

Diabetes

We have just diagnosed your cat with diabetes. We see a lot of cats with diabetes, and with proper care and treatment, most of them do very well and have decent quality life spans.

Cause and Types:

- Every time your cat eats, they ingest glucose in various amounts. To be able to metabolize this glucose, their pancreas secretes insulin, which allows the cells to be able to metabolize the glucose.
- Diabetes happens when they either are not producing enough insulin, or when their cells are insulin resistant, and require higher levels of insulin to be able to metabolize the glucose.
- When glucose cannot be adequately metabolized, it starts to build up in the blood stream, resulting in various problems. This is diabetes, also known as hyperglycemia.
- There are two types of diabetes, type I and type II.
 - **Type I diabetes** is caused by failure of your cat's pancreas to produce enough insulin for the body's needs. There are several factors that can affect this.
 - Acute or chronic pancreatitis can damage the pancreas enough so that the pancreas can no longer secrete an adequate amount of insulin.
 - This can also be congenital, although congenital type I diabetes is fairly rare in cats.
 - Idiopathic is our third cause. Idiopathic is a medical term that means we have absolutely no idea what caused it.
 - **Type II diabetes** is when the cells of the body become insulin resistant, and require higher and higher levels of insulin to be able to function.
 - This is most commonly caused by increased levels of fat. Fat cells produce hormones that can cause insulin resistance, and the more fat cells present, the higher likelihood that insulin resistance requiring treatment will occur.
- Regardless of the type and cause, in cats they are both treated the same way. For people with type II diabetes, there are oral medications that can be given. None of these medications have been shown to be terribly effective in the cat.

Treatment Options:

- Insulin. This is the primary treatment for diabetes in cats. There are two insulins that we currently use in treating cats, and a third insulin that we will use when cost is a factor in being able to treat.
 - **ProZinc insulin.** This is an insulin made specifically for cats.
 - It is a medium length insulin which means it lasts 8-14 hours, and is given twice daily.
 - This will result in the best overall glucose control for your cat. About 5-10% of cats on ProZinc insulin may eventually go into remission, and not require insulin anymore.
 - While costly, one bottle can last up to 6 months, depending on the dosing that your cat ends up regulating on.
 - **Lantus insulin.** This is a human insulin that can potentially reverse insulin resistance.

- It is a long length insulin which means it lasts 10-22 hours, and has the potential in a small percentage of cats to be effective at once daily dosing, but it is most commonly given twice daily.
 - Because this insulin can potentially reverse insulin resistance, if your cat has type II diabetes, then there is up to a 50% chance that your cat could go into remission on this insulin, and not require insulin for a while, or forever.
 - But, since this insulin has such a high rate of remission, it also has the highest rate of insulin shock, or hypoglycemia, so if you choose to go with this insulin, we do recommend that you purchase a glucometer calibrated for cats, and learn how to check your cat's glucose at home on their ear.
 - This is the most expensive insulin, but one bottle can also last up to 6 months as long as you keep it refrigerated and handle it gently.
- **NPH insulin.** This is a human insulin, but it is not as effective in cats.
 - This is a short length insulin, which means it lasts 6-8 hours in cats, and must be given in twice daily dosing, or even three times daily dosing when feasible.
 - Because we do not see good glucose control with this insulin, we will use it only when cost is a deciding factor. This insulin is better than using no insulin at all.
 - This is a very inexpensive insulin in generic form.
- **Diet**
 - It has been demonstrated conclusively in cats that they will achieve better glucose control when on a high protein low carb meat based diet.
 - There are several high protein, low carb diets that are meat based that will help your cat metabolize their glucose levels better. These are diets that are safe to feed to all healthy cats in the home.
- **Exercise**
 - Easier said than done with a cat. However, anything that you can do to increase your cat's activity will also help them metabolize their glucose better. We can provide you with suggestions on how to do this.

Administering Insulin:

- **Giving injections.** While it may seem daunting, it really is quite easy to give insulin injections to a cat.
 - The easiest area is in between the shoulder blades on the back. There is a lot of loose skin here, and it is very easy to pull it up a little, and give the injection.
 - Be sure that when you mix the insulin, that you do so gently – roll it, do NOT shake it.
 - While most human insulins can be stored at room temperature, they will have a much longer shelf life if you keep them refrigerated. ProZinc insulin needs to be kept refrigerated, but it is still good if you accidentally leave it out at room temp for a day.
- **Treats.** If you also give your cat a tasty treat such as canned cat food, meat baby food, tuna, etc., then they may not even notice you giving the injections, and may actually start letting you know when it is time for their insulin because they want their treat.
- **Frequency.** Ideally, you will give the insulin injections roughly 12 hours apart. If it is closer to 10 hours and 14 hours apart, that is okay too.

- **“Don’t eat, don’t treat.”** If your cat for any reason does not seem to want to eat their food, do not give the insulin. It is better to skip a dose of insulin, than to give it on an empty stomach and risk insulin shock.
- **Missing a dose.** If you are going to be gone for a day or two, and you cannot find anyone to give your cat insulin, your cat should be fine skipping a few doses. If you are going to be gone for several days, then you will need to find someone to administer insulin to your cat, or else board your cat somewhere where it can be given every day.

Regulating Diabetes:

- **Glucose checks.** For the first few weeks to the first few months, we will need to check your cat’s glucose every week to help us decide whether to increase, maintain, or decrease the amount of insulin your cat is being given.
 - This will need to be done approximately 6-8 hours after your cat received insulin and eats a meal, and is then fasted until we check the glucose levels.
 - The purpose of this is to do a spot check of your cat’s glucose ideally in what is called the nadir, or the lowest point that the glucose will go to throughout the day.
- **Weight.** We will also be monitoring your cat’s weight during this time period. Once your cat stops losing weight, and starts to gain weight, that will help us determine whether or not to adjust the insulin dosing.
- **Water intake/output.** Please let us know when you bring your cat in if you have noticed a decrease in water intake and urine output. This also helps us determine insulin dosing adjustments.
- **Goal.** Our goal is to get the insulin readings to sit between 100 and 200 at the nadir. While a normal glucose reading in a healthy cat is between 70-120, anything below 100 is a little too close to possible insulin shock, as there is always a chance that we are not checking the glucose at the absolute nadir. Glucose above 240 will result in glucose spilling into the urine, which will cause increased urination, and therefore increased drinking.
- **Monitoring at home.** If you do not want to bring your cat into the clinic every week because it stresses your cat, you can purchase a glucometer calibrated for cats, and we can show you how to check to glucose on your cat’s ear. You would then call the number into us each week, along with an approximate weight and water input/output, and we would let you know if any adjustments need to be made.

Complications of Diabetes:

- The two critical life-threatening complications of diabetes are insulin shock, and diabetic ketoacidosis.
 - **Insulin shock** is when your cat’s glucose drops below 70. Symptoms you may see include:
 - **Vomiting**
 - **Disorientation**
 - **Drooling**
 - **Lethargy**
 - **Not eating**
 - **Twitching**
 - **Seizuring**
 - **Flat, comatose**
 - **Death**

- **Diabetic ketoacidosis** is when your cat's glucose is very elevated for a prolonged period of time. This is not as life-threatening as insulin shock, but it can lead to death if not treated properly. Symptoms you may see include:
 - **Vomiting**
 - **Disorientation**
 - **Drooling**
 - **Lethargy**
 - **Not eating**
 - **Not able to get comfortable**
- As you can see, many of the symptoms of the two extremes are very similar. So, if your cat acts abnormal in any way, it is better to give them sugar in any form, and bring them into the clinic right away to have their glucose and ketones checked.
- **Ways to give your cat sugar include:**
 - **Honey**
 - **Karo or maple syrup**
 - **Commercial glucose paste**
 - **Sugar mixed in water to form a paste**
- You can give these by smearing them on the gums or the roof of the mouth, dribbling them on the tongue, or in the case of honey only, also by pushing it in rectally with your finger. If your cat is seizing, or close to it, please be careful, and use a spoon or spatula to apply the sugary substance to the mouth so you are not bitten. Do not pour liquid down the back of their throat as this is a potential choking hazard.
- Other complications of diabetes include:
 - Kidney disease
 - Hypertension
 - Heart disease
 - Bacterial urinary tract infections
 - Pancreatitis
 - Dental disease
 - More prone to infections
- By keeping on top of your cat's diabetes, and changing their lifestyle to a healthier one, we can help to minimize diabetic complications. We also recommend a semi-annual exam, blood work, and urinalysis to help catch any secondary diseases early, and treat them before they become a problem.

Many people own diabetic cats that are healthy, and live normal quality lives.

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.