

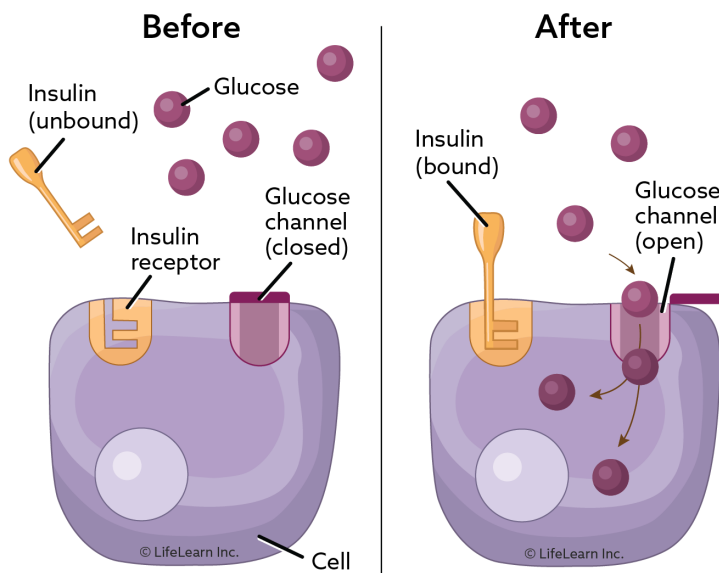
Diabetes Mellitus in Cats: Overview

What is diabetes mellitus?

Diabetes mellitus is a disease of the pancreas, a small but vital organ located near the stomach. The pancreas has two types of cells that have very different functions. One type of cell produces the enzymes necessary for digestion. The other type, called beta cells, produce the hormone insulin.

Insulin regulates the level of glucose (sugar) in the bloodstream and controls the delivery of glucose to the tissues of the body. In simple terms, diabetes mellitus is caused by the failure of the pancreas to regulate blood sugar.

The clinical signs of diabetes mellitus are related to elevated concentrations of blood glucose and the inability of the body to use glucose as an energy source.



Blood glucose is regulated by insulin, a hormone produced by the pancreas.

Insulin acts as a key, unlocking cells to allow glucose from the bloodstream into the tissues of the body, providing energy.

What are the clinical signs of diabetes mellitus in cats?

The four main symptoms of diabetes mellitus are increased thirst, increased urination, weight loss, and increased appetite. These signs may go unnoticed, especially in the early stages of the disease, or if a cat spends a lot of time outdoors. Cats that are fed canned or semi-moist diets receive much of their water intake from their food, which makes it harder to recognize increased water intake.

Are there different types of diabetes mellitus in cats?

Diabetes mellitus is usually classified into three types of disease:

Type I diabetes mellitus results from total or near-complete destruction of the beta cells. This appears to be an uncommon type of diabetes in the cat.

Type II diabetes mellitus is different, because some insulin-producing cells remain, but the amount of insulin produced is insufficient, or there is a delayed response in secreting it, or the tissues of the cat's body are relatively insulin resistant. Obesity is a predisposing factor in type II diabetes, which appears to be the most common type of diabetes (85–95% of cases) in the cat.

Type III diabetes results from insulin resistance caused by other hormones and can be due to pregnancy or hormone-secreting tumors.

How common is diabetes mellitus in cats?

Diabetes mellitus is the second most common endocrine disease in cats. It is seen more frequently in middle-aged to senior cats and is more common in males than in females. While the exact incidence is unknown, the number of diabetic cats is increasing at an alarming rate due to the tremendous increase in the number of overweight and obese cats.

"The average domestic cat weighing 13 pounds or more is at high risk of developing type 2 diabetes mellitus."

It is important to note that a cat three pounds over its ideal weight is considered obese, and that means the average domestic cat weighing 13 pounds or more is at high risk of developing type 2 diabetes mellitus.

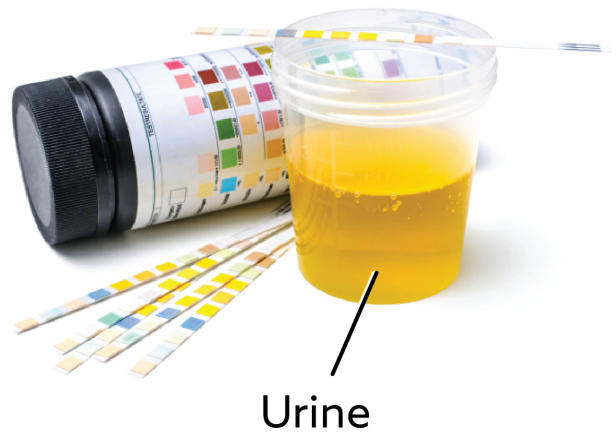
How is diabetes mellitus diagnosed?

Diabetes mellitus is diagnosed by the presence of the typical clinical signs (excess thirst, excess urination, excess appetite, and weight loss), a persistently high level of glucose in the blood, and the presence of glucose in the urine. Diabetes is the most common disease that will cause the blood glucose level to rise substantially.

To conserve glucose within the body, the kidneys do not filter glucose out of the bloodstream and into the urine until an excessive level is reached. This means that cats with normal blood glucose levels will not have glucose in the urine. Diabetic cats, however, have excessive amounts of glucose in the blood, so it spills into the urine. Once blood glucose reaches a certain level, the excess is removed by the kidneys and enters the urine. This is why cats and people with diabetes mellitus have sugar in their urine (glucosuria).

Since cats can have elevated blood glucose levels due to something as simple as stress at the time of blood testing, definitive confirmation of feline diabetes mellitus may require a specialized test called a serum fructosamine test. This test indicates average blood glucose levels over the past 7–14 days. An elevated fructosamine test confirms diabetes.

Urinalysis includes a dipstick test of the chemical properties of the urine.



How is diabetes mellitus treated in cats?

Diabetes mellitus is a treatable condition. Although long-term treatment requires commitment and dedication, it can be rewarding to manage this condition successfully in a beloved cat.

Initial steps in treating a diabetic cat include removing potential predisposing causes for the diabetes. For example, some medications such as corticosteroids predispose cats to develop diabetes, and withdrawal of these drugs may lead to resolution of the condition. Obesity is a risk factor for diabetes in cats, so weight normalization may lead to resolution of diabetes in some cats.



All cats with diabetes mellitus benefit from being fed a well-balanced diet, and your veterinarian is the best source for guidance about which nutrient profile will most benefit your cat. Many cats with diabetes mellitus benefit from a diet that is high in protein and relatively low in carbohydrates, because this type of diet decreases the amount of glucose absorbed from the intestinal tract and lowers the requirement for insulin. Unfortunately, while nutrition is a critical element of diabetes management in cats, it is generally not as easy as making a simple nutritional choice.

There are now two types of treatment for diabetes mellitus: insulin injections and oral medications that decrease the amount of glucose in the blood by causing increased glucose loss into the urine. Both require careful monitoring to ensure they are effective. Not all cats are good candidates for oral medication. Your veterinarian will recommend the best option for your cat.

"Many cats need insulin injections once or twice daily."

Many cats need insulin injections once or twice daily. Your cat may require several hospital visits until an appropriate insulin dosage is determined. New technology has allowed the adoption of home glucose monitoring with the use of a simple device, such as an AlphaTrak® or a continuous glucose monitoring system such as the Freestyle Libre®. Additional home monitoring can involve the evaluation of urine for the presence of glucose, although this is not a very sensitive way to monitor glucose levels and insulin changes should not be made based on urine glucose levels.

Most cats will achieve initial stabilization within a few days to a few weeks and will require once- or twice-daily injections of insulin. Very small needles are available that cause no pain to the cat, and within a short time the procedure becomes routine. Insulin "pens" make it even easier to give your pet an insulin injection. Your veterinarian will determine the appropriate administration frequency, dosages, and type of insulin that your cat requires.

Do treated cats need to be monitored?

Yes, it is important to monitor treatment of diabetes mellitus to be sure the cat is doing well. Home monitoring of blood glucose is becoming more popular and more common, although part of treatment monitoring may involve periodic blood samples collected by your veterinarian.

To assist in the care of your cat, it is particularly valuable to keep accurate records of the following information:

Daily record:

- time of insulin injection
- amount of insulin injected
- amount and time of food fed and eaten
- amount of water drunk

Weekly record:

- weight of the cat

Although urine test strips cannot be used to guide insulin dose, it may be valuable to monitor the quantity of glucose passed in the urine to identify a need for further testing, including full glucose curves or other laboratory tests.

To collect cat urine, it is usually easiest to replace the normal cat litter with specially designed urine-collecting pellets or with clean and washed aquarium gravel overnight. These materials will not soak up any urine, which can then be collected into a clean container for testing. Your veterinarian may provide you with test strips to dip into the urine and measure the sugar level. If there is a marked change in the amount of glucose in the urine or in blood glucose levels, this may indicate the need to modify the insulin dose, but you should never change the dose of insulin without first discussing it with your veterinarian. Changes in insulin doses are usually based on trends in blood glucose levels, as there is normally some day-to-day variation.

What happens if my cat receives too much insulin?

If a cat receives too much insulin, it is possible for the blood sugar level to drop dangerously low (hypoglycemia). For this reason, it is important to be very careful to ensure the cat receives the correct dose of insulin.

Clinical signs displayed by a cat with a very low blood sugar level include weakness and lethargy, shaking, unsteadiness and even convulsions. If a diabetic cat shows any of these signs, it is important to take a blood glucose reading if you have a home monitoring device and seek immediate veterinary attention. In mild cases of hypoglycemia, you may observe wobbling or a "drunken" walk, or the cat may seem sedated when you call or pet them. Low blood sugar is a medical emergency! Your veterinarian can advise you about specific emergency treatment of low blood sugar in your cat that you can deliver at home until the cat can be seen by a veterinarian.

© Copyright 2024 LifeLearn Inc. Used and/or modified with permission under license. This content written by LifeLearn Animal Health (LifeLearn Inc.) is licensed to this practice for the personal use of our clients. Any copying, printing or further distribution is prohibited without the express written consent of LifeLearn. This content does not contain all available information for any referenced medications and has not been reviewed by the FDA Center for Veterinary Medicine, or Health Canada Veterinary Drugs Directorate. This content may help answer commonly asked questions, but is not a substitute for medical advice, or a proper consultation and/or clinical examination of your pet by a veterinarian. Please contact your veterinarian if you have any questions or concerns about your pet's health.