

Kidney Disease in Dogs

**What is kidney disease?**

Chronic kidney disease, also known as chronic renal failure or renal insufficiency, is a progressive loss of kidney function over a period of time. By definition, kidney failure is the inability of the kidneys to remove waste products from the blood. Kidney failure does not indicate the inability to make urine. Ironically, most dogs in kidney failure are actually producing large quantities of urine, but the body’s wastes are not being effectively eliminated.

**Is age a factor of chronic kidney disease?**

The most common form of chronic kidney failure is the result of aging; it is simply a “wearing out” process. The age of onset is related to the size of the dog. For most small dogs, early signs of kidney disease occur at about 10 to 14 years of age. However, large dogs have a shorter age span and may go into kidney failure as early as seven years of age.

**What changes are likely to occur in my dog?**

The kidneys' function is to filter the blood and pull out toxins from the blood stream. When aging causes the filtration process to become inefficient and ineffective, blood flow to the kidneys is increased in an attempt to increase filtration. The kidneys are unable to filter effectively so they begin to lose more
water into the urine when they shouldn’t. This results in the production of more urine. To keep the dog from becoming dehydrated due to increased fluid loss in the urine, thirst is increased and more water is consumed. Thus, the early signs of kidney disease are increased water consumption and increased urine production.

The clinical signs of more advanced kidney failure include loss of appetite, weight loss, depression, vomiting, diarrhea and very bad breath. Occasionally, ulcers will be found in the mouth. When kidney failure is accompanied by these clinical signs, it is called uremia.

**How is chronic kidney failure diagnosed?**

The diagnosis of kidney failure is made by determining the level of two waste products in the blood: blood urea nitrogen (BUN) and blood creatinine. A urinalysis is also needed to complete the study of kidney function.

Although BUN and creatinine levels reflect kidney failure, they do not predict it. A dog with marginal kidney function may have normal blood tests. If a dog is stressed with major illness or surgery, the kidneys may fail, sending the blood test values up quickly. There is a difference between chronic kidney disease and acute kidney injury which will be evaluated with bloodwork, urine, and imaging such as an ultrasound.

**Can chronic kidney failure be treated?**

In some cases, the kidneys are so worn out that they cannot be revived. However, many dogs can live for several months or years with aggressive treatment.

Treatment occurs in two phases. The goal of the first phase is to “restart” the kidneys. Large quantities of intravenous fluids are given to “flush out” the kidneys. This flushing process, called diuresis, helps to increase blood flow to
the kidneys and allow them to filter more efficiently. If enough functional kidney cells remain, they may be able to adequately meet the body’s needs for waste removal. Once kidney cells are damaged, they don’t work effectively
so it depends on the health of the remaining kidney cells present. Fluid therapy also includes replacement of various electrolytes, especially potassium. Other important aspects of initial treatment include proper nutrition and drugs to control vomiting and diarrhea.

**What can I expect from this phase of treatment?**

There are three possible outcomes from the first phase of treatment:

* The kidneys will function adequately with a reduced number of kidney cells and continue reasonably well for a few weeks to a few years.
* The kidneys will function adequately during fluid treatment but worsen again as soon as treatment stops.
* Kidney function will continue to worsen despite treatment.

Unfortunately, there are no reliable tests that will predict the outcome.

**If my dog improves, is treatment concluded?**

No. Your dog's kidneys are still damaged and will never be normal again. Without continued treatment, your dog will soon be back in kidney failure. Therefore, home treatment is vital.

**What happens next?**

The goal of the second phase of treatment is to keep the kidneys functioning as long as possible. This is accomplished with one or more of the following, depending on the situation:

* **A special diet.**The ideal diet is lower but easily digestible protein, low in phosphorus and not acidified. This type of diet helps to keep the electrolytes and kidney values as close to normal as possible, which usually makes your dog feel better. Also, once kidney disease is advanced, a decreased protein diet will decrease the workload on the kidneys. We can recommend a commercially prepared food that has the quantity and quality of nutrients your dog needs.
* **A potassium supplement.** Potassium is lost when urine production becomes excessive. Low potassium levels have also been shown to further reduce kidney function.  A potassium supplement will replace the nutrient loss and help maintain kidney function if needed based on lab work.
* **A phosphate binder.** Phosphorous is removed from the body by filtering through the kidneys. Once the filtration process is impaired, phosphorous begins to accumulate in the blood. This also contributes to lethargy and poor appetite. Certain drugs will bind excess phosphates in the intestinal tract so they are not absorbed, resulting in lower blood levels of phosphorus. This will be added if needed based on lab work.
* **Fluids given at home.**Once your dog is stabilized, fluids can be given under the skin (subcutaneously). This serves to continually give the
kidneys a boost with fluids as their function begins to worsen again. This is done once daily to once weekly, depending on the degree of kidney failure. Although this might not sound like something you can do, you will be surprised at how easily the technique can be learned and how well most dogs will tolerate it.
* **A drug for excess stomach acid.** Evidence indicates that excess stomach acid causes nausea and can be harmful to your dog’s appetite.  These drugs are usually given only if appetite is improved while they are administered.
* **A drug to stimulate the bone marrow to produce new red blood cells.** The kidneys produce erythropoietin, a hormone that stimulates the bone marrow to make red blood cells. Therefore, many dogs in kidney failure have a low red blood cell count, also known as anemia. Epogen or Procrit, synthetic forms of erythropoietin, will correct anemia in most dogs and is recommended if persistent anemia is present. Unfortunately, the drug cannot be used long-term for some dogs because the immune system recognizes it as "foreign" and will make antibodies (immune proteins) against it.
* **A drug for high blood pressure.** Many dogs with kidney failure have high blood pressure. Blood pressure will normalize for many dogs following hospital treatment, but it remains elevated in others. These drugs are used only if needed.
* **Acupuncture as an adjunctive treatment**. We have two certified veterinary acupuncturists on staff who would be happy to consult with you on acupuncture's use in kidney disease.

**How long can I expect my dog to live?**

The prognosis for kidney disease is quite variable depending on response to the initial stage of treatment and your ability to perform the follow-up care. We encourage treatment in most situations because many dogs will respond and maintain a good quality of life for up to four years.