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Diabetes Mellitus

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.

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
- Abdominal pain

An animal may also shows signs of 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
- 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 ensure 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 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 medications are 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. 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 need only one daily injection and others may need two. Some may require one type of insulin; others may need a combination of insulin. 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.

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.

HANDLING INSULIN AND SYRINGES

Insulin should be kept cool at all times and the bottle should be rolled gently in your hand prior to withdrawal of the insulin into the syringe.

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.

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

These syringes and needles are disposable or "single use" only. After injecting your pet with insulin, place the needle guard over the needle and place it in a designated sharps container. When it is full, return the sharps container to your veterinarian for disposal. (It is illegal to dispose of needles and syringes in the garbage.) For their safety, it is extremely important that children do not have access to the syringes or needles.

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 then the exact dose. Now, withdraw the needle from the bottle, tap the syringe barrel with your finger 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 preferred hand. Below 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 someone 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 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. Praise your pet for sitting quietly. A reward of your affection 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. Contact your veterinarian. 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. If your pet is sometimes reluctant to eat or if its appetite is inconsistent, be certain that is consumes a meal *before* you give the insulin injection. Without the presence of food either before or after the injection, insulin may precipitate hypoglycemic shock.

In addition, your pet must be fed the recommended food in the correct quantity at a regular time each day in conjunction with the insulin. 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 the glucose curve. Cats generally need dry food available to them at all times.

WHAT TO FEED

Do not feed table scraps or any food not recommended by your veterinarian. 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.

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 tissue responsiveness to insulin (both natural and injected) and results in the dangerous high blood sugar levels. Canine r/d or Feline r/d brand dietary pet food is recommended because they are high in fiber with reduced calories to lower your pet's weight.

If your pet is at optimal body weight, a special diabetic diet will be prescribed for your pet.

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.

THINGS TO WATCH FOR AT HOME

- Seizures
- Coma
- Lack of appetite
- Deviations of normal behavior
- Cataracts
- Deviations of normal urine glucose pattern
- Depression
- Drunken state

If your pet exhibits any of these signs, please contact your veterinarian as soon as possible.

SPECIAL CONSIDERATIONS

Although diabetes mellitus can be controlled with insulin and diet, diabetic animals are more susceptible to other health problems. Diabetes mellitus can cause an increase incidence of infections (especially bladder infections), slowed healing, cataracts, gastrointestinal dysfunction, kidney disease, heart disease, pancreatitis and nervous system disorders.

You should not breed a diabetic female animal because it is extremely difficult to control diabetes during pregnancy, and may cause a life-threatening situation.

COST

The cost of caring for a diabetic pet is an important consideration. Of course, the cost will vary somewhat depending on any additional health problems that may occur and the size of your animal. To estimate your costs, it's best to break down the treatment stages: 1. Initial diagnostic work-up; 2. Stabilization 3. Maintenance

Your veterinarian will discuss the costs involved for each stage.

Beyond the monetary cost, there is a time commitment required of owners of a diabetic pet. Such a commitment may not seem easy, but can be very rewarding for both pet and owner.

Your commitment adds to the quality of your pet's life and is paid back in years of healthy companionship.

Questions you may have concerning your pet's health are welcomed by the hospital staff.

SPECIAL HOME CARE INSTRUCTIONS FOR YOUR PET