

## DIABETES EMERGENCY PROTOCOL

### SIGNS OF HYPOGLYCEMIA (LOW BLOOD SUGAR)

- Lethargy (sleepiness)
- Shakiness, twitching, stumbling, bumping into things
- Seizures (generally short but will recur if not treated)

### TREATMENT

- Encourage your pet to drink a small amount of Karo syrup (about 1 to 2 Tb per cat or 1/4 cup per medium sized dog).
- If necessary, dilute Karo with water or milk to make it easier to drink.
- If your pet is unable to drink, rub Karo on his gums and tongue, especially the underside, until he is alert enough to drink.

**DO NOT POUR KARO INTO THE MOUTH OF AN UNCONSCIOUS ANIMAL!**

**DO NOT PUT FINGERS INTO THE MOUTH OF A SEIZURING ANIMAL.!**

- Wait until in-between seizures to rub Karo into the mouth.

**CALL THE OFFICE IF YOU CAN'T GET KARO INTO THE MOUTH.**

**PHONE: 215-598-9000**

**CALL THE OFFICE AS SOON AS YOUR PET IS STABLE TO DISCUSS ADJUSTMENT OF THE INSULIN DOSE.**



*Indian Walk  
Veterinary Center, P.C.*

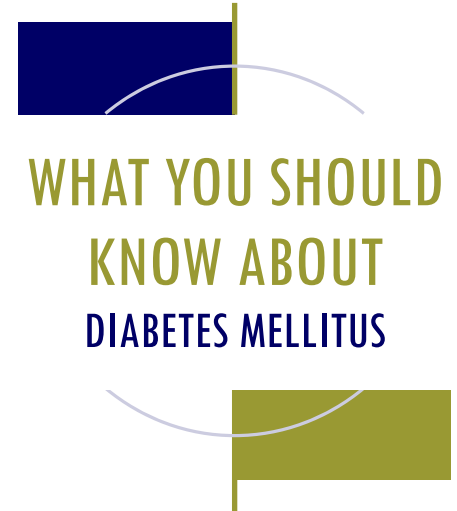
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**Indian Walk Veterinary Center, P.C.**



*Caring for Pets and the  
People Who Love Them*

## INTRODUCTION

Diabetes mellitus in humans and animals is a disorder of carbohydrate, protein and fat metabolism. It involves an absolute or relative lack of insulin in the body. In other words, the diabetic either can't produce insulin at all or can't utilize the insulin produced. In people the disorder can be present in childhood or develop later in life. Dogs may also have either early or late onset diabetes but usually have the latter. Cats seem to always have the late onset type.

## CAUSES OF DIABETES MELLITUS

There are several possible causes for diabetes. Some diabetics are born without the cells that manufacture insulin. In some cases the cells are present but make a defective type of insulin that cannot be utilized by the body. Several other hormones normally have anti-insulin effects as part of the body's regulatory mechanism, but if these hormones are present in excess, the insulin produced by the body is not able to be used properly.

Recent research has shown that in some patients there is a defect in the body's immune system causing the animal's own white blood cells to attack the pancreas, where insulin is manufactured.

The mere fact of being overweight can cause diabetes, especially in cats, because fat-filled cells can produce hormones that impair the ability of insulin to act upon cells in the body.

## CLINICAL SIGNS AND WHY THEY OCCUR

The clinical signs of diabetes mellitus include increased hunger and thirst, weight loss, and increased urination. The urine tends to be sticky when dry due to its sugar content. To understand these signs one must know what insulin does.

Insulin, which is produced by special cells in the pancreas, has many functions, some of which are not yet well-defined. Its best known function is to enable body cells to absorb and thus utilize the carbohydrate (sugar) called glucose, the basic fuel the body requires for energy.



Without insulin the cells are literally starving for energy and they send out signals of hunger to the body. But the increased appetite does not help, since glucose available from the food can't get into the cells. Thus the sugar levels in the blood keep building up.

This can't go on for long or the blood would soon become as thick as molasses, so when the sugar level exceeds a certain limit, sugar starts to spill out into the urine. Due to its shape, each glucose molecule carries several molecules of water with it, so a lot of extra urine is produced, thus the diabetic has increased urination. Of course all this water leaving the body must be replaced, so there is also increased thirst.

The weight loss goes back to the problem of the "starving" cells. From the point of view of the cells and organs, they are not being fed, so they convert to a "starvation metabolism," much as they would if the animal were really not eating. This metabolic state involves the use of the body's own fat and muscle stores to produce energy. Thus the animal is consuming his own body.

There is another problem with this type of metabolism; it also requires insulin to proceed normally. In the absence of insulin and carbohydrates, this metabolic pathway produces by-products called ketones which are toxic to the body. In very advanced diabetes, these toxins contribute to the death of the animal.

## TREATMENT



Diabetes is not curable but it is controllable in most patients. The missing insulin is replaced by daily injections under the skin.

In the normal animal, the pancreas releases insulin as it is needed. When insulin is given by injection, it is absorbed by the body at a slow but steady rate. The diet must be adjusted so that there is always enough glucose in the blood for the insulin-treated cells to use.

- Too little insulin or too much food and the blood glucose remains too high.
- Too much insulin or not enough food causes the blood glucose to drop too low. When the blood glucose is too low the cells lack energy. The brain is most susceptible to this, so signs of low blood sugar include sleepiness, stumbling, blindness, seizures, occasionally coma and death.

The best way to avoid these extremes is to check your pet's blood glucose level at home. In the past we used to depend on urine glucose measurements, but they can be very misleading. There are now blood glucose monitors calibrated especially for cats and dogs. They are easy to use, and obtaining the necessary drop of blood with a lancet is not hard once you have done it a couple of times.



Many things may affect the body's insulin requirements. As mentioned earlier, a number of hormones in the body have anti-insulin effects. Diabetes is thus hard to control during growth and adolescence and in unsprayed female dogs (cats do not have this problem). All diabetics should be neutered as soon as the disorder is stabilized.

Stress, exercise, and even the weather can affect insulin requirements. Working dogs need less insulin on the days they are working. Most dogs need slightly less insulin in hot weather than in cold, possibly due in part to smaller appetites in summer than winter.

Unlike dogs, cats can sometimes be regulated partly or entirely with a special diet and oral medication. Cats also have a poorly understood tendency toward "transient" diabetes. After a period of time on insulin injections, they seem to regain their ability to control their own blood sugar. Unfortunately, this does not last indefinitely, so insulin will probably be needed again.

Care of a diabetic pet requires close cooperation between you and our staff, as adjustments may be necessary to achieve the best control of the disorder. Please read the Emergency Protocol panel of this brochure very carefully and post it in a prominent place (such as on your refrigerator) for easy access in case of emergency.

With a little extra care, a diabetic pet can live a long, productive, happy life.

