


Home monitoring of feline diabetics

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Feline diabetes


- Very common feline endocrinopathy: 1/250 cats
- Relative or complete lack of insulin production
- Risk factors
 - Male
 - Age
 - Obesity
 - Breed: DSH, Burmese
- Mostly a life-long disease
- Some cats can enter remission (20-50%) during first months after diagnosis



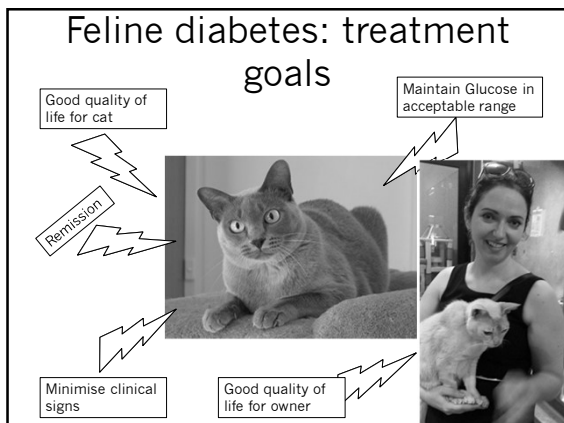
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Feline diabetes

- Overweight
- Genetics
- High fat diet
- Feline Diabetes Mellitus
- Insulin resistance
- Leptin
- Leptin
- Hypothalamus
- Nicotinic
- C



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How do we obtain the goals?

- **Insulin**
 - Longer acting insulins: PZI, Glargine, Detemir
- **Diet: Low carbohydrate diets**
 - Wet diet better than dry
 - Feeding pattern is not important (meals vs grazing)
- **Monitoring**
 - Blood/urine glucose
 - Clinical signs

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Diabetic monitoring

- **Monitoring of clinical signs**
 - Body weight
 - Polyuria
 - Polydipsia
 - Polyphagia
- **Monitoring glycemia** (curves, urine, etc.)
- **Owner discussion and bonding** about progress
 - How is the cat doing?
 - How is the owner doing?

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Monitoring at the vets

- Cat comes into practice
- Vet/assistant sees case
- Physical exam
- Glucose curve
- Decisions made about insulin/diet, etc.



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Monitoring at the vets



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Monitoring at home



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Home monitoring

Advantages for the owner	Advantages for the cat	Advantages for the veterinary surgeon
Reduction of veterinary visits & costs	Reduced travel & stress	Improved relationship with clients/improved owner compliance
Greater involvement in the management of the disease	Improved quality of life	Glucose curve performed according to daily routine
Blood glucose curves can be done at any/ convenient time	Early detection of hypoglycaemia	Clinician can request immediate testing +/- curve at any time when concerned
Reduced worry about whether there could be hypoglycaemia		Reduction of stress hyperglycaemia

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Advantages of home monitoring

J Feline Med Surg. 2017 Sep 1;10(8):1217-1226. doi: 10.1177/1098121717727692. [Epub ahead of print]

Acceptance of home blood glucose monitoring by owners of recently diagnosed diabetic cats and impact on quality of life changes in cat and owner.

Haidichew A¹, Gostelow B², Boulter C³, Forsythe A⁴, Church DB⁵, Newman SA⁶.

1) Author information

Abstract

Objectives This study aimed to evaluate the acceptance of home blood glucose monitoring (HBGM) by owners of recently diagnosed diabetic cats, and the impact of choosing HBGM on the quality of life (QoL) changes of cat and owner, in addition to glycaemic changes during 6 months of follow-up. **Methods** Owners of cats diagnosed with diabetes mellitus (DM) and treated with insulin for 6-20 weeks

Cats and owners on the home monitoring group had better quality of life and improved glycaemic parameters

non-HBGM group. Remission occurred in 9/28 (32%) HBGM group cats and 1/10 (10%) non-HBGM group cats ($P = 0.236$).

Conclusions and relevance HBGM was adopted successfully by most diabetic cat owners. Despite the extra task, positive changes in QoL parameters occurred in the HBGM group and not in the non-HBGM group. Although no difference was found in glycaemic control between the HBGM and non-HBGM groups during the 6 months of follow-up, significant glycaemic improvements were documented in the HBGM group.

PMID: 28911204 DOI: 10.1177/1098121717727692

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Be careful!



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Adapt!



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Home monitoring

- Can be introduced in the first visit
- Can be delayed for 3-4 weeks until owner
 - Becomes comfortable with diagnosis
 - Becomes used to insulin
 - Learns technique of injection
 - Develops a trusting relationship with you

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Initial visit: plan of action

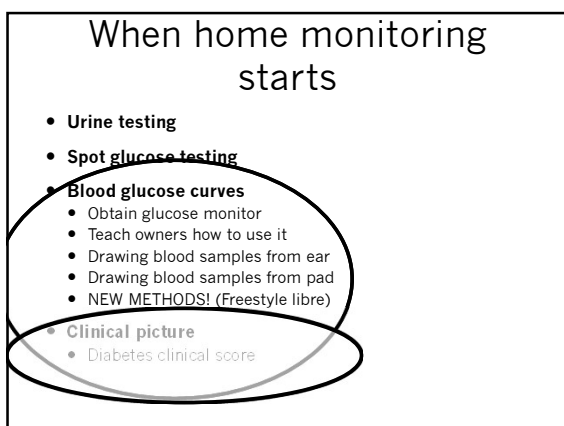
Discuss initial key aspects

- **Insulin-related aspects**
 - HOW TO INJECT: where, how, which syringe, etc.
 - Owners can practice in front of you
 - How to best handle insulin: fridge, drawer, avoid shaking, etc.
- **Signs of hypoglycemia/DKA**
- **Additional questions**
 - What to do if cat doesn't eat (yes/no/half insulin, etc.)?
 - What to do if a dose is missed?
 - Accidental overdose?

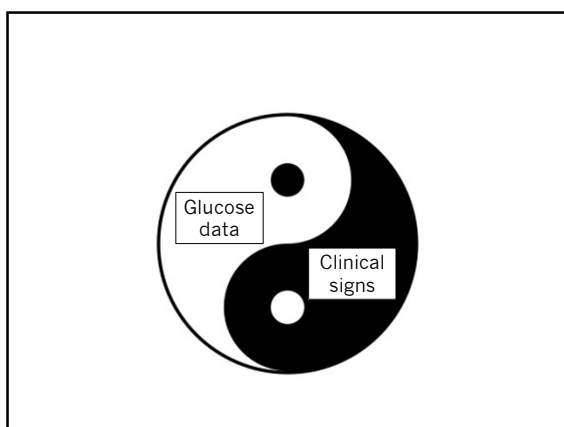
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Urine testing

- Determine if there is glucose or ketones in urine
 - Useful to do in early stages
 - First morning urine
 - If **no glucose in urine** (possible sign BG is too low): call clinic
 - If **ketones present** and cat is ill: call immediately
 - If **ketones present** for 3 days: call clinic
- **Rest of information is not useful**
 - Depends on individual's urine threshold
 - Depends on individual's urine output



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Spot blood glucose



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Spot blood glucose: exceptions

- Cats entering diabetic remission
- Anorexic/inappetent cats before/after insulin

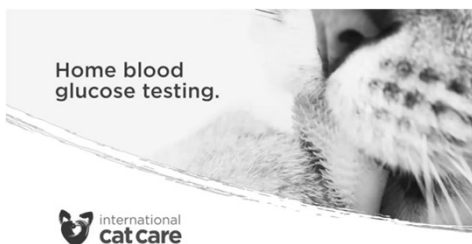
Table 2: example of the insulin dosing guidelines provided to the owner of a diabetic cat on the basis of pre-injection spot home blood glucose testing in anorexic cats or those about to enter diabetic remission

Blood glucose concentration (before food and insulin)	Recommended insulin dose
>15 mmol/L (270 mg/dl)	Full dose of insulin (minimum of 1 IU)
10-15 mmol/L (180-270 mg/dl)	% dose of insulin (minimum of 0.5 IU)
8-10 mmol/L (144-180 mg/dl)	% dose of insulin (minimum of 0.5 IU)
≤8 mmol/L (144 mg/dl)	No insulin

- If hypoglycemia: reduce dose
- No other permanent dose changes are justified

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Glucose curves



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Blood glucose curves

- How often?
 - Not more than every 7-10 days (unless specific reasons)
- How many blood samples?
 - Every 2h
 - Start at time of insulin injection, then continue for 12-14h until next injection
 - Always include before insulin (and food)
 - If Glucose falls below 180 mg/dl, measure every hour (to detect hypoglycemia and rebound hyperglycemia)

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Blood glucose curves

- What can we read from them
 - Nadir (lowest blood glucose concentration):
 - is there a scope for increasing dose?
 - Is there hypoglycemia?
 - Is there no response? (insulin resistance)?
 - Duration of action
 - Should we consider a change in insulin type?

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Glucose curves

- One of the most useful glycemetic tools
- But beware!
 - Some owners may find it a burden!
 - Very significant day-to-day variability
 - ALWAYS to be interpreted with the clinical signs
 - Exception: hypoglycemia



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FreeStyle Libre

NEW METHOD: NO NEEDLE PRICKS (or just one)

Overzicht Producten Help Contact

Home > Contact

Startpakket

Probeer het FreeStyle Libre Flash Glucose Monitoring systeem en kies voor het startpakket. Het is een flexibel voorlopig aanbod en bereikt niet het niveau van een vastgesteld aanbod van 10 dagen. Het startpakket wordt de eerste maand u kunt het FreeStyle Libre systeem blijven gebruiken door eenmalig een prik te nemen.

Download Gebruikershandleiding

BELANGRIJKE INFORMATIE:
 Het startpakket is bedoeld voor de eerste maand van gebruik van het FreeStyle Libre systeem. Het startpakket is niet bedoeld voor de eerste maand van gebruik van het FreeStyle Libre systeem. Het startpakket is niet bedoeld voor de eerste maand van gebruik van het FreeStyle Libre systeem.

Hoe werkt het FreeStyle Libre-systeem

Hoe het startpakket uw leven zal veranderen De FreeStyle Libre software

Breng de sensor aan
 Scan de sensor
 Meet uw glucose

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Alpha-track vs Freestyle Libre

Alpha-track

- Requires regular pricks
- Provides Capillary Glucose reading
- Owners write down results
- Provide information about glucose curves

Freestyle

- Requires placing probe at the vet practice
- Provides interstitial Glucose
- No further pricks needed
- Results are displayed on PDF form
- Information about TRENDS during several days

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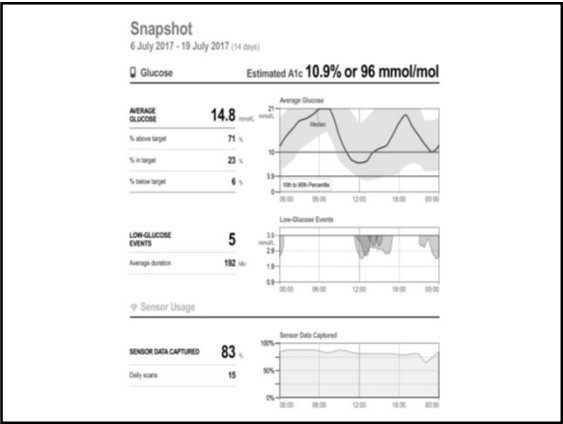
Freestyle Libre



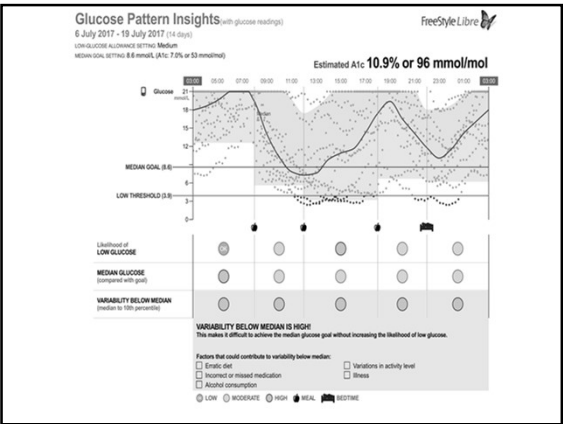
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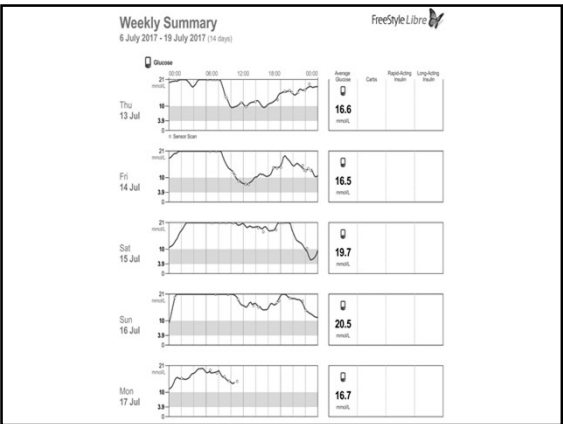
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Home monitoring: clinical signs

- NO GLYCEMIC PARAMETER SHOULD BE INTERPRETED WITHOUT THIS
- Focus on clinical parameters associated with hypoglycemia and hyperglycemia
 - Tremors, disorientation, weakness, seizures
 - Polyuria, polydipsia, polyphagia, weight loss
- Other clinical signs : vomiting, diarrhea
- Monitor body weight

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Diabetic Clinical Score

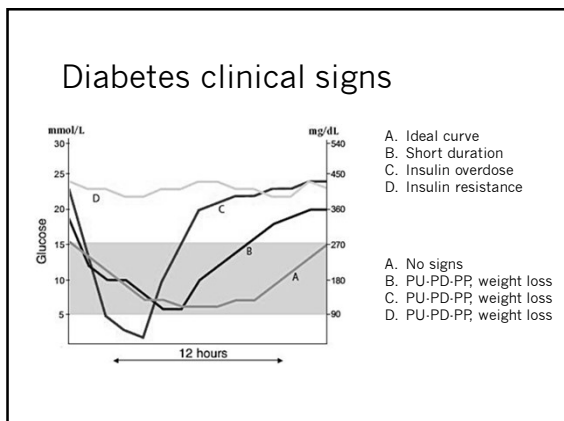
Factor	Score
Unintended Weight Loss 0 = None, or gained since last examined 1 = Mild (<5% loss) 2 = Moderate (5-10% loss) 3 = Severe (>10% loss)	2
Polyuria and Polydipsia 0 = Normal 1 = Mild (Some increase noted by owner) 2 = Moderate (Increased filling of water bowl) 3 = Severe (constantly at bowl)	1
Appetite 0 = Normal or decreased appetite 1 = Mild polyphagia (finishes eagerly) 2 = Moderate polyphagia (finished eagerly and begs for more) 3 = Severe polyphagia (obsessed with food)	1
Attitude/activity 0 = Normal 1 = Mild decrease (a bit less running and jumping) 2 = Moderate decrease (a lot less running and jumping) 3 = Severe decrease (lying about all the time)	2
Total Score =	6

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Diabetes clinical signs: limitations

- Sometimes subtle hypoglycemia does not show signs
- Insulin overdosing (Somogy overswing) can sometimes look the same as underdosing

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Free RVC Pet Diabetes App

- Diabetic management tool developed with & for diabetic pet owners
- Pet owner shares info with vet practice
 - **Fosters communication**
 - **Empowers**
 - **Involves**
- Collective data used for diabetes research

THE REMBA FOUNDATION
Preventing diabetes in dogs and cats

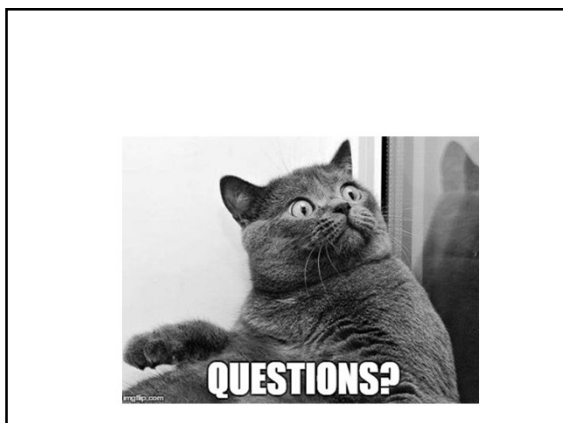
Get it on Google Play

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Home monitoring: conclusions

- Improves glucose control and quality of life
- Not suitable for everyone
- Important to adapt to each patient-owner duo
- **Always interpret glycemic parameters with clinical signs**
- Modern technology makes it even easier
 - Diabetes apps
 - Freestyle libre

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Additional resources for owners of cats to do home blood glucose monitoring

Website	URL
International cat care	http://www.icatcare.org/news/diabetes-awareness-week
Royal Veterinary College Feline Diabetic Remission Clinic	https://www.facebook.com/RVC.Diabetic.Remission.Clinic/videos
Veterinary partner Diabetes Mellitus Center	http://www.veterinarypartner.com/Content.pla?A=631

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