WITH YOU AND YOUR PET FOR LIFE

WHAT YOU NEED TO KNOW ABOUT PET DIABETES

caninsulin®
with you for life

MSD
Animal Health

YOUR PET HAS DIABETES

Your pet has diabetes mellitus but it's not alone. An estimated 1-in-200 cats and 1-in-300 dogs are affected.[1,2]

In cats, it occurs most often in older animals, especially neutered males.

In dogs, it occurs most often in middle-aged to older dogs.

With a daily routine including insulin, appropriate diet and regular exercise and meal times you can successfully manage your cat or dog's diabetes.

Your veterinarian will help you make this possible with Caninsulin®.

WHAT IS DIABETES?

During digestion, food is broken down into smaller components that can be used by the body.

Carbohydrates (starches) are converted into sugars. Glucose is the most important sugar. After absorption, glucose provides the body's cells with energy.

Glucose gets into cells through the actions of a hormone called insulin. If there is not enough insulin, glucose stays in the bloodstream, blood sugar rises and a condition known as diabetes mellitus develops.

Diabetes mellitus is basically a shortage of insulin.

Is pet diabetes curable?

In general, diabetes in dogs and cats is not curable but it is manageable. In some diabetic cats, if insulin treatment is started early, and body weight reduced, clinical remission can occur. This means the cat no longer shows signs of diabetes. In intact female diabetic dogs with diestrus diabetes, clinical remission can occur after spaying.

With your help and the care of your veterinarian, your pet can continue to lead a happy, healthy life - with little impact on daily activities.

The key to this is working with your veterinarian and maintaining a daily routine that includes treatment with MSD Animal Health's insulin, Caninsulin, suitable diet, regular exercise and monitoring and recording the signs your pet shows.

1. O'Neill DG, Gostelow R, Orme C et al. J Vet Intern Med. 2016;30:964-972.
2. Mattin M, O'Neill D, Church D et al. Vet Rec. 2014;174:349.

DIABETIC PETS CAN ENJOY HEALTHY, HAPPY LIVES

Insulin

The hormone insulin that keeps your pet's blood sugar normal is produced by special cells in the pancreas.

In diabetic animals, these cells produce too little or no insulin. Diabetes is most common among middle aged to older animals, particularly neutered male cats.

Signs of diabetes

When blood sugar is high due to insulin shortage, glucose can be found in the urine. This results in extra water loss from the body causing your pet to urinate and drink more. Glucose, an important fuel (energy source), is being lost. So, a diabetic animal may eat more than normal but loses or does not gain weight. The most important signs of diabetes mellitus in your pet are:

1. Urinating too much
2. Drinking too much water
3. Altered (often increased) appetite but losing or not gaining weight

Diagnosis

Your veterinarian will confirm the diagnosis of diabetes in your pet by carrying out a physical examination and some tests, including urine and blood tests.

Other hormones

The ovaries produce the hormone progesterone during the part of the female dog's cycle that follows 'heat'.

Progesterone has a negative influence on the action of insulin. Intact female dogs with diabetes should be spayed as soon as possible. Products used to suppress heat should also be avoided because they also reduce the action of insulin.

Starting Caninsulin therapy

Your veterinarian will provide you with the supplies and instructions you need to care for your diabetic pet at home. You will learn how to administer insulin, what to feed and when, and how to monitor your pet's progress.

Treatment is tailored to suit each diabetic pet's individual requirements. To begin with, your veterinarian will establish a dose of Caninsulin for your pet based on its weight and perhaps also its blood sugar. You will notice your pet starting to improve soon.

Treatment and monitoring

Monitoring is an important part of managing your pet's diabetes. Your veterinarian will use the information you provide, along with other data, to help you manage your pet's diabetes. This process may include blood samples, sometimes taken throughout a whole day, as well as other investigations.

Future adjustments

Although your diabetic pet may have been stable for a long time, changes in dose may be required from time to time. This is why it is important to continue to monitor your pet's progress - even after months or years of treatment – and consult your veterinarian if anything unusual occurs.

GIVING INSULIN TO YOUR PET

Your pet's insulin needs can be restored by regular injections of Caninsulin. There are two ways you can give insulin to your pet, either using a U40 insulin syringe. This is easy, takes very little time and is not painful.

Vials and U40 insulin syringes*

- Caninsulin should be stored upright in the fridge. Do not freeze.
- Shake the vial thoroughly to obtain a homogeneous, uniformly milky suspension.
- Carefully remove the cap from the U40 insulin syringe needle and insert the needle into the Caninsulin vial.
- Draw up the correct dose of Caninsulin into the U40 insulin syringe (1).
- Before injection, remove air bubbles by tapping the U40 insulin syringe with your finger and then pressing the plunger very gently (1).
- Draw the skin gently upwards and make a small hollow with your index finger (2).
- Place the needle in this hollow and push it gently through the skin (3) and then release the skin.
- Depress the syringe plunger steadily until all of the insulin dose has been injected.

IMPORTANT:

Only use a U40 insulin syringe with Caninsulin.

* See package insert for full information.

Injections tips

- If necessary, ask someone to hold your pet prior to injecting Caninsulin.
- Ideally, the site of injection should be rotated from behind shoulder blade to slightly in front of hip bone and alternated between left and right sides. Ask your veterinarian for advice.
- Feed your pet before, during and after the injection, based on your vet's advice.

* See package insert for full information.

MANAGING YOUR PET'S DIET AND ACTIVITY

Caninsulin contains two types of insulin suspensions, one that works more quickly and another that provides longer activity.

The daily dose of Caninsulin is adjusted to match your pet's daily energy intake and expenditure. So, your pet's diet and activity level are critical. Always feed your pet the same amount of the same food at the same times each day. Your veterinarian will advise on a suitable commercial diet.

Regular exercise is important for your pet. If an animal is suddenly very active (e.g. longer walks, excitement about visitors, etc.) it uses more glucose (energy). This can result in signs of lower than normal blood sugar. (see "Be prepared for hypoglycemia").

Dogs

Diabetic dogs are usually fed at least twice daily – once to ensure that they are feeling well and able to eat and once to make sure they have enough glucose available to match the insulin they have been given.

To ensure a uniform diet, it is preferable to use commercial diets only.

However tempting, never give your pet any tidbits or treats unless these have been approved as suitable by your veterinarian.

This will require the co-operation of your family and friends too!

Cats

Some cats prefer eating small amounts throughout the day. If this is your cat's habit, your veterinarian probably will not try to change it.

Diabetic cats are often fed a special low carbohydrate diet. If your diabetic cat will not eat this diet, ask your veterinarian for advice on other suitable diets. It is important that your diabetic cat continues to eat regularly.

If your cat is overweight, your veterinarian will advise a weight management program to help reduce its weight gradually. Weight loss will make your cat's diabetes easier to manage and is important factor in cats that achieve remission.

BE PREPARED FOR HYPOGLYCEMIA

One of the most important complications seen in diabetic pets on insulin treatment is lower than normal blood sugar (hypoglycemia).

Situations where this may occur include:

- Giving too much insulin
- Missing or delaying food
- Change in diet or amount fed
- Infection or illness
- Variation in amount and intensity of exercise
- Interaction with other drugs
- Presence of other chronic diseases

If the blood sugar is too low, the brain does not receive enough glucose. This can lead to a potentially fatal situation. It is important for you to know what to do.

Watch out for the signs:

- Restlessness
- Trembling or shivering
- Unusual movements or behaviour
- Loss of consciousness (coma) and unusual quietness or sleepiness.

What should you do if you see these signs:

1. Provide food immediately
2. If your pet refuses to eat or cannot eat, administer a glucose source as quickly as possible.

   Always keep a ready source of glucose, for example glucose powder which can be mixed with tap water. Give one gram of glucose per kilogram body weight. Administer the solution very carefully. Make sure the solution does not go down the wrong way.

CONTACT YOUR VETERINARIAN if your pet is unconscious or having a seizure:

THIS IS AN EMERGENCY!

What you can do:

Treat your pet immediately - do not delay treatment. If your pet is unconscious or unable to swallow, rub the glucose solution onto the gums and especially under the tongue. Watch your fingers to avoid an accidental bite.

As soon as your pet shows signs of recovery, feed it a small amount of its normal food. Watch your pet closely for several hours to make sure that the signs do not return and feed small amounts of food regularly.

When your pet is stabilized, immediately take him/her to your veterinarian for evaluation.

MONITORING TREATMENT

To monitor your pet's treatment, update this chart daily or use the free Pet Diabetes Tracker App. Remember to take it with you when visiting your veterinarian.

DATE	FOOD AND WATER CONSUMPTION (NORMAL)		1ST CANINSULIN DOSE	2ND CANINSULIN DOSE	URINE TEST*			BLOOD TEST**		NOTES
	AM	PM			TIME	GLUCOSE	KETONES	TIME	GLUCOSE	

* Urine dipstick results: format may depending on type of dipstick used; + positive; - negative; +- trace

** Test result blood: + positive; - negative; or value in mmol/L, mg/dL or g/L

PRODUCT INFORMATION

NAME OF THE VETERINARY MEDICINAL PRODUCT

Caninsulin 40 IU/ml Suspension for Injection

QUALITATIVE AND QUANTITATIVE COMPOSITION

Each ml contains:
Active substance:
Insulin 40 IU

PHARMACEUTICAL FORM

A white to almost white suspension for injection.

CLINICAL PARTICULARS

Target Species

Dogs and cats

Indications for use, specifying the target species

Caninsulin is indicated in cases of diabetes mellitus (insulin deficiency) in dogs and cats, where the required blood glucose levels are achieved by using an individually adjusted dose of Caninsulin.

Contraindications

Caninsulin is not intended for the treatment of animals with severe acute diabetes presenting in a ketoacidotic state. Caninsulin must not be administered by the intravenous route.

Special warnings

None.

Special precautions for use

Special precautions for use in animals

It is important to establish a strict feeding schedule in consultation with the owner which will include a minimum of fluctuations and changes. Clinical signs of hunger, increased anxiety, unstable locomotion, muscle twitching, stumbling or sinking in the rear legs and disorientation in the animal indicate hypoglycaemia and require immediate administration of glucose solution or food to restore blood glucose concentrations to normal.

The product must be administered with specific U-40 sterile single-use syringes (vial).

Special precautions to be taken by the person administering the veterinary medicinal product to animals. Accidental self-injection can provoke clinical signs of hypoglycaemia, which should be treated by oral administration of glucose.

In case of accidental self-injection seek medical advice immediately and show the package insert or label to the physician

Adverse reactions (frequency and seriousness)

Very rare cases of local adverse reactions associated with administration of porcine insulin have been reported in dogs and cats. These reactions are usually mild and reversible. In extreme rare cases, allergic reactions to porcine insulin have been reported.

Use during pregnancy, lactation or lay

The use of Caninsulin is not contra-indicated during pregnancy or lactation but requires close veterinary supervision to account for changes in metabolic requirements during this period

Interaction with other medicinal products and other forms of interactions

Changes in insulin requirements may result from administration of substances which alter glucose tolerance such as corticosteroids and progestagens. Monitoring of glucose levels should be used to adjust dose accordingly. Similarly, changes in diet or exercise routines may alter insulin requirements.

Amounts to be administered and administration route

Caninsulin should be administered once or twice daily, as appropriate, by subcutaneous injection. Shake the vial thoroughly until a homogeneous, uniformly milky suspension is obtained. Foam on the surface of the suspension formed during shaking should be allowed to disperse before the product is used and, if required, the product should be gently mixed to maintain a homogeneous, uniformly milky suspension before use. Agglomerates can form in insulin suspensions. Do not use the product if visible agglomerates persist after shaking thoroughly.

When using vials:

A 40 IU/ml insulin syringe should be used.

When using product in cartridges:

The cartridge is designed to be used with VetPen. VetPen is accompanied by package leaflet with detailed instruction for use to be followed.

Stabilisation phase

Dog: Insulin therapy is initiated with the starting dose of 0.5 IU/kg bodyweight once daily, rounded down to the lowest entire number of units. Some examples are given in the following table.

Dog body weight Starting dose per dog

Some examples are given in the following table.

Dog body weight	Starting dose per dog
5kg	2IU once daily
10kg	5IU once daily
15kg	7IU once daily
20kg	10IU once daily

Subsequent adjustment to establish the maintenance dose should be made by increasing or decreasing the daily dose by approximately 10% according to the evolution of the diabetes clinical signs and to the results of serial blood glucose measurement. Alterations in dose should not normally be made more frequently than every 3 to 7 days. In some dogs, the duration of insulin action may require treatment to be administered twice daily. In such cases, the dose per injection must be decreased by 25% so that the total daily dose is less than doubled.

For example, for a 10 kg dog receiving 5 IU once daily, the new dose (rounded down to the nearest whole unit) would be 3 IU per injection initially. The two daily doses should be administered at 12h intervals. Further dose adjustments should be made progressively as previously explained.

To achieve a balance between the generation of glucose and the effect of the product, feeding should be synchronized with the treatment and the daily ration divided into two meals. The composition and quantity of the daily food intake should be constant. In dogs treated once daily, the second meal is usually fed at the time of peak insulin effect.

In dogs treated twice daily, feeding coincides with Caninsulin administration. Each meal should be fed at the same time each day.

Cat: The initial dose is 1 IU or 2 IU/kg per injection based on the baseline blood glucose concentration, as presented in the following table.

Cats require twice daily administration.

Cat blood glucose concentration Starting dose per cat

Cat blood glucose concentration	Starting dose per cat
<20 mmol/1 or <3.6 g/l (<360 mg/dl)	1 IU twice daily
≥20 mmol/l or ≥ 3.6 g/l (≥360 mg/dl)	2 IU twice daily

The composition and quantity of the daily food intake should be constant. Subsequent adjustment to establish the maintenance dose should be made by increasing or decreasing the daily dose according to the results of serial blood glucose measurement. Alterations in dose should not normally be made more frequently than every week. Increments of 1 IU per injection are recommended. Ideally, no more than 2 IU should be administered per injection in the first three weeks of treatment. Due to the day-to-day variation in the blood glucose response, and the variations in insulin responsiveness that are seen with time, larger or more frequent increases in dose are not recommended.

Maintenance phase in dogs and cats

Once the maintenance dose has been reached and the animal is stabilised, a long-term management programme needs to be established. The aim should be to manage the animal in such a way as to minimise the variations in its insulin requirement. This includes clinical monitoring to detect under or overdosage of insulin and adjustment of dose if required. Careful stabilisation and monitoring will help to limit the chronic problems associated with diabetes, including cataracts (dogs), fatty liver (dogs and cats), etc.

Follow up examinations should be performed every 2-4 months (or more often if there are problems) to monitor the animal's health, the owner's records, urine glucose and biochemical parameters (like blood glucose and/or fructosamine concentration). Adjustments to the insulin dose should be made based on interpretation of the clinical signs supported by the laboratory results.

Overdose

Overdose of insulin results in clinical signs of hypoglycaemia. Owners and veterinarians should be aware of the Somogyi over-swing which is a physiological response to hypoglycaemia. As a partial hypoglycaemia begins to develop a hormonal response is triggered which results in the release of glucose from hepatic glycogen stores. This results in rebound hyperglycaemia, which may also manifest as glucosuria for part of the 24-hour cycle. There is a danger that the Somogyi over-swing will be interpreted as a requirement for an increase in the insulin dose rather than a decrease. This situation can progress to an overdose so large as to cause clinical hypoglycaemic effects.

Pharmacodynamic properties

Insulin facilitates the uptake of glucose by cells and activates intracellular enzymes involved in the use and storage of glucose, amino acids and fatty acids. Insulin also inhibits catabolic processes such as proteolysis, gluconeogenesis and lipolysis. Diabetes mellitus is characterised by an absolute or relative insulin deficiency leading to persistent hyperglycaemia, and monitoring blood glucose concentration enables assessment of the overall effect of the administered insulin. In diabetic dogs, the action of Caninsulin on blood glucose concentrations, following subcutaneous administration, peaks at about 6-8 hours post-injection and lasts for about 14 to 24 hours. In diabetic cats, the action of Caninsulin on blood glucose concentrations after subcutaneous administration peaks at about 4-6 hours and last for about 8 to 12 hours post-injection.

Pharmacokinetic particulars

Caninsulin is an insulin of intermediate duration of action that contains both amorphous and crystalline insulin in a 3.5:6.5 ratio. In diabetic dogs, the peak plasma concentration of insulin occurs at about 2-6 hours after subcutaneous injection, and insulin remains above pre-injection level for about 14 to 24 hours. In diabetic cats, the peak plasma concentration of insulin occurs at about 1.5 hours after subcutaneous injection and insulin remains above pre-injection level for about 5 to 12 hours.

Incompatibilities

None known.

Shelf-life

Shelf life: 2 years. Vials: following withdrawal of the first dose, use the product within 42 days. Cartridges: following withdrawal of the first dose, use the product within 28 days.

Special precautions for storage

Store upright and refrigerated between +2 C and +8 C.

Do not freeze

Protect from light.

After first opening, store below 25°C and away from direct heat or direct light.

Special precautions for the disposal of unused veterinary medicinal products or waste materials derived from the use of such products

Any unused product or waste material should be disposed of in accordance with national requirements.

Distributed by: Intervet International BV, PO Box 31, 5830AA Boxmeer, The Netherlands.

Get more information about Caninsulin and pet diabetes online at

www.pet-diabetes.com

Notes from your veterinarian about your pet's diabetes treatment:

CANINSULIN DOSAGE:

Starting dose _____ **IU**

Dosing frequency _____ **time/day**

ADMINISTRATION:

○ **U40 insulin syringe** ○ **VetPen**

DIET:

EXERCISE:

REMARKS:

WHAT YOU WILL NEED TO TREAT DIABETES:

1. Caninsulin
2. U40 insulin syringes or VetPen
3. Appropriate amount of a suitable diet and regular meal times
4. Source of glucose (e.g. glucose powder) for emergencies
5. A plan and necessary supplies to monitor your pet's progress (e.g. water intake, signs of diabetes, body weight, urine ketones, blood glucose), as advised by your veterinarian
6. A place to record your pet's progress (e.g. free Pet Diabetes Tracker App, Diabetes Diary)

Your veterinarian's contact details

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Use medicines responsibly.

This information is provided by MSD Animal Health, the manufacturer of Caninsulin®.
Caninsulin® contains an aqueous suspension of insulin containing 40 i.u. highly purified porcine insulin, which is structurally identical to canine insulin. Legal category POM-V. Further information is provided in the package leaflet. Caninsulin® is for animal treatment only and must be prescribed by your veterinary surgeon whose advice should be sought. Caninsulin® is indicated for the treatment of diabetes mellitus in cats and dogs.

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