

Feline Diabetes Mellitus

What is diabetes mellitus?

The problem that cats experience with Diabetes is analogous to how an individual could die from dehydration in a row boat on top of the ocean, surround by water. Diabetes mellitus is a relative condition resulting in an excessive amount of sugar (glucose) in the blood they utilize. This is caused by a relative deficiency of insulin, which is a hormone secreted by the pancreas. Insulin allows glucose to go from the blood into the cells of the body for use.

The clinical signs seen in diabetes are largely related to the inability to utilize glucose and spike at elevated concentrations of blood and urine glucose.

It is important to note that feline diabetes does not cause the same long-term problems as seen in humans. It is also not managed the same way.

Feline Diabetes Mellitus is not separated into Type I and Type II. However, Diabetes does differ greatly from one patient to the next. Transient Diabetes is common in cats. This is when the diabetic cat will suddenly or gradually, no longer be diabetic. This is the best reason to closely monitor the diabetic cat as directed by your veterinarian.

We also see a situation with cats that could be described as a "lifestyle" diabetic. We know that free choice dry food can predispose or sometimes even cause diabetes in the cat: upon converting these cats to a canned food only diet, their diabetic state will normalize. We recommend that all diabetic cats have limited dry food. Ideally, all diabetics eat a canned food only diet. However, once again, cats must eat well every day to be healthy. Some cats will not tolerate diet changes.

What are the clinical signs of diabetes mellitus?

The most common clinical signs seen in diabetic patients are an increase in water consumption and urination. Weight loss is also a common feature, and an increase in appetite may be noticed in some cats. Poor coat condition and weakness in the legs, more commonly the hind limbs, are other possible signs. Recognition of these signs is variable though, particularly because of the life-style of some cats. If a cat spends a lot of time outdoors, it may drink from ponds or pools of water outside, rather than appearing to drink excessively from what is provided indoors.

How is diabetes mellitus diagnosed?

The diagnosis of diabetes mellitus is made based on clinical signs, persistently elevated blood glucose concentration, and the presence of glucose in the urine. However, a diagnosis of diabetes should be cautiously made on a single blood and urine sample, as other conditions such as particular stress may also cause a transient rise in glucose levels. Confirmation of diabetes may therefore require more than one blood sample collected over a period of one to five days. Some levels of hyperglycemia can be diagnostic.

How is diabetes mellitus treated?

Diabetes mellitus is a treatable condition. Although long-term treatment requires commitment, it can be very rewarding to successfully manage this condition.

Initial steps in treating a diabetic cat may involve removal of any predisposing causes for the diabetes. For example, the administration of some drugs (steroids for example) predisposes cats to develop diabetes, and withdrawal of these drugs may lead to resolution of the condition. Obese cats are more prone to develop diabetes, and weight reduction can lead to resolution of the signs in some cats.

If there are no predisposing causes, or if correction of the predisposing causes does not lead to resolution of the diabetes, specific treatment is required. Cats will respond to oral hypoglycemic medication, and some cats will require insulin injections to control the diabetes. Very small needles are available which cause no pain to the cat, and within a short period of time the procedure becomes very routine. Administration times, dosages and type of insulin will be determined by your veterinarian.

You will be taught by our staff how to give insulin injections to your cat. We can also teach you to check your cats blood glucose level.

Diet can also play a role in the treatment of Diabetes. Your veterinarian may make a diet recommendation. However, no diet can be helpful if your cat will not eat it. In fact, it can be very dangerous if your cat does not eat while receiving insulin. So, you must make sure your cat likes its food and is eating. You can not assume that if the cat gets hungry enough he/she will eat whatever you provide. This is not true for most cats, and prolonged anorexia can lead to serious liver disease and death in cats. Canned food should be offered three to four times daily, and we suggest combining this with insulin administration for two reasons. First, you can assure your cat has food in his system and second, you can create a positive association between the canned food and the insulin injection.

*****Diabetic cats must always have easy access to fresh food and water. Since they will always have to urinate larger amounts more often, they must have additional litterboxes added throughout your home.*****

Do treated cats need to be monitored?

Yes, it is important to monitor treatment to make sure it is working properly, and to determine if any insulin dosage adjustments are necessary.

What happens if my cat receives too much insulin?

If a cat receives too much insulin, it is possible for the blood sugar level to drop dangerously low. For this reason it is important to be very careful in ensuring the cat receives the correct dose of insulin. This can also happen if your cat does not eat or is vomiting for a prolonged period of time (as quickly as a day or two,) but still receives insulin. No food in his/her system = lower blood glucose levels which will drop even lower with the administration of insulin.

The typical signs displayed by a cat with a very low blood sugar level are severe weakness and lethargy, vocalizing, shaking, unsteadiness, acting dazed and confused. This also

happens in the transient diabetic. The more serious signs include convulsions/seizures, coma and death. If a diabetic cat shows any of the less serious signs, it is important to try to offer your cat some canned cat food (Hill's A/D, etc.) or a special treat to tempt him/her to eat. If you can, try to get a blood glucose at this time so we know if the signs are due to low blood sugar. It is possible that something else is causing these signs. If your cat is conscious enough to be able to swallow, but will not eat on its own, you can use an oral syringe to put some Karo (corn) syrup, honey or sugar water in its mouth. Then try again to offer your cat a special treat/food. This may be enough to make your cat feel better and return to normal activity and mentation, but you should still notify our office or call the emergency clinic for guidance on future insulin administration. The doctor may also suggest your cat be seen by a veterinarian, depending on the circumstances. If your cat is unable to swallow or showing any of the more serious signs mentioned above, you must seek veterinary attention immediately. If you are able to have someone call us or the emergency clinic while you are on your way, we can be better prepared for your cat's arrival and medical needs. Because of the seriousness of hypoglycemia, we always start conservatively.

The Cat Clinic of Roswell

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The sooner cats get on an insulin regime, the sooner they start to feel better. The signs you may have noticed at the time of diagnosis will lessen as we get the diabetes under control. Diabetic cats will always drink and urinate more than a non-diabetic cat. That is why it is important to provide additional large litterboxes and water bowls in several locations throughout your home.

Glucose curves are only appropriate in the home environment. We primarily monitor diabetic cats with fructosamine levels. This is a single blood draw in the hospital that can evaluate the patient glycemic control over the previous 21-30 days. We only make insulin changes based on this value. No changes should ever be made on a single glucose reading, or even the "curve" of a single day.

We prefer if you use the brand glucometer we suggest for a couple of reasons:

- 1) If you are experiencing difficulty using it at home, we can walk you through problems easier over the phone, and
- 2) We know this brand uses the "sip-in sampling" method, which makes getting blood from your cat in to the machine easier, and requires a smaller amount of blood.

If a BG is below 100, you should take a BG again in an hour or two, as well as watch your cat closely for any of the signs listed above for low blood sugar. Human glucometers can run up to approximately 100 points lower, compared to the laboratory machines that check blood glucose levels. The Alphatrak glucometers are closer to the laboratory machine results. For this reason, the number alone **should not** be used to assess how your cat is doing. You should also evaluate how your cat is **acting**.

Keep in mind that with practice everything gets easier and this will too!! Call us for tips and tricks if you are having trouble getting blood, or enough blood, from your cat, etc. Not only do we have lots of diabetic feline patients, but many of us have diabetic pet cats at home.

Administering Insulin

Remove the clear plastic cap on the plunger side of the insulin syringe. Push the plunger all the way in towards the needle. Once the bottle of insulin is removed from the refrigerator and gently rolled back and forth a few times, carefully remove the (orange) cap from the needle. Invert the bottle of insulin and carefully insert the needle through the rubber stopper in the bottle of insulin. (The needle should be pointed up towards the sky to meet the rubber stopper.) Pull back on the plunger to remove the appropriate amount of units of insulin. (Each line on the syringe is equal to one unit.) Then replace the (orange) cap on the needle. You are now ready to inject the insulin under the skin of your cat. On one side of the cat, in front of the hip, pull out a pocket of skin using three fingers to create a tented area of skin as shown in our office. Remove the cap off the needle and insert it into the skin pocket. Make sure the needle is inserted **PARALLEL** to the cat, not pointed towards his body. Also make sure the tip of the needle is pointed **TOWARDS** the head; that way, if something spooks him and he runs away, the needle will just pull out instead of getting caught in and tearing the skin. Push the plunger all the way in and then remove the needle/syringe from your cat. Feel the area of skin/fur where you just injected to make sure you do not feel any moisture (insulin). This ensures that you got the insulin under the skin. If you feel moisture or are unsure if you got all the insulin under the skin and into your cat, **DO NOT** simply give your cat more insulin. Call our office for guidance. It is always safer to give less than more insulin at any one time.

If the blood sugar remains too high for a long period of time, the cat can become Diabetic Ketoacidotic. This is a serious complication to Diabetes Mellitus that must be treated in the hospital environment. Occasionally, a diabetic will be diagnosed for the first time during a "ketoacidotic crisis." Again, these pets will need to be hospitalized until their metabolic status can be stabilized.