



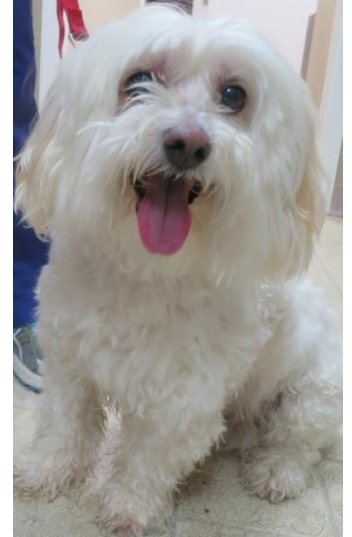
## Chronic kidney Disease in Dogs

Chronic kidney disease or kidney insufficiency is most to occur in senior and geriatric dogs. The kidneys are no longer able to keep up with the demands of the body and start to become inefficient. The inefficiency may be mild, moderate or severe. Treatment for kidney inefficiency is to slow the progression of the disease process and maintain the patient feeling as normal as possible.

### What is the kidneys role?

The kidney is responsible for many things in the body;

- Filtration of the blood to remove toxins and retain important components like proteins
- Red blood cell production. The kidneys produce the hormone erythropoietin which signals red blood cell production in the bone marrow
- Helps in blood pressure regulation
- Water retention or conservation. When a dog is dehydrated, the kidney is responsible for conserving water and concentrating the urine. When a dog drinks too much, it is responsible for excreting the excess water and results in dilute urine.
- Electrolyte balance



### What are the clinical signs of kidney insufficiency?

- Excessive thirst
- Excessive urination
- Weight loss
- Dehydration
- Decreased Appetite
- Vomiting and diarrhea in more advanced cases



### How is kidney insufficiency diagnosed?



A blood test and urine test are used to assess kidney health. Normal kidneys can concentrate urine, while damaged kidneys no longer can. The urine specific gravity, or concentration of the urine is measured. In dogs, a urine specific gravity of more than 1.020-1.025 is normal. Dilute urine is seen in patients with kidney insufficiency.

Toxin levels will start to become higher and the dog will have increased levels of blood urea nitrogen (BUN) and creatinine. These have traditionally been used as markers to determine the level of damage that has occurred, or the stage of kidney

disease. A newer marker, called SDMA (Symmetric dimethylarginine), can aid in earlier kidney disease diagnosis as it can be detected even earlier.



The international renal interest society (IRIS) has created a staging and sub-staging system to help monitor kidney function.

Stage	creatinine levels (umol/L)
Stage 1	<125
Stage 2	125-180
Stage 3	181-440
Stage 4	>440

Figure: the IRIS renal staging used for monitoring kidney disease in dogs

## Monitoring of kidney insufficiency

Continued blood and urine monitoring are recommended to assess progression of the disease and to tailor treatment options.

Blood pressure monitoring is important as high blood pressure or, hypertension, is commonly associated with kidney disease. Should your dog's blood pressure be too high (generally considered a systolic pressure of more than 160mmHg), medication may be recommended to help lower the blood pressure. High blood pressure can have damaging effects on many organs in the body including further damage to the kidneys.

Proteins that the kidney normally would help retain in the blood often escape into the urine as the kidneys ability to filter the blood declines. Protein loss through the kidney also increases damage to the kidneys. Measurements of how much protein is being lost is recommended and if the levels are too high, medication may also be recommended to decrease the amount of protein loss. This test is called a urine protein to creatinine ratio.

## How is kidney disease treated?

Treatment is aimed to help the patient feel normal and help slow the progression of damage to the kidneys.



**1) Diet:** Electrolyte imbalances occur with kidney insufficiency. Kidney specific diets are aimed to help maintain normal electrolytes in the blood stream. Low phosphorus in the diet is important and can be achieved by decreasing the amount of protein. As kidney disease progresses, low protein kidney diets are recommended to avoid further kidney damage due to protein loss into the urine. Kidney diets include: Hill's k/d, Royal Canin's Mature Consult or Renal D, E, and T diets , Purina's NF and Rayne's Restrict CKD. These diets also tend to be higher in potassium which is important as kidney disease worsens.

**2) Kidney health supplements:** Supplements are aimed to aid in the binding of excess phosphorus from food so it is not absorbed. They also supplement potassium and help to break down certain toxins that have built up in the blood stream, such as ammonia.





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- 3) **High blood pressure:** If hypertension is present, medication such as Fortekor, Semintra (telmisartan) or amlodipine are recommended.
- 4) **Protein in the urine:** If proteinuria is present, medications such as Semintra (telmisartan) or Fortekor (benazepril) are recommended.
- 5) **Fluid therapy:** The kidneys lose the ability to conserve water properly resulting in excess water loss and subsequent dehydration. This is why fluid therapy is very important. Free access to fresh water should always be available. Wet food can also help increase water intake. Fluids can be supplemented by giving fluids under the skin, called subcutaneous fluid administration or can be administered into the vein (IV fluids).



## Prognosis

The goal is to maintain a happy dog who feels normal. When toxin levels become elevated in the blood, the dog feels sick and this is called uremia. With treatment and monitoring, we can help prevent uremia and slow the progression of the disease but unfortunately will not stop it altogether. Disease progression may occur within a short to moderate period of time in many dogs. We will be here to support you and your beloved dog along the way. We thank you for entrusting us with the care of your dog. Please let us know about your questions and concerns by contacting us at 250-758-3985 or by email at [nveth@shaw.ca](mailto:nveth@shaw.ca).

## Further reading

International Renal Staging Society

<http://www.iris-kidney.com/>