

## **Chronic kidney disease in cats**

Chronic kidney disease (CKD), also called chronic renal failure, is long-standing (greater than 3 months) kidney dysfunction that is manifested by dilute urine (urine that is not as concentrated as it should be) and retention of urea (uremia) and other waste products in the body. CKD is a common problem in older cats but can also occur in young and middle-aged cats.

In many cases, the underlying cause of CKD is never discovered. Identifiable causes include kidney infections and stones, obstruction of the ureter (the tube that carries urine from the kidney to the bladder), incomplete recovery from previous damage to the kidney (such as acute renal failure), polycystic kidney disease (an inherited condition common in long-haired cats), and certain tumors (such as lymphoma). In young cats, congenital kidney disease (such as kidney dysplasia) may be the cause. Kidney stones are common in middle-aged cats.

CKD may be detected on routine screening of blood and urine prior to the onset of signs. Diagnosis at this stage allows treatments to be started that may slow the progression of CKD. Early clinical signs may include increased water intake and urine production, decreased appetite, and nausea. In later stages, vomiting, lethargy and dehydration may be apparent. Physical examination findings may include dehydration, weight loss or muscle loss, poor hair coat, small or irregular kidneys, and a uremic odor to the breath.

Initially, a biochemistry panel, complete blood test, and urinalysis are usually recommended. With CKD, kidney function tests, such as blood urea nitrogen (BUN) and creatinine, are elevated. Levels of blood electrolytes (potassium) and certain chemicals (phosphorus, calcium) may also be abnormal. Urinalysis is crucial to determine the ability of the kidneys to concentrate the urine and to look for protein in the urine. Additional diagnostic tests may include a urine culture to screen for infection, blood pressure measurement (especially if there is protein in the urine) to check for high blood pressure (hypertension), and a complete blood count to look for anemia. Abdominal x-rays and an ultrasound

are often done to look for kidney stones, evidence of infection, or other changes. In some cases, a kidney biopsy may be recommended, along with laboratory tests to rule out other diseases that can cause similar signs.

Currently, no treatments are available that will reverse CKD. The goals of treatment are to slow progression of CKD and treat the clinical signs. Feeding a special kidney diet, which contains less protein and phosphorus, is the most effective method of slowing progression of CKD. Cats eating a kidney diet can live twice as long as those eating a regular maintenance diet. These diets can be started even before signs occur. Control of blood phosphorus levels is also necessary. If dietary changes alone do not accomplish this, drugs to bind the phosphorus in the food can be given with each meal. If chronic dehydration is present, injections of fluid under the skin (subcutaneous fluids) may be helpful. The frequency varies from daily to twice weekly, and the injections can be given at home. If hypertension is present, a variety of drugs can be used to control it. Hypertension is more common in early stages of CKD in cats. Excess protein in the urine is rare in cats and can be treated with angiotensin-converting enzyme (ACE) inhibitor drugs. Potassium supplements may be needed in some cats, as well as drugs to treat excess acid in the blood. Severe, advanced anemia can be treated with hormone injections to stimulate the production of red blood cells, but some cats develop side effects from the hormone the longer it is used. Antacids, such as famotidine, are frequently prescribed for vomiting, and appetite stimulants may be given.

Follow-up visits often involve examinations, laboratory tests, and blood pressure measurement. Frequency of visits depends on the severity of CKD, with monthly visits recommended in advanced cases. Cats with early, stable disease may only need to be checked every 3-6 months.

CKD is a progressive disease that slowly worsens, but the rate of progression is highly variable. Cats diagnosed with early disease have an average survival time of 3 years. Those with moderate disease live an average of 2 years. Those with advanced disease generally succumb to CKD within months. Despite these general rates, the survival time of any individual cat is impossible to predict.