



## Canine Chronic Renal (Kidney) Failure

Chronic renal failure is associated with an irreversible loss of function that occurs gradually over months or years. The kidneys are organs that maintain the body's balance of fluid and electrolytes (potassium, sodium and chloride) and filter out waste material in the form of urine. The kidneys also regulate the metabolism of calcium and phosphorus, help maintain normal blood pressure and produce a hormone (erythropoietin) that stimulates red blood cell production.

Signs of decreased kidney function may not become evident until more than 65% to 75% of the total kidney function has been lost. Failing kidneys cannot adequately clear the blood of certain waste products. The concentration of urea nitrogen (a by-product of protein metabolism) and creatinine (a by-product of muscle metabolism) are two of the substances routinely measured in blood to help determine the magnitude of renal failure.

Patients with chronic renal failure tend to produce large amounts of urine (polyuria) due to the kidneys' impaired ability to reabsorb water back into the blood stream. If the dog is unable to drink enough to compensate for the loss of water from the kidneys, dehydration will occur. Adequate hydration is an important component in the treatment of chronic renal failure. If the patient will not drink enough water to maintain proper fluid balance, supplemental fluid may have to be administered at home. Injecting fluids under the skin with a needle and drip set is an easy and effective way of providing extra fluid needs to the damaged kidneys. Most owners are very capable of performing this valuable treatment.

Other organs are ultimately affected by a decrease in kidney function. The increased level of wastes in the blood may cause irritation to the lining of the stomach resulting in nausea, vomiting and anorexia. To help control these symptoms, patients are often treated with drugs known as H2 blockers (Zantac® and Tagamet®) and/or drugs to control vomiting (metoclopramide). The level of phosphorus in the body may be abnormally high in patients with renal failure. Phosphorus is absorbed from food in the intestinal tract. One method of controlling phosphorus levels is to administer drugs such as aluminum carbonate or aluminum hydroxide, which bind dietary phosphorus and minimize its absorption from intestines.

Hypertension (high blood pressure) may also be associated with renal failure. Increased blood pressure may result in further damage to the kidneys along with damage to other organs (detached retinas causing sudden blindness). Dietary sodium (salt) restriction is one step in treating this condition, but anti-hypertensive drugs are often needed to reduce blood pressure.

An important key to long term management of chronic renal failure is the care that your dog receives at home. You may take several steps to help slow the progression of the disease. Place additional bowls around the house to ensure that your dog has easy access to fresh, clean water. Encourage your dog to eat and drink by maintaining a stress-free daily routine. Stressed dogs will often stop eating and drinking, which will further compromise their kidney function.

Dietary management is an important factor in slowing the progression of renal failure. "Renal diets" are usually restricted in the amount of protein, sodium and phosphorus they contain, but provide daily requirements of non-protein calories, vitamins and minerals. Reduced protein diets will generate fewer nitrogen-based waste products and help reduce the level of wastes in the blood. Prescription diets g/d and k/d are specially formulated diets that we have available to treat chronic renal failure patients.

Severe renal failure may require more aggressive treatment. Kidney dialysis is sometimes available when kidney function has deteriorated dramatically.



Please monitor your dog carefully for changes in eating, drinking, elimination or behavior and contact us if these should occur. Early detection and management of kidney disease can enhance the quality life for our kidney patients.