitosis (bad breath), variable appetite which may be associated with mouth ulcers, lethargy and depression. Less commonly, cats are seen to drink and urinate more and some will have vomiting and diarrhea. Rarely, renal failure is seen as sudden onset blindness.

### ***What treatments are available?***

Depending on the results of blood tests your veterinarian may be faced with several problems that require different treatments. Don't worry if the list below seems so long that you will never be able to administer all of the medications. The majority of cats can be effectively managed with diet change including supplementation and one or two other treatments.

1. Lowering the level of waste products in the bloodstream by feeding low protein and low phosphorus diets. These can be prepared at home or are available ready prepared from your veterinary practice. The palatability of reduced protein diets is usually not as high as normal cat food, so you may have to persevere for a while before your cat will eat it. As well as giving fluid therapy to enhance hydration and dilute toxins.
2. Phosphate binders - despite low phosphate in the diet, blood phosphorus levels remain above normal in some cats. Reducing blood phosphorus can have a major effect on improving your cat's well being and slowing disease progression. Phosphate binders such as aluminum hydroxide are given by mouth to further lower the amount of phosphorus absorbed through the gut wall.
3. Antibiotics - many cats seem to respond well to antibiotics though the reason for this is not always clear.
4. Potassium supplementation - cats in renal failure tend to lose too much potassium in the urine. This leads to muscle weakness, stiffness and poor hair quality. Low potassium levels may also contribute to the worsening of the kidney failure.
5. Vitamins B and C - these vitamins are lost by the failing kidneys and need daily supplementation.

6. Anti-emetics - for those cats that are experiencing vomiting, the use of anti-emetics reduces nausea, thereby improving appetite.
7. Hypotensive drugs - significant numbers of cats with kidney failure have high blood pressure. In some cases lowering their blood pressure may be necessary.
8. Treatment of anemia - the kidneys also initiate the production of red blood cell in the bone marrow. Many cats with CRF are anemic due to a lack of stimulation of the bone marrow. Newer drugs have been developed to help stimulate bone marrow production and may be prescribed for your cat.
9. Calcium controlling agent-Calcitriol is Vit D like substance which helps a cat absorb Calcium when the kidneys are starting to slow the reabsorption of Calcium into the body. More and more studies show it extends the life of renal failure cats.
  
10. The at home use of subcutaneous fluids or fluids administered under the skin.

**IT IS IMPORTANT THAT FRESH WATER IS AVAILABLE AT ALL TIMES BECAUSE CATS WITH RENAL FAILURE TEND TO DEHYDRATE RAPIDLY.**

***What is the cost of treatment?***

Treatment costs will vary with each individual case. In the majority of cases, long term management is unlikely to be prohibitively expensive. Referral for ultrasound for cause not related to above can be provided.

***How long can I expect my cat to live?***

Unfortunately, once the kidneys are damaged, they have very limited ability to recover. Most CRF advance very slowly. With treatment, your cat may have a good duration of good quality, active life ahead.