

Kidney Disease

Kidney (**renal**) failure occurs when kidney function has deteriorated to a degree that the kidneys can no longer perform their normal functions of excreting wastes, maintaining water and electrolyte balance, and producing hormones. Acute renal failure is of recent onset and is potentially reversible. In contrast, chronic renal failure has been present for months to years and is irreversible. Animals with chronic renal failure cannot be cured, but may be successfully managed.

SYMPTOMS

The earliest signs of renal failure are typically increased thirst (**polydipsia**) and increased urine volume (**polyuria**). These signs result from an inability of the kidneys to form concentrated urine. Other common signs include weight loss, poor hair coat, and an increasingly selective appetite. Further decline in kidney function results in retention of toxic wastes in the body. This is known as **uremia** (urine in the bloodstream). Signs associated with uremia include: loss of appetite, vomiting, ulcers in the mouth and stomach, "uremic" breath (a foul ammonia-like smell), weakness, and lethargy. Other significant effects of renal failure may include **anemia** (decreased percentage of red blood cells) and increased blood pressure. With advanced renal failure, it is not uncommon to see sudden blindness, mental dullness, behavior changes, seizures, and possibly coma.

CAUSES

Causes of kidney disease are often associated with changes in the blood supply to the kidneys. Blood pressure changes may result from age-related scarring, kidney stones, shock, cancer, toxins, heart failure, heatstroke, unregulated anesthetic procedures, drug sensitivities, immune-mediated processes, or any process that results in inflammation or infection. Occasionally, the underlying cause is unknown and the condition becomes classified as **idiopathic** renal disease.

DIAGNOSIS

Diagnosis begins with a thorough physical examination and review of the patient's history. Renal failure is confirmed by evaluation of the urine and blood. A urine test (**urinalysis**) can help determine whether the kidneys are appropriately concentrating urine and provide evidence of other problems such as urinary tract infections. Blood tests used to evaluate kidney function include BUN (**blood urea nitrogen**) and **creatinine**, which are protein by-products. Increased concentrations of these enzymes in the blood indicate decreased kidney function. Blood tests also assess for anemia, electrolyte and mineral imbalances, and acid-base abnormalities. Physical and anatomical analysis of the kidneys via x-rays or ultrasound provides additional diagnostic information.

TREATMENT

Treatment protocols for kidney failure are designed to address reversible damage, to correct blood and urine abnormalities, and to preserve remaining kidney function. Many animals with kidney disease can be treated, providing a good quality of life for months to years. The underlying cause of kidney damage is treated when possible. This is followed by aggressive re-hydration therapy and administration of medications to control clinical signs, acid-base and electrolyte disorders, anemia and hypertension. Intravenous (IV) fluid therapy promotes increased urination (**diuresis**) of waste products. Patients receiving IV fluid therapy are hospitalized, and blood tests are rechecked within the first 2-3 days to determine the response to therapy. In conjunction with fluid therapy, medications are administered either orally or by injection. These may include dietary phosphorus binding drugs, anti-vomiting drugs, antacids, electrolytes, and antibiotics.



HOME CARE

Home care is designed to maintain the patient's hydration status and to avoid the progression of clinical signs. **Dehydration** (abnormal depletion of body fluids) is a real threat to pets with renal failure; they may deteriorate rapidly if episodes of vomiting, diarrhea, or decreased water intake are not addressed promptly. Water should never be withheld from a renal failure patient. Pet owners may be instructed to inject fluids underneath the patient's skin (**subcutaneous or SQ** fluids) to ensure fluid levels. Oral medications are continued at home. Antacids and phosphate-binding supplements are usually prescribed long-term. Antibiotics may be used as an infection treatment or preventative. It is also important to provide the patient with a stress-free environment.

A specialized diet should be provided for animals with renal disease. Consumption of excess protein may worsen symptoms, since the waste products of protein metabolism are retained in the blood. Lower levels of phosphorus must be maintained. The reduction of dietary salt may help control **hypertension** (high blood pressure), a major contributing factor to renal failure. Your veterinarian can provide you with a prescription diet recommended to support and manage the renal failure patient.

MONITORING

As stated above, many animals with renal failure can be managed for months to years. It is necessary to closely monitor your pet's hydration status, and to watch for vomiting and diarrhea. While specialized diets are important in the management of kidney disease, it is more important that an animal in kidney failure maintain an adequate caloric intake. If the recommended prescription diet is poorly tolerated, any diet that allows appropriate intake is encouraged. If symptoms of renal failure are observed, it is important to seek veterinary care immediately.

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COSTS

Once a diagnosis of renal failure is made, rechecks are performed at three to six month intervals, allowing your veterinarian to monitor the disease progression and to better tailor home care therapy to the unique requirements of each pet. Initial exam, blood testing and urinalysis will cost about \$250-300. If the initial work-up includes x-rays and ultrasound, the cost may increase by about \$500. Once diagnosed, initial therapy including hospitalization (2-3 days), IV fluid therapy, injectable medications and repeat blood and urinalysis will run approximately \$500-800. Therefore, the initial cost estimate for diagnosis and aggressive treatment of renal disease is approximately \$1,200-1,500. Estimated annual costs for managing an animal at home, including recheck examinations, blood and urine analysis, prescription diets, oral medications and SQ fluid set-ups for home use will average \$300-600 per year. Of course, treatment protocols may vary, depending upon the unique needs of each patient.

Please speak with your veterinarian regarding the possibility of kidney disease in your senior pet.

