



Chronic Kidney Disease in Cats

Chronic kidney disease or kidney insufficiency is one of the most common conditions to occur in senior (>age 7) and geriatric (>age 14) cats. The kidneys are no longer able to keep up with the demands of the body and start to become insufficient. The condition may be mild, moderate or severe. The goal of treatment for kidney insufficiency is to slow the progression of the disease process and maintain the patient feeling as normal as possible.

What is the kidneys role?

The kidney is responsible for many things in the body;

- Filtration of the blood to remove toxins and retain important components like proteins
- Red blood cell production. The kidneys produce the hormone erythropoietin which signals red blood cell production in the bone marrow
- Helps in blood pressure regulation
- Water retention or conservation. When a cat is dehydrated, the kidney is responsible for conserving water and concentrating the urine. When a cat drinks too much, it is responsible for excreting the excess water and results in a dilute urine.
- Electrolyte balance



What are the clinical signs of kidney insufficiency?

- Excessive thirst
- Excessive urination
- Weight loss
- Dehydration
- Decreased appetite
- Vomiting and diarrhea in more advanced cases



How is kidney insufficiency diagnosed?

A blood test and urine test are used to assess kidney health. Normal kidneys can concentrate urine, while diseased kidneys no longer can. The urine specific gravity, or concentration of the urine is measured. In cats, a urine specific gravity of more than 1.035 is normal. Dilute urine is seen in patients with kidney insufficiency.



Toxin levels will start to become higher in the blood and the cat will have increased levels of blood urea nitrogen (BUN) and or creatinine. These have traditionally been used as markers to determine the level of damage that has occurred, or the stage of kidney disease. A newer kidney marker, called SDMA (Symmetric dimethylarginine), can aid in earlier kidney disease diagnosis as it can be detected even earlier.



The international renal interest society (IRIS) has created a staging and sub-staging system to help monitor kidney function.

Stage	creatinine levels (umol/L)
Stage 1	<140
Stage 2	140-250
Stage 3	251-440
Stage 4	>440

Figure: the IRIS renal staging used for monitoring kidney disease in cats

Monitoring of kidney insufficiency

Continued blood and urine monitoring are recommended to assess progression of the disease and to tailor treatment options.

Blood pressure monitoring is important as high blood pressure or, hypertension, is commonly associated with kidney disease. Should your cat's blood pressure be too high (generally considered a systolic pressure of more than 160mmHg), medication may be recommended to help lower the blood pressure. High blood pressure can have damaging effects on many organs in the body including further damage to the kidneys.

Proteins that the kidney normally would help retain in the blood often escape into the urine as the kidneys ability to filter the blood declines. Protein loss through the kidney also increases damage to the kidneys. Measurements of how much protein is being lost is recommended and if the levels are too high, medication may also be recommended to decrease the amount of protein loss. This test is called a urine protein to creatinine ratio.

How is kidney disease treated?

Treatment is aimed to help the patient feel normal and help slow the progression of damage to the kidneys.

- 1) Diet:** Electrolyte imbalances occur with kidney insufficiency. Kidney specific diets are aimed to help maintain normal electrolytes in the blood stream. Low phosphorus in the diet is important and can be achieved by decreasing the amount of certain proteins. Purina's NF early care, has low phosphorus levels while maintaining protein levels, therefore not contributing to further weight loss. As kidney disease progresses, lower protein diets are often recommended to avoid further kidney damage due to protein loss into the urine. Other kidneys diets include: Hill's k/d, Royal Canin's Renal A, E, and P diets. These diets also tend to be higher in potassium which is important as kidney disease progresses.





- 2) **Kidney health supplements:** Supplements are aimed to aid in the binding of excess phosphorus from food in the gut so it is not absorbed. They also supplement potassium and help to break down certain toxins that have built up in the blood stream, such as ammonia.
- 3) **High blood pressure:** If hypertension is present, medication such as Semintra (telmisartan) or amlodipine are recommended.
- 4) **Protein in the urine:** If proteinuria is present, medications such as Semintra (telmisartan) or Fortekor (benazepril) are recommended.
- 5) **Fluid therapy:** The kidneys lose the ability to conserve water properly resulting in excess water loss and subsequent dehydration. This is why fluid therapy is very important. Free access to fresh water should always be available. Wet food can also help increase water intake. Fluids can be supplemented by giving fluids under the skin, called subcutaneous fluid administration or can be administered into the vein (IV fluids).
- 6) **Other Medications:** Assistance with the phosphorus and calcium balance is sometimes done using medications.



Prognosis

Cats with kidney insufficiency may be able to live a fairly normal life for a quite some time. Cats are much more adept at dealing with loss of kidney function than humans or dogs. The goal is to maintain a happy cat who feels normal. When toxin levels become elevated in the blood, the cat feels sick and this is called uremia. With treatment and monitoring, we can help prevent uremia and slow the progression of the disease but unfortunately are not able to stop it altogether. We will be here to support you and your beloved cat along the way. We thank you for entrusting us with the care of your cat. Please let us know about your questions and concerns by contacting us at 250-758-3985 or by email at nveth@shaw.ca

Further reading

International Renal Staging Society

<http://www.iris-kidney.com/>