Pet CGM

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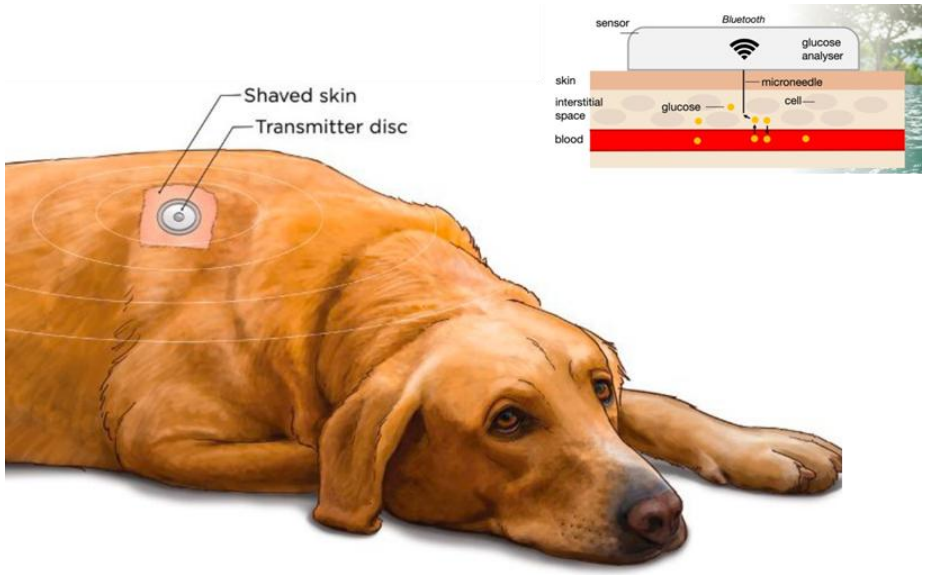
CGM Introduction

Continuous Glucose Monitors (CGMs) are devices that can attach to a patient for up to two weeks, measuring glucose levels in the interstitial fluid during that time. In recent years, these devices have become more affordable and applicable in veterinary medicine.

Compared to traditional blood glucose testing, CGMs provide real-time comprehensive glucose data, enabling users to manage glucose levels more accurately, making them essential tools for managing diabetic patients.



CGMs consist of three main components:

1. A flexible electrode inserted through a guide device into the interstitial (subcutaneous) space of the patient's skin.
2. A small transmitter attached to the probe, which adheres to the patient's skin surface.
3. Monitoring software (using a smartphone).
   The sensor is compatible with X-rays but not with computed tomography or magnetic resonance imaging. In human devices, CGMs can be directly connected to an insulin delivery system.

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CGMs vs. Traditional Blood Glucose Testing

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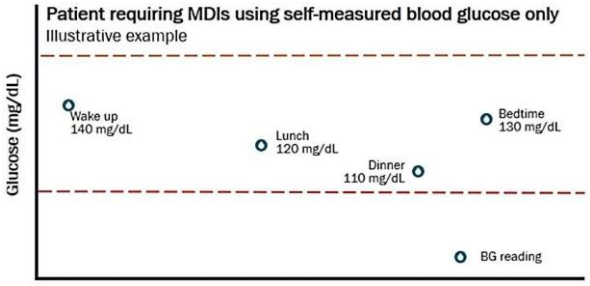
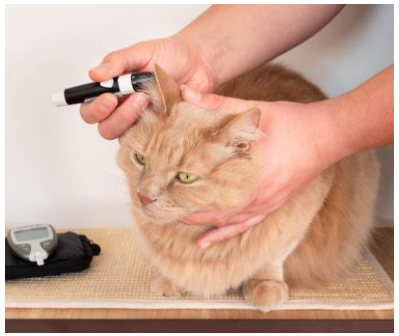
Traditional BG Testing

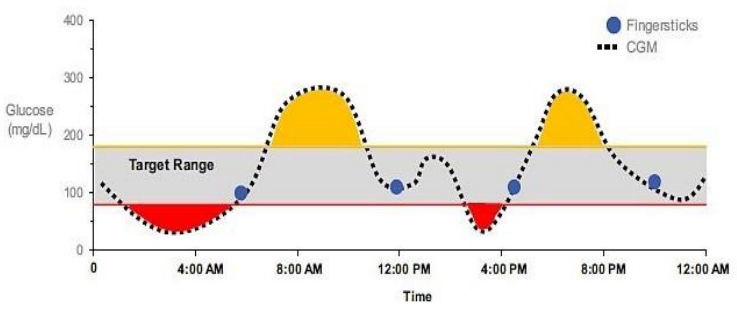
- ❑ 10+ blood samples per day to draw the curve
- ❑ One-time measurement, cannot reflect the full picture
- ❑ No real-time hypo/hyperglycaemia alerts
- ❑ Painful and stressful for pets, difficult for pet owners to operate





CGM

- ✓ CGMs (Continuous Glucose Monitors)
- ✓ No frequent blood sampling
- ✓ Up to 14 days of continuous monitoring
- ✓ Comprehensive reports, providing valuable insights for informed decisions
- ✓ Real-time alerts



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Human CGM vs. Pet CGM

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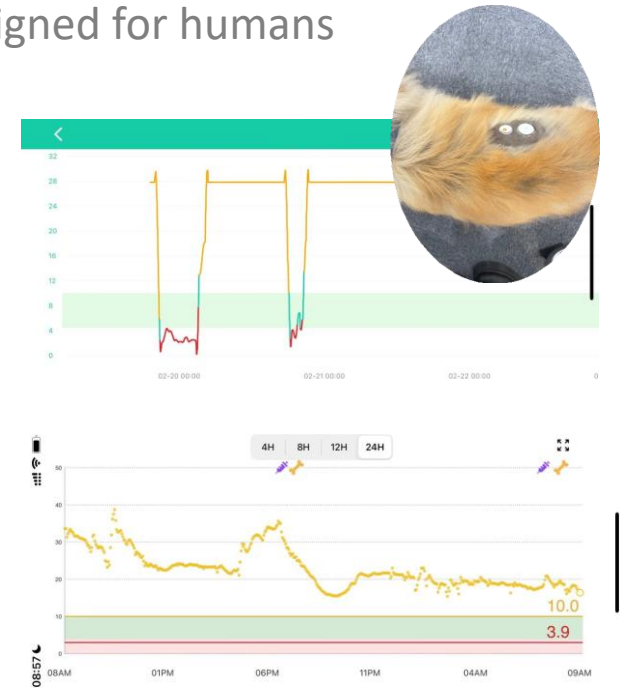
Why Should you use CGM Specially Designed for Pets

Human CGM

- ❑ Glucose range is designed for humans
- ❑ Algorithm is designed for humans
- ❑ No after-sale service
- ❑ Software is designed for humans



Pet CGM

- ❑ Specially designed calibration algorithm for cats and dogs
- ❑ Specially designed probe for pets
- ❑ The glucose thresholds, parameters and alert ranges are suitable for cats and dogs
- ❑ InSight Vet CGM App allows veterinarians account to monitor data for multiple diabetic pets

Goals of Wearing a CGM

- ❑ Owner feels supported and can easily cope with the care of their diabetic pet
- ❑ Resolution of clinical signs
- ❑ Avoidance of insulin-induced hypoglycaemia

When to use a CGM

- ❑ Rapidly improve diabetic control
- ❑ To understand a specific problem
- ❑ The owner wants to use it
- ❑ Sick diabetics in hospital

Dr. Linda Fleeman, Animal Diabetes Australia

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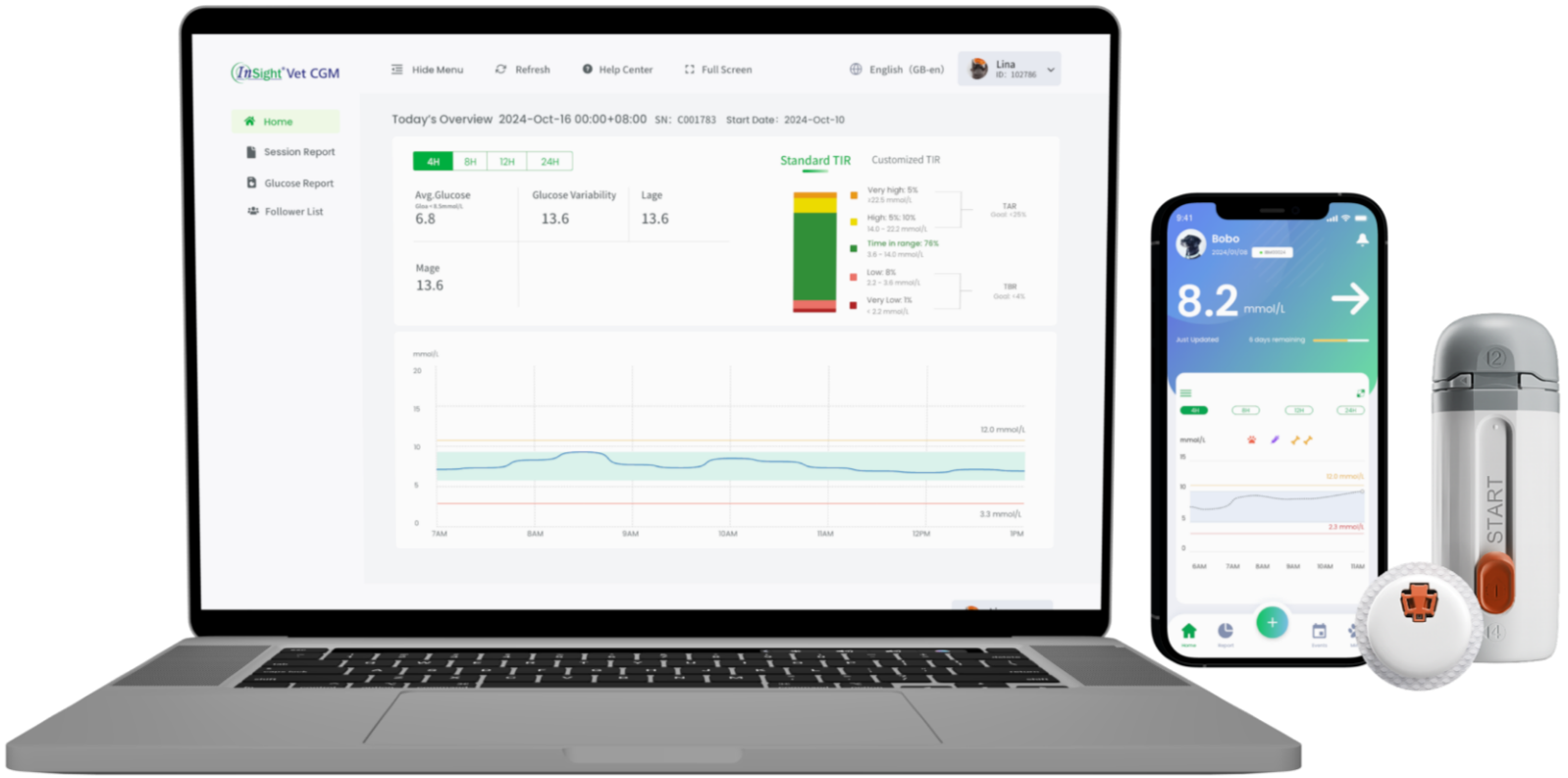
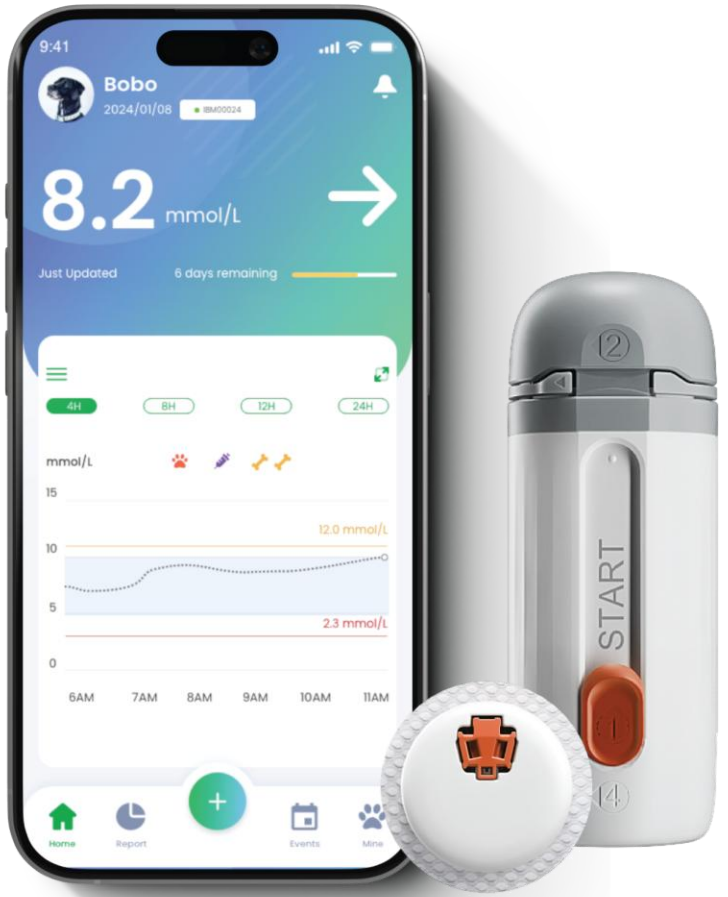


CGM Introduction

Product Matrix

Data Interval	3 minutes
Monitoring Up To	14 days
Calibration	Factory Calibration
Waterproof	IP27
Shelf Life	18 months
Age	8 months+
Warm-up Time	30 minutes
MARD (Mean Absolute Relative Difference)	7.38%
Prediction Trend	Yes



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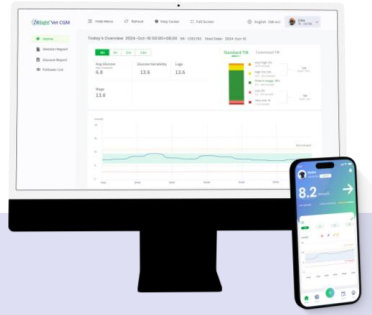
Product Composition

Applicator

- ❑ Disposable
- ❑ Passive activation

Sensor

- ❑ Bluetooth connection
- ❑ One data point every three minutes, monitoring for 14 days
- ❑ Flexible probe, comfortable and imperceptible to wear
- ❑ IP27 protection rating, water-resistant
- ❑ For daily use



App & Web Portal

- ❑ Receive data through a compatible smartphone app
- ❑ Cloud-based portal for analysing and generating blood glucose reports
- ❑ Facilitates sharing with Vets and other owners

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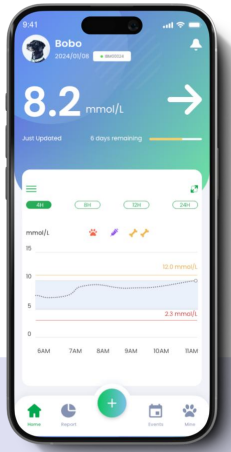
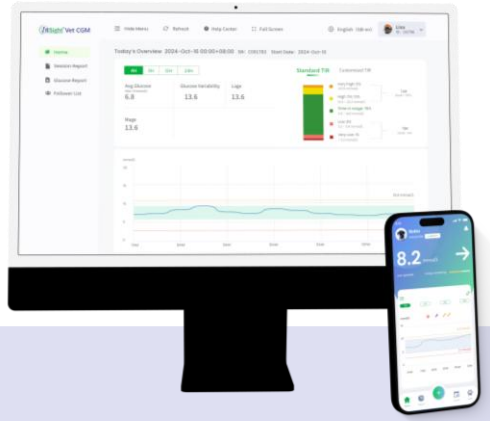
Software





1. Sensor detects glucose and sends data to smart device via Bluetooth.

2. App receives glucose data. Displays real-time glucose and generates reports.

3. The doctor-side management dashboard retrieves blood glucose data from the cloud, making it convenient for doctors and pet owners to manage their pet's blood glucose levels.

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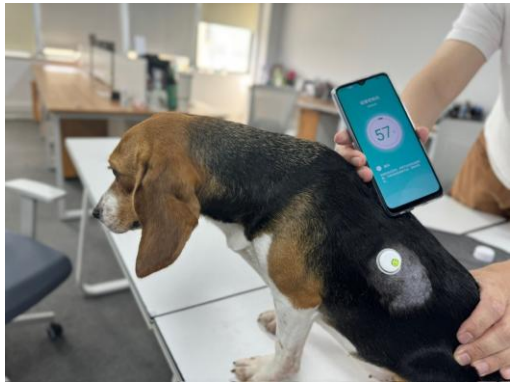
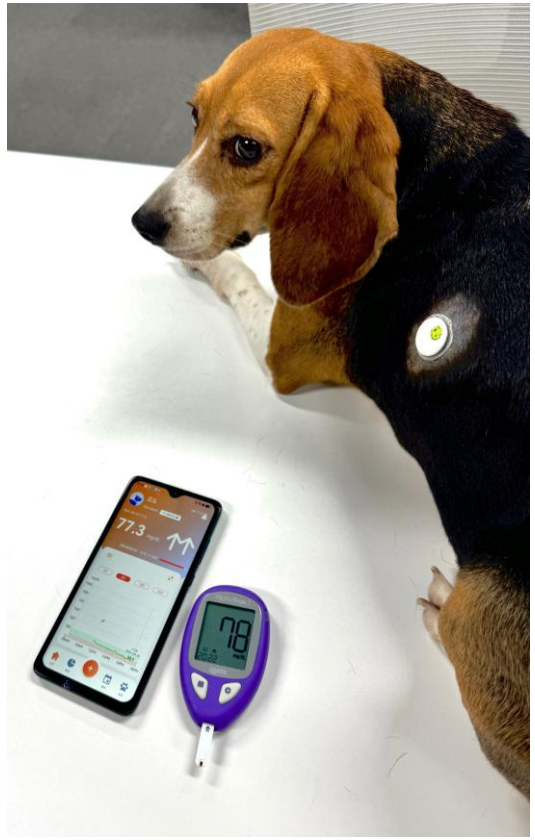
Animal Test





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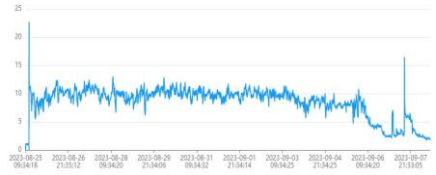
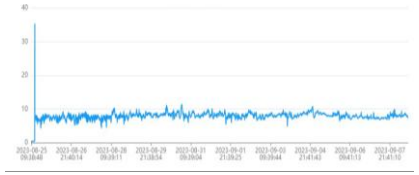
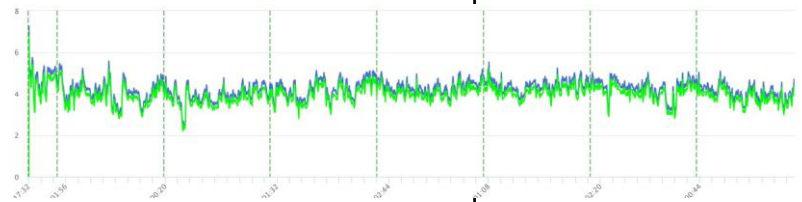
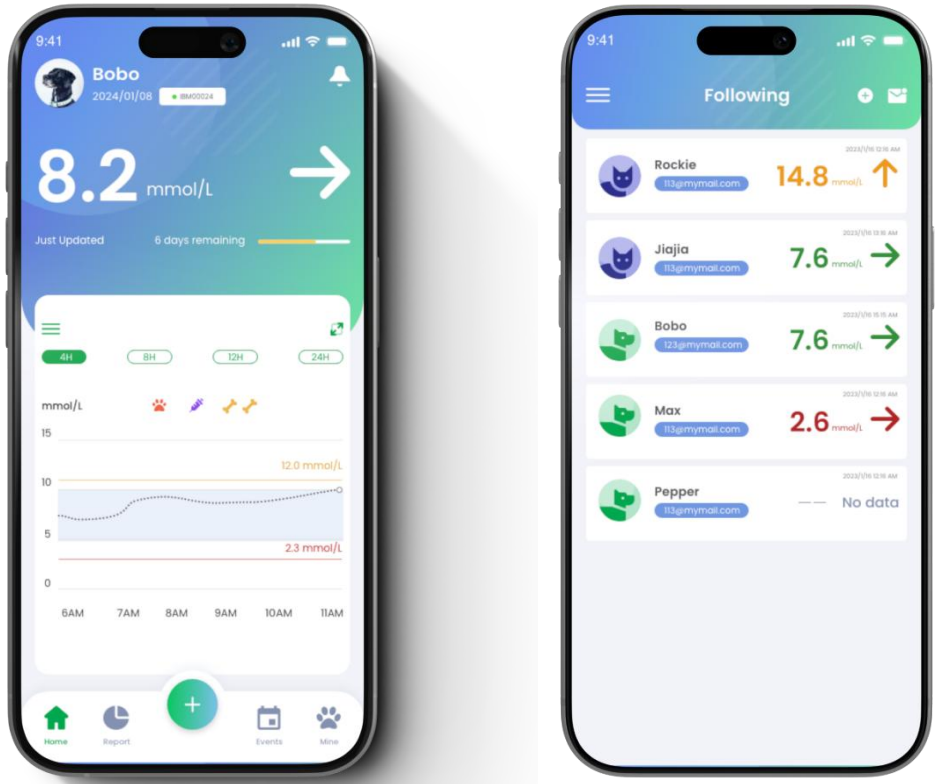
Animal Data Overview

Sensor	Name	Date Started	Date Removal	Data Overview	
F0974	Victor (Dog)	2023-08-25 12:20	2023-09-08 14:00		Upon removal, a slight shedding phenomenon was observed, and hair growth in the excised area is relatively rapid.
F1075	Pea (British Shorthair)	2023-08-25 12:20	2023-09-08 14:13		
C000294	Miaomiao (British Shorthair)	2024-07-03 17:20	-		



InSight Vet CGM App Introduction

Download App & Sensor Pairing

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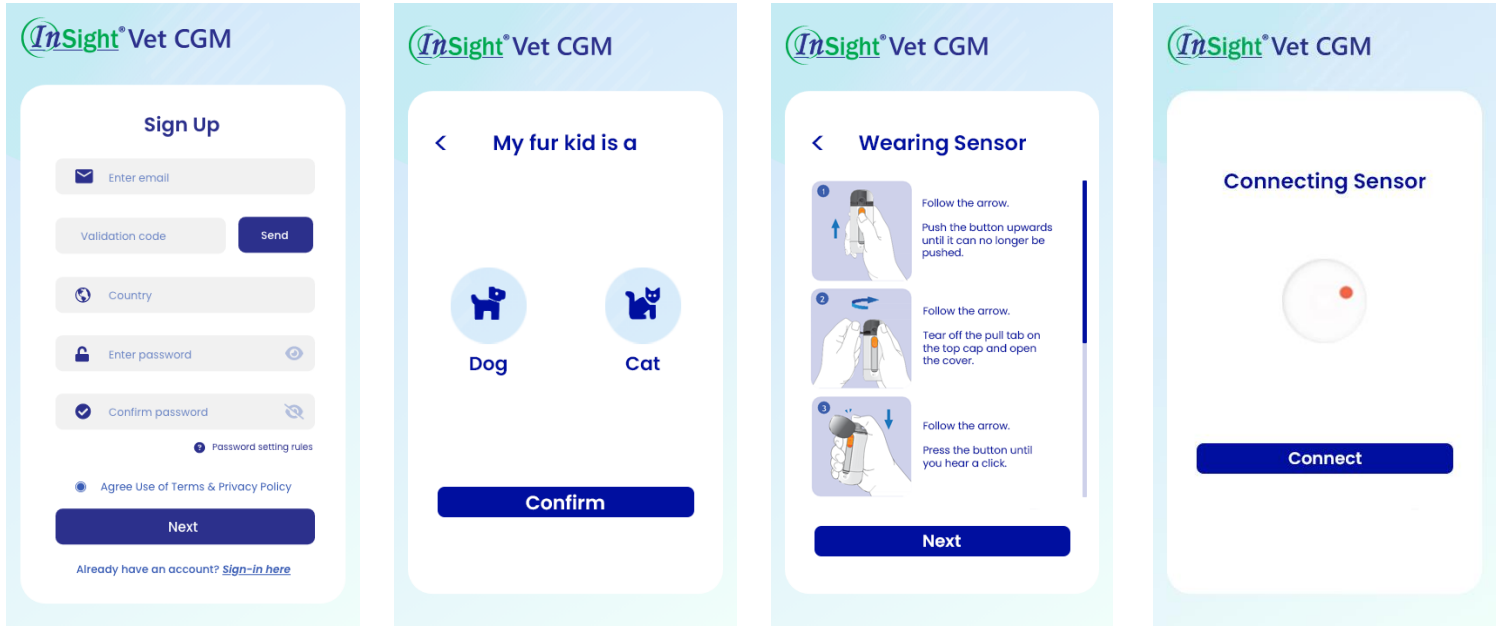
Download InSight Vet CGM

Follow the instructions in the app and pair the sensor



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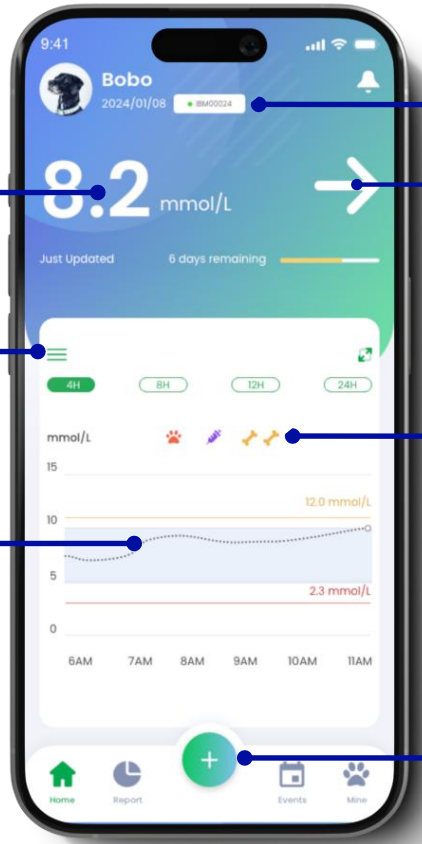
App Home Screen



Connection Status

Current Glucose

Glucose Trend Arrow

Alert Setting

Events

Trend Graph

Add New Event

Trend Arrow Definition

↑↑	Glucose is rapidly rising
↑	Glucose is rising
↗	Glucose is slowly rising
→	Glucose is steady
↘	Glucose is slowly falling
↓	Glucose is falling
↓↓	Glucose is rapidly falling

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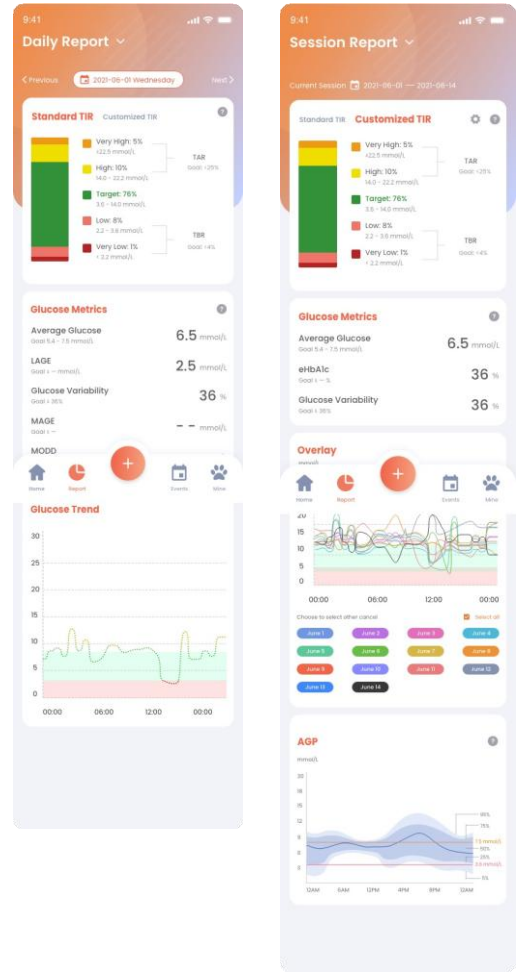
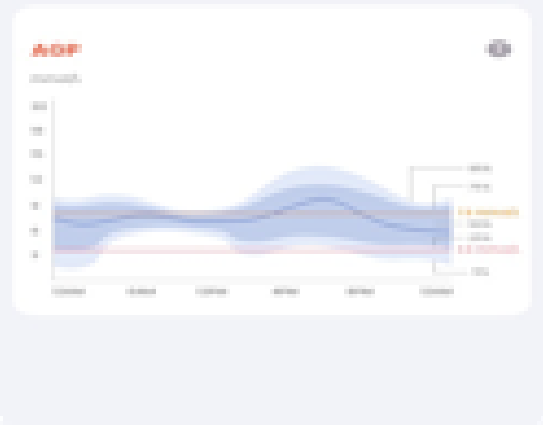
Glucose Reports

- Average Glucose Level: The average of all glucose measurements during sensor monitoring, used to evaluate overall blood glucose levels.
- Maximum Blood Glucose Fluctuation: Evaluates the maximum fluctuation in blood glucose levels, specifically the difference between the highest and lowest glucose readings of the day.
- Coefficient of Variation: The degree of dispersion of all glucose measurements during sensor monitoring, used to assess blood glucose variability.
- Mean Amplitude of Glycaemic Excursions (MAGE): Evaluates the extent of intra-day blood glucose fluctuations. After removing all glucose fluctuations that did not exceed a certain threshold, the average value is calculated based on the first valid fluctuation direction to reflect blood glucose variability.
- Mean of Daily Differences (MODD): Evaluates the degree of inter-day blood glucose fluctuation, reflecting the consistency of blood glucose levels from day to day. It is the average of the absolute differences between corresponding measurements within a complete 48-hour period. The MODD for a specific day reflects the fluctuation in glucose levels between that day and the previous day.
- Estimated Glycated Haemoglobin (eA1C): Glycated haemoglobin (HbA1C) is considered the gold standard for blood glucose control and is related to microvascular and macrovascular complications in diabetes. It reflects the average blood glucose level over the past 2-3 months (110 days in dogs, 70 days in cats). In other countries, the cost of testing pet A1C is at least 99 USD, and the blood sample needs to be sent to a specialised laboratory for testing. The more glucose data available from the CGM, the more accurate the estimated A1C will be. Additionally, the level of A1C reduction is positively correlated with the frequency of CGM use.



AGP Profile Graph

AGP Profile Graph – A single 24-hour visual summary of glucose data aggregated over multiple days.



What the AGP Helps With:

- ❑ Identifying patterns (e.g. overnight hypoglycaemia, post-lunch spikes)
- ❑ Assessing treatment effectiveness
- ❑ Guiding medication adjustments
- ❑ Improving patient understanding of food, activity and insulin effects
- ❑ Reducing HbA1c without increasing hypoglycaemia risk

The AGP compresses multiple days of glucose data into a single 24-hour graph, aligned by clock time (e.g., midnight to midnight). It looks for recurring patterns — like spikes after meals or overnight dips — by averaging the same time point across many days.
If a patient eats meals, exercises, or takes medication at roughly the same time each day, the AGP graph is highly informative. You can easily spot:

- ❑ Post-meal spikes
- ❑ Overnight lows
- ❑ Morning rises (e.g., dawn phenomenon)

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AGP Profile Graph

What If Their Daily Routine Is Irregular?
If a patient doesn't eat meals at set times or their schedule is highly erratic (e.g. irregular eaters), the AGP graph becomes less precise.

Even for patients with irregular schedules, you can still use AGP effectively by:

- ❑ Pairing it with a daily glucose log or food/activity diary to understand what's happening on outlier days.
- ❑ Looking at time-in-range, variability and GMI, which don't rely on consistent meal timing.
- ❑ Reviewing daily graphs (if available) to examine individual days instead of just the aggregated AGP curve.

Summary

- ❑ AGP is most powerful when there's a consistent routine.
- ❑ For irregular schedules, the AGP curve may be less useful on its own, but other metrics (like TIR, variability, and daily views) still provide valuable insight.
- ❑ If patterns seem unclear, clinicians may focus more on event-based analysis (e.g. what happens after meals or insulin doses) rather than time-of-day averages.

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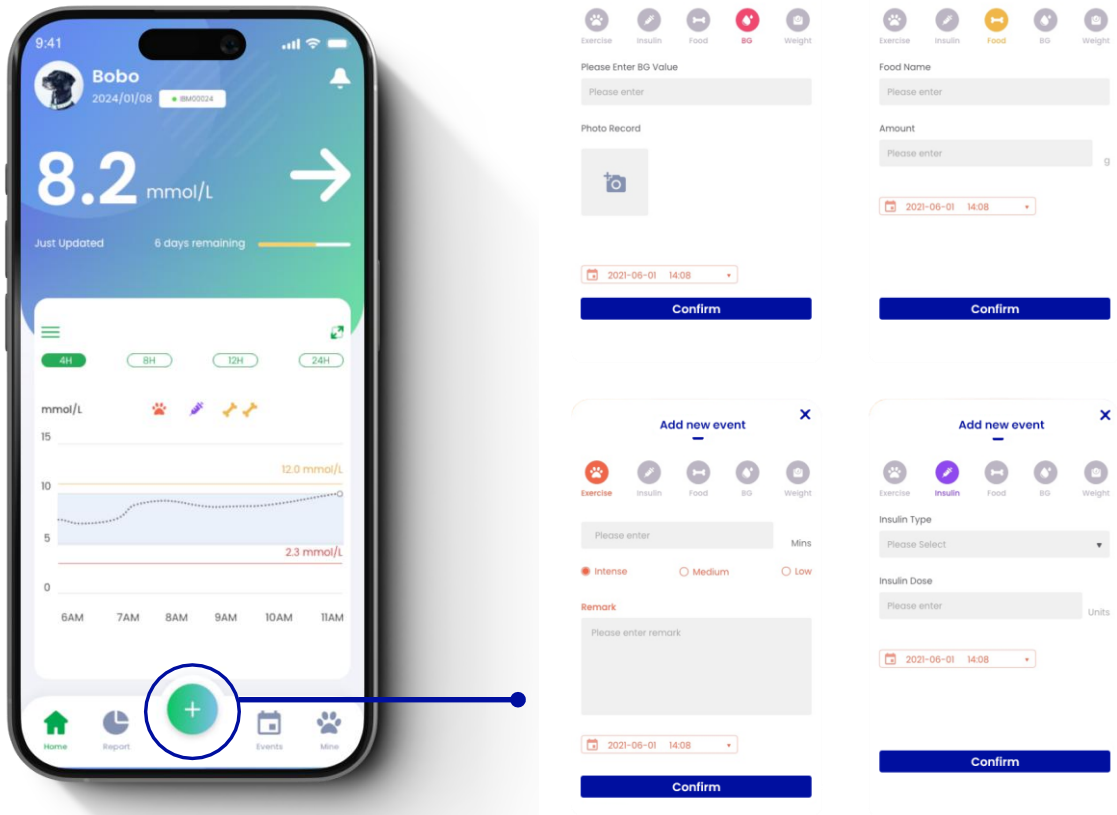
Add Events



Recording events and observing blood glucose data allows pet owners and veterinarians to adjust the pet's diet and behaviours more promptly.

For example, when pre-meal blood glucose levels rise, reducing carbohydrate intake in the pet's food or taking a walk after meals can help prevent blood glucose spikes.

Using a CGM can also prevent hypoglycaemia during outdoor activities. By monitoring trends and receiving early warnings, pet owners and veterinarians can adjust the pet's insulin dosage before and after exercise to prevent blood glucose fluctuations.

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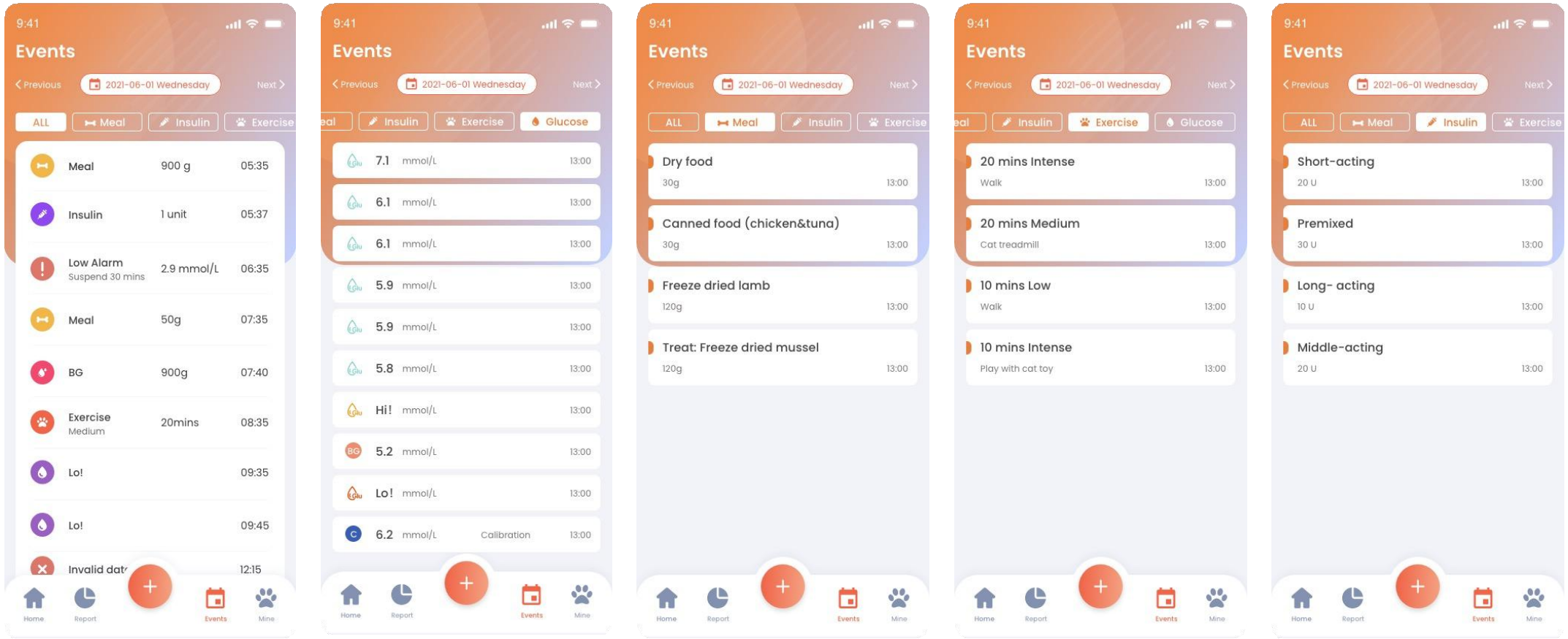
Events List



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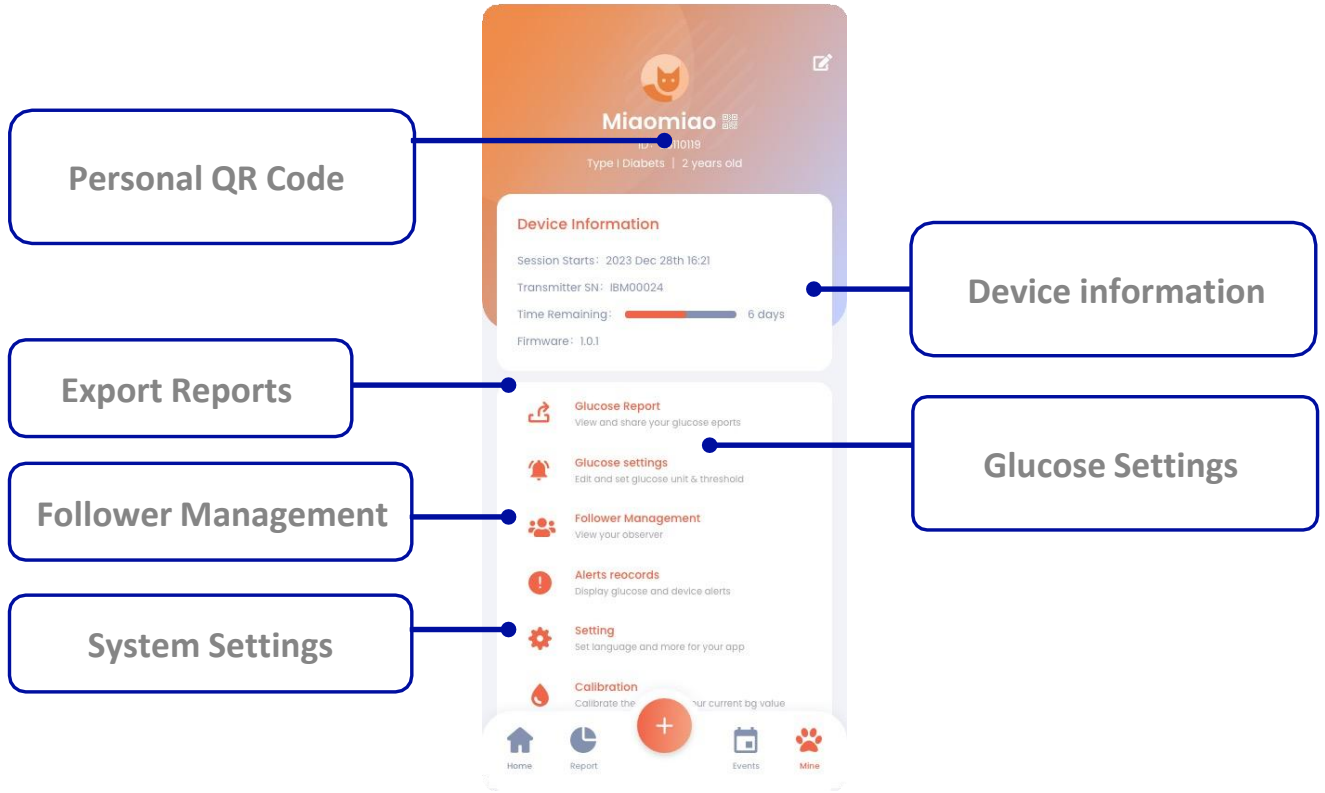

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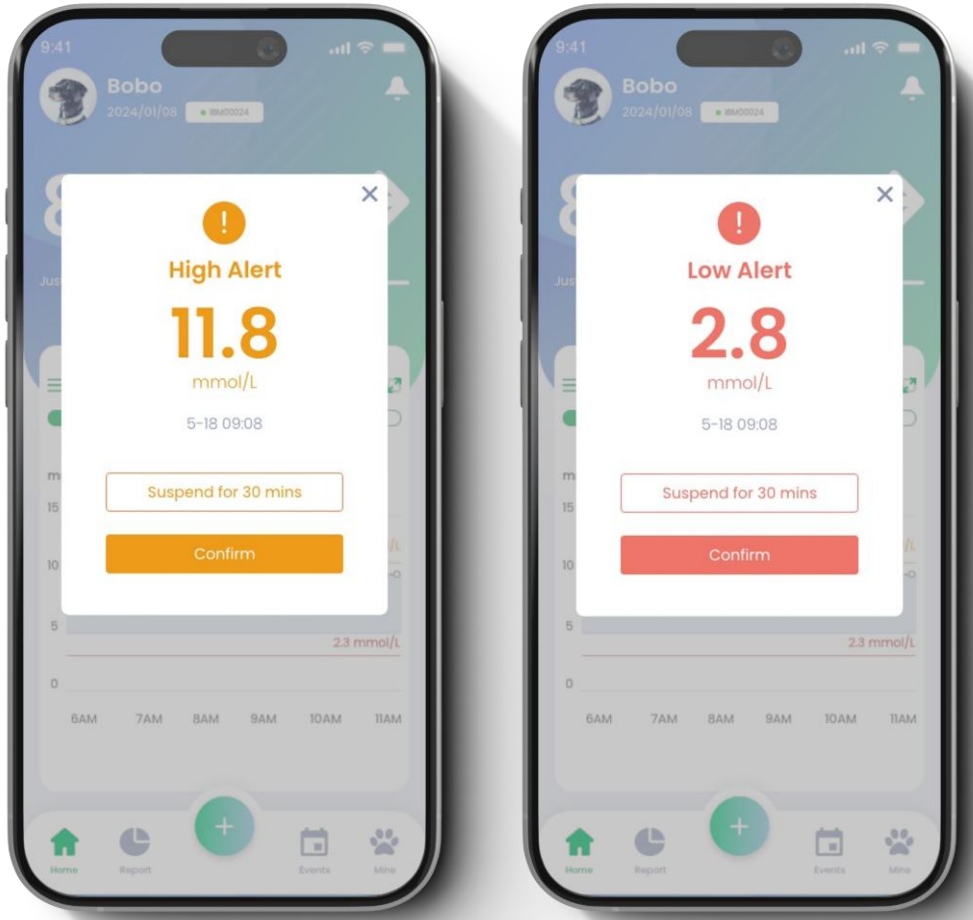
Alert

When high or low glucose events occur, the app will send real-time notifications, allowing pet owners to take timely action.



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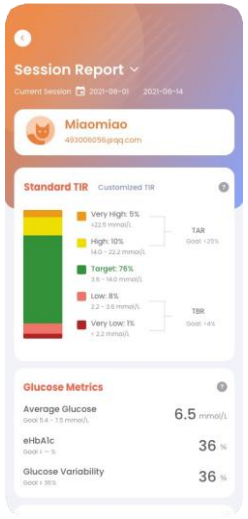
InSight Vet CGM App



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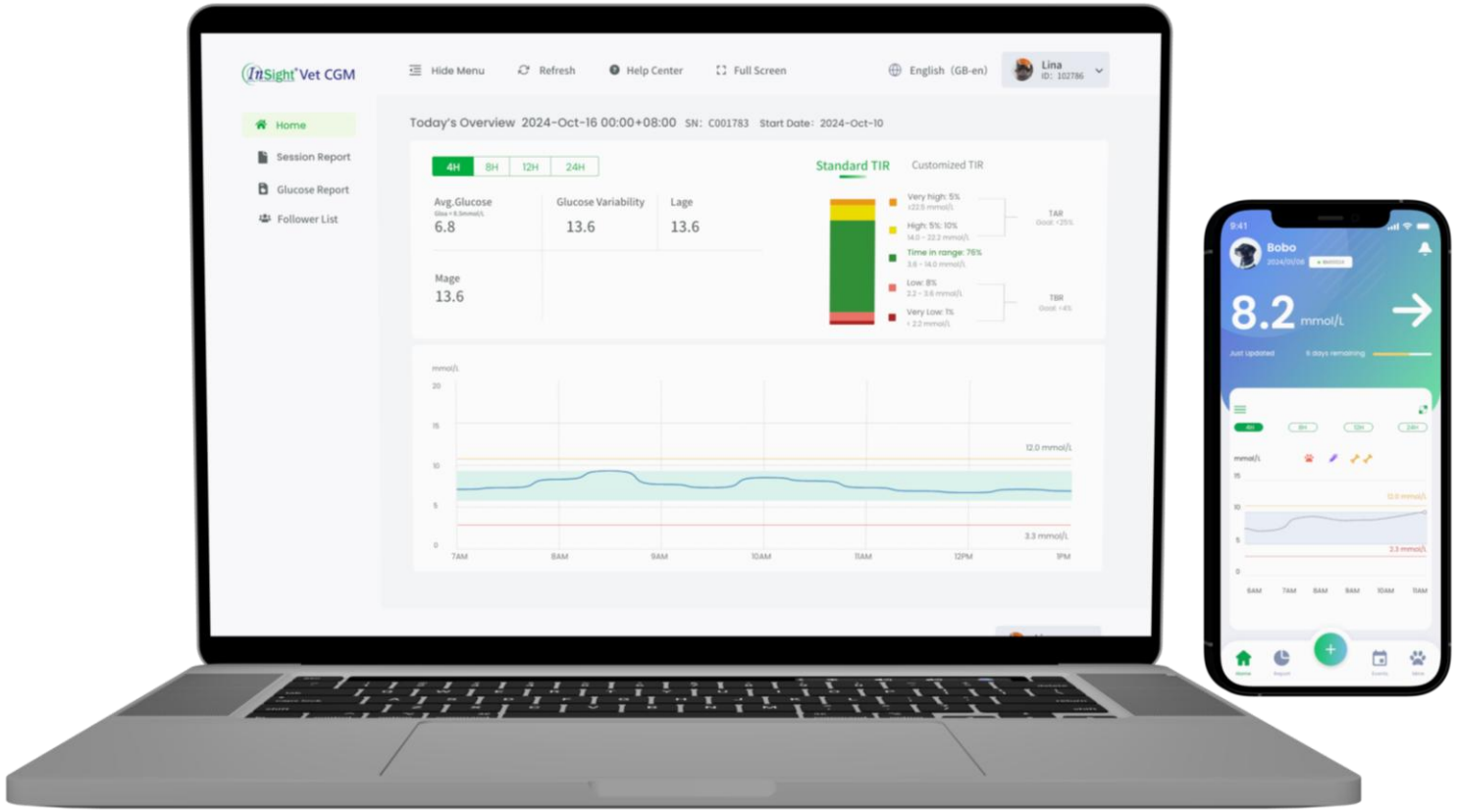
Web Dashboard

www.insightvetcgm.com



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Thank You