



Chronic Kidney Disease



This document was created for information purposes ONLY and it is NOT meant to replace a consultation with a fully qualified veterinary surgeon (veterinarian). It is NOT intended to be used to diagnose or treat any cat. EndFIP® shares this information for educational purposes **exclusively**. Furthermore, creators and contributors strongly advise all readers to always seek the advice of a qualified veterinarian and to obtain professional advice on the correct regimen for your cat and his/her particular situation. **NO responsibility can be accepted.**

Chronic Kidney Disease (CKD) is one of the most common conditions affecting older cats, and in most cases is progressive over time so that there is a gradual decline and worsening of the disease. CKD is defined as kidney disease that has been present for months to years, and the same condition is commonly called as chronic renal disease (CRD), chronic renal failure (CRF), and chronic renal insufficiency.

The kidneys have many functions. They principally act to remove waste products from the blood stream, regulates the levels of certain essential minerals such as potassium and sodium, produce certain hormones, help maintain fluid balance in the body, and produce urine. The kidneys have a large amount of spare capacity to perform their various functions so at least 2/3 (67% to 70%) of the kidneys must be dysfunctional before any clinical signs are seen. Meaning, in many cases the damage to the kidneys has been occurring over a number of months or years before failure is evident.

CKD can be seen in cats of any age, but is most commonly seen in middle to old-age cats (those over 7 years), and it becomes increasingly common with age. It has been estimated that around 20%-50% of cats over age 15 will have some degree of CKD present. Only about 10% of the cases occur in cats less than three years old.

CKD is not a single disease. There are many different causes of CKD but by the time the cat shows signs of kidney disease the cause may no longer be apparent. **Some potential causes for CKD include:**

- Congenital malformation of the kidneys (birth defects)
- Trauma
- Chronic bacterial infection of the kidneys with or without kidney stones (pyelonephritis)
- High blood pressure (hypertension)
- Hypokalemia (low blood potassium)
- Hypercalcemia (high blood calcium)
- Diseases associated with the immune system such as glomerulonephritis, systemic lupus, etc.
- Neoplasia – various tumors of the kidney, most commonly lymphosarcoma
- Amyloidosis (build-up of an unusual protein in the kidney)

- Acute kidney disease, for example poisoning (antifreeze, lilies, etc.) that damages the kidneys can lead to CKD
- Toxins (certain toxins and drugs can damage the kidneys)
- Kidney stones or ureteral stones
- Viral infections/diseases such as feline leukemia virus (FeLV) or *Feline Infectious Peritonitis (FIP)*

Often the cause of CKD is unknown, and by the time the cat shows signs of CKD, the damage is severe. There is NO cure for CKD but various treatments can keep the cat comfortable and with a good quality of life for months to years.

As CKD is mostly a progressive disease, initially the clinical signs are often very subtle and mild, but will gradually get worse over a long period of time. Many of the signs are vague and non-specific, some may arise from the accumulation of toxins in the blood while other may arise as complications from the body trying to adapt to the disease.

The most common signs are:

- Weight loss
- Poor appetite
- Lethargy
- Polydipsia (increased thirst)
- Polyuria (increased urination)
- Incontinence (leaking urine)
- Vomiting
- Diarrhea
- Poor coat
- Halitosis (bad-smelling breath)
- Weakness (caused by low potassium)
- Anemia
- General depression (related to elevation of waste products in the blood)

The less common signs are:

- Weakened bones can result in bone fractures
- Hypertension (high blood pressure) can lead to sudden blindness
- Itchy skin from calcium and phosphorous depositing in the skin
- Bleeding into the stomach or gut, or bruising of skin

It is important to note that the signs seen in pets with CKD and the findings on examinations are not specific for CKD and may be seen with many other diseases so blood and urine tests are needed to reach a diagnosis of CKD. Signs you **may** see if you examine your cat include: dehydration, weight loss, pale gums and ulcers in the mouth.

How is CKD diagnosed?

A diagnosis of CKD can usually be made based on the signs, physical examination, and blood and urine tests. Abnormalities that are often seen on diagnostic blood and urine tests include:

- Increased waste that are normally removed by the kidneys - blood urea nitrogen (BUN) and creatinine
- Non-regenerative anemia

- Increased phosphorus
- Calcium can be elevated in some pets with CKD
- Protein or bacteria in the urine

To look for an underlying cause for the CKD and/or to “stage” the CKD, other tests that may be performed include:

- X-rays or ultrasound (to determine size of the kidneys)
- Test for clotting ability (if the cat is going to undergo a kidney biopsy, this test may be performed in advance to evaluate the ability to stop bleeding from the biopsy site)
- Kidney biopsy (a biopsy is not required to make a diagnosis of CKD but the results may show a cause for the CKD)
- Bacterial culture (if white blood cells are observed on microscopic examination of the cat’s urine, a bacterial culture of the urine should be obtained)

How will my veterinarian determine the degree of kidney failure in my cat?

The severity of CKD can be estimated based on blood waste product elevation and abnormalities in the urine such as the presence of protein. Your veterinarian will use the **IRIS** (The International Renal Interest Society) staging system. Stages are numbered 1 through 4 where one is the least severe and four is the most severe. The higher the stage number also generally corresponds to the greater number of symptoms seen in the cat. By using this staging, your veterinarian has a better idea on how to proceed with treatment, monitor progress, and to estimate your cat’s prognosis.

Treatment of CKD

The severity of the cat’s signs will determine what treatments are needed. In most cases, treatment is symptomatic and supportive. As CKD is not a disease that can be cured, treatments are designed to reduce the work the kidneys need to perform, to replace substances that may be too low (such as potassium) and to reduce wastes that accumulate such as urea (generated by the body from protein) and phosphorus. Some cats may require initial intravenous fluid therapy to correct dehydration (and perhaps electrolyte abnormalities), but once stable, treatment is aimed at supporting kidney function and minimizing the complications of CKD.

Those cats who are still eating and not showing severe signs are treated with a variety of treatments, often introducing treatments incrementally as new signs develop. The treatment approach is often called “conservative” compared to more aggressive treatments such as hospitalization for fluid therapy, dialysis, or kidney transplantation.

Your veterinarian will work with you to determine the best treatment for your cat, and may include:

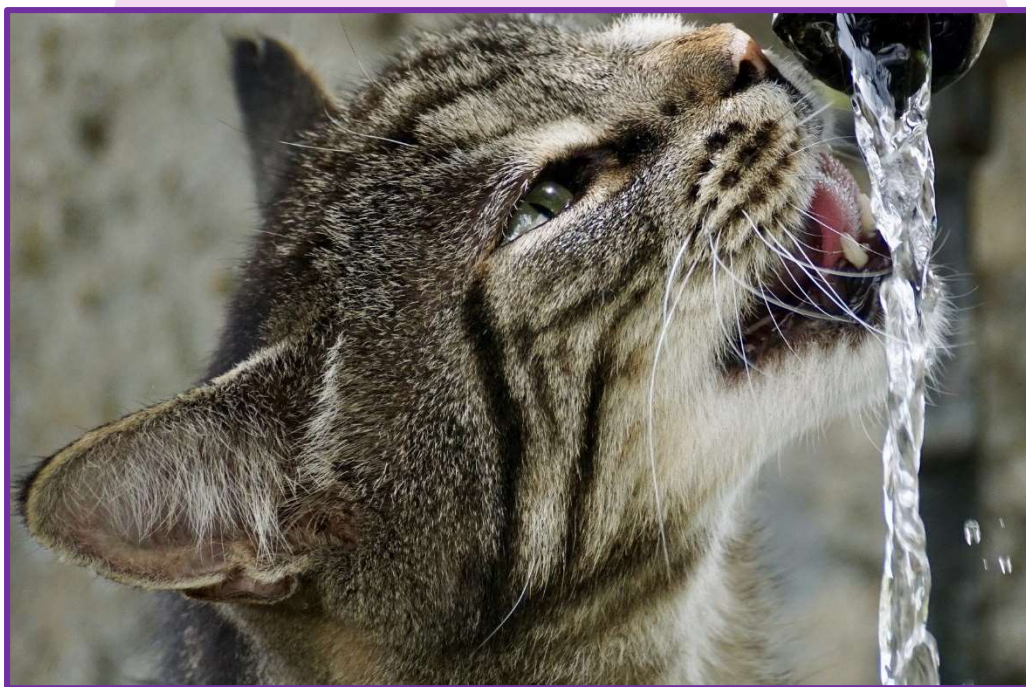
- Special diets (low protein and low phosphorus formulas). These diets can be prepared at home or are available ready prepared from your veterinary practice
- Phosphate binders (oral phosphate binders such as aluminum hydroxide help to lower the amount of phosphorus absorbed through the gut wall)
- Antibiotics (cats with CKD develop bladder infections more frequently)
- Potassium supplements (cats in renal failure tend to lose too much potassium in the urine. This leads to muscle weakness, stiffness, and poor hair quality)
- Vitamins B and C
- Anti-emetics (anti-vomiting medications reduce nausea, thereby improving appetite)
- Blood pressure lowering drugs

- Treatment of anemia

Managing dehydration

Because cats with kidney disease cannot conserve water by making concentrated urine, their water intake is very important to prevent dehydration. Using a wet rather than dry diet is important to increase water intake in cats with CKD, but they still sometimes do not consume enough water to compensate for what is being lost in the urine. In these cases, additional measures may need to be taken, and may include:

- Making sure a good supply of fresh water is always available
- Cats should be encouraged to drink by offering water from different bowls, water fountains, etc.
- Offering flavored waters (chicken or tuna, for example)
- Adding further water to the food
- Using intermittent sub-cutaneous fluid therapy (at the vet clinic or at home)
- Using intermittent intravenous fluid therapy at your vet clinic



On a closing note, sadly, once the kidneys are damaged, they have very limited ability to recover. However, the rate of progression of renal disease varies considerably between individuals and appropriate support and treatment can both increase the quality of life of affected cats and also potentially slow down the progression of the disease. It is also extremely important to reduce stress because when a cat is stressed, they may drink and eat less than normal and reduce water intake is detrimental to diseased kidneys. When possible, keep your cat calm and keep in mind that with treatment, your beloved feline may have several years of good quality, active life ahead.

EndFIP® has a vision: every cat a healthy cat. This vision expands beyond the boundaries of FIP. The focus of our group is to educate, inform and inspire people to create lasting solution to prevent cats from becoming infected with feline coronavirus, thus preventing FIP altogether. We also like to provide information about other issues affecting cats worldwide.

All of us at EndFIP® are dedicated to keeping cats healthy and happy.