

Diabetes and Home Care

The organs and cells within the body require sugar known as glucose for energy. Glucose is created in the body from components within your pet's diet. The blood stream carries glucose to the tissues, but these cells cannot absorb or utilize glucose without a hormone called insulin, which is produced and excreted by the pancreas. Insulin is like a key that unlocks the door between the bloodstream and your pet's cells and tissues.

A diabetic animal does not produce enough insulin and the following problems occur

1. The cells cannot use glucose from the blood nor can the body detect it in the blood, so it thinks it is starving.
2. Protein, starch and fat are broken down to provide energy to the body
3. All along there has been plenty of glucose, in fact there is an excess given all resources have been mobilized. Still, without insulin, the excess of fuel cannot get to the tissues that need it.
4. The glucose excess in the blood overwhelms the filtering system of the kidneys and glucose spills into the urine and is lost.
5. Glucose also draws water into the urine like a magnet, which causes an excessive urine production and then excessive thirst to keep up with the fluid loss.

Typical Signs of Diabetes:

- Excessive water drinking
- Excessive urination
- Excessive eating
- Weight loss
- Cataracts (primarily in dogs)

Type I and Type II Diabetes Mellitus

Type I occurs when the pancreas produces no insulin. Virtually all dogs have this type and therefore must be treated with insulin injections. Type II occurs when the pancreas produces some insulin but not enough. Most cats have this type and there is a potential for their diabetes to resolve if the pancreas heals and improves insulin production. Insulin injections are necessary to treat most diabetic cats, but good control and proper diet can improve their diabetes so that insulin may become unnecessary.

Once a Diagnosis is Determined

There are several types of insulins and it is not possible to know the exact amount of insulin your pet requires in the beginning of treatment. The veterinarian will start at a lower dose initially and increase until they find the optimal dosage for your pet. Most pets require injections twice a day, approximately 12 hours apart, always following a meal.

The insulin prescribed by the veterinarian may be available through a human pharmacy, while others are available only through veterinary clinics. You will need syringes and a bottle of insulin to start home treatment. Our office will provide you with a prescription or send you with the necessary supplies.

We will demonstrate how to give insulin injections to your pet. Please also read through the "Insulin Administration" handout for more detail on proper technique.

Never alter the insulin dose recommended by our office.

To determine whether dose adjustments are needed or a different type of insulin is more appropriate, your pet will need a glucose curve test. This test is performed in the clinic during a day stay, where blood glucose levels are monitored every 1-2 hours for 8-12 hours. This test gives information on how long the insulin injection is lasting and the lowest and highest glucose levels of the day. Initially, it may take a few curves and dosage adjustments before the optimal dose is determined. We will recommend the frequency of the glucose curves depending on your pet's glucose control. Expect a curve to be recommended a week or two after each adjustment in insulin dose.

When to Be Concerned During Treatment:

Please call our office and have your pet re-evaluated if you notice any of the following:

- Pet seems to feel ill
- Noticeable weight loss
- Ravenous appetite or loss of appetite
- Drinking or urinating excessively
- Disoriented or groggy
- Vomiting or diarrhea

Complications of Diabetes Mellitus

- 1) **Insulin Shock:** If your pet appears wobbly or disoriented, their blood glucose may have dropped too low. This occurs after an insulin overdose. First try to get your pet to eat. If they will not eat, administer Karo syrup, honey or even sugar water by mouth and then call our office immediately.
- 2) **Diabetic Ketoacidosis:** When an animal goes without food, their body must break down fat, stored starches and protein to supply the calories for hungry cells. Fat requires a different process to be broken down than starches or protein which can lead to the production of ketones rather than glucose. Ketones are another type of fuel the body can use in a pinch but the detection of ketones indicates a problem typically. This same situation can occur in a diabetic animal prior to or while on insulin therapy. Even though they produce glucose, their body is unable to utilize it and essential is in a starvation mode. Your pet may become profoundly dehydrated, stop eating, and have vomiting or diarrhea. If this occurs, many times your pet will need to be hospitalized to re-regulate their diabetes with fluids, insulin and glucose monitoring.
- 3) **Cataracts:** An unfortunate consequence of diabetes in dogs is the development of cataracts. This is usually the result of glucose entering the lens of the eye. We do not typically see this occur in cats given the different composition of their lens.

Feeding Your Diabetic Pet

Diabetic control is achieved by a balance of diet, exercise and insulin. The best choice for cats is a low carbohydrate, high protein diet. These diets also promote weight loss in obese diabetics and are available in both canned and dry formulations. For dogs, high fiber diets are ideal, as fiber seems to help dogs become more sensitive to insulin. The prescription diets available have been shown to better regulate diabetic cats and dogs, and therefore they require less insulin or in some cases cats may no longer require insulin.

Avoid moist diets if possible, as sugars are used in these diets as preservatives. Avoid breads and sweet treats. As previously mentioned, feeding should be done every 12 hours just prior to their insulin injection. Therefore, avoid giving treats or an extra meal in between these times as it may cause an increase in their blood glucose.

Getting Started at Home:

- 1) Determine the best time to administer the insulin to your pet that will fit into your schedule. The injections should be given 12 hours apart consistently.
- 2) Pick up the following insulin and syringes at your human pharmacy_____ at our clinic_____
- 3) Prior to giving the insulin, feed your pet first and make sure they eat the entire meal.
- 4) Draw up your insulin and administer subcutaneously (or under the skin) to your pet
- 5) Create a log at home detailing the time of insulin injections, amount of water your pet drinks, how often and rough quantity of urination as well as appetite or any vomiting or diarrhea.
- 6) Return in 7 days for a glucose curve at our office. Do not give your pet their breakfast or morning insulin injection, but bring them with you for us to give while your pet stays at our clinic.