



DIABETES MELLITUS

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GENERAL INFORMATION

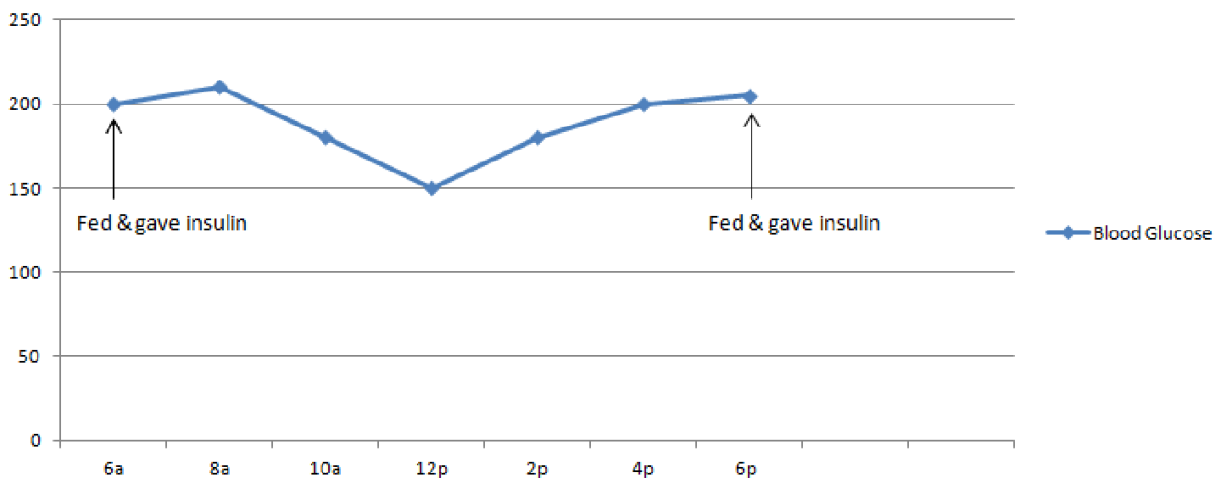
Our understanding of Diabetes Mellitus in pets is ever evolving. Dogs with diabetes mellitus are similar to people with Type 1 “insulin dependent” diabetes in the sense that lifelong insulin administration is necessary to manage the disease and it will never be cured. Cats with diabetes mellitus are similar to people with Type 2 “insulin resistant” diabetes in the sense that insulin administration combined with a special diet, can often put them into “diabetic remission” and they may not need insulin lifelong. While diabetes mellitus is a serious disease for both dogs and cats, many can enjoy a relatively normal life with proper balance of diet, exercise/weight loss, and insulin use.

NUTRITION

A prescription diet is beneficial for both dogs and cats with diabetes mellitus as they are specially formulated with less starch to help achieve more constant blood glucose and a healthy weight. For dogs, I recommend Hill's w/d or Royal Canin Diabetic Diets. For cats, I prefer Royal Canin Glycobalance as I've had the most success for diabetic remission with this diet.

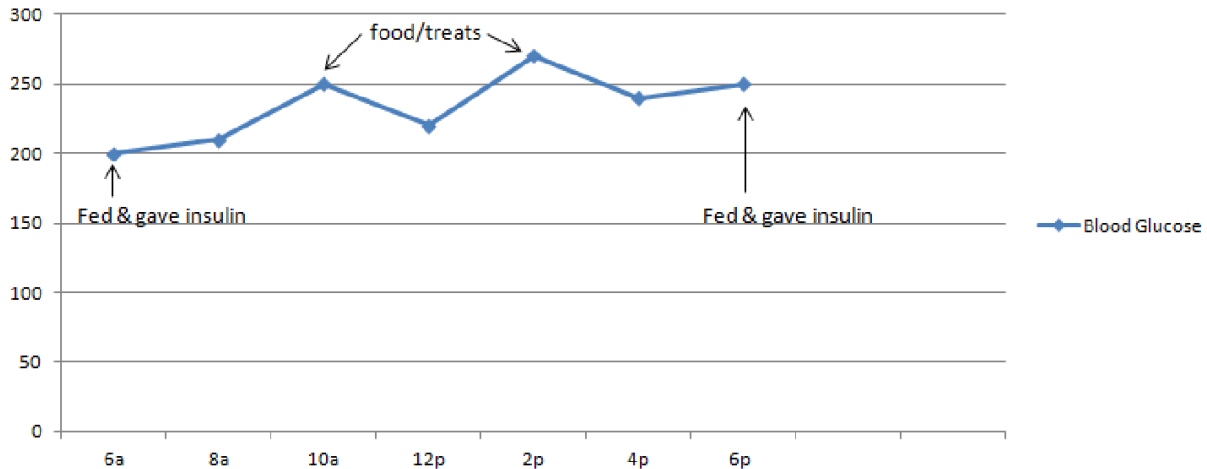
A regulated feeding regime is critical for both dogs and cats as they should only receive food at the time of insulin administration to avoid “blood sugar spikes.” This means your pet should not be allowed to “graze” on food all day and should only receive food, treats, or chews twice daily (every 12 hours) before insulin administration. To demonstrate this importance, please refer to the 2 graphs below:

Ideal BG Curve



This first graph shows an “Ideal Blood Glucose Curve” when a pet only receives food twice daily at the time of insulin administration. Note the values are above 100 and less than 250mg/dl with no large spikes. The starting and ending blood glucose readings of the curve are nearly identical. The blood glucose begins higher, drops after the insulin is given, and begins to rise again as the pet nears time for the next dose of insulin.

BG Curve with free choice food or treats given



The second graph shows what happens when a pet is allowed free access to food or otherwise receives treats throughout the day. Note the 2 “spikes” in blood glucose when the treats are given and how the starting and ending readings differ by 50mg/dl. Although this may not seem like a lot, this all happens in a single day so imagine if this same habit of feeding treats or free choice diet is fed over days, weeks, or months. The evening blood glucose reading would be higher every day which would cause the morning blood glucose reading to also be higher. This would result in unregulated diabetes and constantly high blood glucose levels as the insulin dose would never be able to compensate for the “spikes.”

INSULIN ADMINISTRATION AND HANDLING

Preferred insulin types

For dogs, I prefer Vetsulin which is used with U-40 syringes. This is a veterinary specific insulin formulated for use in pets. For cats, I prefer Glargine which is used with U-100 syringes or can also come in a preloaded “insulin pen” from a human pharmacy.

Insulin administration

The insulin should be given twice daily (every 12 hours) after your pet eats a good sized meal. Try not to deviate by more than 1-2 hours from schedule to maintain consistency. Your pet needs to be monitored closely during and any concerns reported to your vet. Please schedule a blood glucose curve in 1 week to assess your pet’s progress.

Administration Instructions:

- 1) Feed your pet a full meal.
 - a. **If your pet does not eat or only eats a small amount, give only half the normal dose of insulin to avoid causing low blood glucose.
 - b. **If your pet vomits or does not eat well for 2 consecutive meals, seek veterinary care right away.
- 2) Roll (do not shake) the bottle of insulin. Shaking can damage the proteins in the insulin.
- 3) Use the insulin syringe prescribed to draw up the insulin to the appropriate dose.
- 4) Administer the insulin under the skin as demonstrated and withdraw the needle. Gently massage the area.
 - a. **If you missed your mark and some/all of the insulin squirted out, do NOT give another dose. Call your vet for further advice.
- 5) Give your pet a treat to make this a more enjoyable experience for both of you.
- 6) Return the insulin to the fridge for storage.
- 7) Dispose of the syringe properly into a biohazard disposal unit.

MONITORING

It is critical to always monitor your diabetic pet closely as this is a serious disease and these pets can get very sick, very fast. Pets with diabetes are also more susceptible to skin infection and urinary tract infections.

Visual Observation:

Signs of low blood sugar: lethargy/ extreme tiredness, weakness, disorientation, dizziness, bumping into objects (blindness), seizures, coma , and even death.

****What to do with LOW BG:**

- Check pet's blood sugar with blood glucose monitor if possible to confirm it to be low. Ideally, we don't want anything below 100mg/dl.
- If low, offer a small amount of food or treats. If pet will not eat, rub a small amount of Karo syrup on the gums and seek veterinary care immediately as this is an emergency situation. If you don't have Karo syrup, you can use warm water and granulated sugar to create a sugary paste to apply to the gums. DO NOT use artificial sweeteners as these are toxic to pets.

Signs of high blood sugar / unregulated diabetes mellitus: increased thirst, increased urination, change in weight (increase/decrease).

****What to do with HIGH BG:**

- Consult your vet for advice. Your vet may recommend an exam to ensure no underlying diseases are present and/or a blood glucose curve to evaluate if an insulin adjustment is needed.

Testing at Home:

You can purchase glucose + ketone urine strips (Keto-Diastix) over the counter at your local pharmacy. For dogs, simply collect the urine in a disposable cup or paper plate. For cats, you can use non-absorbable plastic litter (No-Sorb) or aquarium gravel to collect urine

- We expect diabetic pets to have a small amount of glucose in the urine (trace or 1+). If it is negative or higher than 1+, contact your vet right away.
- We NEVER want to see ketones in urine so this should be considered an emergency and you should see your vet right away.

You can also purchase a blood glucose monitor for pets called AlphaTrak2. We will be glad to show you how to use the device if you elect to purchase. I highly recommend at home blood glucose curves as it is much less stressful for the pet and much more cost effective for you.

It is ideal to perform a 12 hour curve beginning with the first check before feeding and giving insulin and finishing the curve with the final reading right before the second feeding and insulin dose. After doing curve, you can relay the results to us and I can call to discuss. Below is a sample of how to chart the readings.

SAMPLE BLOOD GLUCOSE CURVE MONITORING:

Time: Results (mg/dl):

6am - Get first blood glucose reading, then feed and give morning insulin.

8am

10am

12pm

2pm

4pm

6pm - Get last blood glucose reading, then feed and give evening insulin. (Curve is complete)

DIABETES PROGRESSION

Diabetic pets are at risk for life threatening complications if their disease is not well regulated.

Dogs will develop “diabetic cataracts” even with good regulation. This means your dog will likely go blind even with good regulation. Surgical removal to restore vision is an option once the disease is well controlled. Kidney disease is also a concern for dogs, as the excess sugar can cause irreversible damage to the kidneys.

Cats do NOT develop cataracts or kidney disease as a result of diabetes, but they can develop neuropathies which can be temporary or permanent if they go unregulated for too long. This means your cat may develop a strange stance or gait as a result. Cats, unlike dogs, can go into “diabetic remission” which means they may not need insulin for months or years after diagnosis and treatment. This is our goal for all diabetic cats.

Regulating diabetes mellitus can be a slow and frustrating process as every pet responds differently to treatment and there is no “one size fits all” method to managing the disease. Please don’t give up and talk to your vet about your concerns along the way. With proper monitoring, diet, and insulin, diabetes can be managed and result in a good life for your pet.