



### Diabetes Mellitus - Information for Owners

#### The Disease

Diabetes mellitus is a complex metabolic disorder caused by **insulin** deficiency or a reduced response by the body to insulin. Insulin is a hormone produced by the pancreas, which plays an important part in carbohydrate and glucose metabolism. Insulin promotes the movement of glucose from the circulating blood stream into the tissues and allows long term storage. A lack of insulin results in an inability of the body to store and use glucose, this causes a raised level of glucose in the blood, and the "overflow" of glucose from the blood into the urine. If the metabolism of glucose remains incorrect for some time then a build up of toxins can occur making the animal significantly unwell. The presence of glucose in the urine essentially changes the concentration/chemical composition of the urine, this leads to water being drawn from the blood through the kidney, into the urine. This in turn causes large dilute volumes of urine being produced and results in an increase in thirst, in order to replace the water that is lost in the kidney.

#### The Signs

- Increased thirst and urination.
- Loss of weight along with an increased appetite.
- Vomiting in the later stages of the disease.

#### Confirmation of Diagnosis

If your pet presents with the above signs, we will ask you to obtain a urine sample, and we will also take a blood sample. A raised level of glucose in these samples confirms the diagnosis of diabetes mellitus.

#### Treatment

Successful treatment requires the daily administration of synthetic insulin. This is given by subcutaneous injection i.e. under the skin and is usually required for life. It is not a difficult technique and we will teach you how to do it at home. Unlike the case in humans, diabetes mellitus in dogs and cats is rarely controlled by dietary management alone, but is crucial that a daily dietary routine is established and adhered to.

#### Diet

It is crucial that this is constant, i.e. exactly the same quantity of the same diet is fed every day at exactly the same times. Alterations to the feeding pattern will make it difficult to stabilise the dose of insulin, resulting in widely varying blood glucose levels. We recommend that your pet be fed exclusively on a prescription diet, which is designed specifically for pets with diabetes mellitus.

Although this seems more expensive than homemade diets, it is formulated to a strict specification, which makes stabilisation easier by reducing the daily fluctuations in the blood sugar level. It is cost effective and better for your pet's well being in the long term.

**DO NOT GIVE TITBITS** as these can cause large fluctuations in blood glucose levels.

Water should be freely available at all times.

#### Exercise

Your pet should be given the same amount of exercise, at regular times, every day.



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### Stabilising a diabetic

Response to insulin is individual to each case, and so it can take a little time from the initial diagnosis to find the best insulin dose for your pet.

A short while after starting insulin injections, we will ask for your pet to stay with us for a day for us to perform a **glucose curve**. The pet should come in to us without having had that morning's food or insulin. We ask that you bring their normal food and insulin with them. We take a blood sample before feeding and injecting, and then take a sample hourly after that. Only a pin-prick of blood is required each time. This allows us to see how your pet's body is dealing with its glucose levels, and that the insulin dose is not too high or low.

Glucose curves must be repeated after any change in insulin dose, and it may take several curves before the best dose is established.

Once stable, it is useful to periodically perform a glucose curve to ensure your pet's condition has not altered.

### Complications of Diabetes Mellitus

#### Insulin Overdose - Hypoglycaemic Crisis

This may occur if your pet does not eat for any reason, or if you inadvertently give too much insulin. (For example if more than one person in the house routinely administers the injections, it may accidentally be given twice).

Insulin overdose causes a rapid drop in the blood sugar level resulting in insufficient glucose reaching the brain. It is **potentially fatal**. It is therefore very important that you are aware of the signs.

These are **drowsiness, weakness, trembling or collapse**. Pay attention to your pet, and look out for unusual behaviour or strange movements, which may precede a hypoglycaemic crisis. Always have a source of glucose readily available for emergency use, such as honey or sugar solution, a mars bar or energy tablets. Administer 1-2 tablespoons (or the equivalent) by mouth. If your pet is unable to swallow, rub the glucose powder or honey into the gums, especially under the tongue. When you have administered this emergency treatment, consult the practice for advice. Further treatment or tests may be necessary at the surgery.

If you miss an insulin dose, **do not 'double up' on the next dose**. Simply give the next normal dose at the next normal time.

If your pet does not eat, do not give that insulin dose or phone the practice for advice.

#### Long Term Complications

Diabetic animals are prone to certain long-term complications including cataracts, recurrent cystitis, liver and kidney failure, all of which have an insidious onset. Regular attendance at the surgery for check-ups enables us to spot potential complications early and institute appropriate treatment. It is usually necessary to spay entire bitches, as the hormone fluctuations, which occur as part of the oestrous cycle, affect the insulin requirement and make stabilisation difficult.

Although diabetes mellitus is a serious disease, diabetic animals can and do live a long and happy life with careful management. For treatment to be successful, it is **crucial that routines are established and adhered to**, as described above. We are here to help you manage the condition, and if you have **any** concerns about any aspect of the management or treatment of your pet, please speak to one of the veterinary surgeons or nurses. We are always happy to help.

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