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Renal (Kidney) Failure

The kidneys are organs that remove waste material from your pet's body with fluid while trying to keep as much fluid in the body as possible. Pets have 2 kidneys, one on each side of the body. They should be identical in size and shape.

Kidney disease is either acute (sudden) or chronic (long-term). Acute kidney disease is a rapid decline in kidney function which is often the result of a sudden change in the body such as:

- **Blood loss**
- **Shock**
- **Surgical Stress**
- **Trauma**
- **Infection**
- **Severe dehydration**
- **Poisons**
- **Drugs**
- **Obstructed urine flow**

Acute kidney disease is often reversible and the prognosis is not always so bad. Whereas, chronic kidney disease can result from the same causes listed above, as well as the following, but carries a worse prognosis:

- **Breed tendencies**
- **Hereditary tendencies**
- **Age**
- **Nutritional factors**
- **Immune System defects**

The term chronic implies that this disease has been present for a long time. Many owners notice the symptoms only for one week and are surprised to learn that this is an age related process that has been occurring since the day our pets were born.

Symptoms arise and correlate with stage of loss. The earliest symptoms occur when 65% of the kidneys stop functioning. The pet begins to urinate a lot and therefore drink a lot. When 75% of the kidneys fail to operate, metabolic waste products accumulate. These products (BUN, Creatinine, and Phosphorus) are normally worked upon and eliminated from the body by the kidneys. The rises in these by-products lead to true symptoms in the patient. The patient will experience the many consequences listed below:

- **Anemia**
- **Increased drinking and urinating (no urine production in antifreeze poisoning, etc.)**

- ***Dilute, clear urine***
- ***Loss of appetite***
- ***Neurological symptoms (depression, seizures)***
- ***Stomach and bowel upset, stomach ulcers, dark stools***
- ***Abnormal bone growth or bone loss***
- ***Immune system compromise***
- ***High blood pressure***
- ***Increased acid levels in the blood***
- ***Increased breathing rate***
- ***Weight loss (muscle and fat)***
- ***Poor body condition and poor hair coat***
- ***Small, firm, irregularly shaped kidneys***

Diagnosis is made by a thorough physical exam, urinalysis, and blood work. Occasionally the kidneys must be biopsied or examined through ultrasound or abdominal exploratory.

Once chronic kidney failure develops it cannot be reversed, but there are measures that can be taken to slow the progression of the disease and help your pet live longer and have a better quality of life. On the other hand, acute kidney disease can often be stopped and reversed, allowing the remaining kidney tissue to work harder to compensate for the loss. Therapy is tailored to the severity of the pet's condition and the level of care the owner wishes to extend. Below I have listed the changes that need to be made and how we can do it. Not all pets in kidney failure require each therapy listed.

1. ***Increase the pet's hydration (fluid therapy)--all renal patients need this!!!***
 - a.) ***Increase the drinking (cheap)***
 - ***Canned food has 70% water***
 - ***Forced drinking (difficult)***
 - ***Flavor the water (tuna juice)***
 - b.) ***Subcutaneous fluid administration (moderate price)***
 - ***Needle is injected under the skin in multiple areas and fluids are delivered. This can be done in the hospital or at home.***
 - ***(An indwelling GIF tube allows fluid administration without needles)***
 - ***Unfortunately we can't add nutrients to these fluids***
 - c.) ***Intravenous fluids (most expensive)***
 - ***Pets must be hospitalized for safety***
 - ***Exact amounts can be given***
 - ***Pets can be fed intravenously***
 - ***Usually done with severe cases at intervals***
2. ***Replace water soluble vitamins (Vitamin B and C)***
 - ***Many products available in many forms. We recommend Pet-Tinic.***
3. ***Nutritional Support***
 - ***The products k/d and NF, prescription diets made exclusively for kidney disease patients, will take care of numbers 4, 5, 6, and 7.***
4. ***Decrease the blood pressure (hypertension occurs in 75% of cases) - we***

will monitor for this development.

- Decrease the salt intake

- Use of cardiac drugs like Enacard to decrease the blood pressure

5. Decrease the acid levels in the blood and stomach

- Feed sodium bicarbonate or potassium citrate twice a day

- Most renal failure diets do this. Should the pet need to be fed

these items separately, we need to monitor the pet's urine pH much closer.

6. Protein Restriction

- Protein breakdown and usage leads to waste products (BUN and Creatinine). These products make your pet feel very ill and give them ulcers along their intestinal tract. Even though we need to reduce the protein, we still need some protein that is of high quality.

7. Phosphorus Restriction

- Phosphorus will become elevated late in the disease process (when the failure has reached 90%). It will cause devastating problems. We can lower the patient's intake using k/d and when determined by blood samples a drug called calcitriol can be instituted. We can also use oral phosphate binders.

8. Add Azodyl to protocol - This is a food supplement that contains bacteria that can metabolize urea, creatinine, uric acid, phosphates, and others to relieve the work load on failing kidneys.

9. Monitor PTH levels (this is a hormone involved with calcium and phosphorus metabolism)

- May require calcitriol usage to control the levels

- Samples of blood taken at 1, 3, and 6 months after starting to use calcitriol will guide us to the appropriate dose.

10. Blood work (chemistry)

- Used to monitor the BUN, creatinine, phosphorus, calcium and acid levels in addition to the electrolytes, red blood cells, and the immune system.

11. Managing gastrointestinal signs

- Anti-vomiting meds

- Antacid meds

- Stomach coating protectants

12. Monitor and manage anemia

- The kidneys produce a hormone (EPO) that stimulates the bone marrow to produce red blood cells. When the kidneys fail, they don't produce enough EPO and therefore the production of red blood cells decreases. We can replace the missing EPO with injections of the hormone but there are some side effects that we need to discuss.

14. Exams every 3 months with urine, blood work, and a blood pressure reading.

15. Prevent potassium - we need to maintain normal blood levels. If we are not, adjustments to diet and supplements will need to be made.

Unfortunately you must know that this process of kidney failure is not curable but only controllable. It is progressive and irreversible. Our goals will be to keep your pet

with you for as long as possible as long as he or she has a good quality of life. We will guide you every step of the way as to which therapies are called for and which are not.

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