Client information sheet

Diabetes Mellitus



What is diabetes mellitus?

Diabetes mellitus is a hormonal disease that occurs when the body does not produce enough insulin or cannot use it properly. Insulin is a hormone produced by the pancreas that allows glucose to enter the cells so it can be used as a source of energy.

It is a serious and, in general, chronic disease that can cause complications if it is not properly diagnosed and treated. Although it can appear at any age, it is more common in middle-aged or senior dogs and cats. In addition, some breeds are more predisposed to developing diabetes, such as the West Highland White Terrier and the Border Terrier.

What causes diabetes mellitus?

As in people, there are two main types of diabetes in animals.

- **Type 1 diabetes:** this is the most common form in dogs. It occurs when the pancreas loses the cells responsible for producing insulin, so the body can no longer make the amount needed to regulate blood glucose levels. The most common causes are:
  - **Autoimmune diseases:** the immune system attacks the cells of the pancreas.
  - **Pancreatitis:** it can cause scarring and permanent damage to the pancreas, reducing its ability to produce insulin.
- **Type 2 diabetes:** this is the most common form in cats, although it can also occur in dogs. In this case, the body produces insulin, but the cells do not respond properly to its action. As a result, the pancreas tries to compensate by producing more and more insulin until, over time, it may become exhausted and stop working properly. When this happens, the diabetes can progress to type 1 diabetes. Insulin resistance may be related to different factors, including:
  - **Acromegaly:** a disease in which the body produces too much growth hormone, making some parts of the body grow more than normal.
  - **Obesity:** one of the main causes of diabetes in cats.
  - Some medicines, such as corticosteroids or certain hormonal treatments.
  - **Cushing's syndrome:** a disease in which the body produces too much cortisol, a hormone needed for the body to work normally but which, in excess, can cause problems.
  - Sex hormones in unspayed female dogs.
  - **Amyloid deposits:** a protein substance that is deposited where it should not be and can damage the organ in which it builds up.

What are the signs of diabetes mellitus?

Some of the most common signs that may indicate a pet has diabetes are:

- Increased thirst and amount of urine (polyuria and polydipsia).

- Increased appetite.
- Weight loss despite eating more than usual.
- In cats, walking with the whole sole of the hind paws on the ground ("walking on the hocks").
- A whitish colour in the eyes due to cataracts, which can cause loss of vision.
- Bad breath or a fruity smell on the breath.

In the most severe cases, the body starts to use fat reserves as an energy source instead of glucose, which can lead to a life-threatening complication called diabetic ketoacidosis. Warning signs include:

- Loss of appetite.
- Vomiting.
- Severe weakness, collapse or reduced responsiveness.

How is diabetes mellitus diagnosed?

The diagnosis of diabetes is based on detecting high blood glucose levels and the presence of glucose in the urine. To do this, the veterinary team may carry out:

- A blood test to measure glucose levels.
- A urine dipstick test, preferably collected at the same time as the blood sample.

In cats, the stress of the visit to the vet or of having blood taken can temporarily raise glucose levels. For this reason, if the results show a mild or moderate increase, a fructosamine test may be recommended, which shows the average blood glucose concentration over the previous two to three weeks. It is also common to test a urine sample for possible urinary infections, as animals with diabetes are more prone to them and they can make it harder to control the disease.

Determining the exact cause of diabetes may require additional tests. If the veterinary team suspects other diseases, such as Cushing's syndrome, they may recommend further tests. In some cases there are more specific tests to assess the pancreas, although they are usually only carried out in very specific situations, as they do not usually change the treatment.

How is diabetes mellitus treated?

In most dogs and cats, treatment consists of giving insulin by injection. In some cats, and whenever their clinical situation allows, an oral treatment may be used. Your veterinary team will recommend the most suitable option for your pet. In addition to drug treatment, diabetes management is based on other key aspects:

- **Adapting the diet.** In cats a low-carbohydrate diet is usually recommended, while in dogs a low-sugar diet balanced in calories and fats is advised.
- **Controlling weight.** In some obese cats, weight loss achieved in the early stages of the disease can even encourage remission of the diabetes.
- **Keeping a stable routine.** In dogs it is especially important to offer the same amount of food at the same times every day, and to keep a regular exercise routine of similar intensity.

In some cases additional treatments may be needed, such as:

- **Antibiotics,** if a urinary infection or another infection is detected.
- **Spaying of female dogs,** as it can improve diabetes control.
- **Hospitalisation,** when the pet is seriously ill or develops complications, such as diabetic ketoacidosis.

- **Cataract surgery,** if the cataracts affect vision and the veterinary team considers the operation appropriate. In these cases, assessment by a veterinary ophthalmology specialist is usually necessary.

How will my pet's diabetes mellitus be monitored?

Your pet's insulin needs may vary throughout its life. In addition, the appearance of other diseases may mean the dose needs adjusting. In some cats, if the diabetes is detected and treated early, remission of the disease may occur, and they no longer need insulin.

During the first weeks of treatment it is usual for the insulin dose to need adjusting until the disease is well controlled. Appropriate follow-up is essential to make sure the dose is correct, avoid episodes of hypoglycaemia (low blood sugar levels) and reduce the risk of complications from persistently high glucose.

There are different ways to monitor diabetes and your veterinary team will recommend the most suitable for your pet. They include:

- Observing its general condition, monitoring activity level, appetite, thirst, the amount of urine and body weight. When these remain stable, it is usually a good sign that the diabetes is well controlled.
- Fructosamine tests, especially in cats, as stress can alter the results of single blood glucose measurements. This test must always be interpreted together with the pet's clinical progress.
- Measuring glucose at home with a glucose meter adapted for pets, taking small blood samples from the ear to produce glucose curves that the veterinary team can assess.
- Testing urine with dipsticks, especially in pets at risk of developing diabetic ketoacidosis.
- Using a continuous glucose monitor, a small device inserted into the skin that records glucose levels over several days, making follow-up of the disease more complete.

At the start of treatment, frequent check-ups will be needed until the diabetes is stabilised. Once it is controlled, your pet will need regular check-ups, at least several times a year, to keep the disease well controlled throughout its life.

What are the potential complications of diabetes mellitus?

Although many pets with diabetes can enjoy a good quality of life when the disease is well controlled, some complications can appear, especially if glucose control is not adequate. The most common include:

- **Infections,** especially of the urinary tract and the respiratory system.
- **Diabetic ketoacidosis,** a serious complication that requires immediate veterinary attention and, in most cases, hospitalisation.
- **Hypoglycaemia (low blood glucose levels),** which can occur if the insulin dose is too high or if the pet is given insulin without having eaten beforehand. The most common signs are:
  - Nervousness or anxiety.
  - Tremors.
  - Lack of coordination or difficulty walking.
  - Collapse.
  - Seizures.

It is advisable to always have high-sugar foods to hand, such as honey, jam or glucose gel. If you suspect your pet is having a hypoglycaemic episode, apply a small amount to its gums and contact your veterinary team immediately.

Other complications that can appear are:

- **Cataracts in dogs,** which can cause loss of vision and, in some cases, painful inflammation or glaucoma.
- **Diabetic neuropathy in cats,** which can cause weakness in the limbs, especially the hind legs.

What is the prognosis for diabetes mellitus?

In some overweight cats with type 2 diabetes, weight loss together with insulin treatment can lead to remission of the diabetes, meaning they no longer need insulin. However, to maintain this remission it is essential to continue with an appropriate diet and weight control, as the disease can come back.

In most cases, diabetes requires lifelong treatment and monitoring. This involves giving the medication, carrying out regular check-ups and keeping a stable routine. Some conditions, such as recurrent pancreatitis, Cushing's syndrome or the need for corticosteroid treatment, can make diabetes harder to control. Similarly, some pets tolerate daily injections or frequent visits to the vet less well.

Even so, when diabetes is well controlled, most dogs and cats can enjoy an excellent quality of life and even reach a life expectancy similar to that of other pets of the same age. Over time, treatment and check-ups become part of their daily routine.

Useful Resources

- PDSA: Diabetes in dogs
  https://www.pdsa.org.uk/pet-help-and-advice/pet-health-hub/conditions/diabetes-in-dogs
- International Cat Care: Diabetes mellitus in cats
  https://icatcare.org/articles/diabetes-mellitus-in-cats




