

Ettinger & Feldman – Textbook of Veterinary Internal Medicine

Client Information Sheet

Home Monitoring of Blood Glucose

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Why measure blood glucose?

Diabetes mellitus means that blood sugar (glucose) levels are too high. Successful treatment of diabetic pets relies on your observation of symptoms and on your veterinarian's periodic evaluation. One of the best ways for your veterinarian to regulate your pet's diabetes is to periodically do a blood glucose curve. A blood glucose curve helps your veterinarian determine the best time to give insulin and determine if your pet is receiving the proper dose and type of insulin.

For blood glucose curves, dogs and cats are usually hospitalized for an 8- to 24-hour period and blood samples are taken at 1- or 2-hour intervals by means of direct venipuncture (inserting a needle into the vein). Hospitalization, restraint for blood sample collection, and venipuncture can be stressful. Stress can result in inaccurate readings (especially in cats) and an invalid glucose curve. Hospitalized pets may also refuse to eat, further complicating interpretation of the blood glucose curve.

For people with diabetes, the introduction of self-monitoring blood glucose levels is the single most important advance in the management of diabetes since the discovery of insulin. It has become an integral part of managing the disease. Most human diabetics perform self-monitoring of blood glucose levels by using a portable blood glucose meter (or glucometer) and capillary blood, which is collected by pricking a fingertip with a lancing device.

You can measure your pet's blood glucose levels at home by collecting blood from the ear of your dog or cat using one of these portable blood glucose meters and a lancing device as well. Home blood glucose monitoring is a useful tool to help you and your veterinarian regulate your pet's diabetes. Testing is relatively quick and painless. Discuss whether home monitoring is appropriate for your pet and how often to monitor your pet's blood glucose with your veterinarian. It is extremely important that home glucose monitoring only be performed in consultation with your veterinarian.

Several good Glucometers are available for use with pets. Your veterinarian should help you select a meter that requires a tiny blood sample (one drop) and has test strips that use capillary action to "sip up" the blood into the test chamber. The Bayer Glucometer Elite (or Elite-XL) is an excellent meter for doing glucose tests on pets. Always be sure to read, understand, and follow the instructions provided with your meter and test strips.

How do I obtain blood from my pet?

Two methods of obtaining blood from the ear rim of pets are described here. With both methods, you should obtain a fasting blood glucose reading (just before you feed your pet and give the insulin). After feeding and injecting the insulin, blood samples can be taken every 2 hours. Discuss the resulting curve with your veterinarian.

Method 1

In cats, the easiest method of obtaining a drop of blood is to prick the marginal ear vein. This is a small blood vessel that runs along the outer edge of the cat's ear. To locate this vessel, shine a light into the inside of the ear and look on the back (furry side) of the ear. You should see a thin red line. This is the vessel you will prick. The prick site should be clean and dry (moisture can cause the drop of blood to spread out and it can dilute the sample, causing a false reading). It is helpful to warm the ear first by using either a warm washcloth inside a plastic bag or a rice bag you can heat in a microwave oven. Make sure it is warm and not so hot that it will burn your pet.

The steps for blood collection via Method 1 are as follows:

1. Gather supplies – glucometer, test strip, lancet and lancet device (if used) or small gauge needle, Vaseline (optional), warm, damp washcloth in a plastic bag, and a tissue, gauze pad, or cotton ball.
2. Sit with your pet in a comfortable location (or your pet's favorite spot). Use gentle restraint.
3. Apply the warm (not hot) washcloth to the ear to help increase the blood flow to the ear.
4. (Optional) You can apply a thin film of Vaseline to the sampling site of the ear without adversely affecting the result. This can help the drop of blood to “bead up” without spreading into the fur (especially if your cat has long hair).
5. Have the meter turned on with the test strip inserted.
6. Place the lancet in the lancing device.
7. Hold the ear between your thumb and index finger. Have a gauze, tissue, or cotton ball between the ear and your index finger so you do not inadvertently prick yourself. With the opposite hand, prick the ear with the lancet device or with a needle that is directly over the sampling site. The back (furry) side of the ear is the most common side used for sampling. After pricking the ear, the blood will slowly begin to well up. You can gently “milk” the vein to help the blood drop to form. Do not let your pet shake his/her head and flick the blood.
8. Hold the tip of the test strip to the base of the drop of blood. The test strip will “sip up” the drop of blood into the test chamber and a reading will be provided in about 30 seconds (depending on the glucometer used). It is important to make sure that the blood sample fills the sampling area of the strip. If you are unsure of a result, recheck it. Once you have your blood sample, gently apply pressure to the ear for about 15 seconds to stop the bleeding.
9. Reward your pet with petting and praising.
10. Record the date, time, and glucose reading.

This technique may be applied to areas other than the ear (lips in dogs, paw pads).

Method 2

The steps with this method are similar to those described for Method 1 except a vacuum-lancing device is used in step 7 rather than a lancet or needle. The Microlet Vaculance (Bayer) was designed to allow blood sampling from sites other than the fingertips in people. This can be used to sample the inside portion of the outer ear (the non-haired part) of your dog or cat.

In this case, step 7 would go as follows:

- Hold the tip of the ear between your thumb and index finger, and hold the surface of the ear flat by the rest of your fingers. The lancet device is then set on the non-haired area of the ear. An airtight seal between the device and the ear is obtained by pushing the outer ear against the device with the tip of one finger. The entire edge of the end cap must be in contact with skin. The site is then lanced by pressing the plunger cap down until it comes to a complete stop. While pressure is maintained between the end cap and skin, the plunger is slowly released. This creates a negative pressure, and the skin slightly bulges up into the end cap. The negative pressure is maintained until there is an adequate drop of blood. The blood drop will form more quickly by releasing the pressure that is exerted on the surface of the ear by those fingers holding the ear flat. When an adequate drop of blood has formed, the plunger is pressed three fourths of the way down to release the vacuum and remove the device.

Why monitor blood glucose at home?

Home monitoring has several advantages. Doing curves at home is less expensive and the blood glucose readings will not be artificially increased by the stress of hospitalization and blood sampling. If your pet doesn't seem well, you can test the blood glucose and know whether you are dealing with hypoglycemia (dangerously low glucose) or hyperglycemia (elevated glucose) and respond accordingly. If blood glucose levels are too high or too low, you should test your pet's urine for glucose and ketones. If the urine is negative for glucose (could indicate insulin overdose) or positive for ketones you should call your veterinarian immediately. You should bring your diabetic dog or cat to your veterinarian's office at least twice yearly for a routine check up and an in-hospital blood glucose curve. Illness will affect the blood glucose curve so be sure to see your veterinarian if your diabetic dog or cat is sick.

Superb web sites are dedicated to diabetic pets. Some of these sites discuss home monitoring of blood glucose and have pictures and videos to demonstrate blood sampling. To access these web sites simply type, "home monitoring of diabetic pets" in the search field.

Contacts for Further Information



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