

DIABETES MELLITUS



AN OWNER'S GUIDE TO PET CARE

Provided as a courtesy
by Hill's Prescription Diet
and your veterinarian

Your pet has been diagnosed as having Diabetes Mellitus. This brochure is provided to help you learn about the disease and how to care for your pet at home.

DIABETES MELLITUS

Diabetes mellitus is a chronic endocrine disorder that occurs in dogs and cats. It is characterized by high blood sugar (hyperglycemia) and results when the pancreas is unable to produce enough insulin to meet the animal's requirements.

Insulin is a hormone which is needed to transport glucose (blood sugar) as well as certain amino acids and minerals through the blood to energy-producing cells. When a lack of insulin occurs, glucose cannot move into the cells and the glucose level in the blood rises to abnormally high levels.

SIGNS OF DIABETES

An animal with diabetes mellitus will exhibit some or all of the following symptoms: weakness, increased thirst, frequent urination, rapid weight loss, depression and abdominal pain. An animal may also show signs of either increased hunger or lack of appetite. In some animals, the sudden development of blindness due to cataract formation may indicate diabetes.

CAUSES

Diabetes mellitus in dogs and cats is caused by damage to the pancreas. Predisposing factors are: obesity, genetic predisposition, poor diet, hormonal abnormalities, stress and drugs. The sex of the animal can also be a predisposing factor. In dogs, females are affected twice as often as males and in cats, diabetes is more prevalent in males.

DIAGNOSES

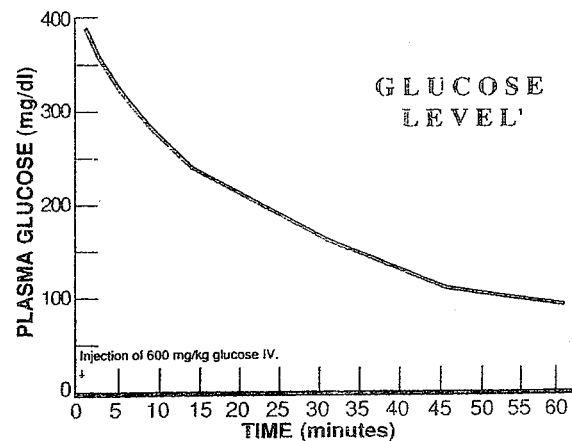
Your veterinarian will perform a thorough physical examination of your pet and ask you questions about your pet's health history. Next, it will be necessary for your pet to fast for a short period of time so that its blood sugar level can be tested and a urine check can be done. Often your pet is hospitalized for one or two days to help insure the accuracy of this test. Diabetes is often complicated by urinary tract infections, other hormone disorders, infections, or a build-up of chemical compounds called ketones in the body. Provided these or no other complications are

present, the fasting blood sugar and urinalysis tests will help determine whether or not your pet is diabetic. If there are complications, more testing may be necessary.

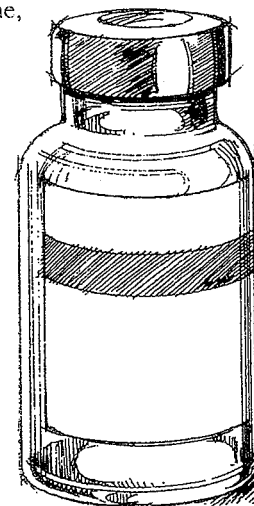
TREATMENT

Treatment requires a commitment of time and management from you, the owner. There is no cure for diabetes mellitus, but, as with humans, it can be controlled with insulin injections, diet, and exercise management. With such therapy, your pet can lead a happy, comfortable life.

Once your pet has been diagnosed with diabetes mellitus, its specific insulin requirements need to be determined. As each pet's insulin needs are unique and often vary from day to day, your pet may need to be hospitalized for 2-4 days in order to determine its specific needs. This is accomplished by your veterinarian giving the pet an insulin injection and testing the blood sugar levels at regular intervals throughout the day. These results are used to determine your pet's initial insulin requirements. Your veterinarian may indicate these on a Glucose Curve Chart such as the one below. Because your pet's insulin needs may



change once it returns home, due to changes in diet, exercise and certain environmental stresses, periodic reevaluation over the next two weeks is recommended until satisfactory control is



achieved. Once control is achieved, further evaluation should be completed every 2-4 months.

HOME CARE

You must provide your pet daily injections of insulin for the rest of its life. Oral medication is rarely effective for diabetic animals. It is also important that the insulin injections are given at the same time each day.

The injection is given just under the skin and is not painful to your pet. Your veterinarian will show you how to administer the injection. Detailed information on the insulin injection is also included in this brochure for your reference. (See next page.) And, remember, the hospital staff is here to help you care for your pet. They welcome your questions.

THE INSULIN DOSE

The type of insulin and the daily dose are tailored to meet the needs of each animal. Some animals require one daily, some twice daily treatments. Some may require one type of insulin, others may need a combination of insulins. Other medications may also be prescribed, depending on concurrent complications.

When regulating a diabetic animal's blood glucose level, the goal is to keep it between 80 and 150 mg/dl. The recommended dose of insulin determined while your pet was in the veterinary clinic may need adjustment once your pet is home. This is because the food and exercise your pet receives at home may be different.

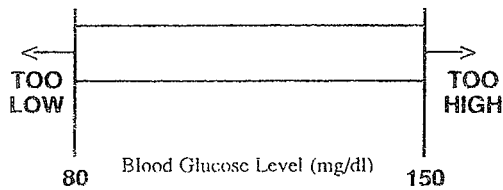
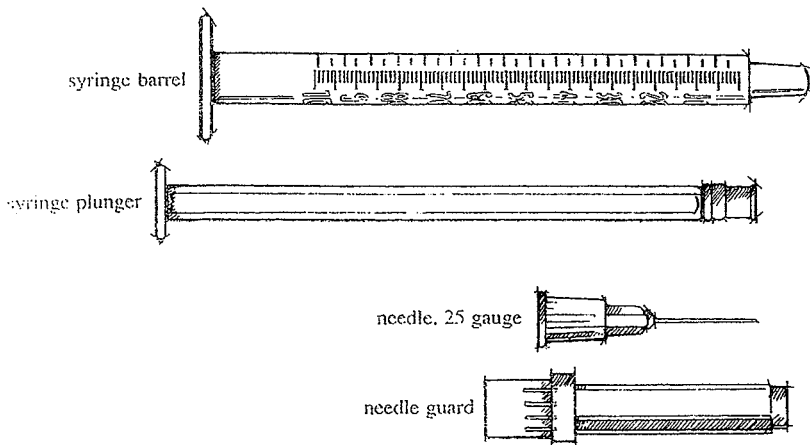


Figure 1.



To adjust the dose, your veterinarian will continue to test and regulate your pet two ways. Your veterinarian will occasionally request you bring your dog or cat into the clinic for the day to test for blood and urine glucose levels. Also, you may be asked to monitor your pet's urine at home (see Home Glucose Monitoring).

HANDLING INSULIN AND SYRINGES

Insulin should be kept cool at all times and the bottle should be shaken prior to withdrawal of the insulin into the syringe. *roll in hands*

The syringe and needle should be stored in protective wrappers to keep them sterile. Syringes and needles have four parts that consist of the syringe barrel, the plunger, the needle and the needle guard (figure 1).

Various syringes are suitable for injecting insulin. They are marked on the barrel for measuring small amounts (figure 2).

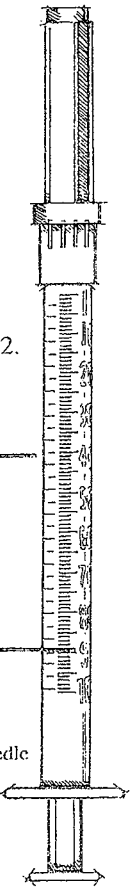
These syringes and needles are disposable or "single use" only. After injecting your pet with insulin, place the needle guard over the needle and dispose of it in the garbage or suitable container. For their safety, it is extremely important that children do not have access to the syringes or needles.

Figure 2.

On the left, gradations indicate units of insulin.

On the right, major gradations indicate 0.1 cc (one tenth of a cubic centimeter). Each 0.1 cc is divided into 10 parts, these very small marks are not shown.

assembled syringe and needle



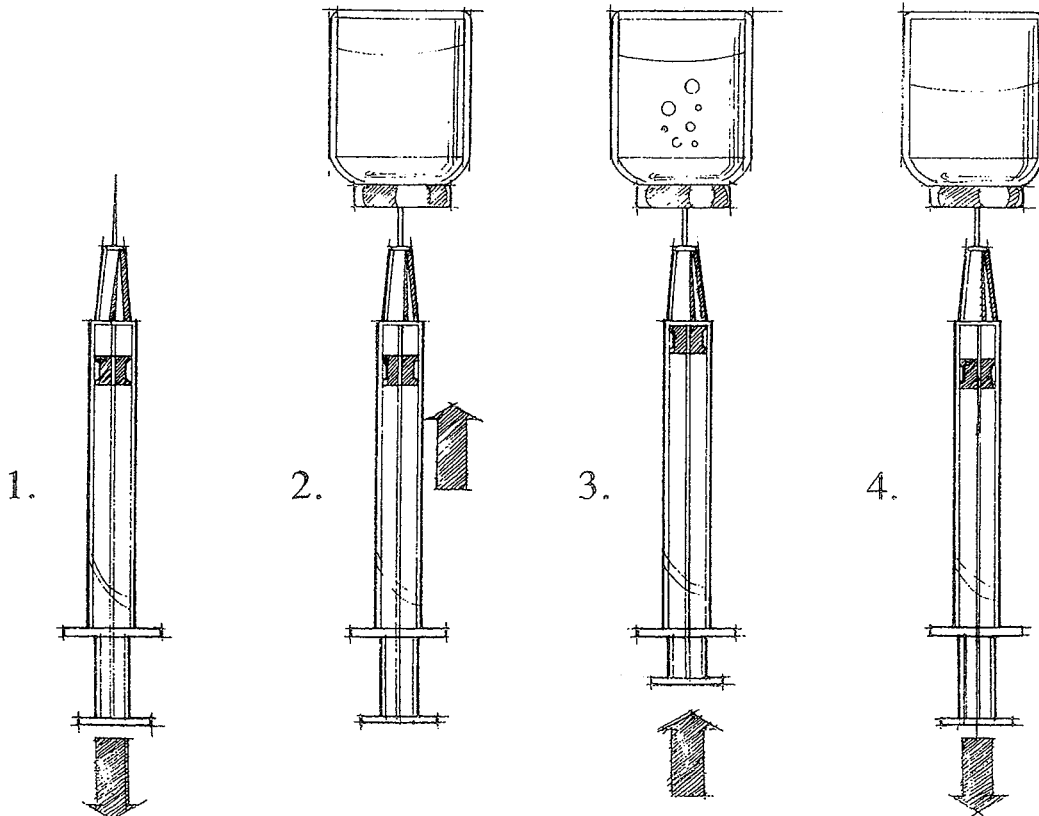
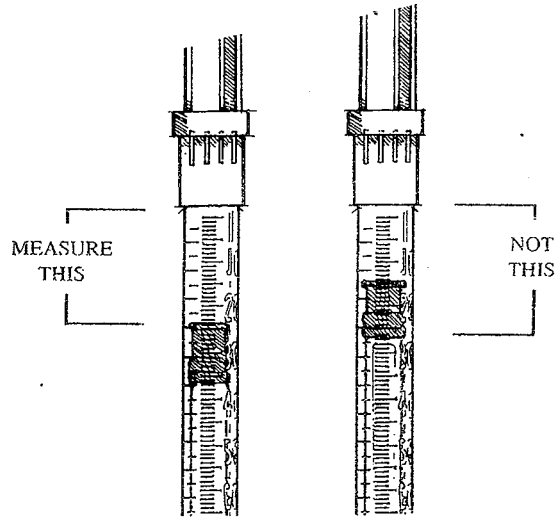
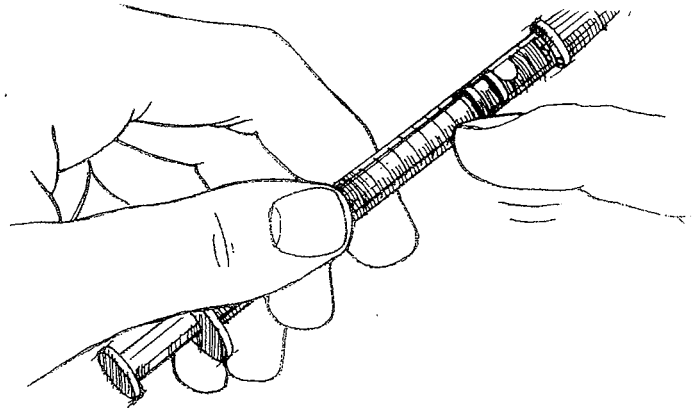
DRAWING UP THE INSULIN

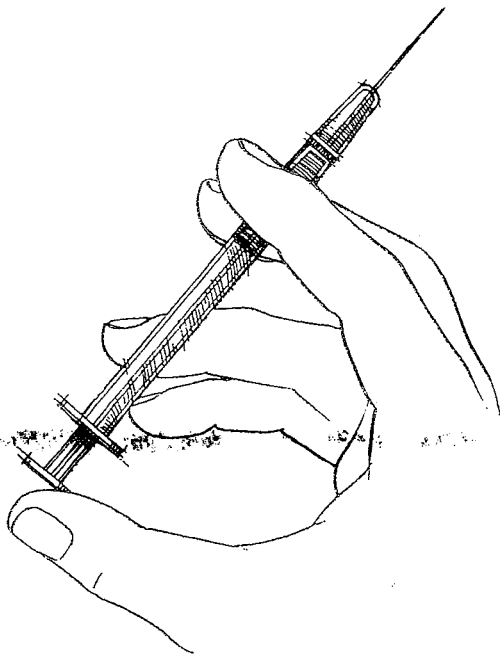
Set out the syringe and needle, insulin bottle and have the pet ready. Then:

1. Remove the needle guard from the needle, draw back the plunger to the desired dose level.
2. Insert the needle into the insulin bottle.
3. Inject the air in the syringe into the bottle to prevent a vacuum from forming in the insulin bottle.
4. Withdraw the plunger, filling the syringe with the correct amount of insulin.

Before injecting the pet with the insulin, check to see there are no bubbles in the syringe. If you see an air bubble, draw up slightly more insulin than the exact dose. Now, withdraw the needle from the bottle, tap the syringe barrel with your finger to move the air bubble to the nozzle of the syringe, then, gently, expel the air bubble by pushing the plunger upwards.

Now, check to see you have the correct amount of insulin in the syringe. The correct dose of insulin is measured from the needle end, or "0" on the syringe barrel, to the end of the plunger nearest the needle.





HOW TO GIVE AN INJECTION

1. Hold the syringe in your right hand (or your left, if you are left-handed). Above is one way to hold the syringe. There are other ways and with time you will develop the one easiest to you. (You may find it helpful to begin by practicing with a syringe filled with water and injecting it into an orange.)
2. Have a friend or member of your family hold your pet as you pick a fold of skin along the pet's back with your free hand (pick a different spot each day).
3. Push the very sharp, very thin needle through

the pet's skin quickly. This should be easy and painless using an insulin needle. Take care to push the needle through one fold of skin, not into your finger, the pet's underlying muscle, or through both layers of skin.

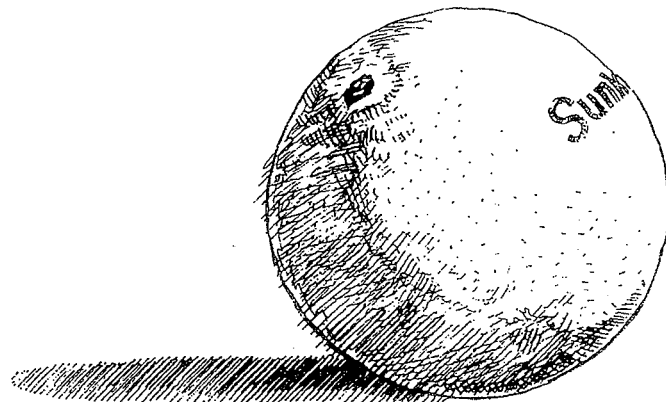
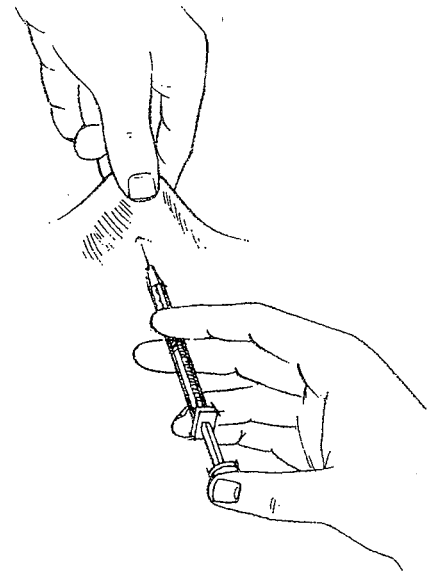
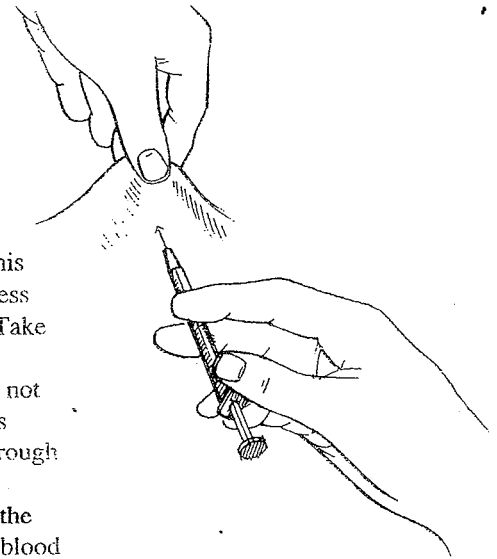
4. Pull back gently on the plunger to make sure no blood fills the syringe.

5. With your thumb on the plunger, push the plunger further into the syringe.

6. Withdraw the needle from the pet's skin, and immediately cover the needle with the needle guard.

7. Pat your pet to reward it for sitting quietly. A reward of patting followed by the first feed for the day quickly creates a cooperative pet that may not even need to be held.

"Sterilizing" the skin with alcohol is not necessary, and may be counterproductive if it stings and causes your pet to want to avoid the injection.



Sometimes your pet may have an insulin reaction caused by a marked decrease in blood sugar. This reaction usually occurs 2-6 hours after the morning injection. The earliest signs resemble a drunken state: that is, your pet will be weak and walk with a wobbly, uncoordinated gait. This stage may progress to seizure or coma. Should this occur, give 1-2 teaspoons of Karo Syrup orally, or an injection of glucagon. Contact your veterinarian immediately if no improvement is seen in 15 minutes. A blood sugar level significantly below normal is an immediate threat to life and needs to be dealt with as an emergency situation.

WHEN TO FEED

When you feed your diabetic pet is as important as *what* you feed it. Your pet must be fed the prescribed diet in the correct quantity at a regular time each day in conjunction with the insulin medication. Correct dietary management is a critical part of the successful management of the diabetic animal. As a general rule, the diabetic animal should be fed more than once a day to help maintain blood sugar at a constant level. Your veterinarian will determine your pet's feeding schedule based on its Glucose Curve.

WHAT TO FEED

Table scraps or any foods other than the prescribed diet should not be allowed. It is important that the food your pet consumes is constant, both in ingredient content and nutrient source. Diabetic control is difficult to obtain if the composition or ingredient source of the pet food varies. Many commercial pet foods are produced from "open" formulas and ingredients can vary from batch to batch depending on ingredient cost and availability.

Studies have indicated that high fiber, high carbohydrate, fixed formula diets lower insulin requirements and blood glucose levels. Experts believe that fiber may cause the body to be more

responsive to insulin. Fiber also slows the absorption of glucose from the intestinal tract and decreases hyperglycemia (high blood sugar).

The amount of food to feed daily will be determined by your pet's caloric requirements. This amount should **not** be varied, as it will have a direct impact on insulin needs.

If your pet is overweight, weight reduction is necessary. Obesity decreases the body's tissues responsiveness to insulin (both natural and injected) and results in dangerous high blood sugar levels. Canine r/d[®] or Feline r/d[®] is recommended because it is high in fiber with reduced calories to lower you pet's weight.

If your pet is at or below optimal body weight, Canine w/d[®] or Feline w/d[®] is recommended because it is high in fiber with adequate calories to maintain your pet's weight. If your dog has difficulty maintaining its weight, Canine g/d[®], which is even higher in calories, is recommended.

EXERCISE

There are no restrictions on your pet's normal activity. However, it is important that your pet's exercise be moderately regulated and consistent in order to keep the insulin needs as consistent as possible.

HOME GLUCOSE MONITORING

You may be asked to monitor your diabetic pet at home for the presence or absence of glucose in its urine. Most dogs and cats have a kidney glucose threshold of 150-200 mg/dl.

