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Chronic Kidney Disease

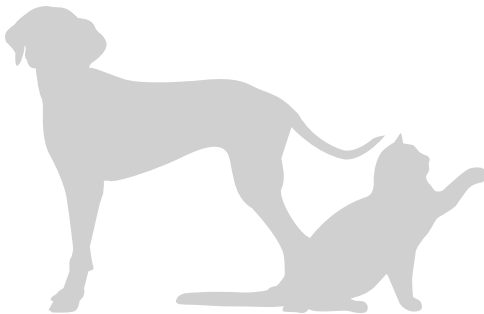
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What is chronic kidney disease?

Chronic kidney disease or 'CKD' is one of the most common conditions affecting older pets, particularly cats. In most cases it is progressive over time so that there is a gradual worsening of the disease. The kidneys are responsible for maintaining fluid balance in the body, producing hormones, regulating electrolytes in the body, maintaining blood pressure and excreting waste products in the urine.

CKD occurs when there is irreversible damage to the kidneys that impairs their ability to excrete waste products. Urea and creatinine are the waste products produced by the kidneys, and due to the kidney damage, the levels of these will increase in the blood. These are the two most common parameters measured when carrying out your pet's blood tests and help us diagnose and monitor your pet's condition.

We may also regularly check your pet's urine to see how well they are concentrating this and also to monitor how much protein they are losing through their urine as these are both indications of progressive CKD.

Electrolytes often become imbalanced with CKD. High phosphate levels are commonly seen as the kidneys start to retain the phosphate and low potassium levels can be seen as there is an increased loss of potassium through the kidneys. These imbalances can worsen CKD and other normal functions. The electrolytes can be monitored by blood testing and managed by diet.

Blood pressure should be regularly checked as pets with CKD are at risk of developing high blood pressure. Should this occur, it can have a number of damaging effects such as worsening of CKD, heart damage and blindness. If your pet has high blood pressure, this is often treated by daily medication of a drug known as a vasodilator.

Why is a renal diet important?

Diet is an extremely important part of supporting a pet with CKD. A renal diet is designed so that it is low in protein. The proteins that your pet eats in their diet are broken down into amino acids which are used by the body for growth, maintenance of muscles, coat, skin and regulation of body functions. The amino acids that are not needed for this are used as an energy source and the rest is then converted in urea which should be excreted in the urine. As discussed previously, this is one of the waste products that accumulate in the blood stream in a pet with CKD. Therefore, a diet with low protein will help to minimise this.

A renal diet is also low in phosphate which will help to protect the kidneys from further damage, in some cases blood phosphate may remain high even on a renal diet, in which case a medication known as a phosphate binder may be given.

Renal diets also have anti-oxidants to help prevent further kidney damage, essential fatty acids to maintain blood flow to the kidneys and added potassium to help balance electrolytes.

Changing over to a renal diet:

Pets often develop a strong preference to certain diets, and low protein diets are often less palatable, meaning the changeover to a renal diet can sometimes be difficult.

Here are some tips to help:

- > Make the change gradual over a period of at least 7 days.
- > Start by mixing a very small amount of the renal diet with your pet's old food.
- > Only increase the amount of the renal food and decrease the amount of old food when they are happy to eat it.
- > Warming the food can help to make it more smelly and therefore more palatable. If using dry food this can be done by adding boiled water and allowing the food to cool.
- > If in any doubt, speak to one of our veterinary nurses for further advice.

Fussy eating and renal disease:

It is important to remember that renal patients can be fussy with their food! They may enjoy one type one week and not the other. The important thing to remember is that there are many varieties of renal food available to try and if in doubt, we are here to help.

Test	Result	Unit	Reference Range
ALT	88	U/L	18.00 - 77.00
Gamma GT	3.5	U/L	1.00 - 14.00
Total Bilirubin	12.0	umol/L	0.00 - 10.00
Urea	14.5	mmol/L	6.00 - 10.00
Creatinine	320	umol/L	44.00 - 194.00
Phosphorus	1.98	mmol/L	0.70 - 2.10
Calcium	0.96	mmol/L	1.80 - 2.10

Test	Result	Unit	Reference Range
ALT	88	U/L	18.00 - 77.00
Gamma GT	3.5	U/L	1.00 - 14.00
Total Bilirubin	4.0	umol/L	0.00 - 10.00
Urea	12.5	mmol/L	6.10 - 12.50
Creatinine	191	umol/L	44.00 - 194.00
Phosphorus	1.32	mmol/L	0.70 - 2.10

Proof that a renal diet is therapeutic and important! These are the blood results of a 16 year old cat with renal disease. The first image shows the initial blood test at the time of diagnosis and the second is 3 months later. This cat has been treated with renal food alone.

Water intake:

Pets with CKD are more likely to become dehydrated as a result of the kidneys not being able to conserve as much water. Maintaining fluid intake is therefore very important and can help to slow the progression of CKD.

Some tips to improve water intake:

- > Feeding wet food
- > Use flavoured water e.g. chicken/tuna
- > Add more water to the renal food (if this doesn't affect your pet's appetite)
- > Use of a water fountain
- > Various water areas around the house
- > Remember, cats like to drink away from where they eat!

Renal food diary:

This is an area you can use to note down renal diets you have tried your pet on and how they responded to the food. Remember, renal patients are often very fussy and can easily 'go off' various diets, so this can be a useful tool to refer back to if needed.

Name of renal food	Did your pet eat it?	Did your pet go off the food?	Any comments

High Blood Pressure:

Pets with CKD are at risk of developing hypertension (high blood pressure). The kidneys play a main part in managing the control of blood pressure and ensuring that this is normal. When the kidney function is affected, this has a knock on effect and can cause blood pressure to increase. We may see that your pet has hypertension at the time of diagnosis; however, some pets manage well but will always be susceptible to getting hypertension due to the nature of the disease. Blood pressure will therefore be an important factor to monitor regularly.

Further management for CKD:

Alongside a renal diet and increasing water intake, there may be some medications your pet may need to aid in management of this disease.

Phosphate binders:

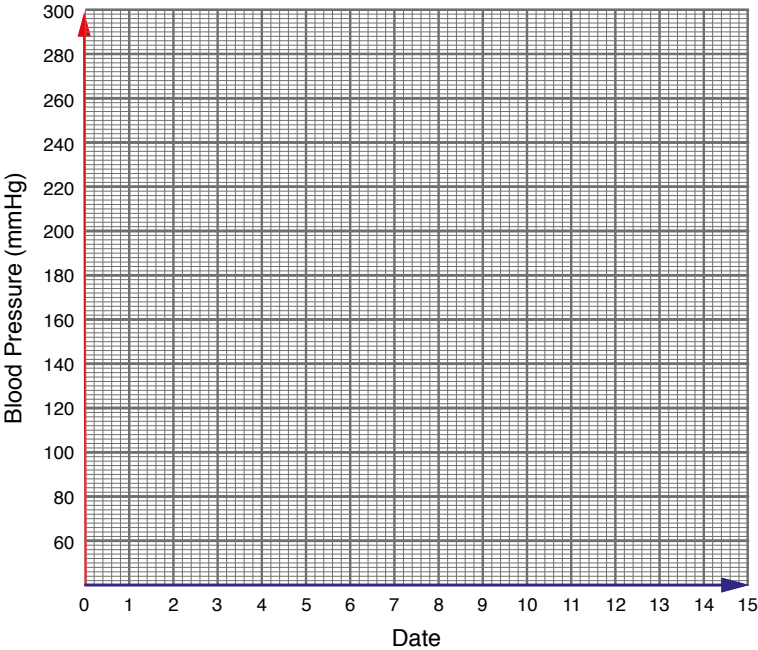
In some cases, a phosphate binder may be needed if phosphate levels remain high, despite using a low phosphate diet. This is often a powder or liquid medication which is added to the food. This will help to lower the phosphate levels.

Potassium supplementation:

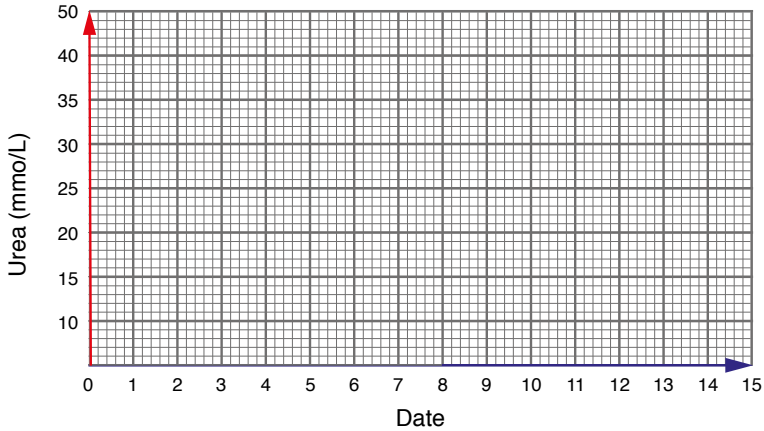
Some pets develop low blood potassium levels which can lead to muscle weakness, loss of bodyweight, inappetence and can worsen CKD. If this is identified, a potassium supplement may be in a tablet, powder or liquid form.

Blood pressure and proteinuria medication:

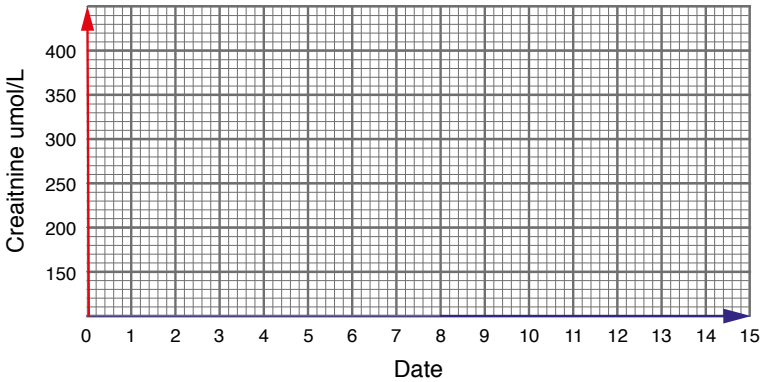
In pets which have hypertension or high protein loss in the urine as a result of CKD, may require medication to help control this.



Blood Pressure Values		
Systolic blood pressure (mmHg)	Risk category	Risk of target organ damage
<140	Normotensive	Minimal Risk
140-159	Prehypertensive	Low Risk
160-179	Hypertensive	Moderate Risk
>180	Severely Hypertensive	High Risk



Urea Values	
Normal cat values	5.7 – 12.9
Normal dog values	2.5 – 9.6



Creatinine Values (umol/L)		
	Cats	Dogs
Stage 1	<140	<125
Stage 2	140-250	125-180
Stage 3	251-440	181-440
Stage 4	>440	>440

[illegible]