Diabetes and Your Cat

How to recognize the signs and manage the treatment

It didn’t cross Roberta Sunkin’s mind that her cat, Portia, might be ill until one day she realized that Portia wasn’t so fat anymore. The Phoenix, Arizona resident just wasn’t thinking about feline diabetes. “On October 29th, 1999,” she recalls, “I came home from work and noticed that Portia looked very thin. For some reason I hadn’t noticed it before.”

Once the alarm bells went off, Roberta realized that Portia had recently been drinking and urinating much more than usual. “My regular veterinarian’s office was already closed,” says Roberta, “so I called the emergency clinic down the street.” The technician she spoke with immediately recognized the seriousness of Portia’s symptoms and recommended that Roberta bring her in. A simple blood test confirmed a diagnosis of feline diabetes mellitus.

Diabetes mellitus, sometimes referred to as “sugar diabetes,” is a complex and common disorder of the endocrine system, affecting many species. Although it can affect cats of any breed, sex, or age, the disease most often occurs in older, obese felines, and is seen in males more often than females. While the exact cause is unknown, obesity, genetic predisposition, pancreatic disease, hormonal imbalances, and certain medications have all been incriminated.

The warning signs exhibited by Portia are typical and point to an inability of the pancreas to produce adequate amounts of insulin. Insulin is a hormone necessary for a body – your cat’s or yours – to metabolize carbohydrates, or convert elements from food that your cat has eaten, into energy. This energy source is transported, in the form of glucose molecules, from the bloodstream into the tissues where it’s needed for body cells to perform various functions.

Without enough insulin, glucose accumulates in the bloodstream, causing hyperglycemia, and “spills over” into the urine, causing glucosuria. The first clinical sign that a cat has diabetes mellitus typically manifests at this point. In an attempt to “flush out” the excess glucose (which should have been but was not converted into energy), the cat’s body will produce a greater volume of urine. An observant owner will take note that his cat is urinating more frequently and is unusually thirsty.
Even though the cat’s appetite remains active, and even when its nutritional intake is maintained at a normal level, the tissues become energy-starved because the glucose cannot reach the cells to provide energy. At this point, the cat begins to lose weight, another tell-tale sign of feline diabetes mellitus.

In the early stages of the disease, a cat will remain active and alert with few other visible indications of illness. As the disease progresses, however, poor skin and haircoat become apparent and liver disease, often with secondary bacterial infections, are common. Without treatment, greater metabolic disturbances will develop and add to the list of clinical signs of vomiting, loss of appetite, weakness and dehydration.

The Importance of Early Diagnosis

Feline diabetes often goes unnoticed in its early stages. In fact, the clinical signs (visible indicators) that a cat is suffering from diabetes do not develop until the insulin levels are 75-80% below normal. Cynthia Ward, VMD, Ph.D and assistant professor of medicine at the University of Pennsylvania School of Veterinary Medicine, says that early diagnosis is very important, and can prevent potentially life-threatening complications of diabetes. “Fortunately for us,” says Dr. Ward, “cats rarely suffer in the long-term deleterious effects that diabetic humans do. But prompt diagnosis ensures optimal treatment.”

Many veterinarians recommend annual screening tests, including laboratory analysis of blood and urine, for senior cats. One of the diseases that they are looking for is diabetes. The American Association of Feline Practitioners recommends these screening tests at annual examination visits for cats over seven or eight years of age. The association also recommends that these tests be administered every six months when a cat has reached an age of 12 to 14 years.

Diabetes mellitus is easily diagnosed. A blood sample is taken to measure glucose levels, and a sample of urine is also taken. Elevated levels of blood glucose, accompanied by the presence of glucose in the urine, confirm the diagnosis.

Margie Scherk, DVM, is certified by the American Board of Veterinary Practitioners as a feline specialist, and treats more than 5000 cats every year at the Cats Only Veterinary Clinic in Vancouver, BC. Dr. Scherk sees one or two new cases of feline diabetes each month, and explains that although diagnosis for diabetes is simple, positive findings must be confirmed.

Cats are prone to stress hyperglycemia, a condition whereby temporary elevations in blood glucose levels occur. “Because cats become stressed and frightened by being examined and having blood and urine collected,” says Dr. Scherk, “they often have elevations in their blood sugar and may even have an increase in urine glucose, just from stress.” Before a veterinarian can diagnose and treat a cat for diabetes mellitus, Dr. Scherk warns, “It’s very important to be sure that the blood glucose elevation and the presence of urine glucose are persistent.” Though the blood glucose levels in these stressed cats will return to normal once the cat settles down, she adds, some of them do eventually go on to develop full-blown diabetes.
Long-term control of the disease for most diabetic cats means long-acting insulin injections, given twice daily. But because each cat responds differently to insulin, the proper choice of insulin type, dose, and frequency of administration needs to be determined on an individual basis. The proper dose of insulin may change with time and need adjustments based on intermittent blood and urine sugar measurements, and response to therapy.

Communication between the cat owner and her veterinarian is vital to successful management of diabetes. “My veterinarian and I work together with Oliver’s diabetes,” says Judy Scher of Eugene, Oregon. “Sometimes we rely on the advice of an internist if my veterinarian feels that more expertise is needed.”

A recently developed blood test called serum fructosamine makes the monitoring process much easier for the cat and the owner – stable, diabetic cats in treatment can often be monitored with a single serum fructosamine test instead of several blood samples and a day in hospital. The serum fructosamine test measures the degree of blood glucose control that treatment has affected over the preceding few weeks of a diabetic cat’s life. It can also be used to differentiate stress hyperglycemia from true diabetes.

**Hypoglycemia and Other Complications**

Consistent, reliable insulin medication is a lifeline for a diabetic cat. Without it, the cat cannot survive. **But too much insulin is more deadly than too little.** A potentially dangerous condition called hypoglycemia (low blood sugar) can result from an overdose of insulin (or from strenuous exercise or insufficient food intake). Any cat undergoing treatment for diabetes should be watched carefully for signs of hypoglycemia. Signs include weakness, lack of coordination, convulsions and coma. This condition is potentially fatal if left untreated.

When a diabetic cat experiences an episode of hypoglycemia, a veterinarian should be contacted immediately for treatment instructions, including a modification of the insulin administration schedule. Here are some steps that you can take while waiting for veterinary assistance:

1. If the cat is convulsing or in a coma, rub a tablespoon of syrup on its gums
2. If the cat is able to swallow, the syrup can instead be given slowly by syringe into the mouth.
3. If the cat is able to ear, offer its normal food.

   **Note:** For your safety and your cat’s, don’t ever force any object, including fingers, food, or fluids, into the mouth of a convulsing or comatose cat.

It may sound unlikely that too much insulin would ever be provided, but it does happen. One family member might medicate the cat, for example, not knowing that another family member already did. If more than one person is handling the medication of a diabetic cat, great care must be taken to avoid miscommunication and incorrect dosing. Rarely diabetes will resolve or go into remission and the cat will not require insulin.

The very first time Roberta administered an insulin injection to Portia, the prescription had the wrong instructions written on it. “Instead of one unit,” she recalls, “I gave her ten, but
since about half ended up on Portia’s fur, I actually gave her about five…” Roberta immediately rushed Portia back to the emergency veterinary hospital. “I figured she was a goner – I was hysterical.” Fortunately, Portia’s blood glucose levels were regulated and she recovered.

Rarely cats develop ketoacidosis, a dangerous condition. A cat that has ketoacidosis will experience a loss of appetite, vomiting, diarrhea, lethargy, weakness, dehydration, and breathing abnormalities. Because this condition can be fatal, proper and prompt veterinary treatment must be provided.

Pancreatic disease is commonly associated with diabetes – remember, it is the pancreas that produces insulin, and so this organ is inextricably involved in any case of diabetes. Chronic pancreatitis (inflammation of the pancreas) can be a problem for diabetic cats.

“The most common complication in cats with poorly controlled diabetes are bladder or kidney infections, or infections elsewhere,” says Dr. Scherk, explaining that a high level of glucose in the blood or urine creates a bacteria-friendly environment.

**Dietary Considerations**

A piece of the diabetic therapy puzzle is diet. Recent research has show benefit to the use of low-carbohydrate diets to treat diabetes in cats. A low-carbohydrate canned diet helps to keep the blood sugar more even and makes it easier to get the diabetes regulated.

“Nibblers” should have constant access to food. Veterinary experts generally agree that cats receiving insulin should be feed at the time of injection. Most people find it easiest to leave a small amount of food out and then give a meal of canned food twice a day at the time of the insulin injection.

Diabetic cats in treatment often look completely normal and healthy, and may live many healthy, relatively normal years. When treatment begins early, the prognosis for the diabetic cat is optimistic.
Medicating Diabetic Cats at Home

Giving Kitty insulin injections is not as difficult as you might think. Questions commonly asked by those new to the procedures are answered below – your veterinarian will also provide detailed instructions.

**Insulin Storage:** Insulin should be refrigerated but never frozen, and must be protected from excessive heat and direct sunlight – refrigeration satisfies both of these needs so it’s the safest bet. Check the temperature of the refrigerator to avoid accidental freezing of the insulin; let it come to room temperature before injecting.

**Insulin Handling:** Mix the preparation well to ensure that the crystals are suspended evenly in the solution. Overly vigorous shaking can alter the structure of the molecule or create foam within the container, making accurate measurement difficult. Gently roll the vial back and forth in your hand before drawing up the dose.

**Correct Syringe:** The tiny doses required by most cats can be difficult to measure accurately. Insulin preparations come in 100 U/ml or 40 U/ml concentrations, and syringes are available to correspond with each. Make sure you have the proper syringe for the insulin concentration you’re using.

**Correct Measurement:** It’s absolutely vital to measure the dosage accurately. When the syringe is held needle-up, the measurement should be read from the TOP of the black plunger, nearest the needle. If you measure from the bottom of the plunger, furthest from the needle, your cat will not get the full dose.

**Injection Site:** Under the skin between the shoulder blades, at the base of the neck is the most commonly recommended injection site. But when cats are very thin, the shoulder blades protrude, making it difficult to get under the skin without going through to the other side. In these cases, the chest, belly, or hip are also acceptable injection sites. Ask your veterinarian to demonstrate.

**Did It Go In?** Owners of long-haired cats don’t always know if they’ve injected beneath the skin, or just beneath the hair. An “intra-hair” injection does Kitty no good at all! Try clipping a bit of hair to create a “target,” and change sites periodically to protect the skin. If some insulin escapes the skin, or you’re not sure how much (or if any) went in, it’s safest to skip that dose and proceed normally at the next appropriate time. **Occasional underdosing is much less dangerous than overdosing!**

**Family Communication:** It’s not unusual for cats to be overdosed accidentally, due to inadequate communication – but one extra dose of insulin can result in life-threatening hypoglycemia. One family member should be the designated caretaker in the early stages of treatment, when everyone is adjusting, it’s critical that instructions are very clear. A written or typed list of rules for Kitty’s medication schedule and procedure, displayed where all household members can easily see it, can be helpful in preventing mistakes.

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