

Senvelgo 

Managing diabetes in cats with Senvelgo®



A convenient, once-daily, oral solution for diabetes



 Boehringer
Ingelheim

INTRODUCING

SENVELGO®

Senvelgo® is a convenient, once-daily oral solution that makes treating feline diabetes simple for vets, nurses, cats and their owners.



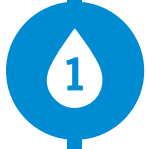
Once-daily, flavoured, oral solution that can be administered directly into the mouth or with a small amount of food



Simple dosing according to bodyweight



No risk of symptomatic hypoglycaemia



Glycaemic control can be achieved within a week^{1,2}



No need for glucose curves to determine dosage



Easy storage - no refrigeration necessary



Less plastic waste - 1 reusable oral syringe vs 180 insulin syringes*



3 months' supply for a 5 kg cat

*Based on 1 bottle of Senvelgo® lasting 3 months for a 5 kg cat and assuming a new syringe for cats on a twice daily insulin injection regime.

FELINE DIABETES

IS A GROWING CONCERN

Diabetes currently affects approximately 1 in 200 cats.^{3,4}

With 1 out of 3 cats believed to be overweight, and obesity being a risk factor for feline diabetes, that number may be expected to grow.^{5,6}

All cats are potentially susceptible to diabetes, with the vast majority suffering from a resistance to insulin (similar to type 2 diabetes in people).

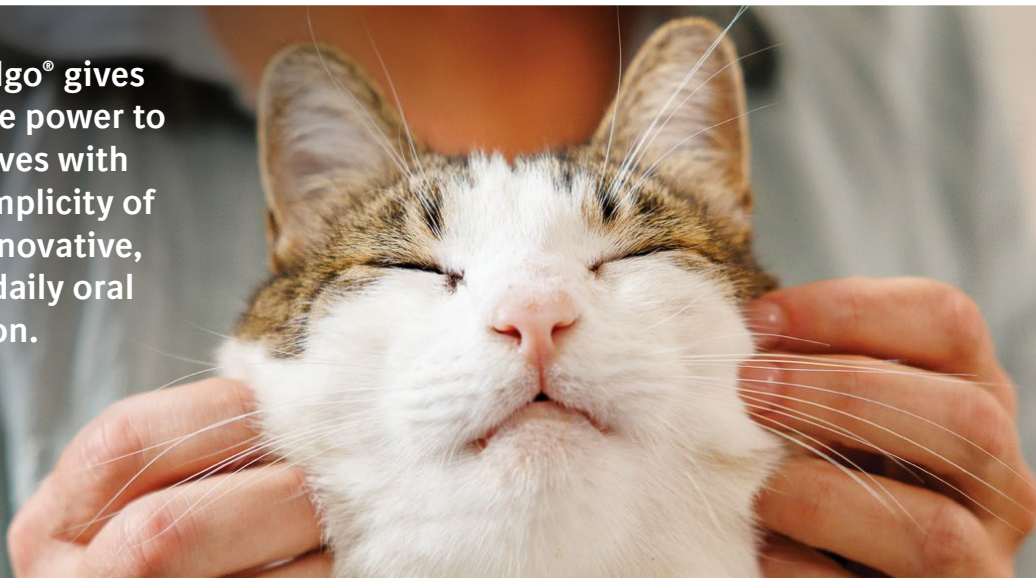
Risk factors include:

- Obesity
- Increased age
- Lack of physical activity
- Steroid therapy
- Neutering
- Genetics and breed predisposition
- Concomitant disease (e.g. other hormonal diseases)

Unfortunately, some owners choose to either not start treatment or abandon treatment for various reasons, including:⁷

- Initial hesitancy and lack of confidence giving injections.
- The negative impact that twice-daily insulin injections can have on the lifestyles of the cat and their owner.
- 10% of cats are euthanased following diagnosis because of owners not wanting to treat with insulin injections.
- A further 10% of cats are euthanased within 1 year because of lack of success or compliance with insulin regimes.

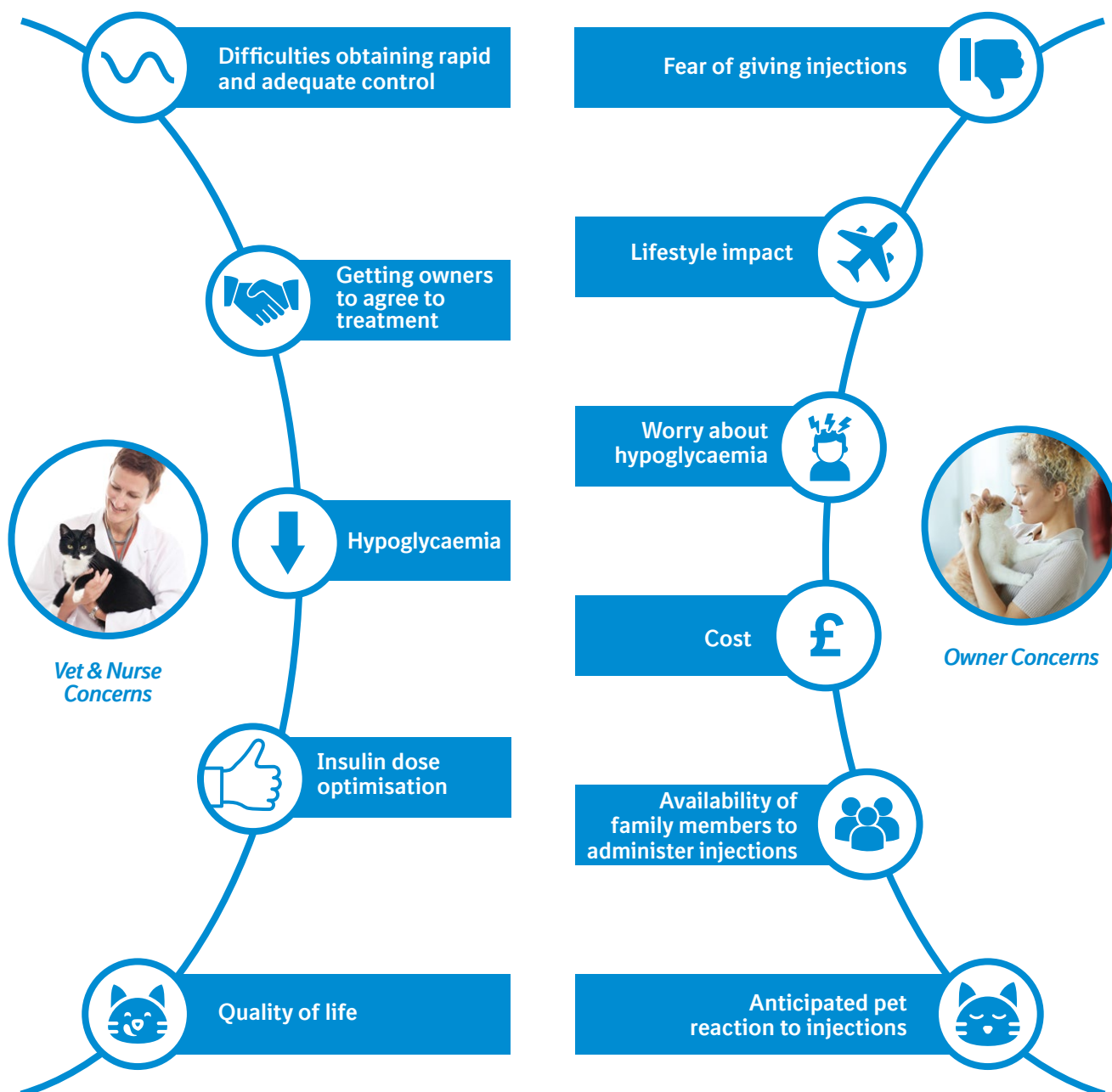
Senvelgo® gives you the power to save lives with the simplicity of this innovative, once-daily oral solution.





COMMON CHALLENGES AND CONCERNS

Diabetes is a challenging condition that triggers medical and emotional concerns in vets, nurses and cat owners alike. Some of the most common concerns include: ^{7,8,9}



EASING

THE BURDEN OF DIABETES

The complexity and time required to treat diabetes can lead to compliance issues, treatment abandonment, and even the tragic loss of patients' lives.⁷ As a convenient, once-daily oral solution, Senvelgo® can help change that.

Diagnosing a cat with diabetes can be a stressful moment for clinics and cat owners alike. While insulin, thankfully, made feline diabetes a treatable condition, it still involves:

- Twice-daily injections and significant lifestyle changes for the owner
- Training the owners to correctly handle and inject insulin
- Finding the right dose and time-consuming blood glucose curves
- The ongoing risk of clinical hypoglycaemic events



Senvelgo® eliminates these concerns, helping make it possible for your client and patient to enjoy a normal quality of life, despite this disease.

SIMPLE MANAGEMENT FOR CATS AND OWNERS

Senvelgo® is the breakthrough you've been waiting for. Insulin makes it possible to manage feline diabetes, and to save a diabetic cat's life. But much of treating feline diabetes has been centred around managing the use of insulin, as opposed to being centred around the needs of the cat and their owner.

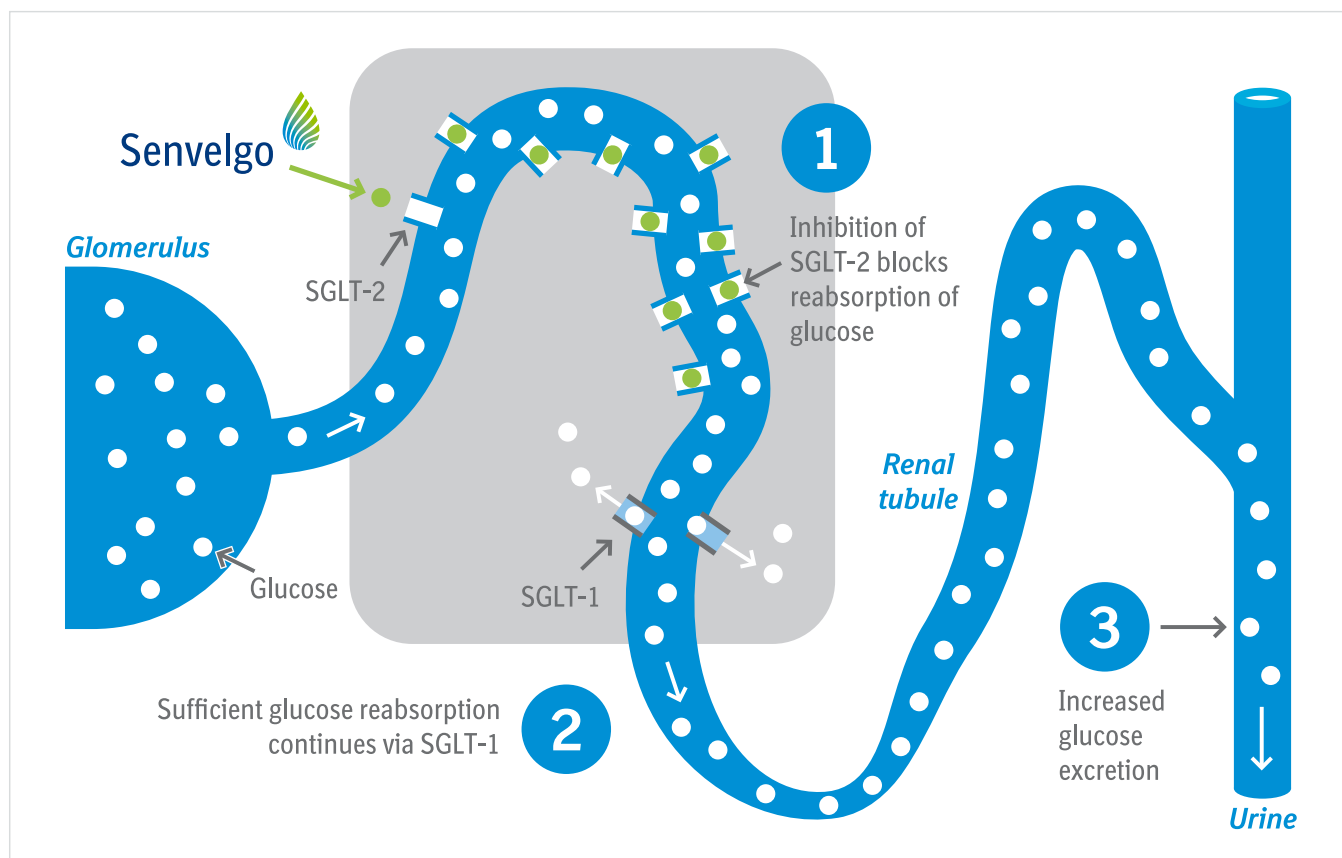
**Senvelgo®
changes that.**



- A convenient, once-daily oral solution.
- Developed as a collaboration between Boehringer Ingelheim's animal health and human diabetes experts.
- Senvelgo® contains velagliflozin: a highly selective inhibitor of the sodium glucose co-transporter 2 (SGLT-2).
- SGLT-2 is predominantly expressed in the proximal tubules of the kidney which is responsible for around 90% of glucose reabsorption.
- Senvelgo® only has a minor impact on the SGLT-1 transporter, which is primarily expressed in the small intestine and the distal part of the proximal tubules of the kidney where it is responsible for 10% of glucose reabsorption.
- Senvelgo® therefore blocks most glucose reabsorption by inhibiting SGLT-2, causing excretion of excess glucose and reducing hyperglycaemia. Sufficient glucose is still reabsorbed via SGLT-1 which prevents clinical hypoglycaemia.

HOW SENVELGO® WORKS

Senvelgo®: SGLT-2 inhibition in the nephron



Scan QR code to watch the mode of action video



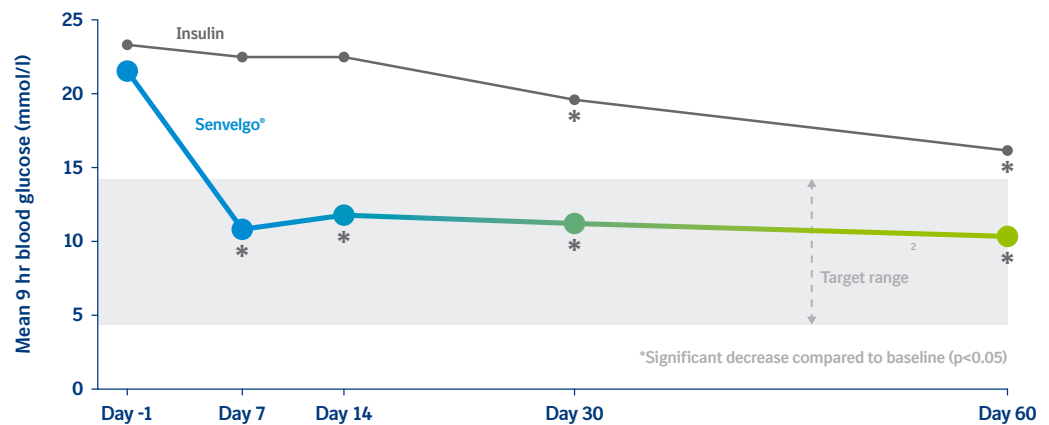
1. Highly selective: targets SGLT-2 with only minor effect on SGLT-1
2. Inhibits most reabsorption of glucose
3. Promotes excretion of excess glucose in the urine
4. Controls hyperglycaemia by bringing blood glucose into the target range^{1,2}
5. Reduces glucose toxicity
6. Controls clinical signs of feline diabetes
7. Minor inhibition of SGLT-1 allows reabsorption of sufficient glucose, preventing symptomatic hypoglycaemia

GLYCAEMIC CONTROL

CAN BE ACHIEVED WITHIN A WEEK^{1,2}

Blood glucose is usually brought into the target range within 7 days of starting Senvelgo®.^{1,2}

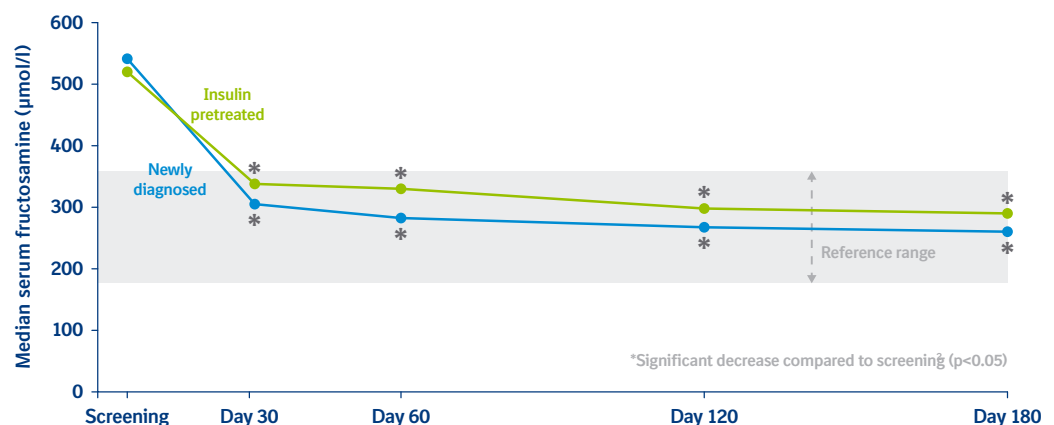
- 60-day field study
- Included both newly diagnosed and insulin pretreated cats
- Randomised to receive once daily Senvelgo® or twice daily insulin



SUSTAINED EFFICACY

Serum fructosamine was controlled for the full study duration.¹⁰

- 6 month field study
- 252 owned diabetic cats
- 214 newly diagnosed and 38 insulin pretreated cats



TESTED EXTENSIVELY, PROVEN REPEATEDLY^{1,10,11}

Senvelgo® delivers glycaemic control and peace of mind.



Efficacy and safety evaluated in studies featuring over 300 insulin-naïve and insulin-treated cats^{1,10,11}



Senvelgo® is brought to you by the makers of ProZinc®, a proven and trusted insulin solution for diabetic pets



By just day 30:

67% of owners reported very good or excellent quality of life in their cats*

87% cats reported as having good, very good or excellent overall diabetic control by their vets*



Senvelgo® is supported by Boehringer Ingelheim Animal Health's technical services team, which is highly experienced in diabetes management



Cats that received Senvelgo® during studies experienced no episodes of symptomatic hypoglycaemia

"This is the development in diabetes management we have been waiting many years for; a practical oral therapy to treat this challenging disease."

Samantha Taylor

BVetMed(Hons) CertSAM DipECVIM-CA
MANZCVS FRCVS

*Senvelgo® SPC



USING SENVELGO® IS DIFFERENT TO INSULIN

Treating diabetes in cats with Senvelgo® is different to treating with insulin, with both medical and practical benefits. Cats usually show improvement in glycaemic control shortly after starting Senvelgo®, with reduction of elevated blood glucose usually seen within a week.^{1,2}

Using Senvelgo® also has many practical differences compared to insulin treatment:

	Senvelgo®	Insulin
Formulation	Flavoured oral liquid	Injectable solution
Dosing	Fixed dose per kg bodyweight (1mg/kg)	Dose needs to be individually established
Treatment frequency	Once daily	Twice daily in most cats
Bottle duration*	A 30 ml bottle lasts for 3 months	A 10 ml vial lasts for 2 months
Syringe	Reusable oral syringe	Single use disposable syringes
Number of syringes used every 3 months	1*	180**
Sharps disposal required	No	Yes
Glucose curves required for stabilisation?	Not required	Often required
Possibility of symptomatic hypoglycaemia?	No	Yes
Storage	No special storage conditions	Refrigerated
In-use shelf life	6 months	Up to 60 days (ProZinc®)

**Based on 5 kg cat receiving median dose of 0.6 IU/kg 40 IU/ml insulin twice daily. **Assuming one syringe per twice daily injection*



WHAT IS

EUGLYCAEMIC KETOACIDOSIS (eDKA)?

All diabetic cats can be prone to ketogenesis, ketosis, and ultimately ketoacidosis, both before and during treatment. Monitoring for ketone production is always important, but especially for cats on SGLT-2 inhibitors. They can also develop a specific condition called euglycaemic ketoacidosis (eDKA). It is therefore important to understand these conditions, why they happen, and what to do about them.

Understanding ketosis, DKA and eDKA:



Ketosis refers to the presence of circulating ketones, but not at a level to cause acidosis. Most ketotic cats appear healthy, are eating and not sick, but require treatment for their diabetes before they become ketoacidotic.



Diabetic ketoacidosis (DKA) is a serious metabolic disorder which is normally characterised by marked hyperglycaemia, circulating ketones, metabolic acidosis and clinical signs such as dehydration, lethargy, anorexia, vomiting and weight loss. It is usually associated with untreated diabetes and/or concurrent disease in a treated diabetic. It is an emergency condition requiring urgent treatment with soluble insulin, intravenous fluids and dextrose supplementation.



Euglycaemic diabetic ketoacidosis (eDKA) is a form of DKA which can be seen with SGLT-2 inhibition, with blood glucose controlled despite insulin deficiency. Cats with eDKA show typical signs of DKA but with blood glucose <14 mmol/l. They still, however, need to be treated in the same way as a standard DKA cat (including administration of soluble insulin) despite normal glucose levels.

WHAT DO I NEED TO KNOW ABOUT USING SENVELGO® & KETOACIDOSIS?

Senvelgo® manages diabetes in a different way to insulin treatment: by causing urinary excretion of excess glucose to reduce hyperglycaemia. This controls clinical signs and reduces glucose toxicity, improving endogenous insulin production whilst also increasing peripheral insulin sensitivity.

It is important to remember, however, that not all diabetic cats are able to produce enough endogenous insulin to prevent catabolic processes and suppress ketogenesis (especially in the early stages of treatment). A small proportion of diabetic cats are therefore at risk of developing ketoacidosis despite treatment with Senvelgo® since they are not receiving exogenous insulin. If a cat does develop DKA they will usually present with eDKA (see page 14), and therefore have normal glucose levels.

This is why it is important to monitor for ketones, especially in the first few weeks of treatment before glucose toxicity is controlled and endogenous insulin secretion and sensitivity increases. By monitoring regularly the goal is to identify these cats at the ketotic stage, before they become unwell.

Please refer to the treatment guidelines and flowchart on pages 16 and 17 for a simple guide on how to identify cats at risk of ketoacidosis, and how to monitor for ketones after starting Senvelgo®.



If ketones are detected or if the cat becomes unwell at any time, then Senvelgo® treatment should be suspended, the cause of ketosis/DKA/eDKA investigated and managed, and standard treatment protocols followed.

STARTING & MONITORING

CATS ON SENVELGO®



Before starting Senvelgo®, the cat should be eating, drinking, interacting normally, hydrated and not showing any signs of DKA (or have any ketones present), with no evidence of clinical pancreatitis, cachexia or chronic diarrhoea. We call these 'happy diabetic' patients.



Start Senvelgo® at 1 mg/kg once daily (according to bodyweight syringe markings) either directly by mouth or with a small amount of food so that the entire dose is taken at once.



The priority in the first 2 weeks is to monitor the cat for ketosis/DKA/eDKA to identify those cats who might not have enough endogenous insulin production:

- The owner should check for ketones at home every 1-3 days
- Check the cat in the clinic 1 week and 2 weeks after starting treatment to check they are healthy and not ketotic (assess history, perform a physical examination and check for ketones)



If ketones are detected, or the cat becomes unwell then suspend Senvelgo®, investigate further and manage accordingly for ketosis/DKA/eDKA and concomitant conditions. Only restart Senvelgo® if appropriate*.



At 4 weeks after starting treatment, check the cat at the clinic:

- Clinical control (e.g. thirst, appetite, physical examination, hydration status, bodyweight)
- Glycaemic control (e.g. fructosamine)
- Urinalysis (check for ketones and UTI)

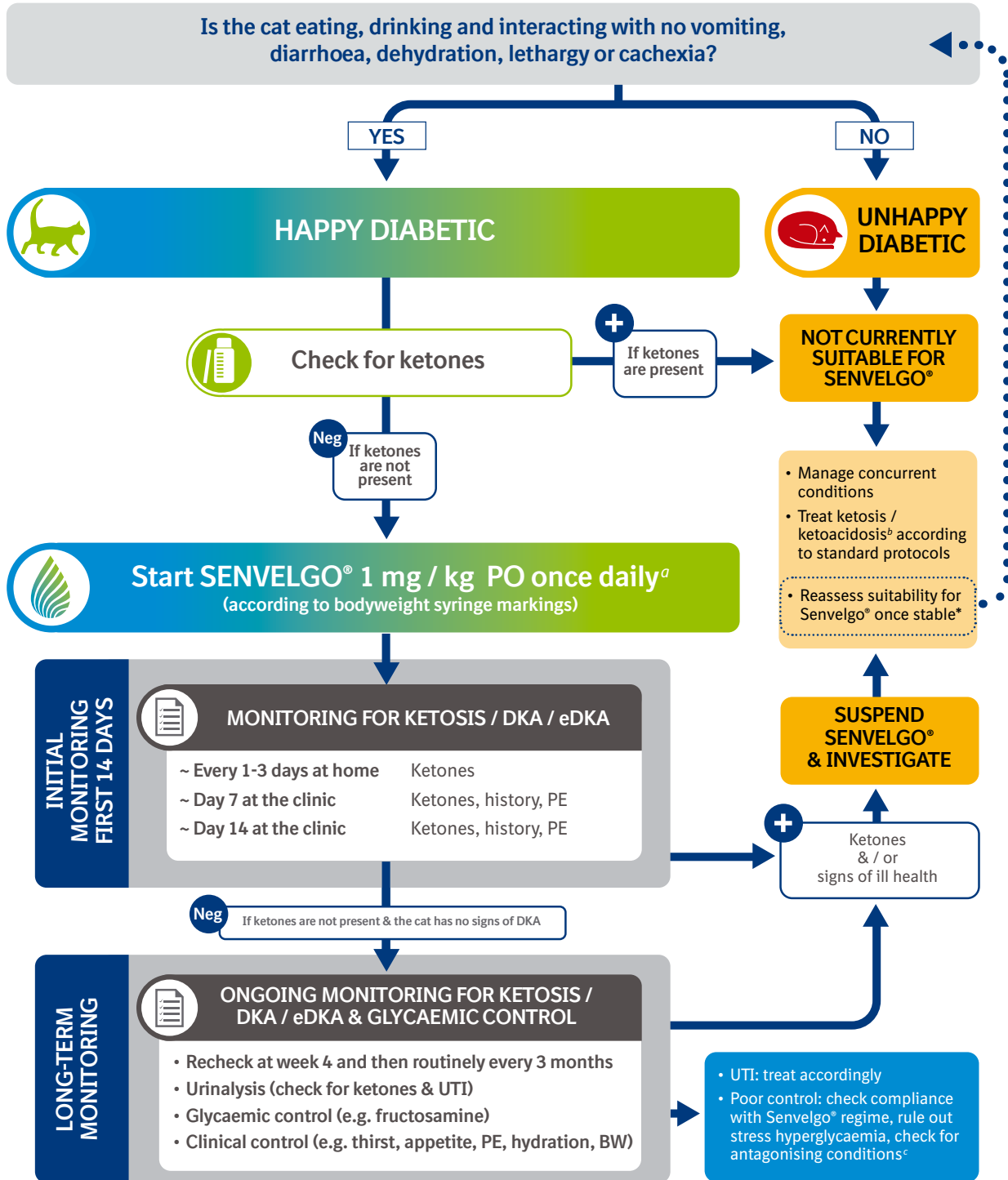
Thereafter, check the cat routinely every 3 months in the clinic according to standard diabetes treatment guidelines, including clinical & glycaemic control and urinalysis (to check for ketones and for UTIs).

The owners should develop a habit of routinely monitoring their cat for signs of illness and checking for urine ketones if any concerns.

* We recommend contacting our Technical Services Team for advice with managing these cases and to discuss whether it is appropriate to start or resume Senvelgo® treatment

GUIDE FOR MANAGING

DIABETIC CATS WITH SENVELGO®



BW: bodyweight
DKA: diabetic ketoacidosis
eDKA: euglycaemic ketoacidosis

PE: physical examination
PO: per os
UTI: urinary tract infection

*The decision to start / restart Senvelgo® should be taken on a case-by-case basis following a benefit / risk assessment. Such cases can be discussed with BIAH Technical Services Team.

a. Cats previously treated with insulin may be at higher risk for DKA & should be monitored closely when starting treatment. If transitioning from insulin, omit the insulin evening dose the day before starting Senvelgo® treatment. b. Soluble insulin & intravenous fluid therapy required to resolve ketoacidosis (supplement with glucose/ dextrose if blood glucose <15 mmol/l). c. A small proportion of cats may not respond adequately to Senvelgo® treatment due to true insulin deficiency, so long-term treatment with insulin may be required in these cases.

SENVELGO®

SAFETY PROFILE

Possible adverse reactions include: ¹²

Very common:

- Loose stool/diarrhoea: generally lasts for 7 days or less and usually resolves without specific treatment.
- Polydipsia/polyuria: resolves without additional treatment; may occur as part of the underlying disease or may be enhanced due to the osmotic effect of velagliflozin.
- Weight loss: may occur as part of the underlying disease. An initial weight loss may occur due to the glucosuric effect of velagliflozin.
- Mild dehydration.

Common:

- Urinary tract infection: may occur as part of the underlying disease, although the glucosuric effect of velagliflozin may contribute to urinary tract infection. Standard cystitis/urinary tract infection therapy should be initiated.
- Hypersalivation: Usually at initial administrations only and occurs immediately following dosing and resolves quickly, without the need for treatment.
- Diabetic ketoacidosis (DKA): may be euglycaemic (see pages 14-15). Suspend treatment and initiate insulin therapy and other supportive measures.
- Diabetic ketonuria: stop treatment, undertake further investigations and manage accordingly (e.g. initiate insulin therapy).

In the event of DKA/eDKA:



Suspend use of Senvelgo®



Initiate insulin treatment (even with normal glucose levels in cases of eDKA)



Supplement the cat with intravenous dextrose as needed (if blood glucose <15 mmol/l)



Provide appropriate nutrition to prevent or treat possible hepatic lipidosis



If appropriate, resume Senvelgo® treatment once the cat is stabilised, hydrated, all signs of DKA and/or ketosis have been resolved



We recommend contacting our Technical Services Team to discuss whether it is appropriate to resume Senvelgo® treatment



VETERINARY SUPPORT

A team of 8 vets and 5 veterinary nurses with over 140 years combined experience.

Case discussions & product advice

01344 746957

vetenquiries@boehringer-ingelheim.com

24/7 365 emergency advice service

Service Hours

Mon-Thu 9am - 5pm

Fri 9am - 4.30pm

NEW live chat service

senvelgo.co.uk

Virtual Team Meetings

Enhance your knowledge of managing diabetes with Senvelgo®

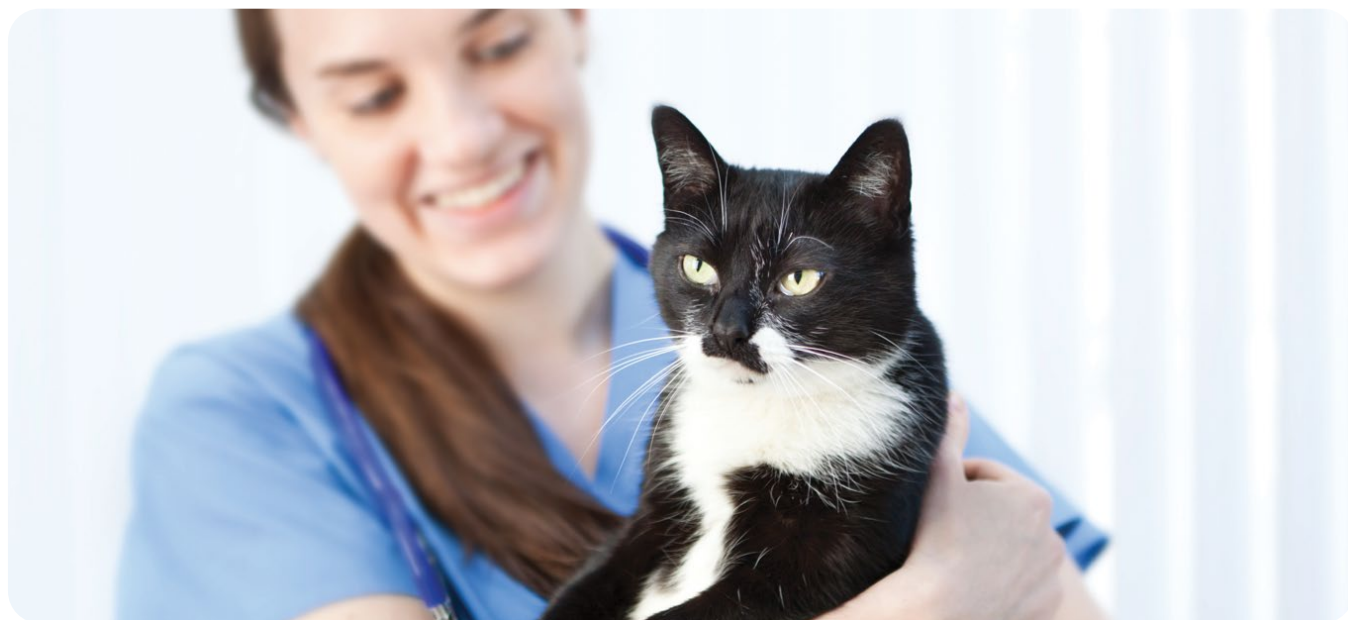
A technical vet can attend a meeting via Microsoft Teams or Zoom



*Best in class animal health pharmaceutical company for technical support helpline in 2022.¹³

DESIGNED WITH CATS IN MIND

Senvelgo® is the latest addition to Boehringer Ingelheim Animal Health's innovative, easy-to-use oral solutions for cats such as **Metacam®** for pain and arthritis, and **Semintra®** for chronic kidney disease (CKD) and hypertension.



Treating diabetes with Senvelgo® is simple, convenient and accurate: a fixed dose according to bodyweight via a reusable oral syringe with half-kg markings.

SENVELGO®

FAQS

1. What is Senvelgo® and what is it licensed for?

Senvelgo® is a once-daily, flavoured oral solution containing the active ingredient velagliflozin for the treatment of diabetes mellitus in cats. Velagliflozin is a sodium-glucose co-transporter 2 (SGLT-2) inhibitor. It reduces blood glucose by preventing the reabsorption of glucose via the SGLT-2 transporter in the proximal tubule of the kidney. This causes urinary excretion of excess glucose and reduces hyperglycaemia which relieves glucose toxicity and peripheral insulin resistance to control diabetes.

2. Can I switch a cat from insulin to Senvelgo®?

Yes, cats can be transitioned from insulin to Senvelgo®, however we don't recommend switching stable diabetic cats unless there are clinical or compliance reasons. For cats previously treated with insulin/ another anti-diabetic medicinal product the dosing regime is the same as for newly diagnosed cats. When transitioning from insulin, omit the insulin evening dose from the day before starting Senvelgo®. Cats that are transitioned from insulin to Senvelgo® are at increased risk of developing diabetic ketoacidosis (DKA) and euglycaemic diabetic ketoacidosis (eDKA) and must be closely monitored in the post-transition period for the presence of ketones.

3. Is Senvelgo® easy to give to cats?

Senvelgo® is an oral solution which is administered via a reusable dosing syringe with 0.5 kg bodyweight markings either directly into the cat's mouth or onto a small amount of food so that the cat eats it all at once.

4. How do I store Senvelgo®?

Senvelgo® does not require any special storage conditions. The shelf-life after opening the bottle is 6 months.

5. What is the onset and duration of action of Senvelgo®?

Senvelgo® is rapidly absorbed with maximum plasma concentrations reached in under 3.7 hours in fed cats. Thus, Senvelgo® increases glucosuria from the first dose onwards. This leads to glycaemic control with a sustained decrease in blood glucose throughout the day, usually within one week.^{1,2}

6. What are the side-effects of Senvelgo®?

The most common adverse event is diarrhoea or loose stool caused by minor inhibitory action of Senvelgo® on SGLT-1 in the small intestine. The majority of incidences of loose stool or diarrhoea last 7 days or less and usually resolve without specific therapy. The most serious potential adverse event is the development of

euglycaemic diabetic ketoacidosis in cats which do not have sufficient endogenous insulin production.

7. Are cats treated with Senvelgo® at higher risk of urinary tract infections (UTIs)?

Urinary tract infection, including cystitis caused by infection, may occur as part of the underlying disease, although the glucosuric effect of velagliflozin may also contribute to UTIs. Urinary tract infections are common in feline diabetic patients, but the frequency of UTIs in cats treated with Senvelgo® is similar to that in cats treated with insulin.¹¹ Standard cystitis / UTI therapy should be initiated if there are clinical signs of cystitis.

8. Is Senvelgo® as effective as insulin?

Yes. In a European clinical field trial, the safety and efficacy of Senvelgo® was evaluated and compared to insulin. The study confirmed that once daily Senvelgo® is non-inferior to (at least as good as) twice daily insulin injections.^{11,12}

9. How do I identify and manage cats that might be going into remission?

Remission of diabetes mellitus in cats is a complex phenomenon, which can be influenced by multiple factors in individual patients, such as glycaemic control, diet,

age, weight and/or genetics. Cats that enter remission while treated with exogenous insulin are often identified following a hypoglycaemic episode (usually due to continued administration of exogenous insulin once endogenous insulin production has increased). Due to Senvelgo®'s mode of action, it may be difficult to identify cats that are in remission, since these cats would not be expected to have clinical hypoglycaemic events. Consideration could be given to continuing treatment indefinitely or discontinuing and closely monitoring glycaemic control and for return of clinical signs. If the patient relapses, Senvelgo® can be restarted when appropriate.

10. Can I feed a restricted carbohydrate diet to cats receiving Senvelgo®?

Whilst feeding a restricted carbohydrate diet improves glycaemic control in diabetic cats, the effect of feeding these diets to cats receiving Senvelgo® has not been specifically investigated. Feeding such a diet was not, however, an exclusion criteria in clinical trials, and there were no specific concerns identified in these cats throughout the trial period. The decision whether or not to feed a restricted carbohydrate diet should therefore follow a benefit-risk assessment on a case-by-case basis.

THE BREAKTHROUGH FOR FELINE DIABETES

Choosing Senvelgo® means you can now treat diabetes without injecting insulin.



Simple dosing according to bodyweight



No risk of symptomatic hypoglycaemia



Glycaemic control can be achieved within a week ^{1,2}

Make Senvelgo® your simple solution
for diabetic cats and their owners.

For more information,
visit www.senvelgo.co.uk



For Senvelgo® technical enquiries contact our technical services team on
vetenquiries@boehringer-ingelheim.com or phone 01344 746957

1. Niessen, S. J. M. et al. (2022) Once daily oral therapy for feline diabetes mellitus: evaluation of SGLT-2 inhibitor velagliflozin as stand-alone therapy compared to insulin injection therapy in diabetic cats. *Journal of Veterinary Internal Medicine* 36, 2512–2513.
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9. Niessen, S. J. M. et al. (2010) Evaluation of a quality-of-life tool for cats with diabetes mellitus. *J Vet Intern Med* 24, 1098-105.
10. Behrend, E. N. et al. (2023) Velagliflozin, an SGLT2 Inhibitor, as a once-daily, oral solution, stand-alone therapy for feline diabetes mellitus. Oral abstract presentation, 2023 ACVIM Forum, Pennsylvania, Jun 15-17.
11. Niessen, S. J. M. et al. (2023) Efficacy and safety of once daily oral sodium-glucose co-transporter-2-inhibitor velagliflozin compared to twice daily insulin injection therapy in diabetic cats. Oral abstract presentation, 2023 ECVIM-CA Forum, Barcelona, Sept 21-23.
12. Summary of Product Characteristics (SPC): Senvelgo® 15 mg/ml oral solution for cats.
13. CM Research (2022) Small animal vets UK April 2022. Syndicated Sales Rep Survey.

Senvelgo® contains velagliflozin (sodium glucose co-transporter 2 [SGLT-2] inhibitor). ProZinc® contains protamine zinc recombinant human insulin. Metacam® contains meloxicam. Semintra® contains telmisartan. UK(GB): POM-V. Further information available in the SPCs or from Boehringer Ingelheim Animal Health UK Ltd., RG12 8YS, UK. UK(GB) Tel: 01344 746959 (sales) or 01344 746957 (technical). Email: vetenquiries@boehringer-ingelheim.com. Senvelgo®, ProZinc®, Metacam® and Semintra® are registered trademarks of Boehringer Ingelheim Vetmedica GmbH, used under licence. ©2023 Boehringer Ingelheim Animal Health UK Ltd. All rights reserved. Date of preparation: Sept 2023. UI-PET-0094-2023. Use Medicines Responsibly.

