

DIABETES MELLITUS IN DOGS



What is Diabetes?



The clinical definition of diabetes in dogs refers to a defect in carbohydrate metabolism associated with an absolute deficiency of insulin.

Insulin is produced by the endocrine cells of the pancreas and is required to move glucose into cells – this results in a marked increase in blood glucose levels. As a result, the body (liver) will eventually start to produce ketones in lieu of glucose as they are smaller molecules, therefore easier to produce. Excessive ketones can result in DKA (diabetes ketoacidosis) as these molecules are acidic, they can disturb the acid-base balance of the body leading to severe illness.

How is Diabetes diagnosed?

Diagnosis requires a combination of clinical signs and laboratory findings. Increased drinking and urination, increased appetite and weight loss despite eating well are typical of diabetes. Cataracts may also develop due to deposits in the lens from excess glucose in the blood stream. These signs, in conjunction with persistently high blood sugar, glucose in the urine +/- ketones. Measuring persistent hyperglycaemia (high blood sugar) can either be done using an in house blood glucose curve, where glucose is tested at regular intervals and trended over time (this is most useful for unwell dogs that are already in hospital), or via fructosamine (for well dogs where glucose trends over the past 2-3 weeks)



My dog has been diagnosed with Diabetes, what now?

There are two mainstays of treatment for diabetic dogs – this includes insulin injections (as most dogs are insulin dependent) as well as dietary management.

Administering insulin:

The most often prescribed insulin for dogs is Caninsulin® - which is an intermediate acting porcine insulin that needs to be given **EVERY 12 HOURS**. Feeding must occur **AT THE TIME** of giving insulin – or low blood sugar may result.



Insulin **MUST BE KEPT IN THE FRIDGE AND PROTECTED FROM LIGHT.**

Do not draw up syringes in advance as the plastic in the syringe will degrade the insulin and it may not be as effective. Ensure you dispose of needles in the sharps bin provided.

Insulin must be given **SUBCUTANEOUSLY** (under the skin) – the picture on the left denotes the correct way to inject insulin under the skin, ensuring not to pierce all the way through the skin

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It is recommended that you **SWITCH SIDES** daily as seen in the photo to the left– this is the ideal site on the body to inject.

It is good to practice on something like an orange, injecting just water so that technique can be developed.

Feeding:

A high fibre, low carbohydrate, and moderately restricted protein and fat diet is recommended. Your veterinarian will calculate your dog's daily intake requirements and divide them into two meals to facilitate insulin administration. **STICK TO THE DIET** as any alteration or extra food can affect blood glucose (glycaemic) control.

If the dog is unwilling to eat **DO NOT ADMINISTER INSULIN**. If insulin is given without food, it can lead to hypoglycaemia which can potentially be dangerous. Clinical signs of hypoglycaemia include: trembling, lethargy, collapse and even seizures. If you suspect your dog is hypoglycaemic – you can put honey or syrup on the gums (beware of bites if actively seizing – wait for seizure activity to finish) and **SEEK VETERINARY ATTENTION** as intravenous glucose will likely be required. If your dog will not eat his/her meal **WAIT UNTIL THE NEXT MEAL** to feed and administer insulin. If they have not eaten the second meal, contact your veterinarian.

Specially formulated prescription diets are often prescribed for dogs with diabetes. These include:

Royal Canin Weight control or **Hill's W/D low fat**.

It is a good idea to keep a food and exercise diary to help communicate with your veterinarian the correlation with glycaemic control. It is also good to record how much your dog is drinking to determine resolution of clinical signs.

Long term monitoring:

Along with your diary, your veterinarian will like to do serial measurements of ongoing glucose to ensure control is adequate – this is usually done by a single blood test of fructosamine and is correlated with resolution of clinical signs.

Overall, diabetic dogs can live happy lives as long as protocols are stuck to and they are regularly monitored by the veterinarian. Once diagnosed, a revisit is usually scheduled for 4-6 weeks after the initial visit: whereby the dog can be examined, diary discussed with the owner and glucose can be re-examined by the previously mentioned methods. The goal of treatment is to maintain body weight, normal appetite and reduce drinking and urinating and ideally prevent the formation of cataracts.

