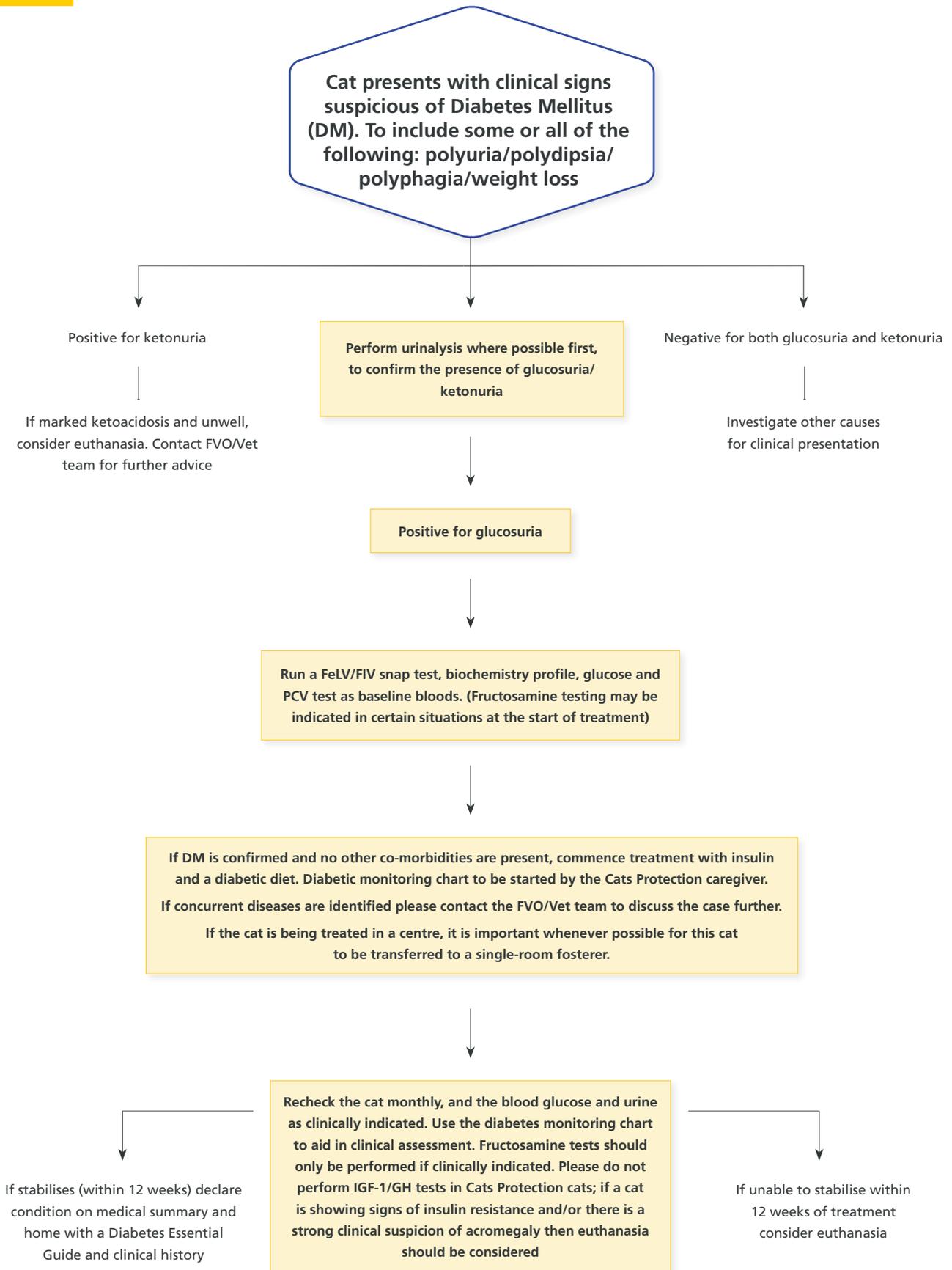




Cats Protection's guidance for diabetic cats in care





Diabetic cats in Cats Protection care

Unlike in the home environment where everyday stresses are lower, cats in care are under a much higher level of stress. This can make stabilisation of Diabetes Mellitus (DM) challenging in the shelter environment, and we always need to consider the cat's welfare in our decision-making process. Single room or whole house foster environments tend to be the least stressful, and therefore most appropriate for a cat with DM.

We recommend that diabetic cats are not kept in a centre pen environment; ideally any diabetic cat in a centre should be transferred to a single-room/whole-house fosterer environment. This would ideally be a fosterer linked to the centre. Any diabetic cat in branch care should also be placed in a single-room/whole-house environment wherever possible. Whether in branch or centre care, the fosterer needs to be comfortable giving injections to the cat every 12 hours and, ideally, have cared for a diabetic cat before. If a branch or centre is asked to take in a diabetic cat, it's a good idea to try and find a suitable foster placement for that cat before they come into Cats Protection care.

Stabilisation of diabetes should be given 12 weeks to occur and if after this period, stabilisation has not been reached and the cat is not fit to home, then euthanasia should be considered. Please contact your Field Veterinary Officer (FVO)/the Veterinary team if this case arises. If a branch/centre is approached to take in a sick diabetic cat then please contact your FVO/the Vet team in the first instance. Cats who are sick as a result of uncontrolled DM (diabetic ketoacidosis (DKA) – see Appendix 1) require intensive treatment, often with prolonged hospitalisation, and it is unlikely to be in their best interests to be brought into care. Euthanasia may be the kindest option in these cases.

An overview of Diabetes Mellitus

This is a condition which often affects middle-aged to older cats, and those cats who are overweight or obese. There is also a potential genetic predisposition as well. DM affects the control of blood sugar and leads to common clinical signs. These signs include:

- 1) Increased hunger and thirst.
- 2) Increased urination.
- 3) Weight loss.
- 4) Smelly breath.
- 5) Increased lethargy/weakness.
- 6) Vomiting.
- 7) Some cats have specific weakness in their hind legs, which causes them to have a sunken stance on their back legs.
- 8) Increased risk of other illnesses such as skin disease and urinary tract disease.





How does DM lead to these clinical signs?

Being diabetic means either the pancreas is not producing enough insulin (this is the hormone which controls blood glucose levels), or the body is not responding to the insulin which is being produced. This lack of response to insulin is similar to Type 2 DM in humans and is generally the cause of DM in cats. This means that the body is unable to drive the blood glucose into the cells, and therefore results in increased circulating blood glucose levels which are indicative of DM. When there are high levels of glucose in the blood, the kidneys are unable to cope with the excess glucose, which spills over into the urine. This results in increased urination which subsequently drives an increased thirst. The cells of the body cannot utilise glucose as an energy source, resulting in increased hunger and also weight loss as the body starts to source energy from elsewhere including fat and muscle protein sources. Long term this can result in toxic by-products building up in the body, which can make cats very ill (diabetic ketoacidosis – see Appendix 1).

Which cats are predisposed?

- 1) Obese cats are at a fourfold increased risk of developing DM, due to increased resistance of the body to respond to the insulin produced.
- 2) Inactive cats are at higher risk.
- 3) Older cats (more than seven years) and male cats are at greater risk.
- 4) Some concurrent hormonal diseases can make cats more resistant to insulin and therefore more likely to develop DM eg acromegaly and hyperadrenocorticism/Cushing's disease (see Appendix 1 for more information on these conditions).
- 5) Cats on medications which cause insulin resistance are also at higher risk of developing DM. Medications such as steroids or progesterones can cause insulin resistance.
- 6) Certain breeds of cat, such as the Burmese, are more likely to develop DM.

What happens now?

Diagnosis of DM is usually straight forward. A blood test to check blood glucose levels (as well as other biochemistry markers such as liver enzymes) is carried out, usually alongside a urine test. In the presence of typical clinical signs, a high blood glucose value with evidence of glucose in the urine is considered diagnostic for DM. Occasionally, a further blood test may be advised to confirm the diagnosis. This is a fructosamine blood test, and it gives an indication of whether blood glucose levels have been elevated over the past two or three weeks. Generally, this test isn't recommended for cats in Cats Protection care but your vet may wish to perform this test if the diagnosis of DM isn't certain from initial blood and urine tests. Once a cat has been diagnosed with DM, the vet will discuss with you the treatment of this disease. The cat will be prescribed a replacement insulin which is usually injected twice daily under the skin while in care. Usually, most cats will require lifelong injections, however some cats can go into remission and not require injections either permanently or temporarily.

The vet will also discuss with you appropriate diets to feed a diabetic cat. Cats with DM often require a high protein, low carbohydrate veterinary prescription diet, where appropriate. However, you will need to follow the vet's advice based on the individual cat's needs, taking into account the cat's current weight and target weight if they are overweight. A prescription diabetic diet alone (without concurrent insulin injections) is not an appropriate treatment choice for a cat in care and is very unlikely to be effective.

Diabetes is an intensive condition to treat, and it should be ensured before starting treatment that the resources are in place to manage such a condition. If a branch or centre does not have sufficient means to manage a case of diabetes, the branch development manager (BDM)/regional centre operations manager (RCOM) and FVO/Vet team should be contacted to discuss alternative arrangements.





Injectable Insulin

To manage the cat's DM, the vet will prescribe injectable insulin. This is usually injected under the skin twice a day and works to lower blood glucose levels, therefore alleviating the clinical signs seen with DM. There are various insulin preparations available and it is recommended that you direct your vet to the commonly ordered products list (available on the Cats Protection website [here](#)) for the insulin preparation preferred for Cats Protection cats. The instructions for use of different insulin products will vary and your vet will be able to guide you depending on which insulin preparation is prescribed. There are, however, a few practical guidelines which apply to all insulin products:

- insulin should be kept in the fridge, in an upright position (not in the fridge door as this is subject to changes in temperature)
- before insulin is drawn up from the bottle, gently roll the bottle in order to mix its contents together
- be sure to only ever use the designated syringes provided by your vet to be used with the insulin. Use of other syringes will lead to inaccuracies in the dose of insulin given
- insulin can only be kept open for a certain length of time (this will vary depending on the insulin used, please ask your vet for guidance). Once breached beyond this length of time, the bottle should be returned to the vet for disposal (branches) or disposed of in the non-cytotoxic waste (centres) and a new one purchased

How is treatment with insulin started?

The vet will calculate a starting dose of insulin based on the cat's bodyweight. The vet or vet nurse will show you how to draw the correct amount of insulin into the syringe and how to inject it under the cat's skin.

The Cats Protection employee or volunteer will be able to administer the injections twice daily themselves, after appropriate training from the vet or vet nurse. The vet will require the cat to be seen for regular check-ups initially. Please be sure to fill in the weekly diabetes monitoring chart and take this to each vet visit, as this provides the vet with really useful information. This information includes:

- 1) Recording the number of insulin units administered with each injection.
- 2) Recording the time the injections are given each day.
- 3) Regularly weighing the cat can be of great help to the vet.
- 4) Measuring the cat's daily water intake is very helpful in order to monitor if the cat's thirst is decreasing. In order to perform this, pour 1000ml of water into the water bowl. Then, after 24hrs, pour what is left of the water into the jug and calculate how much has been drunk. Remember to measure water from all water sources available to the cat.
- 5) Recording the weight of food offered and how much has been eaten is a useful indicator of the cat's hunger.
- 6) Any vomit/diarrhoea or deterioration in clinical signs should be reported to your vet immediately.

The aim of treatment of DM is based on improvement of clinical signs (eg weight gain, decrease in hunger and thirst, decrease in urination etc.) and also an appropriate reduction and stabilisation in the blood glucose levels of the cat. This clinical judgement can usually be made by the vet based on how the cat is doing and vets should be encouraged to use the diabetes monitoring chart initially when assessing a cat's response to insulin treatment. Please ensure this chart is filled in daily and given to your vet to aid them in their assessment. Further tests such as blood glucose curves or fructosamine blood tests may be required to aid with this assessment.





Unfortunately, some cats do not respond well to the insulin treatment and cannot be stabilised. If the cat has not stabilised appropriately after 12 weeks, euthanasia will need to be considered. There are major welfare concerns about keeping an unstable diabetic cat in care for months at a time, while stabilisation is attempted. Some cats will never stabilise enough to be made 'fit to home' and in these cases, euthanasia is the kindest option. Please contact your FVO/the Vet team for support and guidance with decision making for unstable diabetic cats.

Potential side effects of insulin

Low blood glucose levels (hypoglycaemia) is the greatest risk in the treatment of the diabetic patient. Signs of hypoglycaemia can occur suddenly and without warning. Hypoglycaemia can occur due to overdose of insulin, strenuous exercising, failure to eat, vomiting after insulin has been administered, changes in the body's need for insulin (if the cat goes into remission) etc. Indicators of hypoglycaemia include:

- 1) Drowsiness
- 2) Weakness
- 3) Behavioural changes
- 4) Staggering gait (as if the cat is drunk)
- 5) Muscle twitching
- 6) Unconsciousness
- 7) Seizures

In severe cases of hypoglycaemia, coma and death can occur.

If you have any concerns about the cat or the dose of insulin given, then please contact your branch or centre vet immediately. It is useful to have some honey available; if the cat is collapsed or unconscious then it is recommended to rub about one teaspoon of honey on the gums while contacting the vet. Do not give any insulin even if the cat is due their injection.

When not to give insulin

It is advised not to give insulin if:

- 1) The cat is experiencing a hypoglycaemic episode.
- 2) The cat is not eating or is vomiting.
- 3) An incorrect dose has been given or a dose has been missed. In this case, always contact your vet before administering any further insulin.

The golden rule is: if there's any doubt, DON'T give insulin and contact your vet.





Appendix 1 – Unravelling the veterinary jargon

What is remission?

Remission is the term given to cats who no longer require regular insulin supplementation. It is not possible to identify which cats will go into remission, nor for how long. Generally, the cat stands the best chance of entering remission if good glucose control is obtained quickly after a diagnosis of DM has been made. If the cat is gradually requiring lower and lower doses of insulin and is therefore responding well, then there is the possibility that remission is occurring. The vet will require closer monitoring of the cat with more regular check-ups, in order to avoid hypoglycaemic episodes.

Cats who have gone into remission can become clinically diabetic again, so close monitoring will still be required. The chances of seeing full remission in Cats Protection cats is lower than the general population. This could be because they are rehomed before remission occurs or because they are under more stress which makes their bodies more resistant to remission.

What is diabetic ketoacidosis (DKA)?

DKA is a term used to describe a situation where DM is uncontrolled and there has been a build-up of toxic substances in a cat's body. This results in symptoms such as vomiting, lack of appetite, dehydration and lethargy initially, followed by collapse and ultimately death if left untreated. Ketoacidosis is a serious, life threatening condition requiring intensive treatment and often long periods of hospitalisation to treat. Cats who develop this condition often have seriously compromised welfare and if a Cats Protection cat were to present or develop this condition while in care, euthanasia is the kindest option for that cat. Please contact your vet immediately if a diabetic cat in your care is displaying any of the symptoms described above.

What is acromegaly?

Acromegaly is a condition in cats caused by a benign (non-aggressive) tumour of the pituitary gland (a gland situated at the base of the brain which is responsible for production of various hormones). When a cat has acromegaly, the tumour produces excessive amounts of a hormone called growth hormone (GH). As its name suggests, growth hormone is involved in stimulating growth of different tissues in the body. It has also been shown to cause insulin resistance, resulting in Type 2 DM in cats. Acromegaly is not only an underlying cause of DM in cats (due to insulin resistance) but also means that these cats don't respond to insulin injections when they are given, despite repeated increases in the dose of insulin. If a diabetic cat is proving difficult to stabilise or is not showing any improvement when on insulin injections, acromegaly is a possible underlying cause. Cats with acromegaly may also display certain physical features such as broad facial features and enlarged, so-called 'clubbed' paws. Unfortunately, there is no single test that can reliably diagnose acromegaly in a cat and as a result, testing Cats Protection cats for acromegaly is not recommended. If there was a strong suspicion that a diabetic cat in Cats Protection care had acromegaly (eg difficult to stabilise or non-responsive to high doses of insulin +/- suggestive physical features) then the kindest thing for that cat would be euthanasia, due to the length of time the cat would spend in care trying to stabilise their DM and the fact that their DM would never be stabilised to an extent where they would be fit to home.





What is hyperadrenocorticism (HAC)/Cushing's disease?

Cushing's disease is a rare condition in cats that is a result of excessive cortisol (a stress hormone) production, either by a tumour of the pituitary gland or the adrenal gland (a gland located near the kidney, responsible for production of various hormones). High levels of cortisol in the bloodstream causes insulin resistance, resulting in Type 2 DM in cats. Cushing's disease is not only an underlying cause of DM in cats (due to insulin resistance) but also means that these cats don't respond to insulin injections when they are given, despite repeated increases in the dose of insulin. If a diabetic cat is proving difficult to stabilise or is not showing any improvement when on insulin injections, Cushing's disease is a possible underlying cause. Cats with Cushing's disease may show other symptoms as a result of excessive cortisol levels such as skin problems (fragile, easily bruised skin), hair loss, muscle wastage and a large, potbelly. They may also drink and urinate excessively, but this is usually as a result of their DM. Cushing's disease is rare in cats and the diagnosis can be challenging as multiple tests are often required. Cats with Cushing's disease can become debilitated due to muscle wastage, resulting in poor quality of life and poor welfare. If there were a strong suspicion that a diabetic cat in Cats Protection care had Cushing's disease, then the kindest thing for that cat would be euthanasia, due to the debilitating effects of Cushing's disease and the length of time the cat would spend in care trying to stabilise their DM.

