

Chronic Kidney Disease (CKD)

Most cats who live long enough develop some degree of kidney disease, and we can see it show up early even in younger cats. No one knows for sure what causes it; it is believed to be multi-factorial. CKD is the number one disease by far that we see in older cats. However, there are things you can do to help significantly slow down its progression.

Stages of CKD:

- **Stage I:** Early kidney insufficiency.
 - This means that your cat's kidney function is somewhere between 33 and 99%. A pretty broad range, we know, but it can be hard to identify kidney disease until later stages.
 - The body only requires 25% of kidney function to adequately filter out toxins, which is why people can donate one kidney and still be fine. It is also why stage I CKD is nothing to panic about, but it does mean that we want to make a few changes.
 - This is usually diagnosed by seeing a creatinine less than 1.6 on blood work, but seeing other signs of kidney disease such as low electrolytes, dilute urine, excess protein in the urine, or small or misshapen kidneys.
 - We do not typically see any clinical signs or symptoms at this stage.
 - Most cats who are diagnosed with stage I CKD can have several years before it progresses to stage II CKD, but every cat progresses at a different rate.
- **Stage II:** Late stage kidney insufficiency.
 - This stage means that your cat's kidney function is somewhere between 25 and 33%. The kidneys are still adequately filtering out toxins and waste products, but they are starting to struggle.
 - This is usually diagnosed by seeing a creatinine level between 1.6 and 3.0 and seeing low electrolytes on blood work.
 - About the only symptoms you may see in your cat in this stage are maybe a little more water intake, and a little more urine output. We may also start to see hypertension in cats at this point.
 - At this point, we get a little more aggressive in treatments. The younger your cat is when they develop stage II kidney disease, the faster it will progress, but with treatment, we can prolong stage II CKD for several months to several years.
- **Stage III:** Early kidney failure.
 - This stage means that your cat's kidneys are now functioning between 15% and 25%. At this point, the kidneys are no longer able to adequately filter out all of the toxins and waste products of the body, and your cat may be starting to develop more noticeable symptoms of kidney disease.
 - This is diagnosed by seeing a creatinine level between 3.0 and 6.0 and abnormal electrolytes on blood work.
 - The primary symptoms we will see with kidney failure are increased drinking and urination, increased nausea, which will usually manifest as decreased appetite, being pickier with foods, and an increase in vomiting. We will also tend to see hypertension in many cats, and find that cats are more prone to secondary bladder infections.

- In stage III CKD, we get very aggressive with treatments. We may want to put your cat on several medications and treatments. You will have to weigh the stress of administering the treatments versus the benefits at this point, and may need to choose only a few treatments that are easy to administer.
- At this point, depending on how aggressive we are with treatments, and how your cat responds to the treatments, we are looking at a prognosis of several months to 3-4 years.
- **Stage IV: End stage kidney failure**
 - This stage means that your cat's kidneys are now functioning at less than 15%.
 - We now focus on supportive care for your cat, but we are only trying to increase your cat's quality of life, and you may have to ask yourself if it is worth it to keep going. We will do our best to help you understand what your cat is going through to help you make that decision.
 - This is diagnosed by seeing a creatinine level higher than 6.0, and in most cases, an elevated phosphorus level.
 - The primary symptoms we will see at this stage are extreme nausea, to the point of not eating, and lethargy.
 - Prognosis at this point depends on your cat, and what we do for treatments. But, we are not likely to be looking at more than several months as a best case scenario.

Treatments for CKD

- **Stage I CKD treatments**
 - **Electrolytes.** The primary treatment at this point is to supplement lost electrolytes, which are usually just potassium, but can also be phosphorus or calcium, and to increase water intake.
 - We have several forms of potassium supplements; pills, paste, and powder, and we can have it compounded into a flavored liquid.
 - **Water intake.** Anything that you can do to get your cat to drink more will help reduce the work load on your cat's kidneys. Ways to do this include water fountains, multiple bowls of fresh water around the house, or adding things such as low-salt chicken broth, tuna juice, or ice cubes to your cat's water to encourage their fluid intake.
 - **Diet.** There is no need to switch to a kidney diet in stage I CKD. Kidney diets tend to be low in protein, which in later stages reduces the work load on the kidneys, but in early stages, protein is still good for kidneys, and needed for multiple other metabolic functions.
 - **Monitoring.** We also recommend monitoring your cat's kidneys once stage I CKD is detected by having blood work done at least once a year to keep on top of the progression of kidney disease.
- **Stage II CKD treatments**
 - This includes stage I CKD treatments
 - **Diet.** At this stage we may also recommend switching to a kidney diet.
 - Kidney diets are lower in protein, and tend to be higher in things like electrolytes, omega 3 fatty acids, and so on.
 - Kidney diets have been shown to double the life of a compromised kidney. They are all prescription diets, but we carry four different brands that make them so more than likely we can find a flavor your cat likes.

- If you have other, younger cats in the home, while kidney diets are not ideal for long term (several years) feeding to young cats, they will not hurt them, and are fine for a few years. A compromise would be to do a mixture of a kidney diet and a regular diet.
 - We also have sample packs available of all four kidney diets in both dry and canned for a low cost so you can to see if there is one flavor that your cat prefers.
 - **Anti-nausea medications.** If your cat starts showing any signs of nausea at this point, we may also want to start on anti-nausea medications. Signs of nausea can be not eating as much at a time, losing weight, or becoming pickier with food, and eating a new food well, but then not wanting to eat it after a few days, because they are starting to associate the food with making them nauseous. Medications that we will commonly use include:
 - **Pepcid AC 10mg.** This is an inexpensive over the counter medication that can be given in pill form to reduce acid build up in your cat's stomach, which has been shown to happen in the progression of kidney disease. This is a relatively safe drug to give with very few side effects.
 - Dosing is 1/4th tablet once or twice daily.
 - Be sure to only get the plain Pepcid AC 10mg or its generic equivalent. Do not get Pepcid AC Complete, or Maximum Strength Pepcid AC.
 - This medication can also be given in an injectable format using insulin syringes if that is easier for you and your cat.
 - **Cerenia.** This is an inexpensive potent anti-nausea medication that is given in tablet format once daily for 4-5 days in a row, then has a washout period for 1-2 days, then repeat.
 - This can also be given in injectable format or compounded into a flavored liquid, both of which double to triple the cost.
- **Stage III CKD treatments**
 - This includes stage I and stage II treatments.
 - We get much more aggressive with stage III CKD treatments, as your cat is now starting to feel and show more signs of the disease.
 - There are two primary very effective treatments that we will implement at this stage, SQ fluids and stanozolol.
 - **Subcutaneous fluids (SQ fluids)** are considered the gold standard for kidney failure. This consists of you giving fluids through an IV set, but under your cat's skin in the subcutaneous area between the shoulder blades on a daily or every other day basis.
 - This helps to dilute your cat's blood and reduce the work load on their kidneys. Your cat is also urinating larger volumes at this point, and the SQ fluids help to replenish the fluid lost in the urine.
 - For most cats, we will recommend 100cc, or a tenth of a liter for each treatment. This may vary depending on your cat's size and state of health.
 - The only potential side effect to this treatment is if your cat becomes over hydrated, then they can develop edema in their legs or fluid can back up in the lungs although this is very rare at the amounts we recommend. The only other adverse effect is that this can be stressful for some cats.
 - **Stanozolol**, also known as Winstrol. This is an anabolic steroid that increases blood flow through the kidney, helping it to function better.
 - This is a controlled substance that can have several potential side effects. It can change personality and it can be very hard on the liver. For cats that are

on this drug, we do require checking liver enzymes after the first month, and every six months after that.

- In spite of the potential adverse effects, we use this because it works even better than SQ fluids, and can prolong the life of the kidney twice as long as SQ fluids alone.
- This drug can be given as an oral capsule, or as a flavored liquid. Most cats will take the flavored liquid very well.
- You can give both treatments together, which if they work, can get you the absolute best time prognosis.
- There are other treatments that we may also suggest in stage III CKD that will help with the clinical signs of the disease.
 - **Mirtazipine.** This is an appetite stimulant that also has anti-depressant and anti-nausea effects. This is given once every other day or every third day to stimulate your cat's appetite.
 - **Cyproheptadine.** This is another type of appetite stimulant that is given daily to increase your cat's appetite.
 - **Azodyl.** This is a capsule given twice daily that helps bind to proteins in your cat's intestinal tract and prevent them from being absorbed to further reduce the work load on your cat's kidney.
 - **Benazepril or Enalapril.** This is a drug commonly used in heart disease, but it also helps to minimize protein loss in the kidneys. While we want to minimize protein intake, we also want to minimize protein loss through the kidneys.
 - **Procrit.** In a small percentage of CKD cases, we will also see anemia from destruction of centers in the kidneys that release erythropoietin that tell the bone marrow when to make more red blood cells. In these cases, we may want to start your cat on Procrit injections, which is synthetic erythropoietin.
- **Stage IV CKD treatments**
 - At this point, we are not going to be able to do anything to reverse your cat's kidney failure, but through very aggressive treatments, we may be able to get you a few more months of quality life.
 - We may continue some of the stage III CKD treatments, but it will depend on how your cat is responding to them.
 - **IV fluids.** The primary treatment at this point is IV fluids for 72 hours. This requires hospitalization of your cat while we give IV fluids in the vein at the maximum amount we can without over hydrating your cat to try and flush out the toxins that are making your cat nauseous.
 - This has only a 50/50 chance of making a significant difference to your cat. In addition, there is a risk that we could over hydrate your cat resulting in fluid buildup in the lungs. With IV fluid therapy, we walk a tightrope between trying to get the maximum amount of fluid in, but also trying not to cause over hydration, and every cat responds at a different rate.
 - If the IV fluids work, the goal is to drop your cat's creatinine down to a level that significantly reduces their nausea, and give them some additional quality time.
 - **SQ fluids.** After IV fluids, or if you are unable to do IV fluids, then we will have you do aggressive SQ fluid therapy at home on a daily or even twice daily basis.
 - **Phosphorus binder.** Because most cats in stage IV CKD will have a very high phosphorus level, we will also put your cat on a phosphorus binder, either Epakitin, which is a powder you can sprinkle in

their food, or we will have aluminum hydroxide compounded into a flavored liquid that you will give your cat with each meal.

- **Diet.** In stage IV CKD, we are less concerned with kidney diets, and more concerned with eating. So, if your cat will not eat a kidney diet, then you feed them whatever they will eat, and that does include people food. At this point, we are going for a quality of life, not a quantity of life.

You will need to keep in mind, as your cat progresses through the stages of kidney disease, hopefully at a very slow rate, that you need to weigh the pros and cons of each treatment. While we would like to extend the life of your cat as long as possible, we also want them to have a good quality of life, and if the process of giving them treatments substantially decreases their quality of life because they are always hiding from you, then the benefits may not be worth it. That is a decision that you will have to make, and if your cat is extremely stressed by various treatments, talk to us, we might be able to come up with a less stressful alternative.

Associated Diseases with CKD

- Diseases that can contribute to the progression of CKD:
 - Hyperthyroidism
 - Diabetes
 - Hypertension
 - Hypokalemia
- Diseases that can result from the progression of CKD:
 - Hypertension
 - Urinary tract infections
 - Renal secondary hyperparathyroidism
 - Hyperaldosteronism
 - Anemia
 - Hypokalemia

If your cat has any of the diseases that can contribute to CKD, we will want to monitor your cat for signs of CKD. Unfortunately, both hyperthyroidism and diabetes can hide the damage that they are doing until later stages. If your cat has CKD, we will want to monitor them for any of the secondary diseases that can arise from CKD.

A lot of information was presented here, but know that with proper care and medications, your cat may have many years before they progress to stage IV CKD, if they do at all.

If you have any questions or concerns, please do not hesitate to contact us at All Feline Hospital at 402-467-2711 or info@allfelinehospital.com.