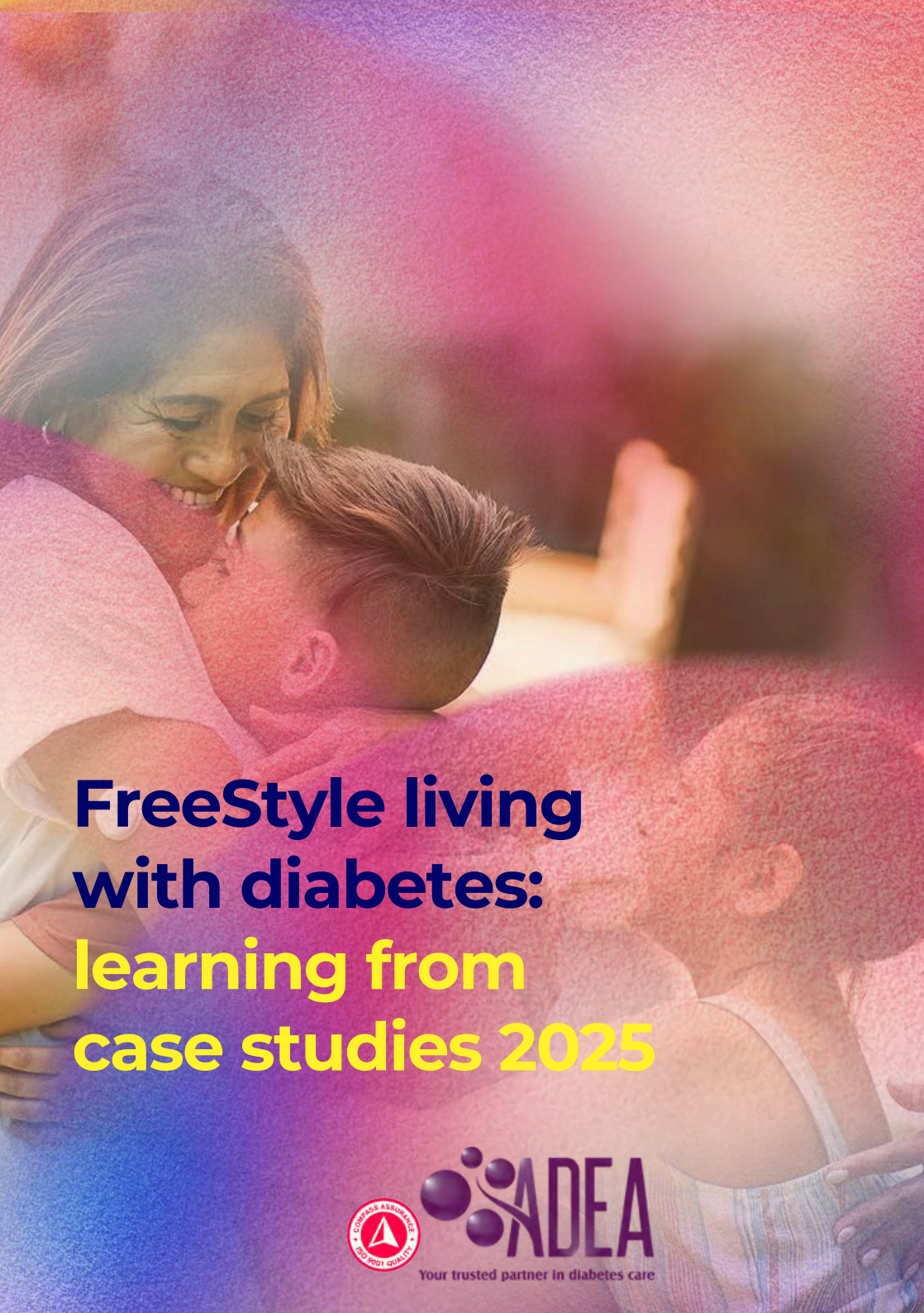

FreeStyle living with diabetes: learning from case studies 2025

ADEA

Your trusted partner in diabetes care

Acknowledgement

ADEA acknowledges the generous contributions from the following members of the review panel:

- Ann Bush, RN CDE, ADEA
- Angela Llewellyn, RN CDE
- Peta Tauchmann, RN CDE
- Dr Sue Lynn Lau, Endocrinologist
- Adam Lamendola RN CDE

Thank you to all who attended this year's Australasian Diabetes Congress (ADC).

FreeStyle living with diabetes: learning from case studies 2025 is financially supported by Abbott.

Disclaimer

1. The claims and opinions expressed in these published case studies are those of the authors and do not necessarily reflect the views of ADEA, unless stated otherwise.

2. Content in this publication is provided for only health professionals and is not intended to be used by consumers, people living with diabetes, and carers.

3. The information provided is for the purposes of general medical education and is not meant to substitute the independent medical judgment of a health professional regarding specific and individualised treatment options for a specific client's medical condition.

4. No responsibility is accepted by ADEA, the publishers or the printers for the accuracy of information contained in the text or advertisements, and readers should rely on their own enquiries prior to making any decision affecting their own interests.

5. The individuals living with diabetes discussed in these published case studies were all de-identified and consented to their case studies being published in this publication.

About ADEA

The Australian Diabetes Educators Association (ADEA) has been the peak organisation for diabetes education in Australia for 43 years. It is the accreditation body for the diabetes education profession through the ADEA Credentialling Program and leads the way in recognising best practice in diabetes education, diabetes care, and diabetes self-management. ADEA also reviews and endorses educational programs developed by external organisations for professional development purposes.

Among the 2,604* ADEA members, more than 1,791* are Credentialled Diabetes Educators (CDEs) in Australia. These specialists in diabetes education, management, and care offer support to the estimated 1.5 million people living with diabetes in Australia.

ADEA works closely with Diabetes Australia and the Australian Diabetes Society to lead and advocate for contemporary, evidence-based best practice, person-centred diabetes education, and care for people with diabetes.

About Abbott

Abbott creates breakthrough products in diagnostics, medical devices, and nutrition that help you, your family, and your community lead healthier lives full of unlimited possibilities. Today, 114,000 of us are working to make a lasting impact on health in more than 160 countries we serve.

**Numbers as of 30 June 2025.*

FreeStyle living with diabetes: learning from case studies 2025

FreeStyle living with diabetes: learning from case studies 2025 is run to acknowledge and reward case studies that address contemporary issues in the practice of diabetes care, diabetes education, and self-management in the use of FreeStyle Libre CGM system and Ambulatory Glucose Profile (AGP).

Submitted case studies include principles of person-centred care and aim to adhere to the Diabetes Australia Position Statement: Our Language Matters. The cases discuss the use of FreeStyle Libre CGM system and LibreView, including the AGP Report, while addressing the following questions:

1. How have the client's outcomes (clinical or non-clinical) improved with this technology?
2. How has the technology been used to make a difference to a client's quality of life?
3. How has the technology changed practice for an individual health professional or the diabetes care team?
4. How has it helped to prevent an adverse event?
5. What are the challenges clients have found with this technology? What has been done as a consequence?
6. Discuss innovative ways used to increase TIR.
7. How has the FreeStyle Libre or Libre 2 helped facilitate living with diabetes?
8. Authors are encouraged to reference the use of the NovoPen 6 with the LibreLink App in case studies when clinically relevant.

The top 10 case studies are featured in this booklet. In round one, a panel of judges selected the top 10 cases for publication. The top four authors were invited to round two, where they presented their case studies. Judges voted on the presentation content and quality. Winners were ranked from first to fourth.

One entrant was selected for the Early Career Award and invited to present their case at the ADC. Their presentation was not judged. To be eligible for this award, applicants were required to be a current full member of ADEA, have less than two years' experience as a CDE or be working towards initial credentialling, and have not previously entered the Abbott Case Study Competition. The case studies in this publication are presented in a random sequence.

Content

Case one

Grace Man

Use of FreeStyle Libre continuous glucose monitoring in a post-bariatric surgery patient with recurrent hypoglycaemia

Introduction

Continuous glucose monitoring (CGM) provides valuable support in contemporary diabetes management, particularly in addressing complex cases such as post-bariatric hypoglycaemia (PBH). This case study presents a female patient with a history of gestational diabetes mellitus and prediabetes who developed recurrent hypoglycaemia following recent bariatric surgery. Although CGM is not yet established as a diagnostic standard for PBH, the implementation of CGM, alongside dietary and pharmacological interventions, was essential in identifying, understanding, and managing her condition.

Assessment

A 35-year-old lady with no prior diagnosis of type 1 or type 2 diabetes but with a history of gestational diabetes and elevated fasting glucose levels 6.9 mmol/L with normal HbA1c 5.3%, underwent sleeve gastrectomy in August 2024. Within three months post-surgery, she experienced five hospital admissions for symptomatic hypoglycaemia, including one episode with unconsciousness collapse with capillary blood glucose 2.2 mmol/L. She reported symptomatic hypoglycaemic such as sweating, occipital pounding headache, pre-syncopal and perioral paraesthesia. A referral was made by the endocrinologist to initiate CGM for the assessment of hypoglycaemia episodes and to support targeted interventions by the care team. A study published in Obesity Surgery in 2019 found that 26.5% of sleeve gastrectomy patients met the criteria for dumping syndrome. Amongst these, 84.8% of these patients reported early dumping symptoms, while 36% experienced late dumping symptoms[1]. Dumping syndrome is a potential complication that can occur after bariatric surgery, where food moves too quickly from the stomach to the small intestine. Early dumping can lead to gastrointestinal symptoms shortly after

eating, while late dumping, occurring 1–3 hours post-meal, can trigger hypoglycaemia due to an exaggerated insulin response following rapid glucose absorption[2]. In this case, late dumping syndrome was suspected based on her symptoms and timing of hypoglycaemic events. Patient was referred to a dietitian and provided targeted education, consistent with international post-bariatric guidelines[3]. Recommendations included:

- Consuming portions of six small meals a day with carbohydrates, 30gm per meal and 15gm per snacks
- Avoiding simple sugars and high GI foods
- Adding protein and healthy fats 15gm per meal and 5gm per snacks
- Introducing low-GI snacks between meals
- Spacing meals and snacks 3 to 4 hours apart
- Avoiding fluids 30 mins before meal and for at least 30 mins after each meal
- Avoid alcohol and caffeine consumption
- Incorporating uncooked cornstarch at bedtime to reduce overnight hypoglycaemia

However, patient was readmitted hospital with symptoms including metallic taste, fatigue and elevated blood ketones measuring up to 1.4 mmol/L, raising concerns about carbohydrate insufficiency and onset of ketosis. During admission specific diagnostic blood tests were conducted, including paired C-peptide and plasma glucose during a hypoglycaemia episode. The results were within normal ranges, excluding insulinoma as a cause (Table 1). These findings confirmed the presence of reactive postprandial hypoglycaemia unlikely to be associated with pathological hyperinsulinaemia. A prolonged 72 hours fast was initiated but terminated at 27 hours at patient's request. At the time of discontinuation, patient serum glucose had dropped to 3.1 mmol/L.

Collection time: 12.32 pm	Result	Normal Level
Glucose (Random)	**3.4**	3.0–7.7 mmol/L
Insulin Non-Fast	0.7	
C peptide	**0.12**	0.26–1.39 nmol/L

Table 1: *Blood glucose and C peptide level.*

Assessment

Refer to AGP report from 6 to 19 April shows that patient spent clinically 9% in low range (3.0 to 3.8 mmol/L), aligning with her symptoms of recurrent post prandial and nocturnal hypoglycaemia. Despite a stable of glucose profile (CV 17.4%) and average glucose 4.8 mmol/L, the elevated time below range and frequent overnight lows highlight ongoing risk of hypoglycaemia unawareness (Figure 1).

Analysis of this case CGM data in Figure 2 reveal significant and recurrent hypoglycaemia, particular in the early morning (2 to 6 am) and post prandial periods. Glucose levels frequently dropped below 3.9 mmol/L, with some record as low as 2.9 mmol/L, which is clinically significant associated with neuroglycopenic risk. In addition, between April 16 and 20, glucose values remained below 3.5 mmol/L for extended durations, highlighting the presence of prolonged hypoglycaemia episodes. These low glucose readings were confirmed by patient using capillary blood glucose testing.

Nocturnal hypoglycaemia was especially concerning. On April 19, glucose levels remained consistently below 4.0 mmol/L from 12 midnight to 7 am, suggesting ongoing glucose dysregulation overnight. These episodes significantly impacted patient's quality of life. Mary reported a fear of going to sleep due to unpredictable nocturnal hypoglycaemia, frequently waking with symptoms sweating, trembling and on several occasions experiencing asymptomatic lows, suggesting hypoglycaemia unawareness. This had effects on her sleep hygiene and psychological well-being. In addition to nocturnal events, Mary experienced postprandial hypoglycaemia likely consistent with late dumping syndrome, with an estimated prevalence 10-20% but well

documented complication post sleeve gastrectomy[4,5]. Refer to Graph 1, several episodes appear 2 to 3 hours post meal, particular following high carbohydrate meals (e.g. juice, biscuits, rice and curry), consistent with late dumping syndrome:

- April 18: Drop to 2.9 mmol/L around 2pm after a carbohydrate-rich lunch.

- April 19: glucose excursion to 9.5 mmol/L at 12 pm, followed by a drop to 3.7 mmol/L within 2 hours- classic rebound hypoglycaemia.

Following review of CGM data, the low glucose alert was reset to 4.5 mmol/L to provide earlier warnings, a strategy shown to reduce the severity of hypoglycaemia[6].

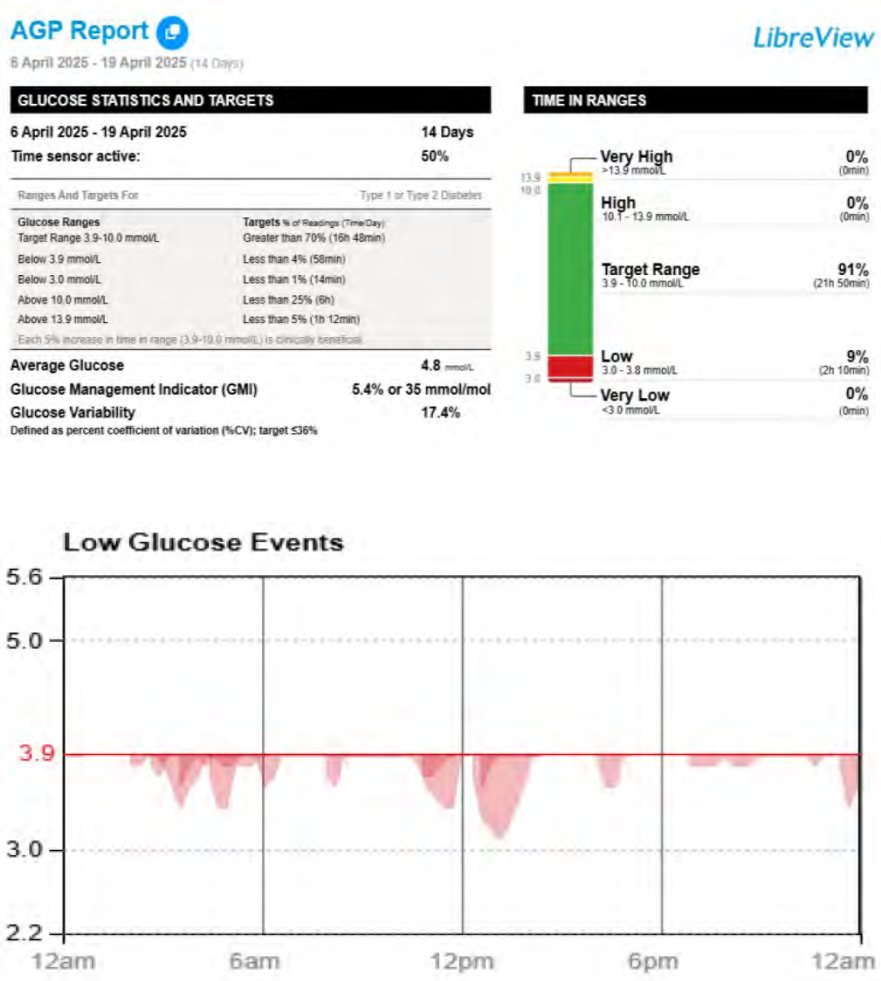

Figure 1: AGP report.

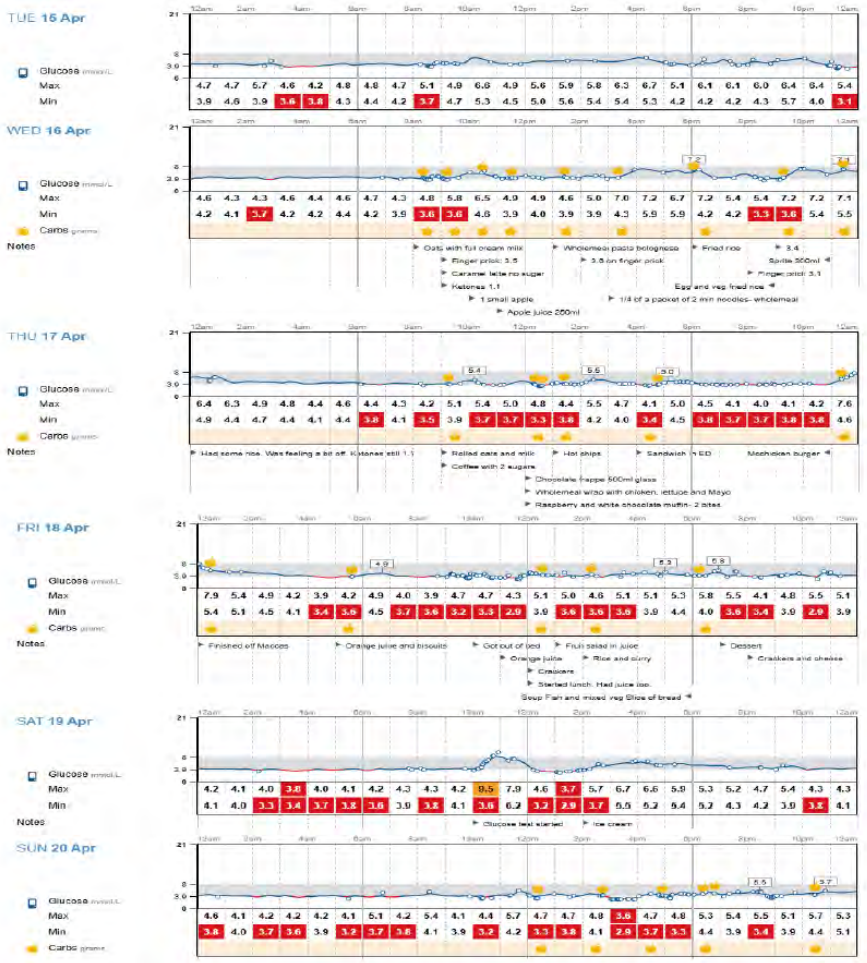

Figure 2: *CGM daily graph.*

Management

This case was reviewed and managed by a multidisciplinary team including endocrinologist, diabetes educator and dietitian. Endocrinologist prescribed an alpha glucosidase inhibitor acarbose that inhibits carbohydrate digestion, thereby delaying glucose absorption and preventing rapid insulin release. Its

efficacy in managing post-bariatric hypoglycaemia is supported by recent study[7]. Following the initiation of acarbose, patient experienced a marked reduction in postprandial and nocturnal hypoglycaemia episodes. CGM data confirmed a reduction in the frequency of hypoglycaemia events. When combined with CGM guided dietary education, acarbose significantly improved patient's glycaemic stability and quality of life (Figure 3).

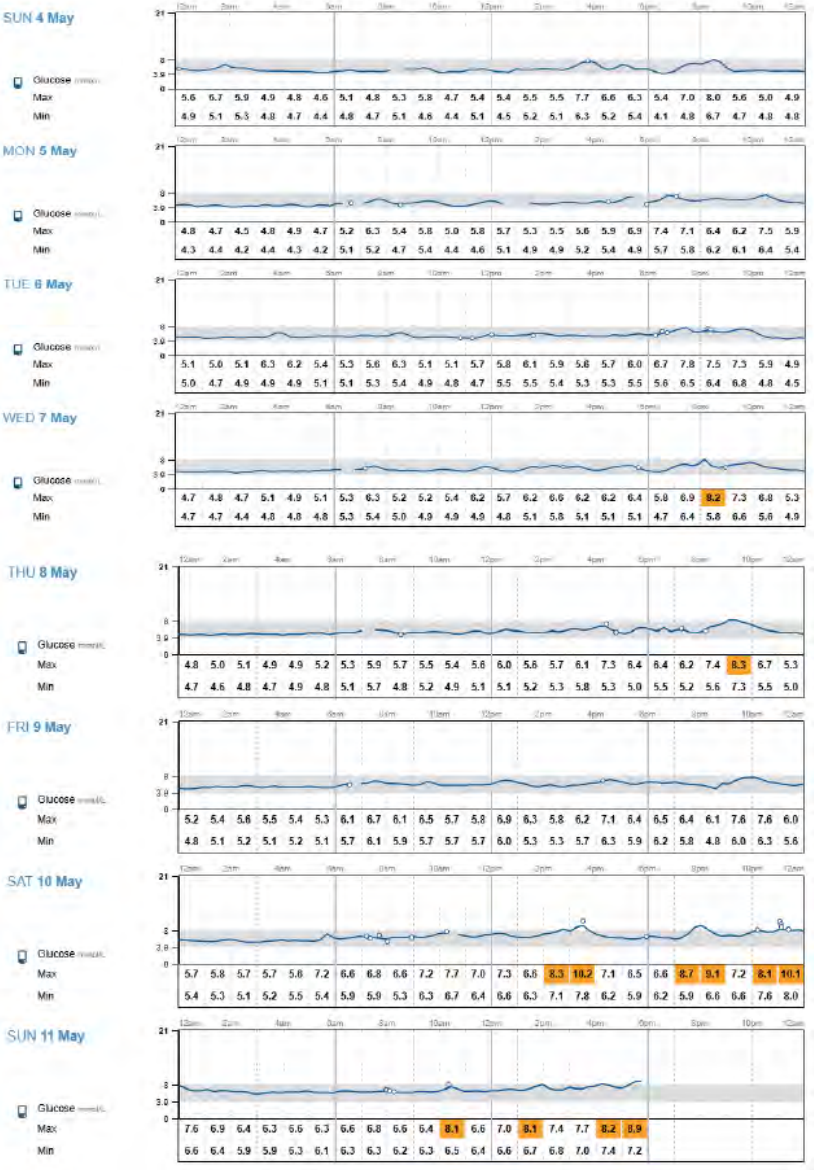

Figure 3: *CGM daily graph.*

Reports generated from CGM platform were regularly reviewed by the care team, enabling detailed analysis of glucose trends, including recurrent postprandial and nocturnal hypoglycaemia. These insights informed targeted interventions such as meal redistribution, initiation of acarbose and the addition of slow-release carbohydrate like corn starch. As a result, patient experienced a significant increase in time in range and reduction in time spent below 3.9 mmol/L with TIR 0%, meeting clinical targets (Figure 4).

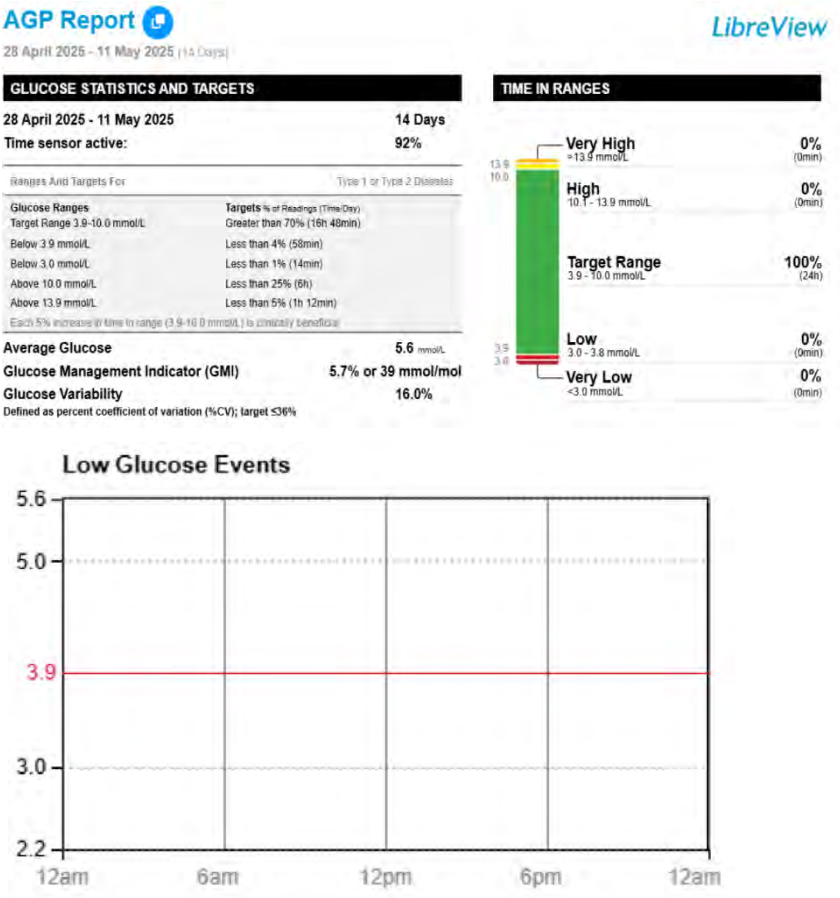

Figure 4: *APG report after acarbose therapy commenced.*

Role of CGM in clinical outcomes and quality of life

Improved clinical outcomes: CGM allowed for accurate identification of postprandial and nocturnal hypoglycaemia patterns, facilitating timely and targeted insulin and dietary interventions. Before CGM, the patient experienced frequent symptomatic and asymptomatic hypoglycaemia; post-CGM, these episodes were significantly reduced (Figure 3).

Enhanced quality of life: The ability to monitor glucose trends in real time reduced the patient's anxiety, particularly overnight. CGM use helped patient regain a glucose control and independence- she returned to work, resumed social activities without fear of hypoglycaemia and was able to sleep uninterrupted.

Safety enhancements: Husband was educated on how to set up and use the LibreView platform. He successfully linked her CGM account to his own device, allowing him to monitor her glucose trends in real-time. The alarm notifications were enabled on his phone, so he would be alerted immediately to any episodes of hypoglycaemia, allowing him to assist her promptly if necessary. A written hypoglycaemia action plan was provided to patient and husband, outlining step-by-step instructions for recognising and treating low blood glucose episodes. In addition, the husband received hands-on education on the use of glucagon injection, including when and how to administer it in the event of severe hypoglycaemia or loss of consciousness. This multidisciplinary strategy enhanced patient's sense of security, reduced her psychological burden, and fostered shared responsibility in her diabetes management, which is supported by literature as an effective strategy to prevent severe adverse events in patients with hypoglycaemia unawareness[8,9].

Professional practice impact: CGM data prompted timely endocrinologist review and helped guide the introduction of acarbose. Health professionals utilised LibreView reports to detect patterns and refine management. The case illustrates how CGM transforms diabetes care into a more proactive and preventative model.

Conclusion

CGM, while not currently guideline-approved for the diagnosis of post bariatric hypoyglyacemia, served as a valuable diagnostic and educational tool in this case. It provided the benefits by understanding glycaemic patterns and informing target interventions. When combined with tailed dietary strategies and pharmacological treatment, CGM use was associated with improved quality of life. However, limitations must be acknowledged. PBH typically presents 1 to 3 years post operatively, whereas this case experienced symptoms within three months. Ongoing monitoring is required. Additionally, patient is currently self- funding her CGM, raising concerns about long term access and affordability. Further studies are needed to validate CGM's diagnostic role in BPH.

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Case two

Liam Collins

From danger to stability: reclaiming glycaemic control and wellbeing with the assistance of FreeStyle Libre 2 technology

Introduction

I am a Nurse Practitioner and Credentialed Diabetes Educator at a metropolitan public hospital diabetes clinic in Sydney. Our multidisciplinary team includes Endocrinologists and dietitians. We aim to provide person-centred, evidence-based education, management, and regular integration of diabetes technology to optimise outcomes.

This case study summarises the management of a 26-year-old male "Jack" (a pseudonym) living with type 1 diabetes, and severe impaired awareness of hypoglycaemia (IAH). Jack was urgently referred to our service for insulin stabilisation, general diabetes education and CGM discussion after a recent endocrinology review. He had not seen a Diabetes Educator in nearly a decade and was following outdated bolus dosing guidelines. Initial FreeStyle Libre data revealed a time below range (TBR) of 28% and high glycaemic variability (CV 61.2%). I aimed to enhance safety, improve time in range (TIR), reduce time below range (TBR), and build self-management confidence.

Assessment

Key findings:

- Medical history: Type 1 diabetes since age 13. Coeliac disease. Nil retinopathy/neuropathy/nephropathy. Severe IAH (BGL ~1.9 mmol/L)
- Anthropometry: 171.6 cm, 70 kg (BMI 26.3)
- Pathology: Not attended before review. He reports his HbA1c is usually 8–8.5% and is only measured annually.

- Insulin:
    - Toujeo 27 units nocte
    - Humalog at breakfast and lunch and Humulin R at dinner - Dosing using DAFNE card (pictured below) – not updated for 9 years. Average doses 15-20 units/meal.
    - Note: The card recommends doses even when he was hypoglycaemic, which he was following.

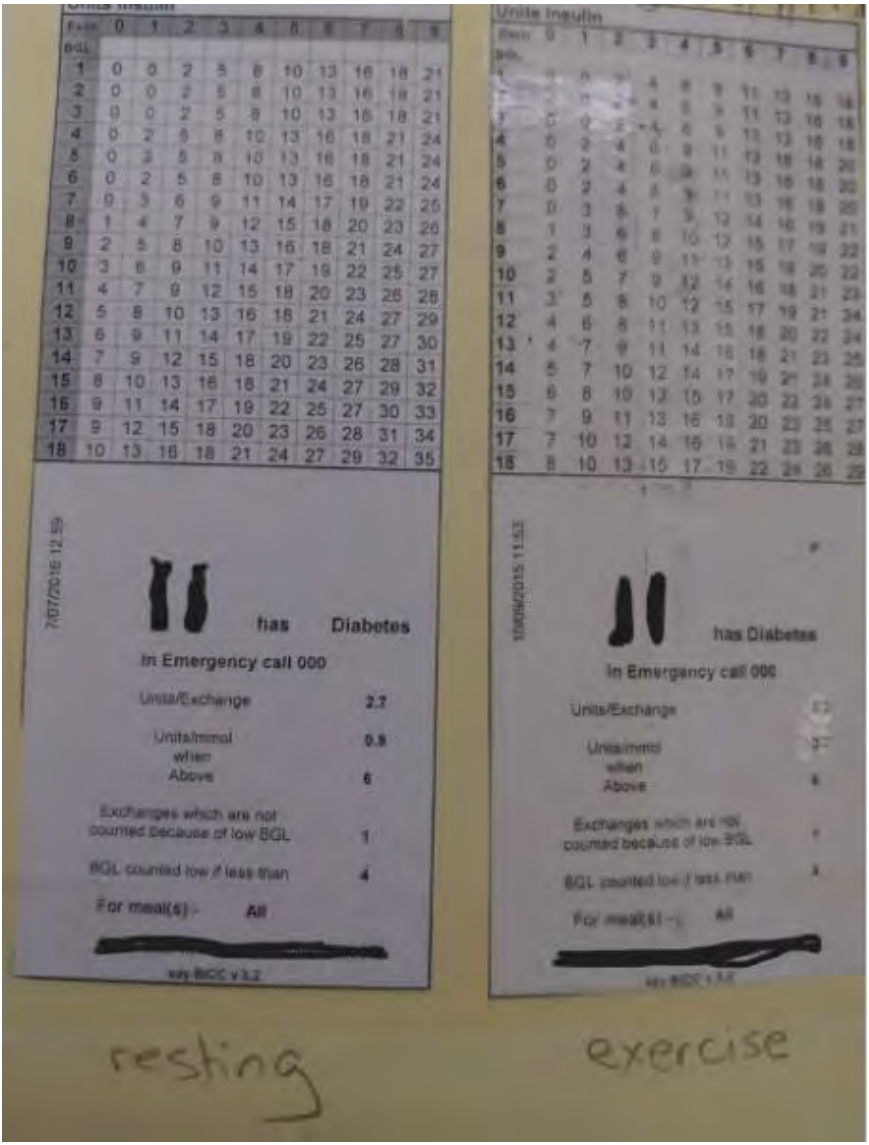

Figure 1: Jack's DAFNE card with personalised dosing information developed in 2015 and 2016.

- Glucose patterns: TBR 28% (14% low, 14% very low), TIR 50%, CV 61.2%. Prolonged episodes of hypoglycaemia overnight and some episodes post-meal.

    - FreeStyle Libre sensor ended 10 days prior to appointment.

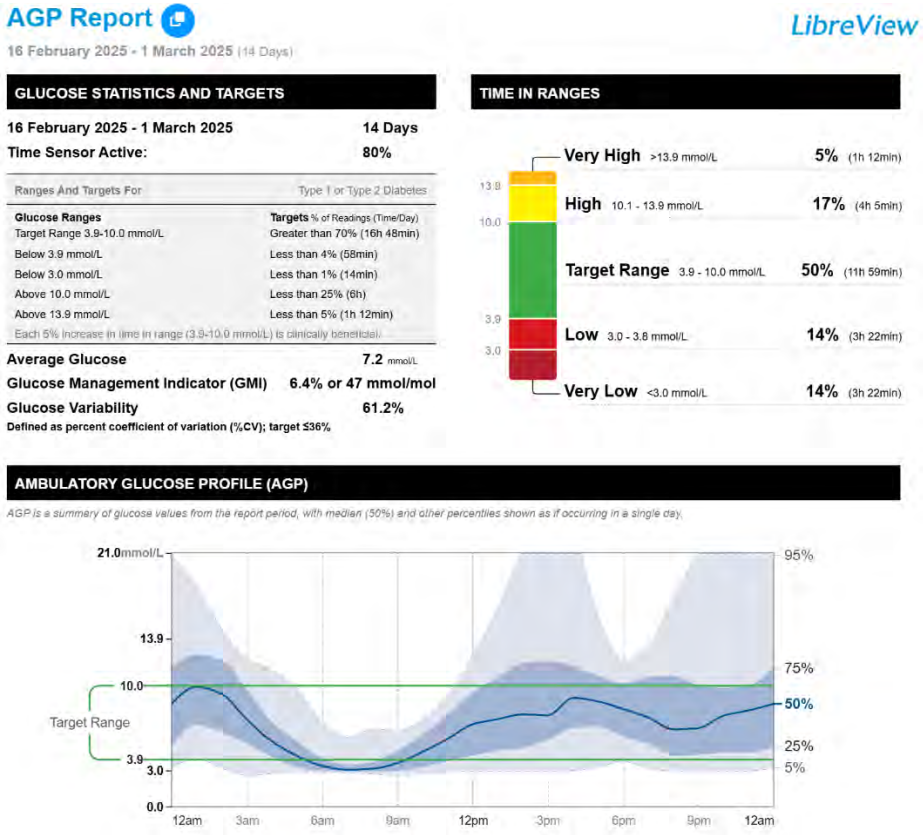

Figure 2: AGP report from first sensor worn prior to review.

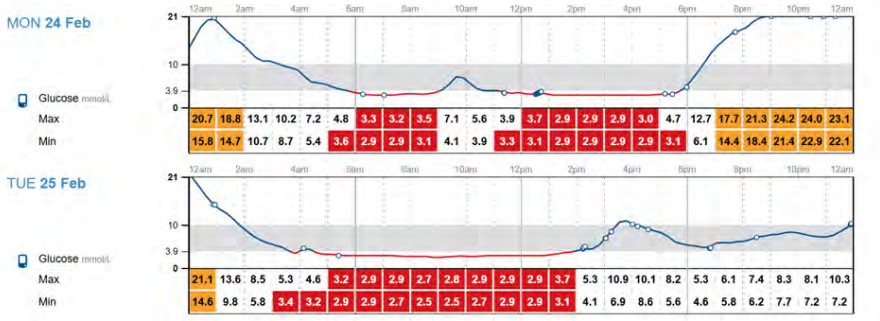

Figure 3: *Two-day snapshot during initial sensor period showing prolonged episodes of hypoglycaemia.*

- Injection sites: Bruising and lipohypertrophy - Injecting into a narrow range near the umbilicus.
- Diet: Gluten Free. Breakfast: cereal and milk, no morning tea. Lunch: 2 sandwiches with ham and cheese. Dinner: Variable, often pasta, mashed potatoes, fried rice and meat.
- Exercise: Mostly sedentary, aside from work hours, where he is always mobile.
- Substance use: Non-smoker, non-drinker, nil illicit substances used.
- Driving: No license (nil interest)
- Social: Lives at home with parents and 2 siblings. Works 5 days a week 1800-2300 at a supermarket.
- In-date Glucagon at home and mother is trained in use.
- Jack presented with a large bruise on his forehead, which he states was from an overnight hypo episode two nights prior. He wasn't showing great concern as it "had happened a few times before". Minimal pain. Nil neurological symptoms.

Management

Over seven weeks, we conducted six sessions, including 2 face-to-face sessions and 4 phone calls.

Session 1: Safety first

Management Plan/Jack's goals:

1. Apply FreeStyle Libre – low alarm set at a higher level of 4.5mmol/L (to give advanced warning of potential hypoglycaemic event)

2. Registered for FreeStyle Libre 2 subsidy on NDSS portal

3. Revision of evidence-based hypoglycaemia management guidelines. Not to inject any bolus insulin if having a hypo[1].

4. Injection site rotation to promote consistent insulin absorption

5. Bolus Calculator app setup with new personalised insulin doses as per table below with Jack's consent.

Before appointment	After appointment
Toujeo 27 units nocte	Toujeo 24 units nocte
Humalog breakfast and lunch ICR - 2.7 units/15g ISF - 1 unit: 0.9mmol/L	Humalog breakfast, lunch and dinner ICR - 1 unit/8g ISF 1.7mmol/L
Humulin R 21 units with evening meal	Switched to Humalog
Target BGL – 6mmol/L	Target pre-meal BGL 8mmol/L[2]

6. Schedule weekly reviews (FreeStyle Libre check daily to ensure no further prolonged hypo episodes)

7. Jack to call if any further hypoglycaemia episodes occur

8. Dietitian review

<u>Session 2 (one-week post-initial consult)</u>

1. AGP and daily graph findings: TBR decreased from 28% to 10%; %CV improved from 61.2% to 44%, TIR increased from 50% to 60%

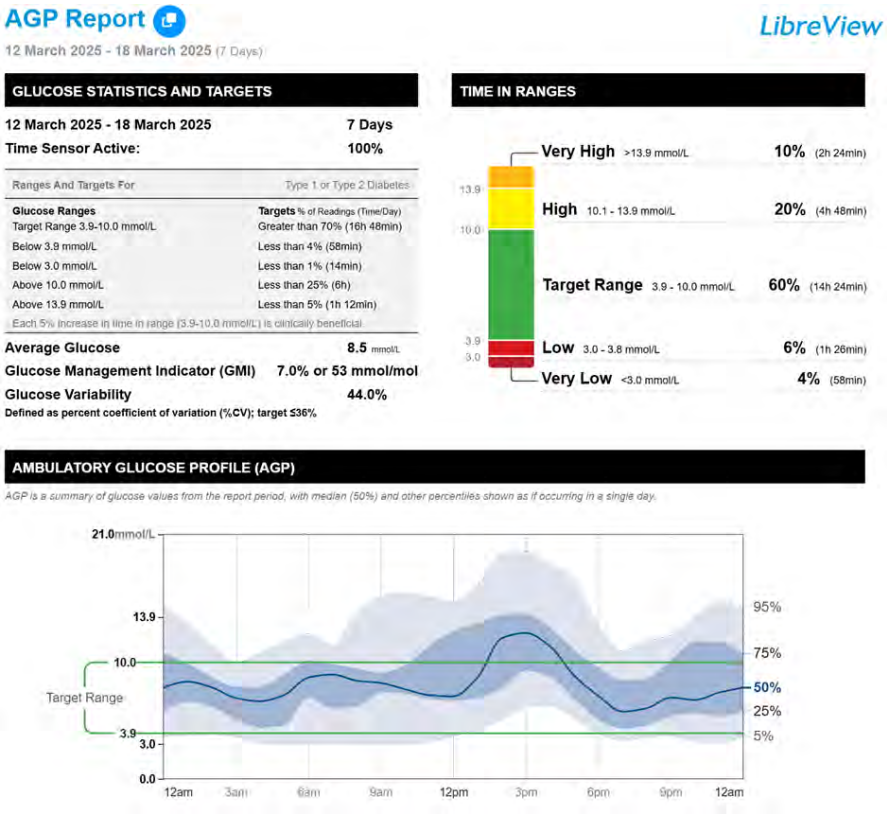

Figure 4: *AGP report for the week following initial review.*

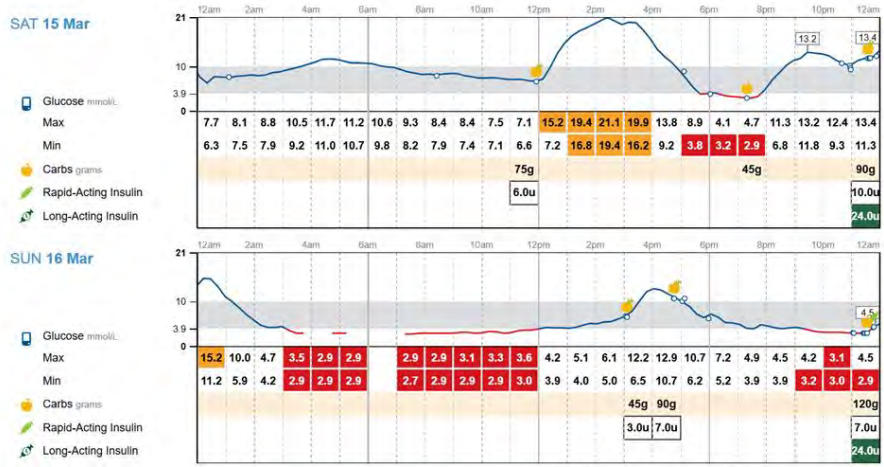

Figure 5: *Sample of daily graphs showing overnight hypoglycaemia and evening hypo episodes during/post work.*

Jack's feedback: Improved safety, reduced overnight anxiety, better sleep, and can see significant benefits in wearing the FreeStyle Libre 2 sensor. No severe hypo episodes.

Plan/Insulin changes:

1. Further basal reduction: Toujeo decreased to 20 units.

2. Reduced ICR to 1unit:9 g and ISF to 1unit:2 mmol/L from 1700-0300 due to low glucose events during and after work.

<u>Session 3 (2 weeks post-initial consult)</u>

AGP and daily graph findings: TBR decreased from 10% to 8%, %CV remained stable - 45.5%, TIR 55%. Occasional nocturnal hypoglycaemia. Revised importance of re-testing BGL post-initial quick-acting carbohydrate treatment.

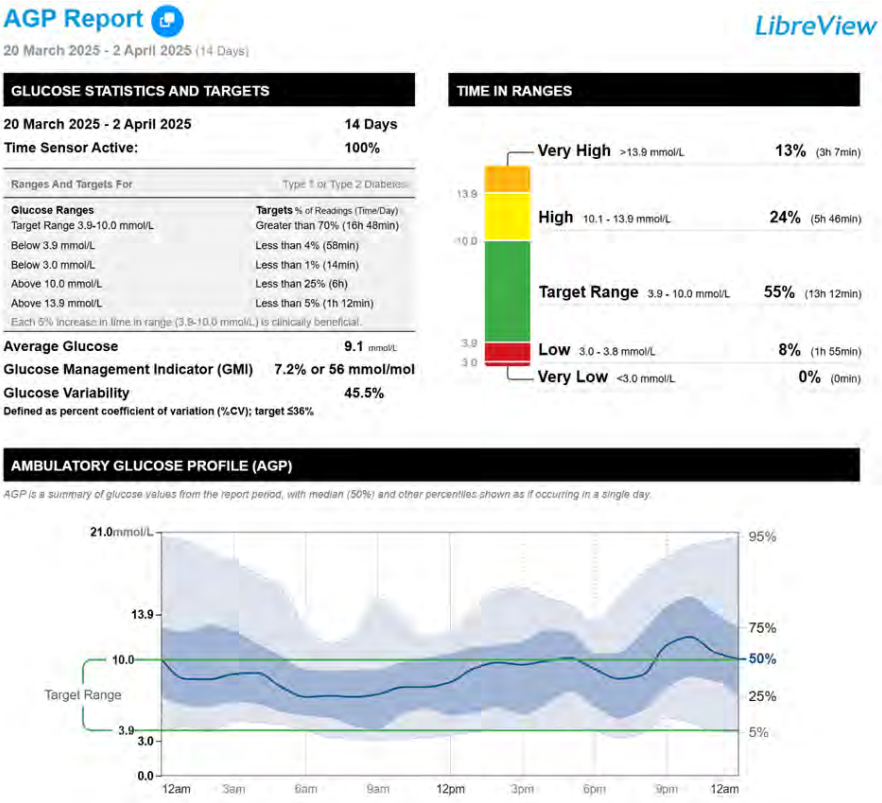

Figure 6: AGP report three weeks post-initial consultation.

Plan:

1. Toujeo decreased to 18 units
2. Continue current bolus doses
3. Review in one week

Session 4 (three weeks post-initial consult)

AGP and daily graph findings: TBR reduced from 8% to 5 %. TIR reduced from 55% to 37% as Jack was on annual leave and mostly sedentary.

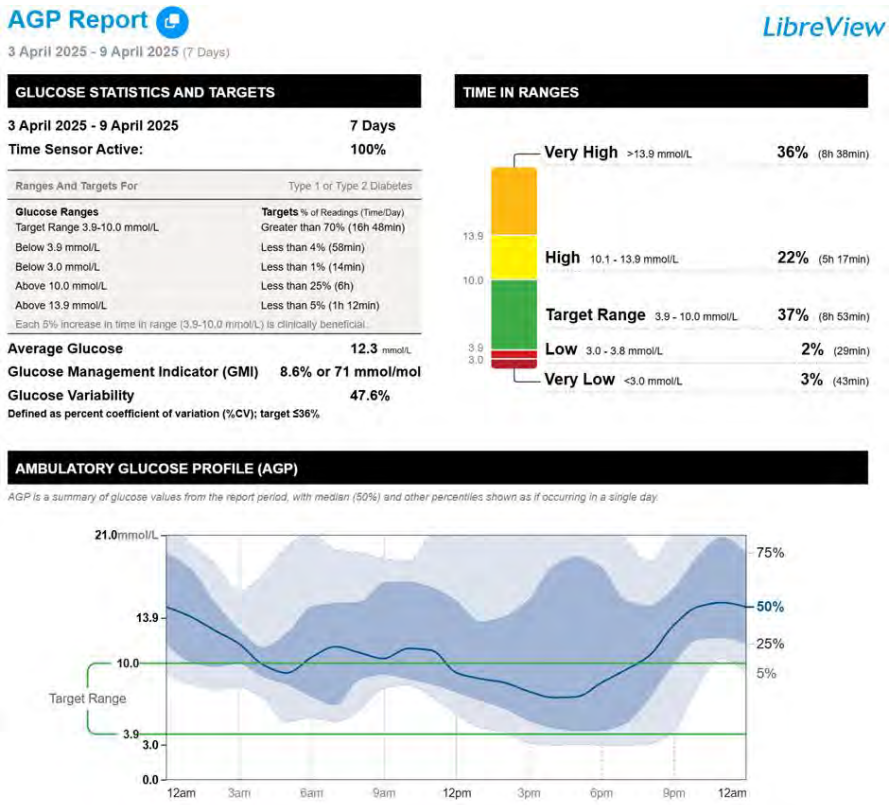

Figure 7: *AGP report from one week before the fourth consultation.*

Plan

1. Toujeo increased to 20 units nocte (increase insulin requirements due to leave)

2. Strengthened bolus doses - ICR 1 unit: 7 g during lunch and dinner only (1200-0300). BGL target reduced to 6.5mmol/L. ISF unchanged as Jack's ICR was strengthened and glucose target reduced. To consider changing the ISF at the next appointment.

Session 5 (five weeks post-initial consult)

AGP and daily graph findings: TBR 0%! TIR 43%. Jack is still on annual leave, causing levels to be higher than usual, but pleasingly, there is no TBR, which was a shared goal and priority.

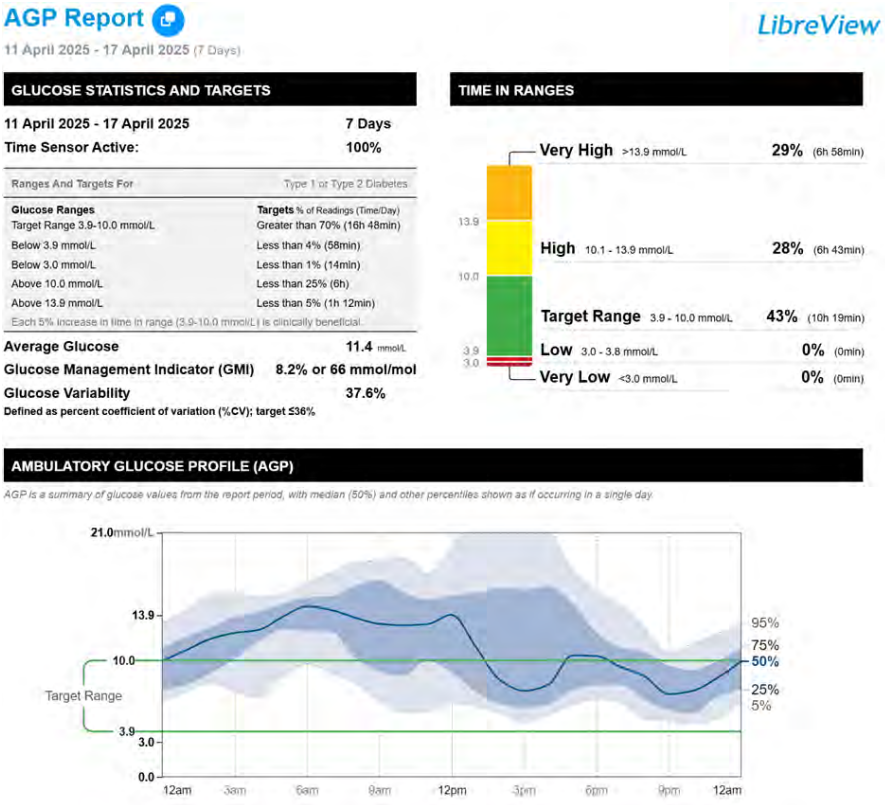

Figure 8: *AGP report from one week before fifth consultation showing 0% TBR.*

Jack's comments: Feels in control, "loves" the instant data and reduced finger pricking burden. He reports reduced anxiety and that his family have noticed a significant improvement in mood. He reports never wanting to go back to life before using CGM.

Session 6 (7 weeks post initial consult)

AGP and daily graph findings: Jack is back at work, and his TBR is 1%, and TIR improved to 62%. He was "extremely pleased" with the results and reported improved confidence and self-management.

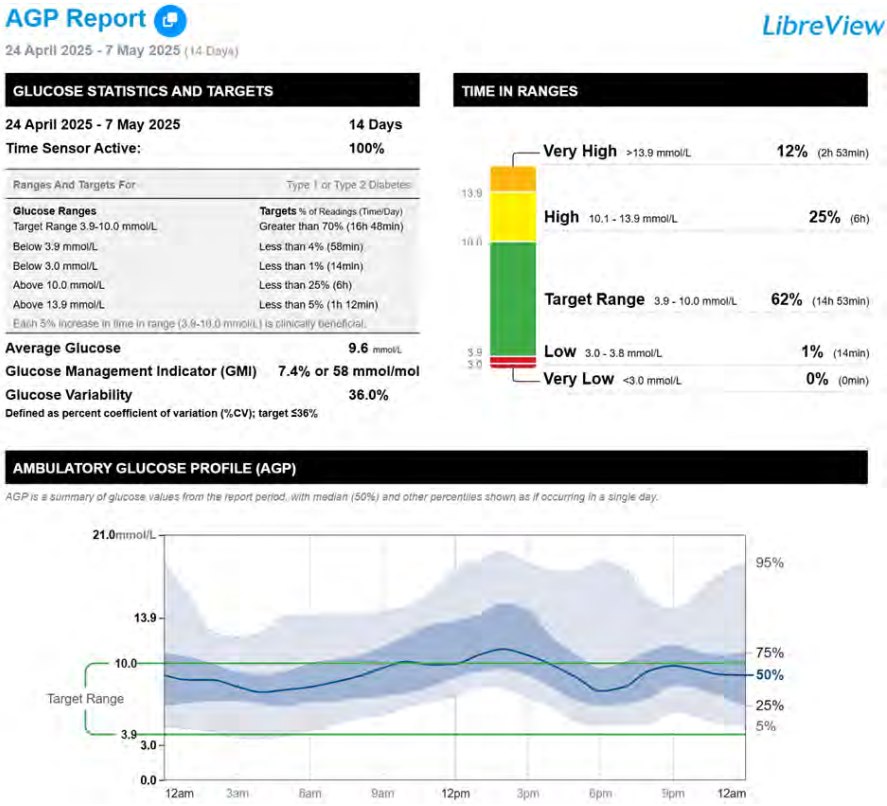

Figure 9: *Two-week AGP report from most recent consultation.*

Plan:

1. Reduced ICR to 1 unit: 9g at 1700–0300, due to improved insulin sensitivity secondary to being active at work.

2. Continue Toujeo at current dose, as all brief hypo episodes were related to Humalog dosing.

Summary of Management outcomes

Reduction in hypoglycaemia: By week six, TBR had dropped from 28% to 0%, meeting our goals, and significantly improving Jack's safety and overall health and wellbeing. This directly correlates with Jack's decreased overnight anxiety and improved sleep quality. His IAH has not resolved, and may take several weeks to months to recover[3].

Increased TIR: At the end of week 6, his time in range (TIR) improved from 50% to 62%. This was achieved even with reducing the total daily dose (TDD) average from 84 units on initial review to 44 units at the end of week 7. Real-world data demonstrate that each 10% increase in TIR correlates to a 0.6% reduction in HbA1c and a lower risk of microvascular complications[4].These changes align with evidence that CGM use improves TIR, reduces hypoglycaemia, and enhances quality of life[5].

Enhanced Self-Management/Empowerment: The FreeStyle Libre 2 eliminated regular finger-pricking and significantly improved data to identify trends and evaluate insulin taken each day. Moreover, we were able to set alarms to detect hypoglycaemia episodes earlier, which was significant due to his IAH. He was also able to change his practice around bolus dosing, ensuring he did not inject if he was having a hypo.

Psychosocial Benefits: He reports significant improvement in his psychological health and well-being. Firstly, he reported reduced anxiety and increased confidence going to sleep, stating, "I'm happy I don't have to go to bed worrying if I'll wake up the next morning". His sleep quality improved

significantly, and he self-reported an improvement in daily energy levels and mood.

Conclusion

This case reinforced the value of integrating CGM data with person-centred education. The 24–hour data access that the FreeStyle Libre 2 provides increased my confidence with insulin management decision making, which in turn reduced nocturnal hypoglycaemia, improved glycaemic stability, and from Jack's point of view, it provided him with a "security blanket" that significantly improved confidence and wellbeing.

For people with diabetes, CGM is not just about numbers, but also, it's about restoring trust in one's body and regaining independence. This case highlights how diabetes technology can improve clinical and emotional outcomes when integrated with person-centred education and support. It has strengthened my resolve to utilise CGM, where possible, in all people with diabetes and embed LibreView discussions into routine care. It will take further reviews to achieve both Jack's and my clinical goals, but within a few weeks, we were able to significantly stabilise and improve the situation from one of danger to stability.

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Case three

Yan Yan Au Yeung

Using FreeStyle Libre 2 CGM for type 1 diabetes management: progress and challenges

Introduction

I am a Diabetes Nurse Educator (DNE) and a Credentialled Diabetes Educator (CDE) working in a public hospital in Canberra. I work in both diabetes outpatient adult clinic and inpatient setting to provide diabetes education to people living with diabetes.

This case study presents a 37-year-old male named Sam (pseudonym), who has been admitted in hospital for diabetic ketoacidosis in late-2024. He had symptoms of polydipsia, polyuria, and weight loss for about 3 weeks prior to admission. He was reviewed by his GP after a blood test. HbA1c was 14%. The GP advised him to present to emergency department.

Sam is originally from China and came to Australia five years ago for work and started his own business about a year ago. He has a busy lifestyle and working Monday to Saturday from 9 am to 7 pm. He speaks Mandarin and is able to communicate with simple English. He lives alone and has no family in Australia. He has a girlfriend living and working in a different state.

Sam has a significant family history of diabetes. His family on his paternal side, including his father, grandfather, aunt and cousin, are all living with insulin-dependent diabetes. He was unable to tell if they have type 1 or type 2 diabetes. He mentioned that his cousin has been insulin dependent since a young age.

Assessment

Sam was diagnosed with type 2 diabetes about two years ago by his GP. He was on Metformin 500 mg for 9 months, but he thought he would be fine without treatment and decided to stop taking any medication for his diabetes until this hospital admission. He is a non-smoker and occasionally drinks one to two glasses of red wine on weekends.

Sam had his HbA1c blood test with his GP prior to the hospital admission. Then he attended further blood tests for autoimmune pathology at the hospital. The results returned with C-peptide of 0.2, positive glutamic acid decarboxylase (GAD) antibodies, insulinoma antigen-2 (IA2) antibodies and islet cell antibodies. This confirmed that he was newly diagnosed with type 1 diabetes (T1DM).

He commenced Optisulin 18 units pre-bed and NovoRapid 6 units three times per day before meals since his diagnosis of type 1 diabetes. He attended his first outpatient DNE clinic review with me six days post-hospital discharge. He was using a FreeStyle Libre 2 glucometer with finger-prick to test his blood glucose level (BGL). He was self-monitoring his BGL three times per day (fasting, before lunch and before dinner). His fasting BGLs ranged from 8.4 to 10.3 mmol/L, pre-lunch BGLs ranged from 8.5 to 13.5 mmol/L, and pre-dinner BGLs ranged from 9.1 to 14.7 mmol/L. His fasting and pre-meal BGLs were out of the target range, which were above 4-7 mmol/L. Sam mentioned that he found it hard to check his BGL at work as he was busy and sometimes forgot. To optimise his blood glucose monitoring, I recommended him to start using FreeStyle Libre 2 Continue Glucose Monitoring (CGM) sensor.

Management

As Sam's first language is Chinese, I set up the FreeStyle LibreLink application on his phone with simplified Chinese. He felt positive about using the CGM as the application could support his language. I used the Abbott Abbott FreeStyle Libre 2 website in Chinese to explain to Sam how the CGM works. I also provided the Abbott FreeStyle Libre 2 booklet to him for reference and further explanation. I applied the first sensor on his left upper arm. He was excited to see how his BGL readings were trending.

Sam attended the second DNE review 2 weeks after CGM started. As Figure 1 shows, his time in range (TIR) was 65%, high reading was 30% and very high reading was 5%. Average glucose was 9.3 mmol/L. However, time sensor active was only 77%. Sam reported the sensor felt off on day 11. He chose to check his BGL with finger-prick testing and a glucometer for the remaining three days until the DNE appointment. He was not sure why the sensor felt off before the 14 days period and was not confident to apply a new sensor by himself. He also mentioned that the sensor felt off the evening after he went for a swim and used sauna facility.

Figure 1

I explained to Sam that the FreeStyle Libre 2 sensor was not designed for use in a sauna. The adhesive of the CGM may weaken from sweating and heat, therefore it felt off before the expected sensor lifetime. I also explained that high temperature could damage the CGM and affect the accuracy of the reading[1].

As the glucose management indicator (GMI) was 7.3% on the AGP report, there was a significant improvement in his glycaemic control compared to the HbA1c on admission. However, there were some high BGLs at specific times of day. As Figure 2 shows, he had some high BGLs one day after 8 pm until 2 am the next day. And both Figure 2 and Figure 3 shown his BGLs increased after lunch time. Sam stated that he forgot to take his insulin sometimes. He forgot when he should inject NovoRapid before his meals. He also stated that the current diabetes management with multiple daily injections was overwhelming for him.

I checked his injection site and found some mild bruises on his lower abdomen. I provided some refresher education to him including how to use insulin, what the insulin profiles are, and managing hypoglycaemia. He asked me what if he skipped a meal. I explained the importance of insulin injection with regular carbohydrate intake. If he decided to skip his breakfast sometimes, he should not give himself the NovoRapid injection as there was a

risk of causing hypoglycaemia. I encouraged him to have regular meals and insulin injections on time.

To support Sam in building confidence to use the CGM, I supervised him to insert a new sensor independently and provided an over patch to cover the sensor. At the end of the session, I referred him to see a diabetes dietitian to learn about carbohydrate counting and recommended him seeing a psychologist to talk about his potential diabetes distress.

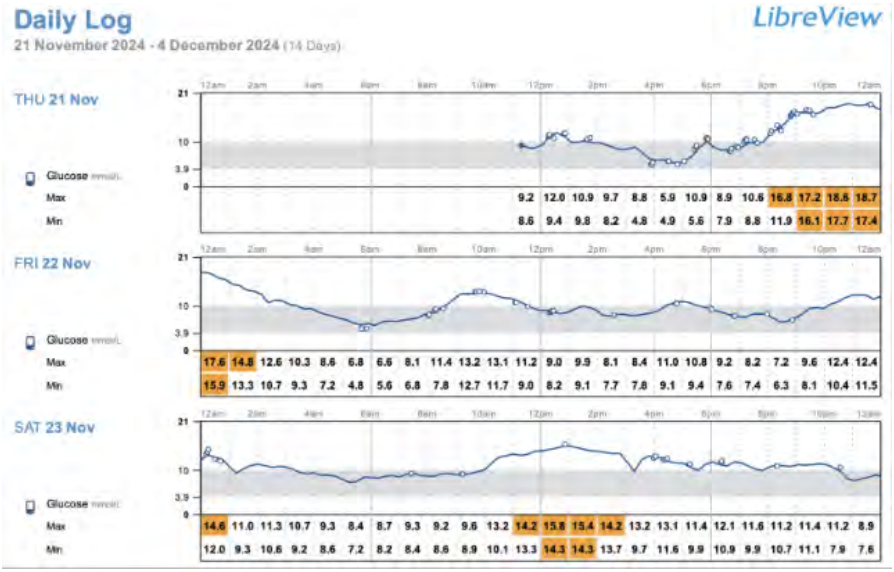

Figure 2

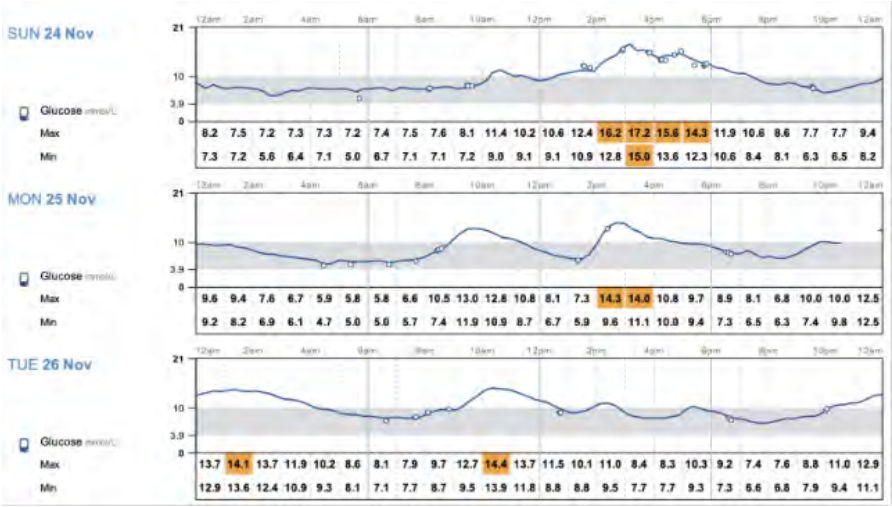

Figure 3

Figure 4

Sam attended his third DNE review two weeks later. As Figure 4 shows, his TIR was 90%, high reading was 10% and no hypoglycaemia episodes. Average glucose was 7.5 mmol/L. Time sensor active was 98%. There was a significant improvement with his diabetes management.

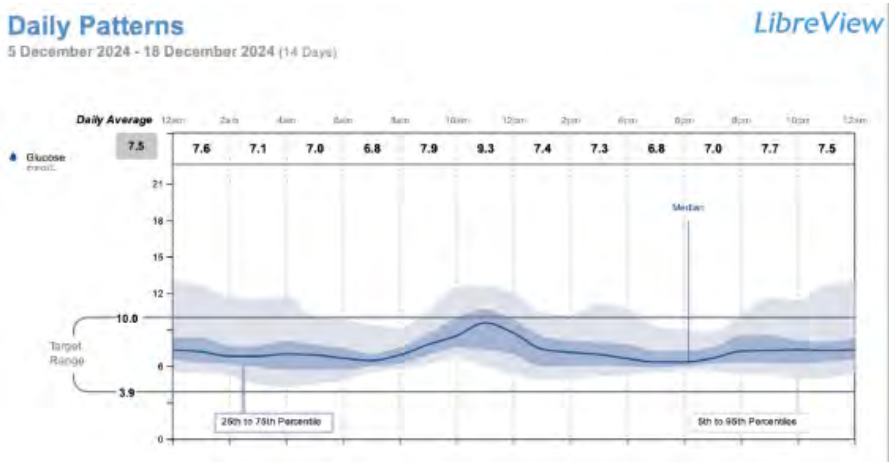

Figure 5

Figure shown his BGL was out of range at lunch time. Sam reported that he forgot to give his lunch time insulin, and he would give it after meals as a catch-up dose. I explained to Sam that this might not be a good practice as he would need to use more insulin after eating. Pre-meal bolus provides better post-meal BGL readings and improved the HbA1c without increasing the risk of hypoglycaemia[2].

Conclusion

FreeStyle Libre 2 Continue Glucose Monitoring (CGM) sensor can help people who are newly diagnosed with type 1 diabetes enjoy the convenience of checking their BGL anywhere and anytime. The AGP report from LibreView provided an excellent platform for DNE to review people's BGL data. It helps us provide better clinical advice to people living with diabetes.

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Case four

Deborah Schubert

Benefits of the FreeStyle Libre 2 and Omnipod DASH in an older person with type 3c diabetes and dementia

Introduction

Grace is a Turkish speaking 82-year-old living with her supportive husband, a daughter and nephew. The primary supportive daughter lives close by. Grace was diagnosed with type 2 diabetes in 1977 and this was reclassified to type 3c diabetes in 2024.

Grace was referred to me by an Endocrinologist for Diabetes Nurse Education under the Hospital Admission Risk Program (HARP) to support diabetes management in the context of declining cognition and to provide follow up for Continuous Glucose Monitoring (CGM). Type 3c diabetes is also known as pancreatogenic diabetes and can account for five to 10% of people with diabetes in Western countries[1].

Type 3c not only affects the insulin beta cells in the Islets of Langerhans, it also impairs glucagon secretion. Glucagon is a hormone that initiates the pathway to increasing blood glucose levels. Also affected the acinar and pancreatic polypeptide cells in the pancreas[1]. These cells are involved in the enzymes that help digest food[2].

Treatment depends on the remaining function of the beta cells. If the beta cells are unable to produce any or an insignificant amount of insulin, then it is treated as type 1 diabetes. If enough insulin producing beta cells are functional, then it will be treated as type 2 diabetes[3].

Assessment

In early 2024, Grace reported ongoing nausea and vomiting and abdominal pain. Grace has a history of mesenteric panniculitis (inflammation of the

vascular and adipose connective tissue that holds the intestines in place) which can cause gastrointestinal upsets. Gastroparesis was ruled out in July 2024 by a gastric emptying study. Pathology tests showed low faecal elastase, low pancreatic lipase, undetectable C-peptides, negative GAD-Ab and IA2-ab. Type 3c diabetes was diagnosed.

Grace had been commenced on insulin five years after her diagnosis of type 2 diabetes. When she was referred to me, Grace was prescribed Ryzodeg before breakfast and before evening meals and metformin MR 1000mg twice daily. Grace has a complex medical history including mesenteric panniculitis, ischaemic heart disease, Non-ST elevation myocardial infarction, depression and cognitive decline.

Upon initial review, there were several issues:

- 8mm needles were used to inject insulin.
- The insulin was being injected up to 30 minutes before eating.
- Grace hated pricking her fingers, but the fear of hyperglycaemia resulted in her “checking her blood sugar levels too much and eating so little” as reported by her family.
- Grace felt restricted with food choices; her family reports that she was sometimes forgetting to eat.
- Grace reported injecting into the same areas of her abdomen for years. Several healthcare providers had noted lipohypertrophy in the past. Grace was reviewed by an Endocrinologist in August 2024 who advised her to avoid injections in the abdomen for four weeks and to inject into her thighs and arms. At this initial review, she was injecting her thighs and arms, and her husband would inject them into her buttocks. Education was given.

Management

A FreeStyle Libre 2 sensor trial commenced in August 2024. The FreeStyle Libre 2 was preferable to other CGMs as each sensor collects more days of data, and the FreeStyle Libre 2 is easy to insert and teach clients.

The LibreView data in figure 1 shows that:

- The Time Sensor Active was only 50% as Grace was forgetting to keep her phone near her at night.
- The Time-in-range (TIR) of 35%, was well below the recommended minimum of 50% for an older/high risk person with diabetes[4].
- Six hypoglycaemia events occurred averaging at 55 minutes each.
- The average glucose was 11.9 mmol/L.

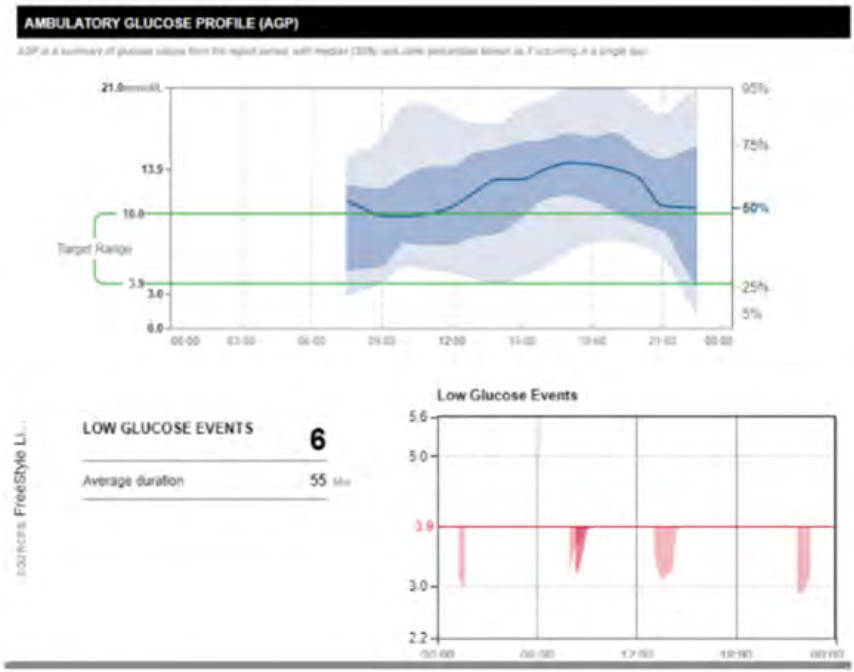

Figure 1: *Libre View data dated 29 August 2024 to 11 November 2024.*

Grace adapted to the sensor and LibreLink app quickly and was much happier using the sensor, as opposed to finger pricking and wanted to continue to use the FreeStyle Libre 2. Once the family became familiar with the FreeStyle Libre 2, they co-ordinated the orders, collected, changed and managed the sensors.

Her primary supportive daughter was thankful to be able to receive alerts through the LibreLinkUp app and would call Grace straight away sorting out any small issues to prevent larger issues from occurring.

I reminded the family that the transmission range of the sensor and FreeStyle LibreLink app is six metres or less, day and night. Any distance over six metres reduces the Time Sensor Active percentage (the percentage of data capture).

In September 2024, Grace was commenced on an antidepressant and reviewed by the HARP Dietitian. Her family reported that she started to feel "happier and more sociable and wanted to go out for coffee". She became more comfortable and confident with her food choices.

Ryzodeg was swapped for NovoRapid when an Omnipod DASH pump was commenced in October 2024. This pump was recommended to the family on the basis that it would be "easy enough to learn." Upon my advice, the primary supportive daughter removed all the Ryzodeg from Grace's house, took it to her own house and stored it in the fridge (just in case the pump did not work out).

The husband or primary supportive daughter sets up the FreeStyle Libre 2 and Omnipod and re-sites every three days, the latter has a re-site reminder in her phone. The Omnipod DASH uses a handheld Personal Diabetes Manager (PDM) to manage the settings. To keep Grace safe, the maximum bolus dose is 6 units to prevent overdose and the Insulin on Board is 4 hours. As per the Endocrinologist, the target HbA1c is 8.0% and glucose 6.0 to 15.0 mmol/L. A week after starting the pump, Grace unsuccessfully hunted through her house for the Ryzodeg to inject herself, forgetting that a pump was delivering the insulin.

We had another discussion on how to prevent and manage hypoglycaemia with type 3c diabetes. In addition to the causes in type 1 and type 2 diabetes, the impaired glucagon function can result in hypoglycaemia[1]. The symptoms are largely the same. Timely treatment is important for all diabetes types but with type 3c, hypoglycaemia needs to acted upon physically and more purposely to prevent and treat hypoglycaemia as the glucagon pathway to stimulate glycogenolysis (breaking down glucagon to glucose) and gluconeogenesis (production of new glucose) is inhibited[1].

Grace carried a hypo kit in her handbag at the first consult. We modified this and she carries this whenever she leaves the house. A sick day plan was discussed and a written copy given to the family. We discussed the risk and prevention strategies of Diabetic ketoacidosis. I showed them how to use a glucagon pen and how to check blood ketones. Education was given on when

to check and what to do depending on the ketone value displayed. Optisulin and Novorapid were prescribed and are stored in the fridge with instructions of how many units to inject and when to inject if there is pump failure. The family report that Grace has not tried to inject herself with these insulins.

In November 2024, Grace was diagnosed with vascular dementia. In type 3c, lack of glucose to the brain cells can lead to impairment in memory, reasoning and judgment[5].

There are approximately 433,000 Australians living with dementia in 2025[6]. The vascular conditions of heart disease and diabetes, as per Grace's medical history, have found to be linked to the development of dementia[7]. Dementia also affects appetite[8]. Sometimes Grace forgets when she has eaten, other times she declines food. She is now on supplements to combat low/poor appetite. The symptoms of depression and dementia can overlap[9] and both can have an impact on self-care and diabetes management.

The Libre View data in figure 2 (below) shows that:

- The Time Sensor Active increased to 66%.
- The TIR increased to 60% due to insulin titration, improved timing of insulin boluses and changes in diet.
- Hypoglycaemia events reduced due to prevention and improved management of hypoglycaemia.
- The average glucose reduced to 9.7%.

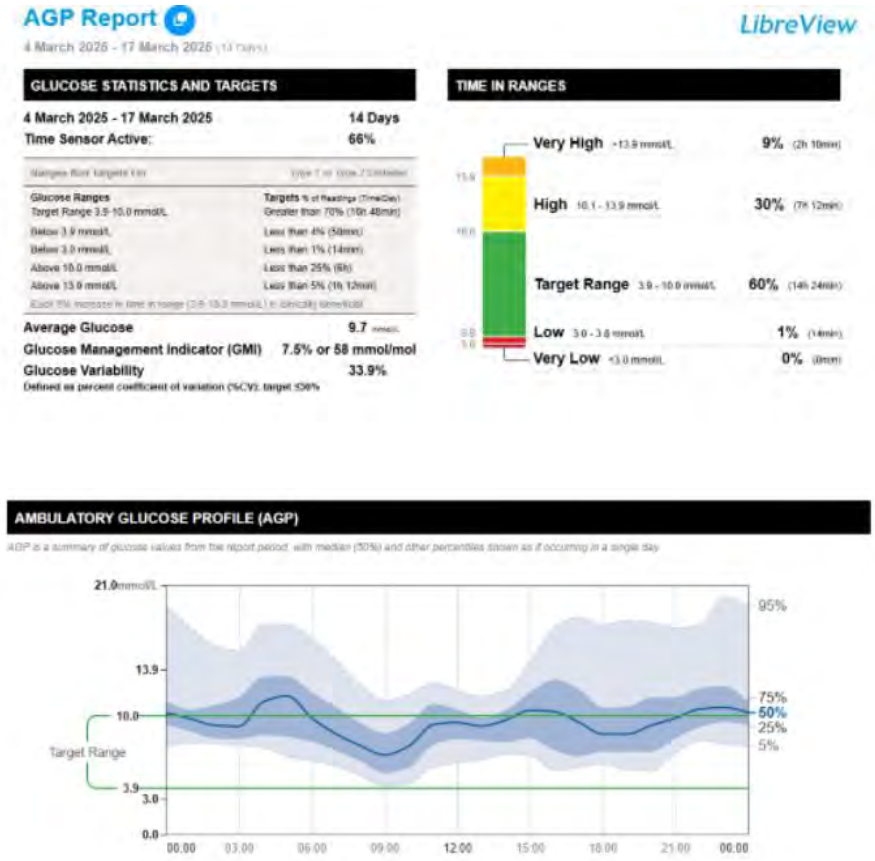

Figure 2: *Libre View data dated 4 March 2025 to 17 March 2025.*

Using the FreeStyle Libre 2 and the Omnipod DASH has solved the issues that were identified at the initial assessment: the lipohypertrophy has resolved; the Pod is injected into different sites in the skin every three days rather than two injections a day into the abdomen. The Omnipod needle is inserted automatically by the Pod, removing the 8mm needle issue. The long-acting insulin is managed by the pump and the family have adjusted to the timing of the meal time boluses. They have the ability and confidence to withhold and titrate a bolus if Grace refuses to eat. Grace is able to check her glucose levels on the LibreLink app as many times as she wants without having to prick her

fingers. Grace can check the cause and effects of her food choices using the FreeStyle LibreLink app. Grace now keeps her phone and the Omnipod PDM close to her day and night. The Time Sensor Active has increased to well above 70%.

As a backup for the daughter who oversees the diabetes management for Grace, Grace's son, daughter-in-law and nephew are involved in the CGM and pump. The daughter who lives with Grace monitors her diet, medicine and exercise.

As Grace's dementia and the duration of her diabetes progresses, there is an increased risk that the diabetes management may be compromised leading to hypoglycaemia, hyperglycaemia or DKA. Grace prefers to use the FreeStyle Libre 2 and the Omnipod to finger pricking, so she is not resistive to the re-siting and presence of the sensor and the pump. She independently checks her glucose levels and acts upon the values to prevent short term complications. Therefore, the long-term use of these technologies can be justified to prevent hospital admissions.

Conclusion

With all these factors in play, the tightrope of balancing the demands of type 3c diabetes, the FreeStyle Libre 2 and the Omnipod have been pivotal in keeping Grace safe. I have been able to titrate Grace's pump insulin doses based on the Libre View reports. Grace confidently monitors her own glucose levels and food choices using FreeStyle LibreLink app. The family work together to support Grace by responding to the LibreLinkUp app alerts, and by ordering, collecting and changing the FreeStyle Libre 2 sensors and the Omnipod pods and giving boluses via the Omnipod PDM. Grace and her family have reported an improvement in her quality of life and that she is "much happier".

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Case five

Rachel Miller

Hyperglycaemia aversion

Introduction

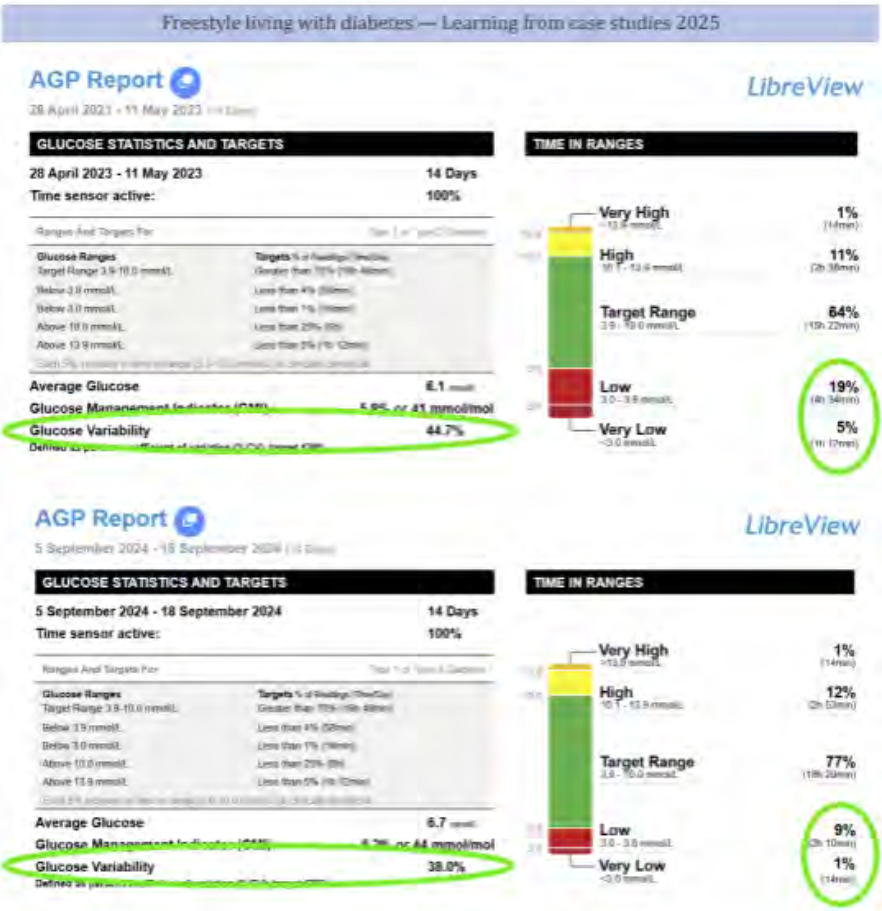
The case study below concerns Jack, a 29-year-old male living with type 1 diabetes who has attended A Health for his diabetes care over a period of 11 years. Recently, he had a consultation with a credentialled diabetes educator (CDE) who is part of a multidisciplinary team, including endocrinologists, CDEs, and dietitians. The CDE collaborates with the team to review and optimise patients' current diabetes management through education, and lifestyle support.

Jack was diagnosed with type 1 diabetes at age 3. He is a primary school teacher who recently relocated to a house 40 kilometres away from the clinic, increasing his commute time to 1.5 hours each way. He has always been fit and active, regularly going to the gym.

In recent years Jack has missed several appointments, making his care challenging. On recent review, Jack's current medications include Toujeo and Fiasp. Due to the missed appointments, we do not have a recent HbA1c however from the LibreView reports, his time in range is generally between 70–80% with a GMI of 6.6%. Jack has a history of a bicuspid valve and hyperhidrosis both of which are not requiring medical treatment currently. One of the most reported issues for Jack is his frequent episodes of hypoglycaemia and he has had two hospitalisations for severe hypoglycaemia in the past.

Assessment

Jack is currently managing his diabetes with a basal-bolus insulin regimen. Since starting the FreeStyle Libre CGM in 2020, he has avoided severe hypoglycaemia hospitalisations, validating its value. However, Jack still frequently experiences hypoglycaemia, as the AGP shows 8–11% time in the low range (target <4%), with one consultation reporting up to 23%.



Jack reports he doesn't like his glucose above 10 mmol/L, and as such administers frequent corrective doses of insulin (1-2 units every 30 minutes) to avoid hyperglycaemia. Jack's coefficient variation/glucose variability also ranges between 33–40%, where a target is <36% and above this may indicate increased hypoglycaemia[1]. The frequent hypoglycaemic episodes are caused by insulin stacking, hypoglycaemia unawareness and Jack's concern over hyperglycaemia. He would benefit from an automated insulin pump to improve insulin delivery precision and reduce hypoglycaemia[2]. However, cost and discomfort with being connected to a device remain barriers. Hence a bolus

calculator app was recommended and agreed to by Jack to try and prevent insulin stacking by utilising insulin on board and avoiding excessive dosing[3].

Management

Jack had previously received carb counting education and was using a carb ratio. To reduce hypo events, he installed the 'MyLife' bolus calculator app. Settings were approved by an endocrinologist (Endo). Issues around exercise and insulin dosing recommendations were discussed, along with how we would use real-time LibreView reports for adjustments.

Time in low was 8% in this consult, glucose variability was 38.3%

The following settings were put into the app:

- Insulin to Carb Ratio: was already using 1:10

- Insulin Sensitivity Factor: based on TDD was set to 1:2
- Insulin Action Time (IAT): 3 hrs
- Insulin on board was going to be used in recommended doses

As Jack is a primary school teacher, he has difficulty attending appointments and phone calls during the day, hence agreed to communicate via email. Libre data reviewed 2 weeks after commencing app. AGP report as shown:

Given the lack of improvement in the time spent in low glucose ranges and the daily glucose trends, I discussed the situation with the endocrinology registrar and suggested reducing the long-acting insulin. I emailed Jack, advising him to decrease his long-acting insulin, a request that has been made similarly over the previous years.

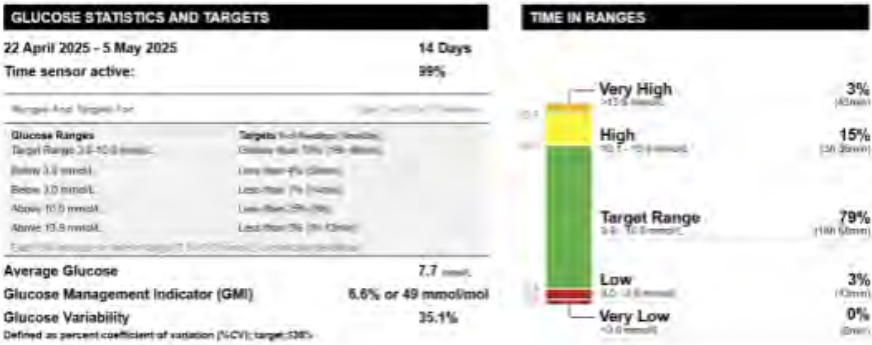
LibreView report checked one month after initial appointment...

Some improvement in time in low range however still not to target.

Had received an email from Jack stating that he believed the reduction in hypos was due to adjusting his calorie intake. He also mentioned that he hadn't reduced the Toujeo dose as requested in my previous email. In the response, encouraged him to lower his Toujeo dose and asked whether he had been using the bolus calculator app.

LibreView report checked another month later, no email reply had been received...

Now at the target range of 3% and the time in low glucose around 3-4% has continued. This is the lowest seen in Jack's LibreView account in a two-week period.



Due to lack of email response, CDE phoned Jack. States that he has increased his Toujeo and is no longer using the bolus calculator, due to inconvenience and not trusting the settings. Jack feels the improvement in low range was due to changed diet and an awareness of the need to not give correction doses as frequently.

Conclusion

The introduction of subsidised FreeStyle Libre CGM has had a significant positive impact on Jack's diabetes management, reducing his time in low glucose ranges and preventing severe hypoglycaemic events. As a CDE, the data provided by LibreView allowed for in-depth analysis of hypoglycaemia occurrence and thus facilitated conversation around making change, in this case around reducing frequency of insulin corrective dosing. Although not successful, the bolus calculator app, used with data from the LibreView, has potentially raised an awareness in Jack of the issue with insulin stacking.

The remote LibreView real-time data has enabled Jack and the team to make more informed decisions about his insulin regimen, particularly when getting to the clinic has proved challenging for Jack. With hypoglycaemia unawareness the ability to set low alarms is improving people's quality of life. We have evidence that CGM has reduced hospitalisation in Jack, and CGM is giving

Jack the ability to be aware of hypoglycaemic events in an attempt to reduce them. However, from a mental health perspective, the case highlights the importance of addressing the emotional aspects of diabetes management,

such as Jack's lack of concern over low glucose and hyperglycaemia aversion. In Jack's case, ongoing support and potential psychological interventions to address these issues is essential if we want to foster a readiness to change, improve safety and overall outcomes.

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Case six

Rebecca Ritchie

Empowering self-advocacy and early symptom management through continuous glucose monitoring in a high-risk adolescent with previous transient neonatal diabetes mellitus

Introduction

M, a 15-year-old female, was exhibiting both physical and psychological symptoms suggestive of type 1 diabetes, significantly affecting her education, part-time employment, and social and family relationships. The family was struggling to receive the support they needed. M's Mum engaged a registered nurse (RN)/ Credentialed Diabetes Educator (CDE) with a certificate in counselling, working in private practice and offering telehealth consults, Australia-wide.

M has a history of Transient Neonatal Diabetes Mellitus (TNDM), a rare condition identified as a mutation of the 6q24 gene[1,2]. She was diagnosed shortly after birth and managed with an insulin pump until remission at approximately 6 months of age. M was advised that there was a significant chance of future type 1 diabetes, which literature suggests is approximately 55–75%, with recurrence typically occurring around puberty[1,3].

Assessment

On initial meeting, Mum had been using a glucose meter to test M's levels randomly and had noticed a steady rise in blood glucose levels, from 7.0mmol/L to 12.2mmol/L. Over the preceding 2–3 months, M developed symptoms including headaches, blurred vision, polyuria, polydipsia, weight loss, and extreme fatigue—all characteristic of early-onset type 1 diabetes. M's fatigue was so severe that she routinely slept from 4–8 p.m. after school, ate a meal, and then returned to bed. M's mental health deteriorated, and she suffered from irrational mood swings

M's mother was unable to reconnect with the paediatrician who had managed her initial TNDM diagnosis. M had an appointment with her General Practitioner (GP), who ordered an oral glucose tolerance test (OGTT) and testing of Hba1c, type 1 diabetes autoantibodies and C-peptide. Results below:

OGTT results 6.6, 7.8 and 9.0

Hba1c 5.7% (6 weeks prior to initial consult)

Antibody testing results glutamic acid decarboxylase (GAD) 7.3 (<8.3) and insulinoma antigen-2 (IA2) 2.5 (<10.7)

C-peptide was 1.66nmol

These results did not confirm a type 1 diabetes diagnosis. However, M's symptoms were significantly impacting daily life, and she had begun restricting food and physical activity to avoid symptom exacerbation.

Addressing M's deteriorating mental health was the highest priority. The previously prescribed Fluoxetine was no longer effective due to the increased stress. Given her history of depression, anxiety, and self-harm, immediate intervention was necessary. The CDE developed a targeted support plan that placed M's emotional well-being at the centre, while also addressing her broader health needs.

Management

The primary objective identified by Mum and M was to gain a deeper understanding of the relationship between blood glucose levels and symptoms, thereby strengthening their confidence in self-advocacy when engaging healthcare professionals (HCPs). Additionally, Mum sought to establish a plan and clear pathways for seeking medical care should M's condition deteriorate, with the goal of preventing a traumatic diagnosis and avoiding a potential intensive care unit (ICU) admission with diabetic ketoacidosis (DKA).

The CDE suggested the use of a FreeStyle Libre 2 continuous glucose monitoring (CGM) device for greater insight and peace of mind. Mum opted to self-fund the device, keen for the reassurance it could provide them.

The initial consultation focused on setup and use of the FreeStyle Libre 2 device, including data-sharing functionalities. M was encouraged to maintain a comprehensive diary tracking her symptoms, dietary intake, and physical activity. Given the presence of heightened anxiety, the primary focus was on helping them interpret glucose data—clarifying when certain readings should be cause for concern and how this information aligned with the goal of informing HCPs of the current glucose patterns. It was emphasized that while glucose readings provide real-time snapshots of current levels, they must be interpreted alongside other clinical indicators to establish meaningful insights.

Further to this, they were provided with a plan in which both were welcome to text the CDE if any concerns were to arise with the data, or if the mental health issues escalated further. Given the challenges Mum had faced in accessing support, it was important the CDE be available to help navigate any concerns about glucose levels and the associated anxieties that might arise with introducing CGM[4,5].

Across the first two weeks of FreeStyle Libre 2 use, M's glucose levels significantly worsened, and glucose data showed clear abnormalities inconsistent with prior pathology. This is clinically concerning given the potential increased risk of diabetic ketoacidosis (DKA) if left undiagnosed for too long. Ambulatory Glucose Profile (AGP) Report, Daily Logs, and the maximum and minimum glucose levels recorded per hour were analysed against non-diabetic parameters[6,7](Figure 1).

	Expected target for someone without diabetes	M's results
Target range	3.9-7.8mmol/L	
Time in range	>91%	60%

Average glucose level	3.9-7.8mmol/L	8.7mmol/L
Glucose management indicator (GMI)	5.4-5.6%	7.1%
Glucose Variability	17% +/- 3%	26.1%

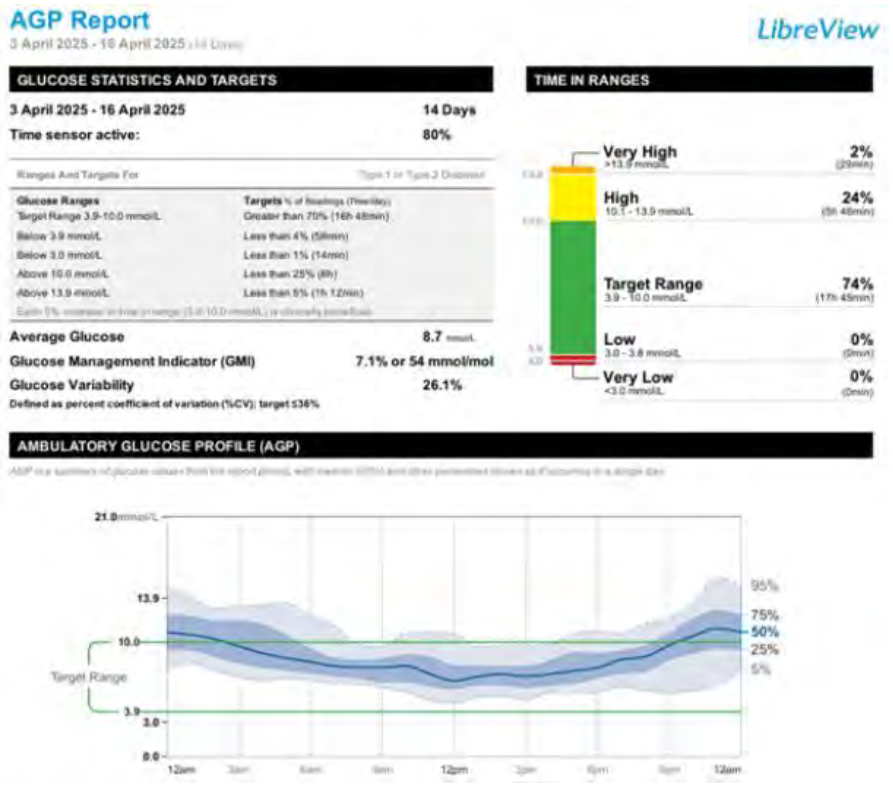

Figure 1

Using the LibreView functionality, the target range was adjusted to reflect non-diabetic parameters. The Daily Log revealed a pattern of overnight glucose elevations: only 1 of 14 nights showed stable levels between 5-6 mmol/L,

while the remaining nights ranged widely between 9.0 to 15.9mmol/L. Fasting glucose levels frequently fell outside the target range (Figure 2).

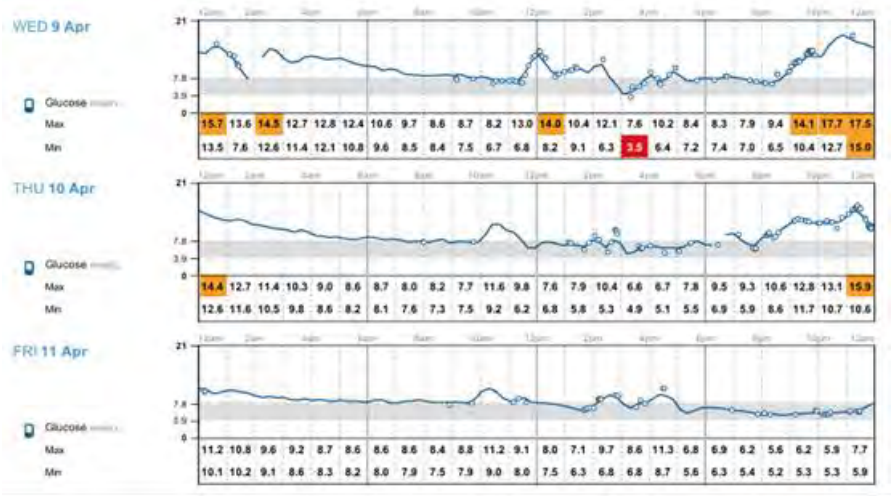

Figure 2

During the consultation, M sought insight into how her diet and exercise affected glucose levels, noting instances of food avoidance due to fear of elevations. The CDE guided her in interpreting FreeStyle Libre 2 data alongside her symptom diary, providing education on the interplay between nutrition, physical activity, and glucose regulation, alongside the underlying pathophysiology of diabetes. By contextualising her symptoms within these broader metabolic processes, M was reassured that appropriate treatment could potentially help manage her symptoms. Data analysis (Figure 2) revealed post-meal glucose elevations and prolonged return to baseline, suggesting insulin resistance as a key concern, and Figure 3 demonstrates this worsening over a short period of time. Although insulin resistance can contribute to β-cell destruction and potentially lead to type 1 diabetes, M's fears were alleviated by the absence of ketones and the eventual normalisation of glucose levels. With ongoing monitoring, any need for additional support could be identified and addressed in a timely manner[8,9].

Given M's undiagnosed status, an action plan was developed to promote safety and confidence while using the FreeStyle Libre 2 device. This included education on how to review data, ketone monitoring, expected results, and early signs of DKA. M was reassured by a clear escalation plan, identifying whom to contact and when to seek urgent medical attention.

Based on the diary kept by M and the deteriorating glucose levels, it was difficult to determine if mental health was worsened by the data that was validating their concerns about the possibility of type 1 diabetes onset or if elevations were the result of stress and anxiety[10]. At this time, the primary aim was to use real-time glucose data over an extended period to advocate for M and validate concerns about the symptoms she was experiencing.

Figure 3

The FreeStyle Libre 2 data prompted a comprehensive referral letter for multiple endocrinologists with the aim of facilitating further assessment and a management plan. An endocrinologist reviewed the analysis, prescribed 500mg of metformin with weekly dose increases, and ordered repeat pathology.

After one week on metformin, the data showed a notable improvement in glucose metrics, indicating an average glucose level of 7.4 mmol/L, a GMI of 6.5%, glucose variability at 18%, and a time-in-range of approximately 87% (figure 4 & 5). Clinically, M no longer experienced weight loss or dizziness; however, persistent symptoms—including headaches, polyuria, polydipsia, fatigue, and extreme hunger—remained. Additionally, metformin-induced nausea and significant appetite reduction were reported. Upon discussion, it remained unclear whether M's symptoms were attributable to glucose fluctuations or inadequate nutritional intake, needing further assessment.

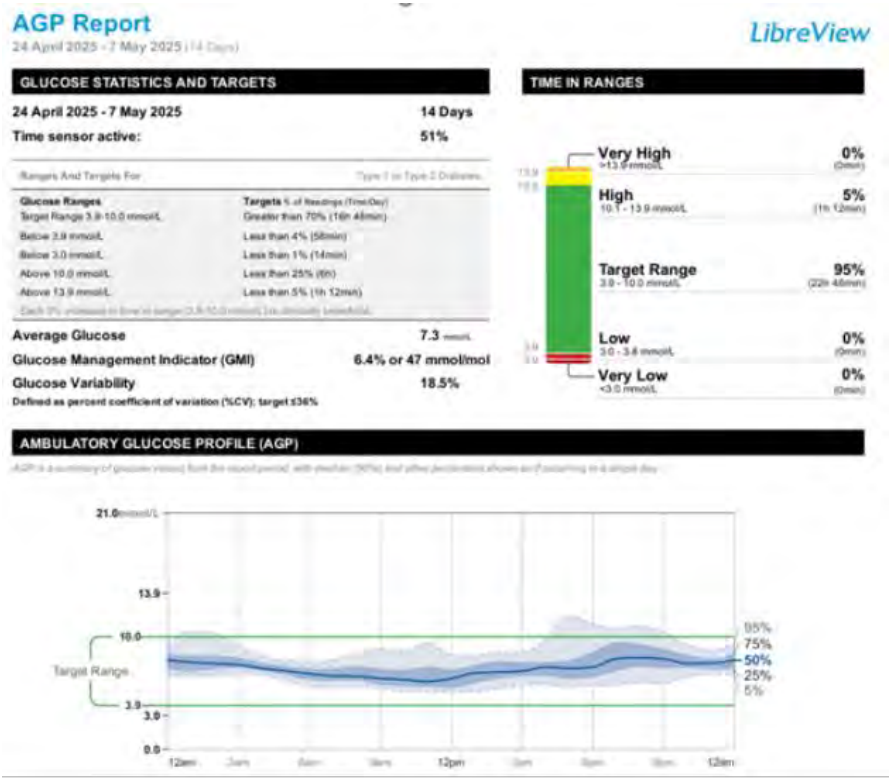
AGP Report
24 April 2025 - 7 May 2025
LibreView
GLUCOSE STATISTICS AND TARGETS
24 April 2025 - 7 May 2025
14 Days
Time sensor active:
51%
Glucose Ranges
Target Range 3.9-10.0 mmol/L
Below 3.9 mmol/L
Below 3.0 mmol/L
Above 10.0 mmol/L
Above 13.9 mmol/L
Targets
Greater than 70% (16h 48min)
Less than 4% (58min)
Less than 1% (14min)
Less than 25% (6h)
Less than 5% (1h 12min)
Average Glucose
7.3 mmol/L
Glucose Management Indicator (GMI)
6.4% or 47 mmol/mol
Glucose Variability
18.5%
Defined as percent coefficient of variation (%CV); target ≤36%
TIME IN RANGES
Very High
>13.9 mmol/L
0%
(0min)
High
10.1 - 13.9 mmol/L
5%
(1h 12min)
Target Range
3.9 - 10.0 mmol/L
95%
(22h 48min)
Low
3.0 - 3.8 mmol/L
0%
(0min)
Very Low
<3.0 mmol/L
0%
(0min)
AMBULATORY GLUCOSE PROFILE (AGP)
21.0 mmol/L
13.9
10.0
Target Range
3.9
3.0
0.0
12am
12pm
12am
95%
75%
50%
25%
5%

Figure 4

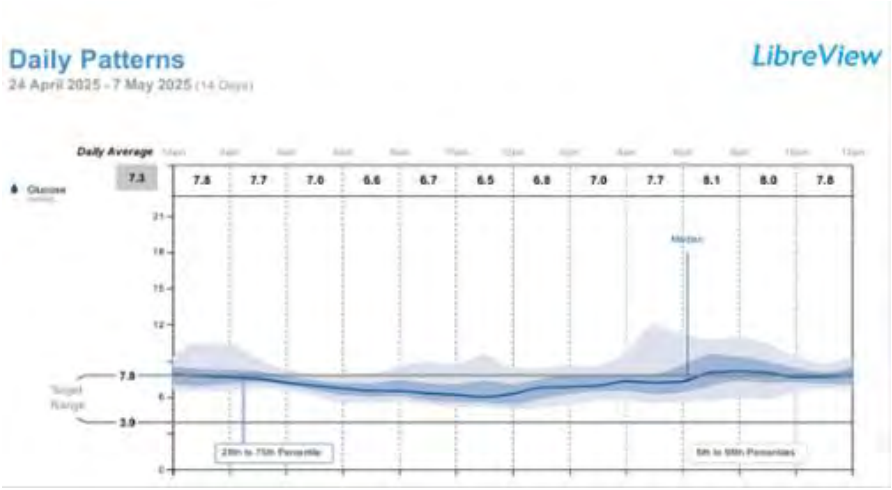

Figure 5

Conclusion

The FreeStyle Libre 2 CGM system has been instrumental in transforming M's journey from uncertainty and distress to empowered self-advocacy. By providing real-time glucose insights, CGM technology has validated her experiences, enabling her family to make informed health decisions before a formal diagnosis. Without it, the fluctuating glucose levels and emerging metabolic patterns may have remained undetected, potentially leading to delayed intervention and increased risk of diabetic ketoacidosis (DKA) or long-term complications. Beyond the clinical data, this case highlights the critical role of patient-centred education and early intervention in diabetes care. M's proactive approach, supported by tailored telehealth guidance, bridged the gaps where traditional healthcare systems failed to provide timely access. By equipping her with essential knowledge, she has gained autonomy over her health, reducing anxiety and enabling better engagement with healthcare providers, all of which were only achievable through access to continuous data available with the FreeStyle Libre 2.

This case underscores the urgent need for greater integration of CGM technology in preventive diabetes care—particularly for high-risk individuals

struggling to access timely endocrinology services. At the time of writing, M does not have a formal diagnosis of diabetes, but she is one step closer. As M continues her journey, she is no longer navigating the unknown; she is armed with knowledge, supported by expertise, and empowered to advocate for the care she deserves.

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Case seven

Ruth Spencer

Are age and CALD background barriers to the use of continuous glucose monitoring?

Introduction

In primary health, the role of the Credentialled Diabetes Educator (CDE) providing private diabetes services facilitates timely diabetes interventions. Betty is one such individual. At 87 years old, Betty has lived with Type 2 Diabetes for 25 years. She has comorbidities including Hypertension, chronic renal disease stage 3, Osteoporosis, Glaucoma and depression. Betty was referred to my private diabetes service via GP referral, for initiation of insulin based upon her Oct 2024 results below: -

- Hb1Ac – 11.9mmol
- Random BGL at consult time 4.9mmol

As the GP had completed medication script and dose within the referral, it is within the scope of the CDE to commence insulin[1]. Betty had significant hurdles when managing her diabetes, she was fearful of needles and had in the last 5 months only taken 5 BGLs randomly ranging from 4.4 to 23mmols. Betty was from a Culturally and Linguistically Diverse (CALD) background, with food culture being of great importance and Betty stated herself. “I want to enjoy my life and my food I don’t know how long I have”

In Betty’s situation the use of the FreeStyle Libre Continuous Glucose monitoring system would enable to us meet Betty’s needs in knowing her Diabetes profile and safety in insulin use.

Assessment

As Betty's Diabetes profile is not well established, we discussed using a continuous glucose monitoring sensor - FreeStyle Libre 2 to establish her diabetes profile including Time in Range (TIR), glucose variability, events, triggers and most importantly if insulin was safe to commence. To further complicate Betty’s situation, she had been seen by her cardiologist 2 days prior to our appointment and was commenced upon Empagliflozin 10mgs

daily, with an episode in the last 48 hours of dizziness, confusion and feeling unwell which resolved over a period of 2 hours.

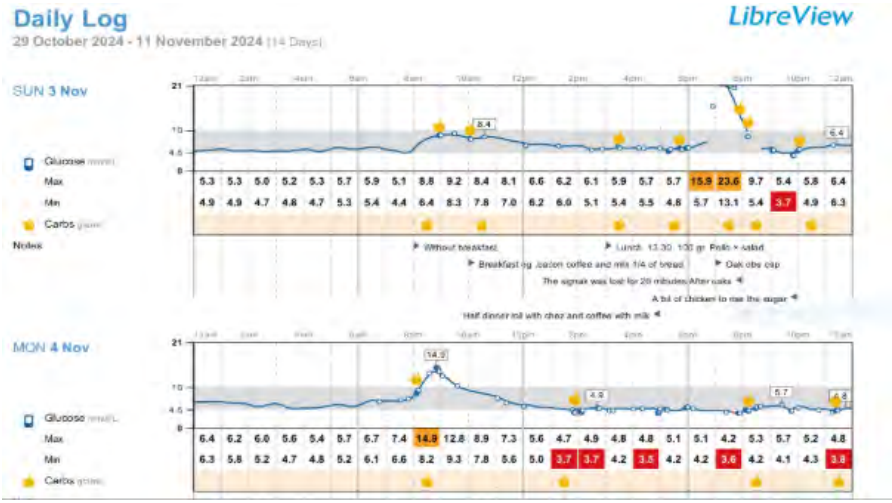
At our initial appointment we discussed the need to establish what Betty's diabetes range was, before commencing insulin, especially as empagliflozin had commenced with a possible hypoglycaemic event experienced. We discussed traditional capillary monitoring, but Betty was extremely hesitant about this due to her needle phobia. She and her son both felt she would not do this as frequently as was required. This discussion highlighted Betty's reluctance to commence insulin and increased monitoring due to needle phobia and these hurdles facilitated Betty in not actively managing her diabetes optimally.

We discussed the use of Continuous Glucose Monitoring (CGM) and factors to be considered if Betty were to use CGM. These were the use of technology and language, as Betty did revert to Spanish frequently in our consult and at 87 years old, she openly acknowledged technology was fearful to her. (218)

Management

To assist Betty to self-determine if she would like to use the freestyle Libre CGM, I asked Betty to read the FreeStyle Libre instructions in Spanish, this assisted Betty to understand the system as she was more proficient at reading in Spanish. Betty then determined she would like to trial the sensor. Our initial consult plan was to wear the sensor for 2 weeks to establish diabetes profile and assess insulin need. Betty was able to use the FreeStyle Libre App fully, following the Spanish instruction education and practical demonstration using a "teach back" method of learning[2]. Betty was linked to my practice FreeStyle LibreLink, enabling Betty to 'reach out' with any concerns and we would be able to discuss 'real time' information and implement diabetes strategy changes quickly based upon consistent information. Betty advised this provided confidence for her to change her approach to her diabetes.

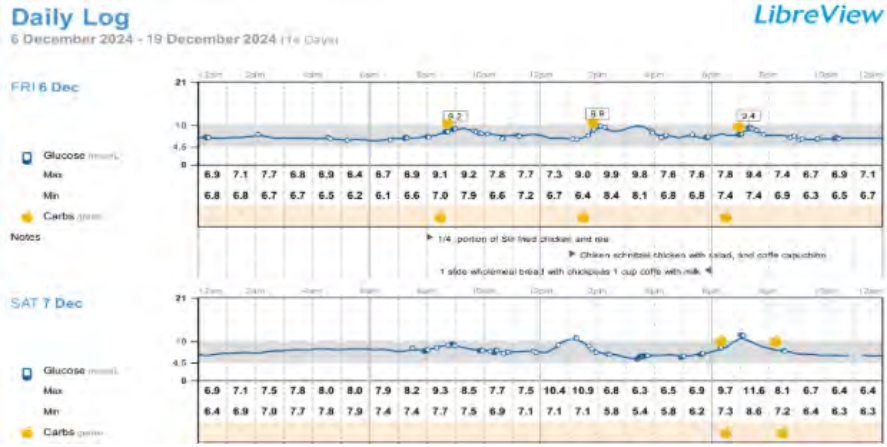
Betty's initial APG Report above indicated a TIR of 89 %, but a Glucose variability of 30.6%. A review of the daily log details illustrated daily fluctuation to mid-teens and frequent short episodes of hypoglycaemia. The first report indicated Betty had irregular eating patterns, carbohydrate loaded meals, and our priority was to reduce / eliminate the Hypoglycaemia episodes due to the risk of complications such as falls, which in older persons have increased incidence of severity[3].



Betty and I consulted 1 week following sensor insertion, to discuss if insulin was to be implemented. It was decided insulin would not be commenced at

this time and a letter sent to Betty's GP advising him of Betty's diabetes profile with empagliflozin. Betty made an appointment to discuss this further with her GP as not in the CDE scope to prescribe or deprescribe treatments (1). Betty was able to visualize correlations of glucose readings to food or lack of, the introduction of empagliflozin appears to have reduced Bettys overall range, which at times is very narrow. This led to Betty and I discussing an individual goal range suitable to Betty, she had been advised to aim for a range of 4 – 6mmol.

With changes in food choice, protein to carb portions, regular eating and a range aim of 6 – 9mmol. I discussed with Betty the need to be aiming for glucose levels which were higher to eliminate risks associated with frequent hypoglycaemia. We discussed the TIR and fluctuation pattern (glucose variability) and impact on Betty's health such as fatigue experienced following food due to high Glucose readings, cognitive changes when glucose too high or low, Betty had experienced these symptoms but using the CGM Betty was able to see the 'Why'. Betty and her son were eager to use another sensor to review her diabetes profile. The APG report for sensor 2 illustrates an important reduction of Glucose variability from 30.6 % to 15.1%. Although the range is higher, there were no hypoglycaemic events. The daily logs notes when completed indicated Betty making changes to develop a regular eating pattern.



Using the data from FreeStyle Libre sensor, Betty and I were able to discuss specific food changes which were manageable and did not detract from Betty's enjoyment of food. We discussed using the FreeStyle Libre sensors on a

regular basis to assist Betty to be self-autonomous with her diabetes management. Betty has continued to wear CGM every 4 weeks, and she has advised

“I have been able to control my diabetes and live and enjoy too”

Betty does have difficulty in applying the sensors due to fine motor strength, but her son applies the sensor, and Betty eagerly advises she is able to navigate the smart phone app, although Betty did state; -

“Glad my phone’s a big one”

A further benefit from Betty’s improved diabetes profile has been an improvement in her renal function, reported by her GP March 2024.

Conclusion

Betty’s age and CALD background did not present barriers which could not be overcome to use FreeStyle Libre CGM. Identifying Betty’s individual needs and accessing resources that met Betty’s needs led to the successful use of FreeStyle Libre CGM. As a result of CGM, Betty did not commence insulin which had great potential to result in severe consequences, with the knowledge we now have. Betty was able to successfully use her CGM information to change her diabetes and in her words: -

“I don’t ignore my diabetes; I can manage it”

As quality of life is vital to humans, Betty’s statement above illustrates her attitude to her diabetes has changed, from being a burden, to active self-management and thus improved quality of life.

As Betty’s diabetes profile has improved so has her renal function thus, demonstrating the far-reaching effects, when CGM is able to be used. Although 87 years old and not growing up in a technology-based society, Betty has clearly demonstrated that age does not prevent use CGM and should be offered to any individual where it may improve diabetes control. Anecdotal observations from Betty and her son are Betty has more energy, can go to social Tuesday with friends and enjoy, as this is her treat day and travel to Peru in June 2025 to see family. As Betty said,

“I wouldn’t be able to go back to Peru, if I hadn’t used the white dot.”

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Case eight

Jijimol Arun

Embracing technology for improved diabetes management

Introduction

I am a credentialled diabetes educator (CDE) and a registered nurse working in a community outpatient service. I am part of a multidisciplinary team that includes an endocrinologist, dietitian and exercise physiologist.

The client, JS, is an 83-year-old male who was referred for titration of his insulin dose to eliminate hypoglycaemia. JS, a retired barrister, lives with his wife and was diagnosed with T2 diabetes 60 years ago. His medical history includes hypertension, hypercholesterolemia, myocardial infarction, coronary artery bypass surgery, carotid endarterectomy, stroke, peripheral vascular disease, non-proliferative diabetic retinopathy and osteoporosis. Although he sees an endocrinologist regularly, he had not seen a CDE for several years.

The most recent endocrinology review revealed eight episodes of hypoglycaemia recorded on his glucose meter in the past month, all occurring overnight or in the early morning. His blood glucose levels (BGLs) during these episodes ranged from 2.1 to 2.8 mmol/L. His HbA1c was 6.3%. JS was taking Mixtard 30/70—15 units before breakfast and 8 units before dinner using a syringe and needle. His insulin regimen had remained unchanged since 2004. He checks his BGL 3–4 times per day. JS also disclosed that he sometimes did not administer the correct insulin dose.

The endocrinologist had frequently recommended switching to an insulin pen, but JS declined, preferring the syringe and needle he was accustomed to. The endocrinologist expressed concerns about frequent hypoglycaemia, suboptimal HbA1c and potential inaccuracies in insulin dosing. At the same consultation, the endocrinologist changed his insulin to Novomix 30/70 and reduced the pre-dinner insulin dose by 2 units, to 6 units, in an attempt to

eliminate overnight hypoglycaemia. JS acquiesced to trying the insulin pen for insulin administration.

Assessment

BMI: 24 kg/m2.

Current diabetes medications: Janumet 50/500 twice a day; Jardiance 10 mg daily; NovoMix 30/70: 15 units before breakfast and 6 units before dinner.

JS attended the CDE appointment with his wife. He brought his NovoPen 6 and NovoMix 30/70 cartridge. JS's wife was apprehensive about the new system, fearing it would be too complex. The CDE explained the features and benefits of the NovoPen 6, such as accurate insulin dosing, memory function, and sustainable design.

Education was provided on the action of Novomix 30/70, timing of doses, insulin storage, rotation of injection sites and sharps disposal. He was shown the injection technique and demonstrated cartridge replacement. JS practiced his injection technique a few times and felt competent to administer his insulin using the pen.

Hypoglycaemia recognition and management were also discussed. Both JS and his wife were stressed about the frequency of his hypoglycaemic events. In addressing their concerns, the CDE discussed trialling a continuous glucose monitor (CGM) and showed JS and his wife the options. JS chose FreeStyle Libre 2 because of the 14-day wear, combined sensor/transmitter components, low glucose alarm function and the fact that he could afford to buy the sensor for ongoing use if desired.

According to the American Diabetes Association (ADA) Standards of Care[1], it is recommended to use real-time CGM for diabetes management and adults with diabetes on any type of insulin therapy. Also, the choice of CGM should be based on the individual's circumstances, preferences and needs[1].

JS was trained in the FreeStyle Libre 2 system, including site selection, skin preparation, insertion, phone app setup, NovoPen 6 scanning, alarms, logging

events, sensor removal, managing travel and medical procedures. Importantly, JS was educated on understanding trends and arrows and responding to alarms. The low glucose alarm was set at 4.5 mmol/L with sound and vibration; the high alarm was disabled to prevent alarm fatigue. His NovoPen 6 was linked with the FreeStyle LibreLink app. His FreeStyle LibreLink was connected to the clinic to enable remote review of his glucose data for insulin dose adjustments.

Management

JS's management goals were to prevent hypoglycaemia and successfully transition to using the NovoPen 6 for insulin administration. According to the ADA Standards of Care for Older Adults[1] CGM glucose target recommendations are:

3.9–10.0mmol/L for >50%

<3.9mmol/L for <1% of the time

Day 3 phone review

JS and his wife reported feeling very happy with the new methods for monitoring serum glucose (SG) and administering insulin. JS expressed confidence in using the insulin pen independently. Figure 1 shows the daily log report of his SG over the first three days. During the review session, CDE discussed the LibreView report with JS, noting no evidence or reports of hypoglycaemia over the observed period. Importantly, there was no indication of overnight hypoglycaemia.

Data from the connected NovoPen 6 confirmed that JS was administering insulin at the correct doses and times. The Daily Patterns report indicated that daytime SG levels consistently exceeded 10 mmol/L, with a peak of 16.5 mmol/L occurring after breakfast and remaining above target until the evening.

To address the elevated daytime SG, the CDE recommended increasing JS's Novomix 30/70 morning insulin dose from 15 to 17 units while maintaining the evening dose of 6 units.

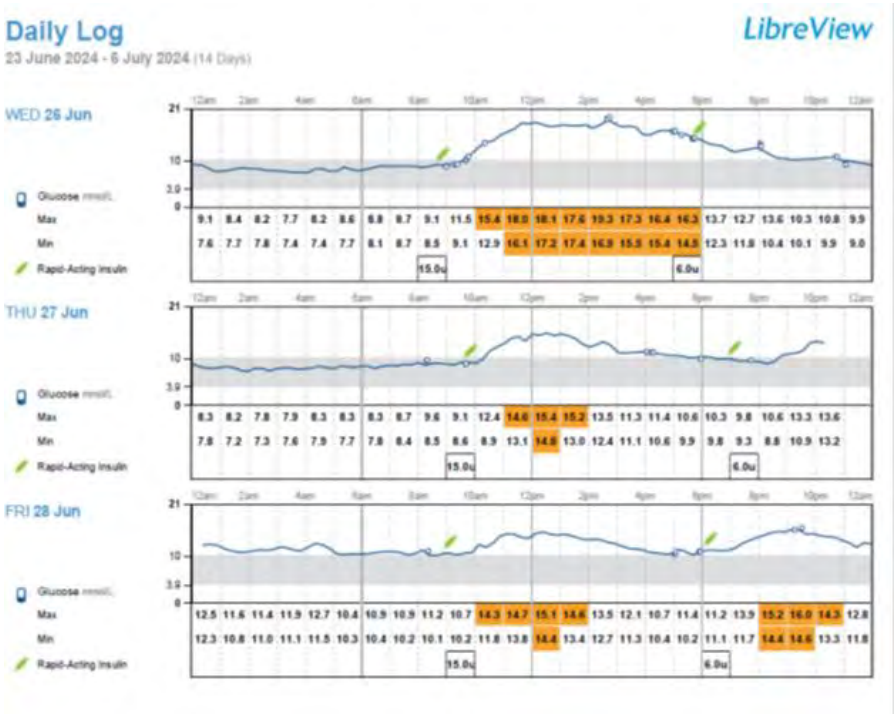
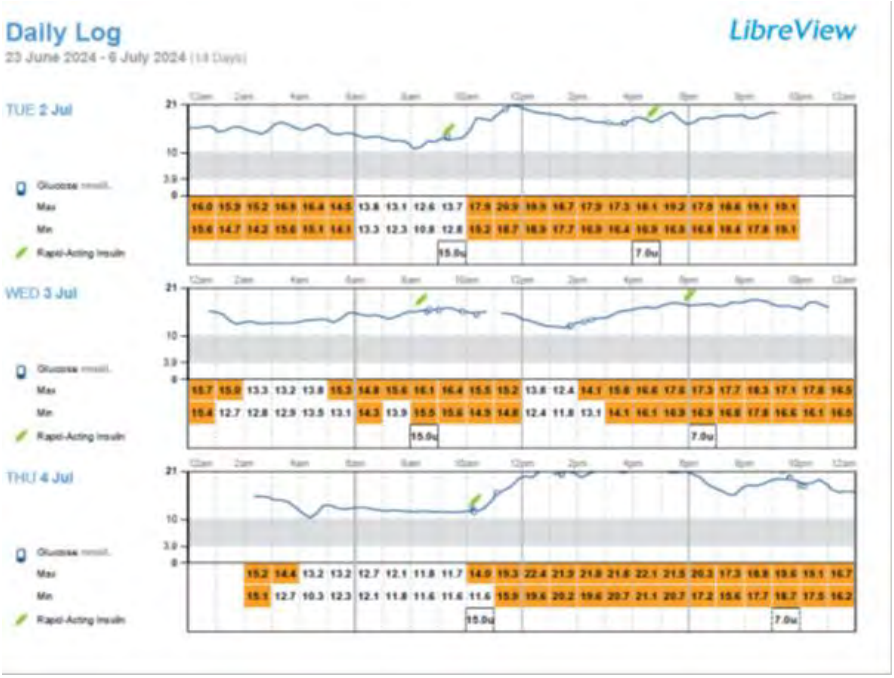


Figure 1

One-week remote LibreView report review

The LibreView report was evaluated by the CDE to assess the effects of the recent insulin dosage increase. The daily log (figure 2) and AGP report (figure 3) revealed a concerning trend of persistently elevated SG throughout the day and night with an average glucose of 14.7mmol/l, and after meal peaked up to 25 mmol/L. JS's wife and JS were very stressed and believed the change in insulin delivery method was contributing to these elevated readings. A review of the NovoPen 6 scan confirmed that the correct insulin dose was administered. CDE discussed the LibreView report with JS's endocrinologist.

Given the heightened risk of glucose toxicity, diabetic ketoacidosis and potential hospital admission, an urgent clinical review was conducted with JS.




Daily Log
23 June 2024 - 6 July 2024
LibreView
FRI 5 Jul
SAT 6 Jul
Glucose mmol/L
Max
Min
Rapid-Acting Insulin

Figure 2

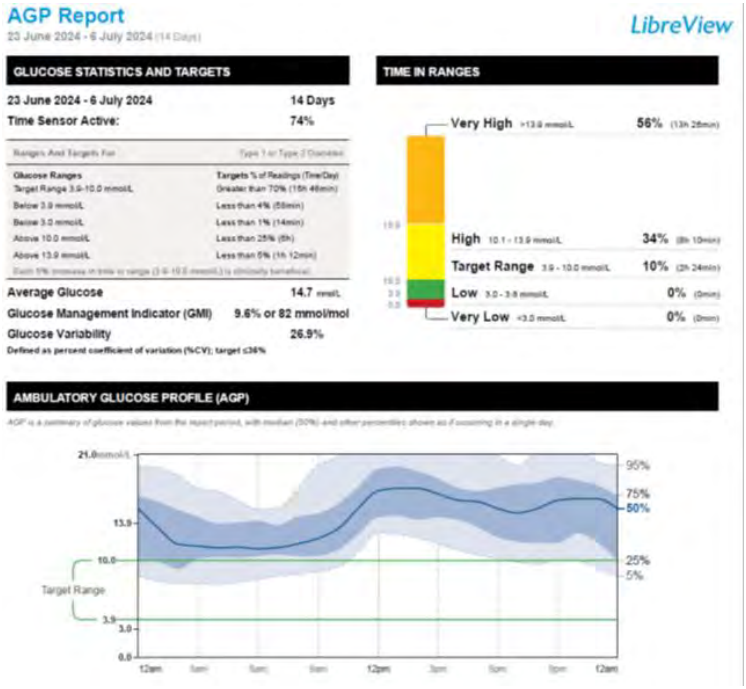

AGP Report
23 June 2024 - 6 July 2024
LibreView
GLUCOSE STATISTICS AND TARGETS
23 June 2024 - 6 July 2024
14 Days
Time Sensor Active:
74%
Glucose Ranges
Target Range 3.9-10.0 mmol/L
Below 3.9 mmol/L
Below 3.0 mmol/L
Above 10.0 mmol/L
Above 13.9 mmol/L
Targets % of Readings (Time/Day)
Greater than 70% (16h 48min)
Less than 4% (58min)
Less than 1% (14min)
Less than 25% (6h)
Less than 5% (1h 12min)
Average Glucose
14.7 mmol/L
Glucose Management Indicator (GMI)
9.6% or 82 mmol/mol
Glucose Variability
26.9%
Defined as percent coefficient of variation (%CV); target ≤36%
TIME IN RANGES
Very High >13.9 mmol/L
56% (13h 26min)
High 10.1 - 13.9 mmol/L
34% (8h 10min)
Target Range 3.9 - 10.0 mmol/L
10% (2h 24min)
Low 3.0 - 3.8 mmol/L
0% (0min)
Very Low <3.0 mmol/L
0% (0min)
AMBULATORY GLUCOSE PROFILE (AGP)
21.0mmol/L
13.9
10.0
Target Range
3.9
3.0
0.0
95%
75%
50%
25%
5%
12am
12pm
12am

Figure 3

During the in-person review, JS's finger prick BGL was 17.8 mmol/L and ketones 0.7mmo/L. The CDE reviewed insulin injection techniques and storage practices with JS. Upon checking his injection technique, it was discovered JS was removing the insulin cartridge from the pen after each injection and storing it in the refrigerator. Thus, when the cartridge was re-inserted, the plunger was not connecting with the rubber stopper of the insulin cartridge. JS was not receiving any insulin despite completing the injection process. Additionally, it was discovered that JS was not performing the required two-unit air shot before administering his insulin dose.

JS was re-educated on the correct use and storage of the insulin pen. His endocrinologist was present during the session and recommended administering 7 units of Novomix 30/70 stat. Reassurance and support were provided to both JS and his wife. JS shared that he occasionally forgets to take his insulin before dinner and instead administers it at bedtime. A phone alarm was set to remind him to take insulin before dinner.

Remote LibreView report review one week later

One week after the previous review, the AGP report (figure 4) and daily log (figure 5) and demonstrated significant improvement in JS's SG. Time in range increased from 10% to 61%, with a glucose variability of 35.9%. There was a substantial improvement in time above range, decreasing from 90% to 36%. The Glucose Management Indicator (GMI) has reduced to 7.1%, from 9.6% with only 3% of readings falling below the target range. Glucose patterns showed reduced fluctuations and fewer elevated SG readings. Consequently, the pre-dinner dose of Novomix 30/70 was adjusted from 6 to 4 units to help maintain overnight SG within the target range and avoid hypoglycaemia.

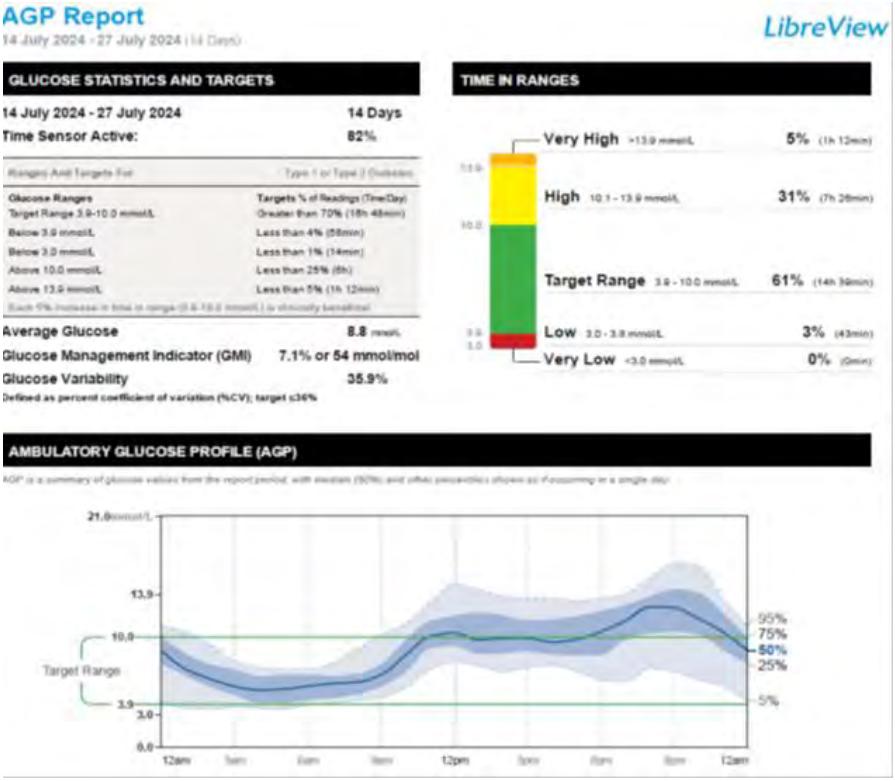

AGP Report
14 July 2024 - 27 July 2024 (14 Days)
LibreView
GLUCOSE STATISTICS AND TARGETS
14 July 2024 - 27 July 2024
14 Days
Time Sensor Active:
82%
Glucose Ranges
Target Range 3.9-10.0 mmol/L
Targets % of Readings (Time/Day)
Greater than 70% (16h 48min)
Below 3.9 mmol/L
Less than 4% (58min)
Below 3.0 mmol/L
Less than 1% (14min)
Above 10.0 mmol/L
Less than 25% (6h)
Above 13.9 mmol/L
Less than 5% (1h 12min)
Average Glucose
8.8 mmol/L
Glucose Management Indicator (GMI)
7.1% or 54 mmol/mol
Glucose Variability
35.9%
Defined as percent coefficient of variation (%CV); target ≤36%
TIME IN RANGES
Very High >13.9 mmol/L
5% (1h 12min)
High 10.1 - 13.9 mmol/L
31% (7h 26min)
Target Range 3.9 - 10.0 mmol/L
61% (14h 38min)
Low 3.0 - 3.8 mmol/L
3% (43min)
Very Low <3.0 mmol/L
0% (0min)
AMBULATORY GLUCOSE PROFILE (AGP)
21.0 mmol/L
13.9
10.0
Target Range
3.9
3.0
0.0
95%
75%
50%
25%
5%
12am
12pm
12am

Figure 4

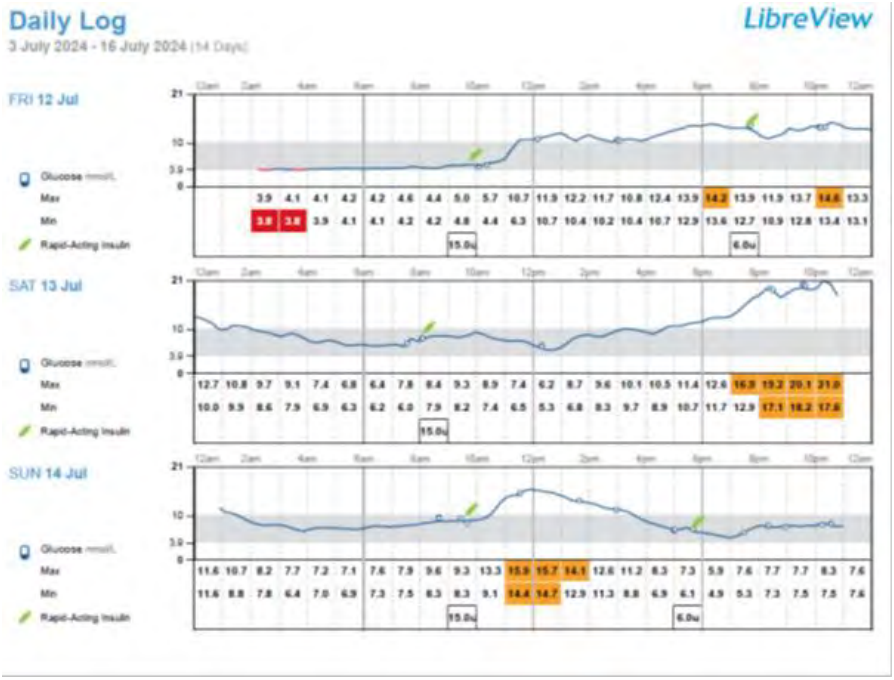


Figure 5

Current AGP report

The most recent LibreView report (figure 6) indicates that JS is within the target range 77% of the time, with no recorded episodes of hypoglycaemia. Glucose variability has decreased from 35.9% to 27.8%, and the GMI is 7.1%, aligning with CGM target recommendations for older adults.

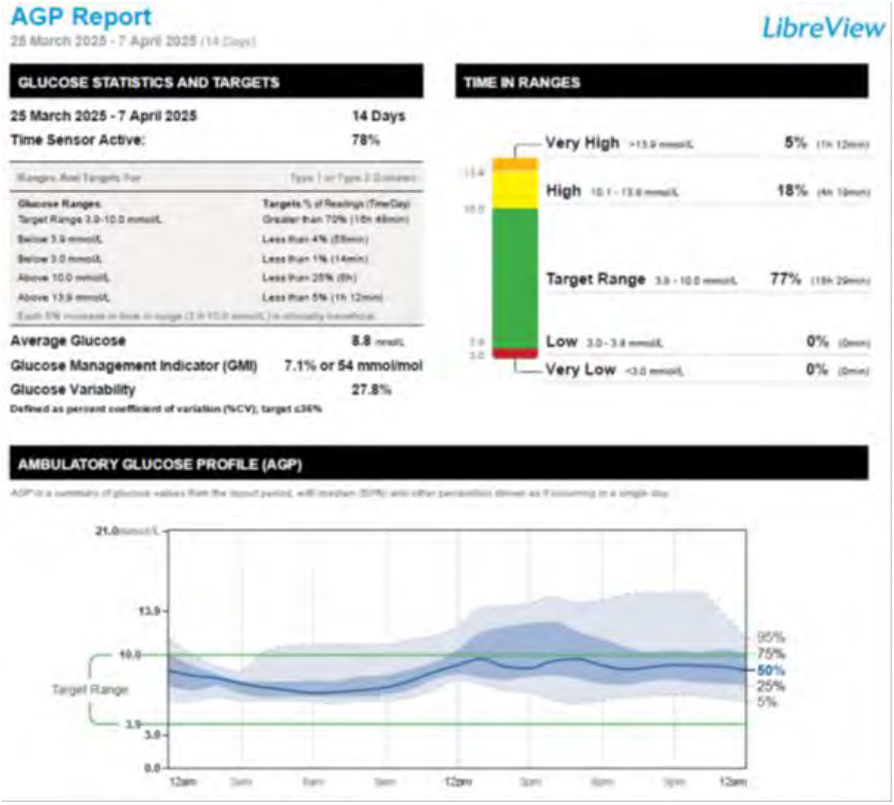


Figure 6

Conclusion

The FreeStyle Libre 2 has significantly improved JS's diabetes management and well-being. It helped to eliminate hypoglycaemia and has reduced his fear of hypoglycaemia. Previously, JS struggled with accurate insulin dosing. However, the CGM combined with NovoPen 6 ensured the correct dose was administered. Remote access to real time data through LibreView helped the CDE and the endocrinologist to support JS to change his method for administering insulin. JS reported "CGM eliminated my burden of frequent finger pricks, I became more mindful of what I am eating when I saw patterns with my food intake to glucose levels. My sleep habit has improved I can sleep

without the fear of nighttime hypoglycaemia. My wife and I feel more relaxed now".

Furthermore, JS gained confidence in using technology, felt more in control of his diabetes, and became less anxious about managing his condition.

Reference

1. American Diabetes Association Professional Practice Committee. 7. Diabetes technology: standards of care in diabetes—2025. Diabetes Care. 2025;48(Suppl 1):S146–66.

Case nine

Molly Cocks

Optimising glucose control using FreeStyle Libre for healing in diabetes-related foot ulcers

I am a Registered Nurse and Credentialled Diabetes Educator working within the Diabetes Service with a personal interest in diabetes-related foot ulcer (DFU) leading to me having a passion for looking after patients who attend a Multidisciplinary High-Risk Foot Clinic. This case study focuses on Robert (pseudonym) who is a 52-year-old male who was diagnosed with Type 2 diabetes approximately 10 years ago.

I first met Robert at the High-Risk Foot Clinic opportunistically, as he was being treated for bilateral foot wounds. His diabetes was being managed by his GP, and he reported previously seeing an Endocrinologist, but stopped seeing them both when they wanted to commence him on insulin therapy. Robert was quite reluctant to engage with me, stating that his diabetes was 'fine'.

Current best practice in management of DFU requires coordinated and expert multi-disciplinary input[1]. The Multidisciplinary High-Risk Foot Clinic comprises Podiatrists, Endocrinologists (Consultants and Advanced Trainees), Orthopaedic Surgeons (Consultants and Advanced Trainees), Diabetes Educator, Dietitian, Allied Health Assistants and Physiotherapists. The clinic is held on a weekly basis and allows clinicians to work collaboratively and provides patients access to specialised care.

Assessment

At our initial review Robert stated he was taking: Ozempic 1mg weekly, Jardiamet 12.5/1000mg BD. He had previously been on Glibenclamide 10mg mane and 5mg evening but ceased this medication in September 2024 as he was unable to get scripts from his GP. He was not routinely checking his blood glucose levels at home and his last HbA1c that we could locate was from 2023 which was 114mmol/mol (12.6%) from a private pathology provider. Utilising our Afinion Point of Care HbA1c in clinic, his HbA1c was 96mmol/mol (10.9%). He reported polyuria including nocturia. He denied any blurred vision or feeling unwell. He had bilateral foot ulcers, one wound to his right plantar hallux and one on his left plantar 1st metatarsophalangeal joint (MPJ).

Robert was currently working as a carpenter and enjoyed riding his Harley Davidson which was proving to be difficult now due to wearing a controlled ankle motion (CAM) offloading boot. When further discussing the use of insulin therapy in managing his diabetes, Robert stated that he was very reluctant to inject insulin given a fear of developing boils and his history of IV drug use and was fearful he would fall back into old habits.

Management

Robert was reviewed by the Endocrinologist and a strong emphasis was placed on the fact that his glucose levels at the time were sub-optimal and that it was important that we get his glucose under control to help with wound healing and to reduce risk of developing diabetes related complications[2]. After much discussion he was agreeable to commence Optisulin 12 units and was referred to the Diabetes Service's phone titration program. The phone titration program allows for adjustment of current insulin doses based on pre-determined parameters for blood glucose levels. Orders are written by the treating Endocrinologist with a range prescribed for the insulin doses to be either increased or decreased. The patient is contacted on 3 separate occasions. During these phone calls the patient's glucose profile is reviewed, either using CGMs or by the patient reading out finger-prick glucose levels.

The use of the FreeStyle Libre 2 Continuous Glucose Monitor[3] (CGM) has dramatically increased in this space and has had a positive impact on both patients and clinicians. For clinicians, being able to review the FreeStyle Libre 2 tracing on LibreView allows for more accurate adjustments of insulin, as we can see patterns that are not always picked up on traditional glucose monitoring. The positive aspect for patients is that they know we can see their glucose profiles and that this allows us to make appropriate decisions. The patients are also comforted by the fact that they can see their glucose levels in real time. Utilising the phone titration protocol proved to be significantly beneficial for Robert, as previous models of care would have required him to attend face-to-face appointments with the Diabetes Educator, and this would potentially have had a negative effect on his foot ulcer and delayed healing.

To reduce some of the burden and anxiety associated with commencing insulin, but also to allow effective titration of his insulin doses, the decision was made to provide Robert with a FreeStyle Libre 2 trial device. Robert was followed up on a weekly basis over a 4-week period. His first phone call was 1 week after his initial appointment in the High-Risk Foot Clinic. His first Ambulatory Glucose Profile (AGP) Report is shown in Figure 1. Robert reported still feeling hyperglycaemic with symptoms of polyuria and polydipsia. His Optisulin was up titrated to 16 units. At this second phone call his time in range was showing improvement (Figure 2) and Robert was pleased that he was able to see his glucose levels slowly coming down and with glucose levels ranging between 11-13mmol/L on some occasions. Robert reported that these where motivating to see.

By week 3 on our phone titration service there was continued improvement (Figure 3) and on the final week of phone titration, his time in range was slowly improving (Figure 4). Robert reported he was feeling motivated and that wearing the FreeStyle Libre 2 not only provided him with real-time feedback but also reduced the burden associated with finger-prick glucose monitoring. Over this 4-week period, his insulin was increased from a starting dose of 12units up to 24 units. Robert was provided a plan of increasing his Optisulin by 2units every week until the majority of his glucose levels were <10mmol/L.

During subsequent weeks Robert was reviewed by our dietitian who also reviewed his AGP reports (Figure 5. and Figure. 6). He reported feeling motivated regarding his self-management of diabetes and this was strongly supported by using the FreeStyle Libre 2, which he was now self-funding, as he found it highly beneficial and made his life easier. We attempted to contact Robert in early 2025 to see how he was managing but he declined to engage due to his availability. Robert however gave consent for his story to be used in this case study and spoke very highly of the service and all the care that was provided to him.

Conclusion

Robert's case highlights the importance of a collaborative, patient-centred approach in diabetes management. Initially resistant to insulin therapy, his engagement with CGM and structured phone titration support allowed him to take control of his diabetes. The integration of technology, education, and regular follow-up empowered him to make meaningful progress in glucose management, ultimately aiding in wound healing and reducing his risk of complications[4,5].

His journey underscores the critical role of diabetes education, technology aids like FreeStyle Libre 2 and interdisciplinary teamwork in managing complex cases. Moving forward, continued support and education will be vital in maintaining his progress and preventing further complications.

Robert is just one example of many patients within the Multidisciplinary High-Risk Foot Clinic who have seen the positive impact of using the FreeStyle Libre 2 sensor to help improve glucose control, resulting in the healing of their DFU. For many patients it allows them to see what is happening in real time and allows them to make positive changes to their current lifestyle. It is a strong motivational tool with real time display of Time in Range and Glucose Management Indicator, which most patients often comment on when we review them.

From a clinician's perspective, the use of the FreeStyle Libre 2 device allows for glucose profile to be developed, treatment initiated in a timelier manner

and leading to improved patient outcomes. Having the technology available also allows for other members of the multidisciplinary team to view their glucose control in real time, make decisions regarding upcoming procedures, allow for appropriate treatment plans to be developed and support them in their self-management.

AGP Report

9 October 2024 - 22 October 2024 (14 Days)

LibreView

GLUCOSE STATISTICS AND TARGETS

9 October 2024 - 22 October 2024	**14 Days**
Time Sensor Active:	**40%**

Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges Target Range 3.9-10.0 mmol/L	**Targets % of Readings (Time/Day)** Greater than 70% (16h 48min)
Below 3.9 mmol/L	Less than 4% (58min)
Below 3.0 mmol/L	Less than 1% (14min)
Above 10.0 mmol/L	Less than 25% (6h)
Above 13.9 mmol/L	Less than 5% (1h 12min)

Each 5% increase in time in range (3.9-10.0 mmol/L) is clinically beneficial.

Average Glucose	**18.3** mmol/L
Glucose Management Indicator (GMI)	**11.2% or 99 mmol/mol**
Glucose Variability	**20.9%**

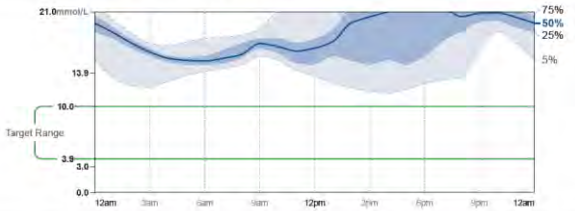
Defined as percent coefficient of variation (%CV); target ≤36%

TIME IN RANGES

Very High	>13.9 mmol/L	**89%** (21h 22min)
High	10.1 - 13.9 mmol/L	**11%** (2h 38min)
Target Range	3.9 - 10.0 mmol/L	**0%** (0min)
Low	3.0 - 3.8 mmol/L	**0%** (0min)
Very Low	<3.0 mmol/L	**0%** (0min)

AMBULATORY GLUCOSE PROFILE (AGP)

AGP is a summary of glucose values from the report period, with median (50%) and other percentiles shown as if occurring in a single day.



AGP Report

17 October 2024 - 30 October 2024 (14 Days)

LibreView

GLUCOSE STATISTICS AND TARGETS

17 October 2024 - 30 October 2024	**14 Days**
Time Sensor Active:	**97%**

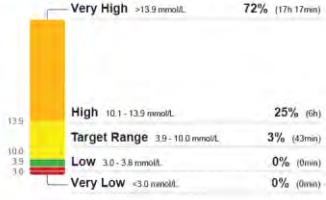
Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges Target Range 3.9-10.0 mmol/L	**Targets % of Readings (Time/Day)** Greater than 70% (16h 48min)
Below 3.9 mmol/L	Less than 4% (58min)
Below 3.0 mmol/L	Less than 1% (14min)
Above 10.0 mmol/L	Less than 25% (6h)
Above 13.9 mmol/L	Less than 5% (1h 12min)

Each 5% increase in time in range (3.9-10.0 mmol/L) is clinically beneficial.

Average Glucose	**16.4** mmol/L
Glucose Management Indicator (GMI)	**10.4% or 90 mmol/mol**
Glucose Variability	**23.5%**

Defined as percent coefficient of variation (%CV); target ≤36%

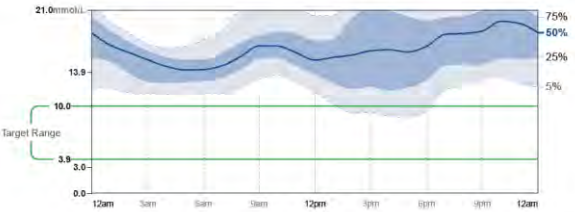
TIME IN RANGES



Very High	>13.9 mmol/L	**72%** (17h 17min)
High	10.1 - 13.9 mmol/L	**25%** (6h)
Target Range	3.9 - 10.0 mmol/L	**3%** (43min)
Low	3.0 - 3.8 mmol/L	**0%** (0min)
Very Low	<3.0 mmol/L	**0%** (0min)

AMBULATORY GLUCOSE PROFILE (AGP)

AGP is a summary of glucose values from the report period, with median (50%) and other percentiles shown as if occurring in a single day.



AGP Report

24 October 2024 - 6 November 2024 (14 Days)

LibreView

GLUCOSE STATISTICS AND TARGETS

24 October 2024 - 6 November 2024	**14 Days**
Time Sensor Active:	**100%**

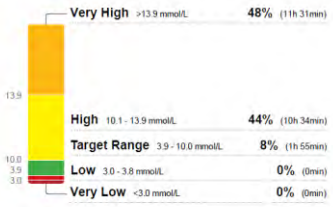
Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges Target Range 3.9-10.0 mmol/L	**Targets** % of Readings (Time/Day) Greater than 70% (16h 48min)
Below 3.9 mmol/L	Less than 4% (58min)
Below 3.0 mmol/L	Less than 1% (14min)
Above 10.0 mmol/L	Less than 25% (6h)
Above 13.9 mmol/L	Less than 5% (1h 12min)

Each 5% increase in time in range (3.9-10.0 mmol/L) is clinically beneficial.

Average Glucose	**14.0** mmol/L
Glucose Management Indicator (GMI)	**9.3% or 79 mmol/mol**
Glucose Variability	**22.2%**

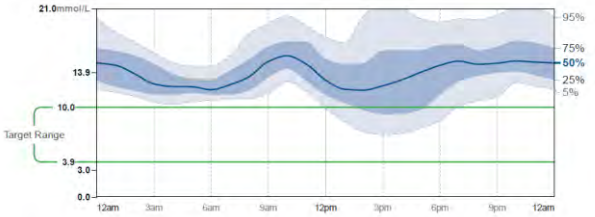
Defined as percent coefficient of variation (%CV); target ≤36%

TIME IN RANGES



AMBULATORY GLUCOSE PROFILE (AGP)

AGP is a summary of glucose values from the report period, with median (50%) and other percentiles shown as if occurring in a single day.



AGP Report

4 November 2024 - 17 November 2024 (14 Days)

LibreView

GLUCOSE STATISTICS AND TARGETS

4 November 2024 - 17 November 2024	**14 Days**
Time Sensor Active:	**100%**

Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges Target Range 3.9-10.0 mmol/L	**Targets** % of Readings (Time/Day) Greater than 70% (16h 48min)
Below 3.9 mmol/L	Less than 4% (58min)
Below 3.0 mmol/L	Less than 1% (14min)
Above 10.0 mmol/L	Less than 25% (6h)
Above 13.9 mmol/L	Less than 5% (1h 12min)

Each 5% increase in time in range (3.9-10.0 mmol/L) is clinically beneficial.

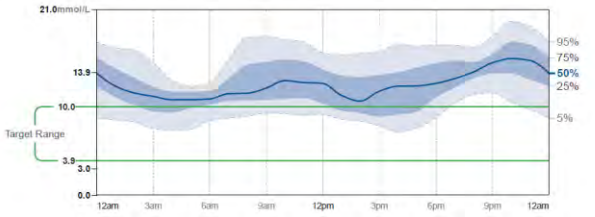
Average Glucose	**12.5** mmol/L
Glucose Management Indicator (GMI)	**8.7% or 72 mmol/mol**
Glucose Variability	**22.4%**

Defined as percent coefficient of variation (%CV); target ≤36%

TIME IN RANGES

AMBULATORY GLUCOSE PROFILE (AGP)

AGP is a summary of glucose values from the report period, with median (50%) and other percentiles shown as if occurring in a single day.



AGP Report

11 November 2024 - 24 November 2024 (14 Days)

LibreView

GLUCOSE STATISTICS AND TARGETS

11 November 2024 - 24 November 2024	**14 Days**
Time Sensor Active:	**56%**

Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges Target Range 3.9-10.0 mmol/L	**Targets** % of Readings (Time/Day) Greater than 70% (16h 48min)
Below 3.9 mmol/L	Less than 4% (58min)
Below 3.0 mmol/L	Less than 1% (14min)
Above 10.0 mmol/L	Less than 25% (6h)
Above 13.9 mmol/L	Less than 5% (1h 12min)

Each 5% increase in time in range (3.9-10.0 mmol/L) is clinically beneficial.

Average Glucose	**12.1** mmol/L
Glucose Management Indicator (GMI)	**8.5% or 70 mmol/mol**
Glucose Variability	**22.5%**

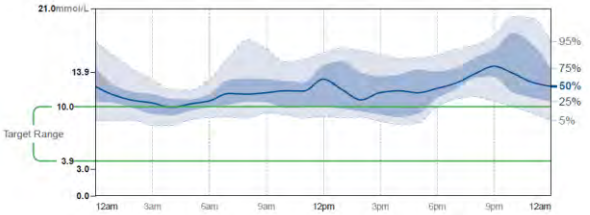
Defined as percent coefficient of variation (%CV); target ≤36%

TIME IN RANGES

Very High	>13.9 mmol/L	**23%** (5h 31min)
High	10.1 - 13.9 mmol/L	**54%** (12h 58min)
Target Range	3.9 - 10.0 mmol/L	**23%** (5h 31min)
Low	3.0 - 3.8 mmol/L	**0%** (0min)
Very Low	<3.0 mmol/L	**0%** (0min)

AMBULATORY GLUCOSE PROFILE (AGP)

AGP is a summary of glucose values from the report period, with median (50%) and other percentiles shown as if occurring in a single day.



AGP Report

29 November 2024 - 12 December 2024 (14 Days)

LibreView

GLUCOSE STATISTICS AND TARGETS

29 November 2024 - 12 December 2024	**14 Days**
Time Sensor Active:	**93%**

Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges Target Range 3.9-10.0 mmol/L	**Targets** % of Readings (Time/Day) Greater than 70% (16h 48min)
Below 3.9 mmol/L	Less than 4% (58min)
Below 3.0 mmol/L	Less than 1% (14min)
Above 10.0 mmol/L	Less than 25% (6h)
Above 13.9 mmol/L	Less than 5% (1h 12min)

Each 5% increase in time in range (3.9-10.0 mmol/L) is clinically beneficial.

Average Glucose	**9.1** mmol/L
Glucose Management Indicator (GMI)	**7.3% or 56 mmol/mol**
Glucose Variability	**37.8%**

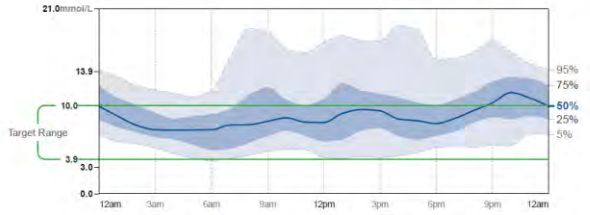
Defined as percent coefficient of variation (%CV); target ≤36%

TIME IN RANGES

Very High	>13.9 mmol/L	**9%** (2h 10min)
High	10.1 - 13.9 mmol/L	**23%** (5h 31min)
Target Range	3.9 - 10.0 mmol/L	**66%** (15h 50min)
Low	3.0 - 3.8 mmol/L	**2%** (29min)
Very Low	<3.0 mmol/L	**0%** (0min)

AMBULATORY GLUCOSE PROFILE (AGP)

AGP is a summary of glucose values from the report period, with median (50%) and other percentiles shown as if occurring in a single day.



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4. Australian Diabetes Society. Clinical guidelines for the management of diabetes-related foot disease. Melbourne: ADS; 2023.
5. Lipsky BA, Senneville É, Abbas ZG, Aragón-Sánchez J, Diggle M, Embil JM, et al. Guidelines on the diagnosis and treatment of foot infection in persons with diabetes. Diabetes Metab Res Rev. 2020;36(S1):e3280. doi:10.1002/dmrr.3280

Case ten

Amanda Taylor

Beyond targets—enhancing quality of life with CGM in palliative care

Introduction

Our organisation provides outreach clinics to many rural communities, with a strong focus on improving the health outcomes for people, particularly First Nations people, living with type 2 diabetes. It was in one of these monthly clinics to a small community one hour west of a major centre, that I had the pleasure to meet Joy (not her real name), a 78-year-old First Nations woman.

Joy was initially diagnosed with type 2 diabetes in 2015. She was not known to me at that time; however, reports on file indicate that she did not believe she had diabetes. Despite being prescribed medication and discussing lifestyle measures, she was not engaged in her healthcare and did not use any measures to support her diabetes self-management during this 10-year period.

Assessment

Fast forward to September 2025, Joy had a fall at home, resulting in a fractured right hip. During this admission to hospital, she was reviewed by the medical team who noted a history of weight loss and steatorrhoea, thought to represent pancreatic insufficiency of unknown cause. This was further investigated with an MRCP which identified a solid cystic mass in the head of the pancreas with related pancreatic duct dilation. Along with the clinical history, it was suspected that this was a malignant lesion. Joy elected at that time not to have any further investigations or treatment if this was the case.

During her hospital stay, it was documented that she had hyperglycaemia as she was not wanting to take her prescribed medications. Her HbA1c was 16.3. A basal-bolus regimen was commenced in hospital with more reasonable results. She was supported by the local Base Hospital Diabetes Unit, in addition to dietitians to discuss important dietary considerations with her

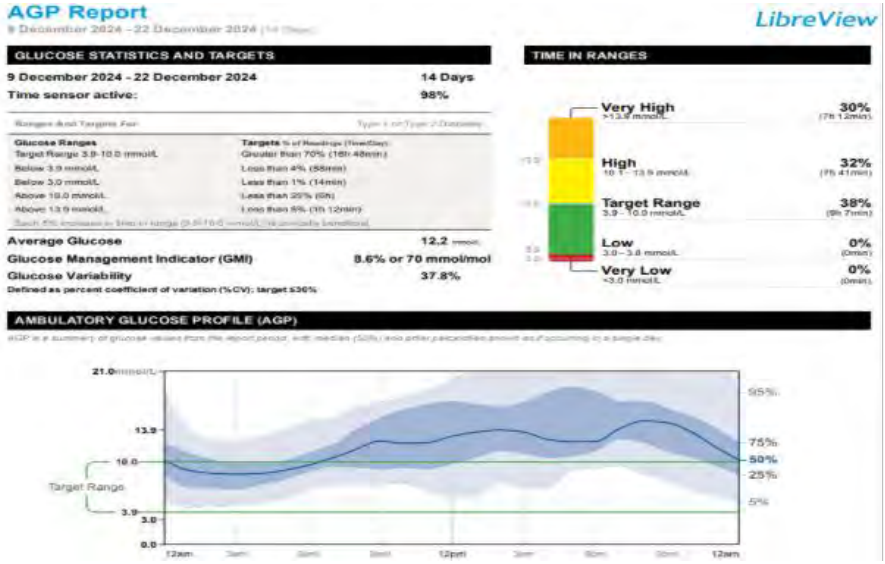
pancreatic insufficiencies. It was on discharge from hospital that a CGM was applied to provide an additional layer of support during the transition home.

Management

Joy was discharged from hospital on a basal-bolus regimen of NovoRapid x/4/4/x and Optisulin x/x/x/18. Being able to experience and access to information gave an additional layer of support to both Joy, her family and clinical team during the transition back home. Unfortunately, ongoing CGM access was limited due to financial constraints.

Creon was commenced to assist with digestion; however, appetite has been a concern. Hospital dietitian was involved during admission, with nutritional supplements discussed and supplied.

When I first had the pleasure of meeting Joy, she had used a CGM for 2 weeks. She felt confused and frustrated about her insulin and management. There was limited understanding of why she was on two different insulins in addition to periods of hyperglycaemia noted particularly through the waking hours, which was difficult to understand as she had such a poor appetite and could not see any improvements in BGLs despite using insulin. In addition, both Joy and her family were struggling to adjust to the new normal and the uncertainty that a potential death sentence brings. At the time, she was unwilling to discuss outcomes and potential management strategies.



Initially this clinician had difficulties in gaining rapport with Joy with her health issues, the Christmas period and once monthly outreach clinics impairing this relationship. Mental health support was a concern. Joy was finding it hard being so reliant on her family, when she should be the one looking after them. The local community nurse was a source of support for the family.

The above AGP was taken before our second consultation. It showed an increased glucose variability of 42%, a reduced TIR down to 29% and increased GMI of 9.1%.

From this consultation we started to approach Joys health more holistically with her case highlighting the importance of treating the whole person, not just the condition. Language was used that was free of jargon or judgement. Joy had the opportunity to ask questions and to clarify anything she did not understand. A link with the local Aboriginal Health Worker was offered but declined due to the tremendous support she was receiving from the local community nurse.

Options in her management were discussed using health behaviour change techniques, which included the possibility of doing no treatment; remembering that for the 10 years prior she had been happy living as she was. On the back of these initial realistic discussions, we have had a slight change in management. Joy does not need to have a perfect HbA1c with her limited prognosis. Our main goals have shifted to reducing hypoglycaemia, managing any symptoms she may experience related to hyperglycaemia, working on nutritional supplements, increasing appetite and gaining acceptance of what the future may hold.

With my background as a community pharmacist, I have been able to discuss pain management for Joy. She had been stretching out the duration of her fentanyl patch, as she was worried that the GP would not continue to write the scripts and was concerned about getting addicted to this medication. This was increasing her pain, affecting her mental health negatively, and possibly her BGLs. We also discussed other potential pain management options, but it was stressed to Joy, that doctors will be hesitant to change therapy without knowing exactly what is happening to her, and that may be important to have further tests. Offers for referral to specialised mental health support have been declined. However, from these discussions, Joy is now feeling strong enough to have follow up scans to confirm prognosis to assist ongoing and future treatment. She is hesitant to have a biopsy as she believes once cancer is exposed to air it will spread.

Over the past 3 months we have been able to achieve the following:

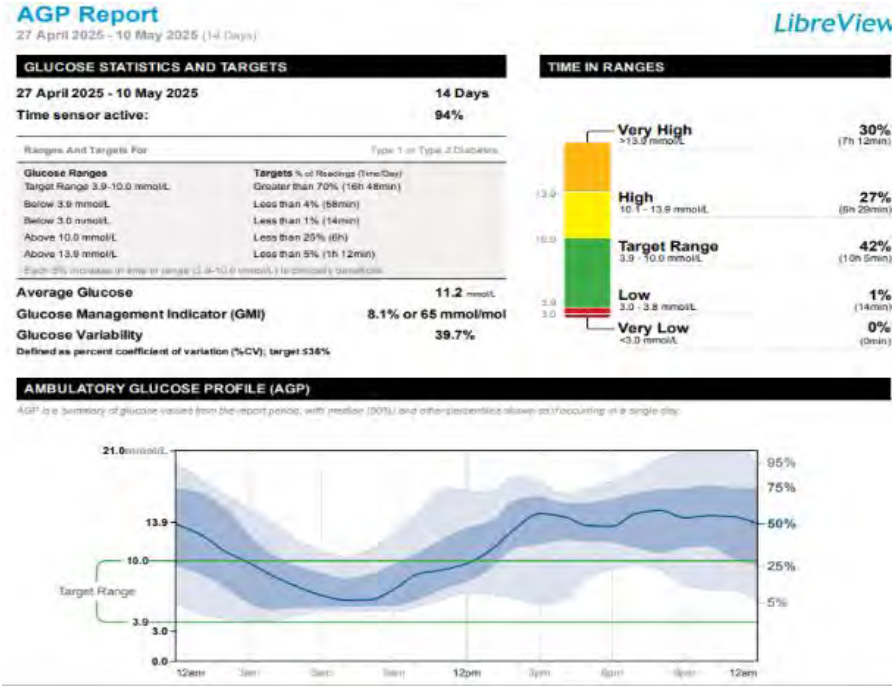
- A regular supply of CGM through several measures, including a compassion supply for 3 months
- A change in therapy to reduce the complexity of management for her and her family.
- Due to regular CGM, Joy has gained increased confidence in self-managing her diabetes.
- Appetite is improving with more consistent small meals being

consumed and consistent, in addition to oral nutritional support

- Reduced fears of using NovoRapid and in turn hypoglycaemia.
- NovoRapid was reduced to 2 units
- only being used when she is feeling symptoms of hyperglycaemia and her BGLs are over 10 or
- her BGLs are above 14
- Continued Optisulin every day
- More accepting of her prognosis
- Willingness to have further investigations to gain a firmer diagnosis and prognosis going forward
- Better pain management
- Improved mental health

Her TIR has improved from 38% to 42%, with her GMI now 8.1% (compared to 8.6%). Glucose variability has reduced to 39.7%.

We have also worked closely with Joy's family to educate them about diabetes management and the importance of monitoring her blood glucose levels. This has included training sessions on how to use the CGM and interpret its data, as well as understanding the signs and symptoms of hypo- and hyper-glycemia. Hypoglycaemic alarms have been raised to alert Joy and her family earlier to prevent a hypoglycaemic event from occurring. By involving her family in her care, we have been able to create a supportive environment that encourages adherence to her treatment plan.



Conclusion

Having access to CGM free from financial constraint has offered Joy and her family peace of mind in managing her type 2 diabetes. From a clinician perspective, servicing clinics only once a month due to funding and distance can be problematic when dealing with chronic disease, particularly diabetes. The use of CGM can allow opportunities for easier monitoring and improved outcomes for clients.

FreeStyle Libre 2 CGM has allowed Joy and her family to feel increased confidence and safer towards her diabetes. While her prognosis remains reduced, this technology is allowing her the freedom to focus on other important areas of her life during this very difficult and uncertain times.

In conclusion, Joy's case highlights the importance of a holistic and culturally sensitive approach to diabetes management. By addressing not only her medical needs but also her emotional, social, and cultural needs, we have been able to provide comprehensive care that supports her overall well-being. This approach has not only improved her diabetes management but also enhanced her quality of life during a challenging time.

Case eleven (early career)

Trang Vu

Introduction

As a Credentialled Diabetes Nurse Educator (CDE), I work within a multidisciplinary team at a Melbourne metropolitan private clinic known for its clinical and research-based approach to diabetes care. Our team comprises an endocrinologist and a diabetes specialist, as well as experienced dietitians and exercise physiologists.

Anne (a pseudonym) is a 68-year-old who underwent a total pancreaticoduodenectomy, splenectomy and cholecystectomy in December 2024 due to a main duct intraductal papillary mucinous neoplasm with high-grade dysplasia. She was relatively fit and well before surgery. Her past medical history includes hypertension, managed with Perindopril/Amlodipine 5/5 mg. She is retired and lives at home with her supportive husband, maintains a socially active lifestyle, and regularly participates in physical activities such as daily walking and water aerobics.

During her hospitalisation, she received basic diabetes education. She was discharged on a sliding-scale insulin regimen consisting of 16 units of Optisulin mane and 6 units of NovoRapid with each main meal, alongside a sliding scale correction: +2 units if BGL >10, +4 units if BGL >14, and +6 units if BGL >18. She followed up with her treating Endocrinologist in our clinic, who then referred Anne to diabetes education for further education and support for ongoing diabetes management.

Assessment

After surgery, Anne was diagnosed with type 3c diabetes following total pancreatectomy. Her recovery had been difficult due to persistent pain, fluctuating appetite, gastrointestinal symptoms, and disrupted sleep. At initial review, Anne appeared frail, cognitively fatigued, and emotionally overwhelmed, frequently relying on her husband for information recall. Although she demonstrated safe blood glucose monitoring and insulin injection technique, she retained minimal understanding of her diagnosis or its long-term implications.

Anne expressed distress about frequent glucose testing (8–9 times daily), which further contributed to fatigue and frustration. She reported anxiety around eating, fearing hyperglycaemia, and struggled to differentiate between hunger and post-surgical pain. Her dietary intake was minimal during the day due to pain, leading to night-time hunger and worsened sleep quality. Although the fixed insulin regimen was initially used to simplify dosing and reduce cognitive load, its lack of flexibility, combined with Anne's inconsistent intake, limited nutrition knowledge, and variable digestion from vomiting and diarrhoea, made it difficult for Anne's diabetes management

Management

First appointment: 29/01/2025

At Anne's initial appointment, the focus was on helping her understand her diagnosis of Type 3c diabetes and developing essential self-management skills. Acknowledging both her emotional and physical distress, all key information was written down for her to refer to later, reducing reliance on memory during a stressful time. To address her anxiety around fluctuating glucose levels and challenges with finger-prick testing, Anne was introduced to continuous glucose monitoring (CGM). Three CGM options were discussed, and she selected the FreeStyle Libre 2 due to its ease of insertion, longer wear time, waterproof design, and an application site that avoided her surgical area. This is in accordance with the American Diabetes Association (ADA) Standards of Care in Diabetes—2025, specifically recommendations 7.1 and 7.2, which

advocate for the use of diabetes technology in all individuals with diabetes, particularly at the time of diagnosis and among older adults. Continuous glucose monitoring (CGM) has been shown to enhance glycaemic control while reducing both the risk of hypoglycaemia and the burden of treatment[1,2].

Due to a lack of consistent blood glucose monitoring and no reported hypoglycaemic episodes, no changes to the insulin dose were made. An urgent referral was made to a dietitian, and all subsequent visits were conducted jointly to provide integrated care. Her GP and endocrinologist were informed to ensure continuity and coordination in her diabetes management. Anne was also given direct contact details for support between visits. Transitions from acute care to the home setting can pose significant risks for individuals with diabetes; thus, coordinated team-based care and the use of continuous glucose monitoring (CGM) are crucial for identifying potential issues and reducing the likelihood of hospital readmissions.[3]

After the appointment, Anne recognised that her journey back to "good health" was going to be challenging, but she reported feeling "clear" and motivated to "make it work".

Second appointment: 12/02/2025 (two weeks post Libre insertion)

Upon reviewing Anne's Ambulatory Glucose Profile (AGP) and Daily Log in Figures 1 and 2 with the team dietitian and herself, key issues were identified:

- Persistent high glucose levels throughout the day.
- Two self-treated hypoglycaemic episodes, including one on the night of the 9th of February due to full 6 units of NovoRapid with a low-carb dinner prior.
- Concerns about malnutrition and limited oral intake. However, Anne's weight has been stable (between 50 -50.8 kg) since discharge.
- Anxiety around food and high glucose further limited oral intake and resulted in poor sleep quality due to night-time hunger.

- Concerns about continued access to CGM.

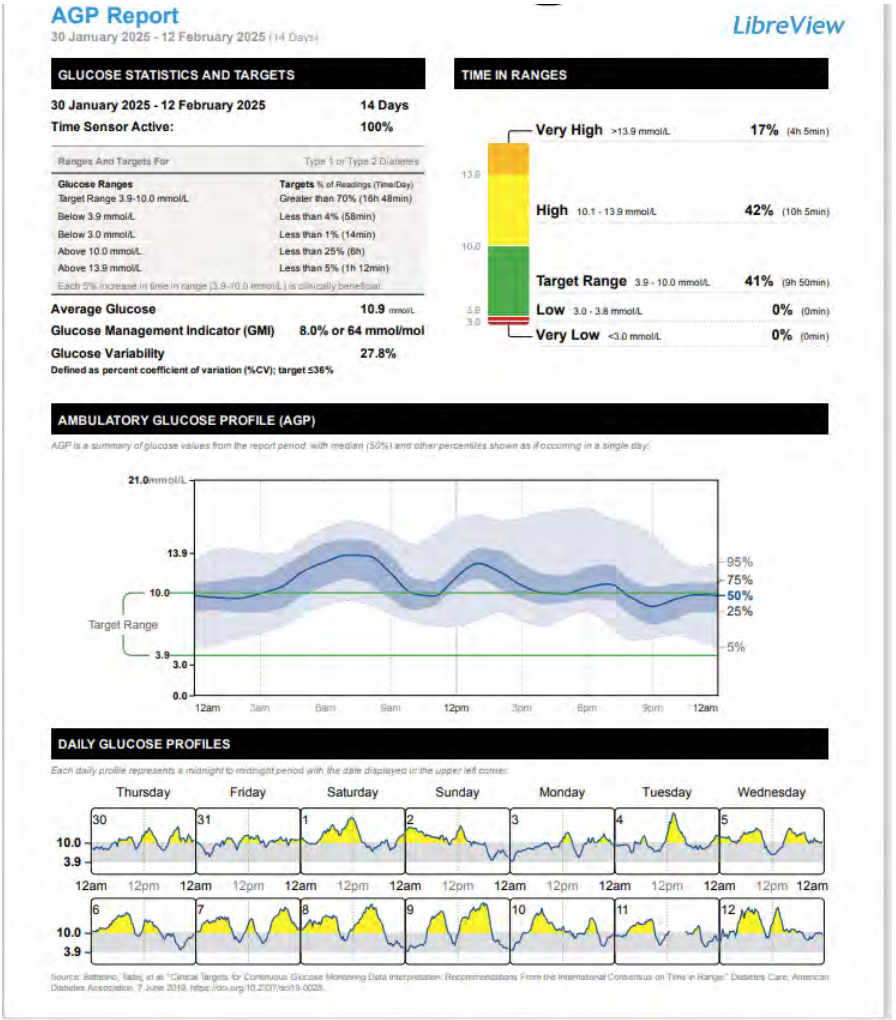
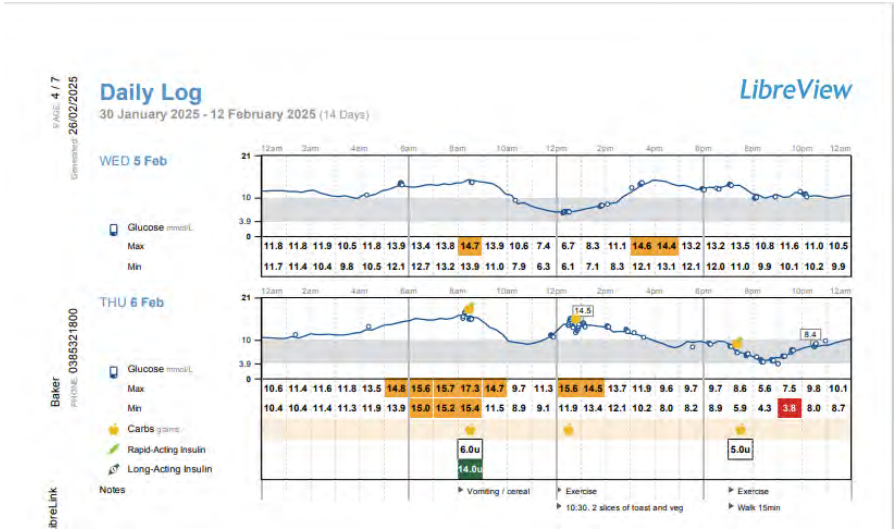
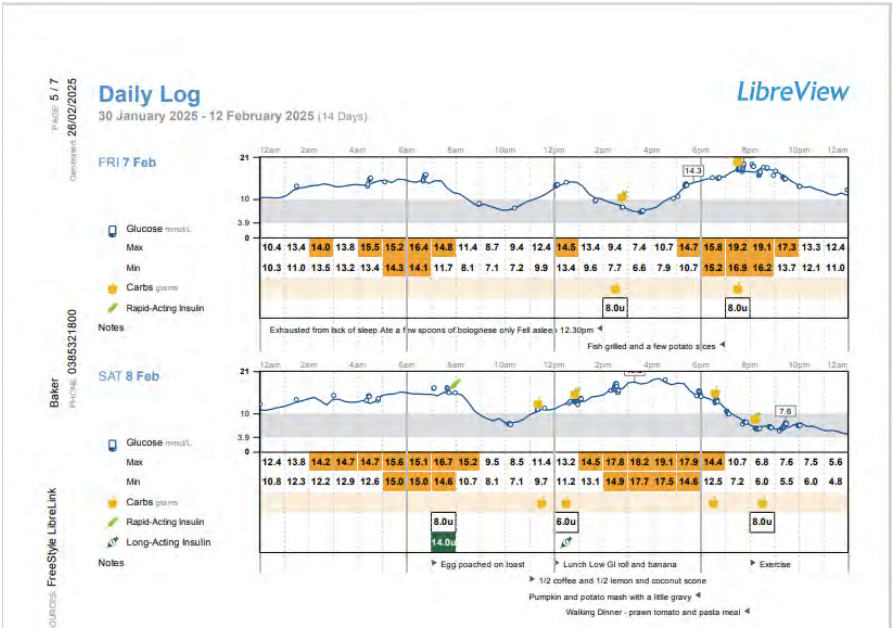


Figure 1


PAGE 4 / 7
Generated 26/02/2025
Daily Log
30 January 2025 - 12 February 2025 (14 Days)
LibreView
WED 5 Feb
Glucose mmol/L
Max
Min
11.8 11.8 11.9 10.5 11.8 13.9 13.4 13.8 14.7 13.9 10.6 7.4
11.7 11.4 10.4 9.8 10.5 12.1 12.7 13.2 13.9 11.0 7.9 6.3
6.7 8.3 11.1 14.6 14.4 13.2 13.2 13.5 10.8 11.6 11.0 10.5
6.1 7.1 8.3 12.1 13.1 12.1 12.0 11.0 9.9 10.1 10.2 9.9
THU 6 Feb
Glucose mmol/L
Max
Min
10.6 11.4 11.6 11.8 13.5 14.8 15.6 15.7 17.3 14.7 9.7 11.3
10.4 10.4 11.4 11.3 11.9 13.9 15.0 15.2 15.4 11.5 8.9 9.1
15.6 14.5 13.7 11.9 9.6 9.7 9.7 8.6 5.6 7.5 9.8 10.1
11.9 13.4 12.1 10.2 8.0 8.2 8.9 5.9 4.3 3.8 8.0 8.7
Carbs grams
Rapid-Acting Insulin
Long-Acting Insulin
6.0u
14.0u
5.0u
Notes
Vomiting / cereal
Exercise
10:30. 2 slices of toast and veg
Exercise
Walk 15min
Baker
PHONE 0365321800
ibreLink


PAGE 5 / 7
Generated 26/02/2025
Daily Log
30 January 2025 - 12 February 2025 (14 Days)
LibreView
FRI 7 Feb
Glucose mmol/L
Max
Min
Carbs grams
Rapid-Acting Insulin
Notes
Exhausted from lack of sleep Ate a few spoons of bolognese only Fell asleep 12.30pm
Fish grilled and a few potato slices
SAT 8 Feb
Long-Acting Insulin
Egg poached on toast
Lunch Low GI roll and banana
1/2 coffee and 1/2 lemon snd coconut scone
Pumpkin and potato mash with a little gravy
Walking Dinner - prawn tomato and pasta meal
Exercise
Baker
PHONE 0385321800
SOURCE FreeStyle LibreLink

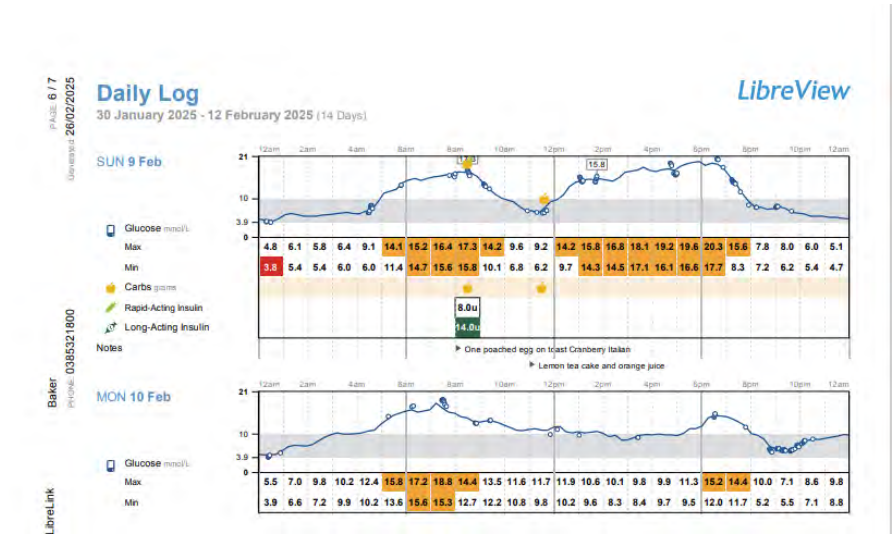

PAGE 6 / 7
Generated 26/02/2025
Daily Log
30 January 2025 - 12 February 2025 (14 Days)
LibreView
SUN 9 Feb
Glucose mmol/L
Max
Min
Carbs grams
Rapid-Acting Insulin
Long-Acting Insulin
Notes
One poached egg on toast Cranberry Italian
Lemon tea cake and orange juice
MON 10 Feb
Baker
PHONE 0385321800
LibreLink

Figure 2

Despite the challenges, Anne reported feeling more empowered and confident. She resumed short daily walks with her husband and better understood the connection between glucose, insulin, sleep, food, and activity. Her primary goal is improved sleep, knowing it will support better recovery and self-management of diabetes. She also accepted the need and was motivated to learn how to adjust her insulin based on food intake—a key step toward effective self-management[4].

Based on Anne's personal goal and AGP reports, below recommendations were made:

- Increasing basal insulin by 2 units. Continue with the same Novorapid dose till email review next week.
- Carbohydrate education with a dietitian to help Anne safely adjust Novorapid.
- Anne is to prioritise protein intake if having a low appetite to prevent further weight loss.
- Introducing a bedtime snack (e.g., warm milk) to reduce overnight hunger.
- A letter of special consideration was made to NDSS.
- Continuing to revisit previous concepts and information to strengthen Anne's understanding.
- Encouraging husband's attendance in future appointments.

<u>Third appointment: 26/03/2025 (1.5 months from the 2nd appointment, with email contacts and dietitian review appointments in between)</u>

Between her second and third appointments, Anne had an additional consultation with the dietitian, where she received more in-depth dietary education. She began basic carbohydrate counting using *the Easy Diet Diary*

app. Anne also attended a review appointment with her GP and surgeon, during which her pain medication was adjusted. The diabetes educator consulted with Anne's treating endocrinologist regarding her insulin regimen. Adjustments were made to her insulin doses: 17 units of Optisulin in the morning and 4 units of NovoRapid with each meal, continuing with the same sliding scale protocol.

In Figures 3 and 4 Anne's time in range had improved from 41% to 61% and with minimal hypoglycaemia episodes. During the appointment, Anne reported feeling significantly better overall and more confident in managing her diabetes. She noted that sleeping through the night had made a substantial difference to her health. Additionally, she resumed water aerobics and re-engaged in social activities, which she had previously avoided. Anne set a new personal goal to learn how to adjust her insulin doses more flexibly, believing it would provide her with greater freedom to enjoy her active social life.

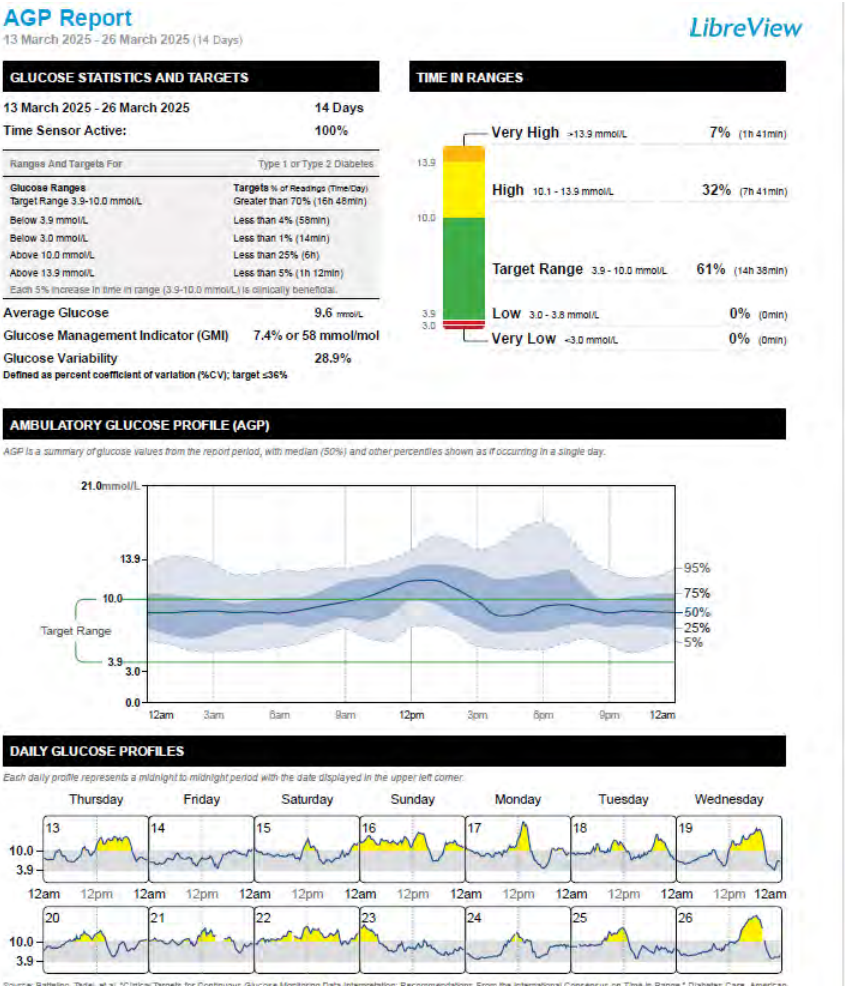
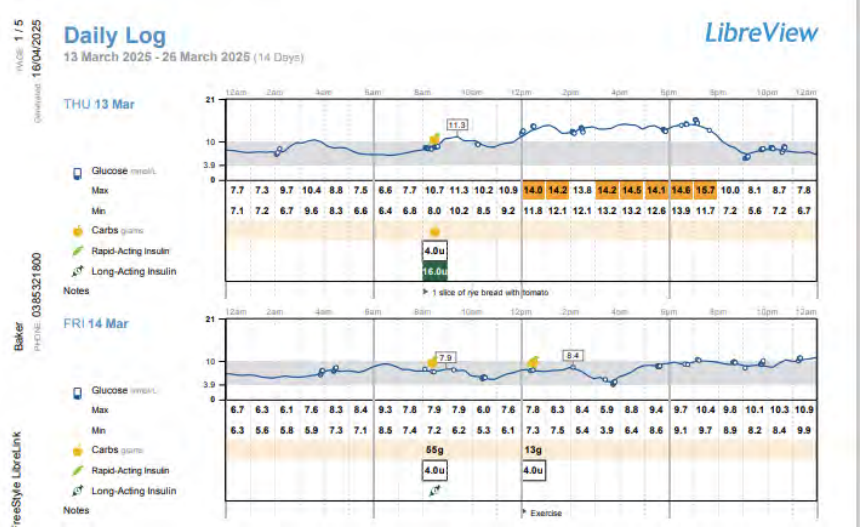
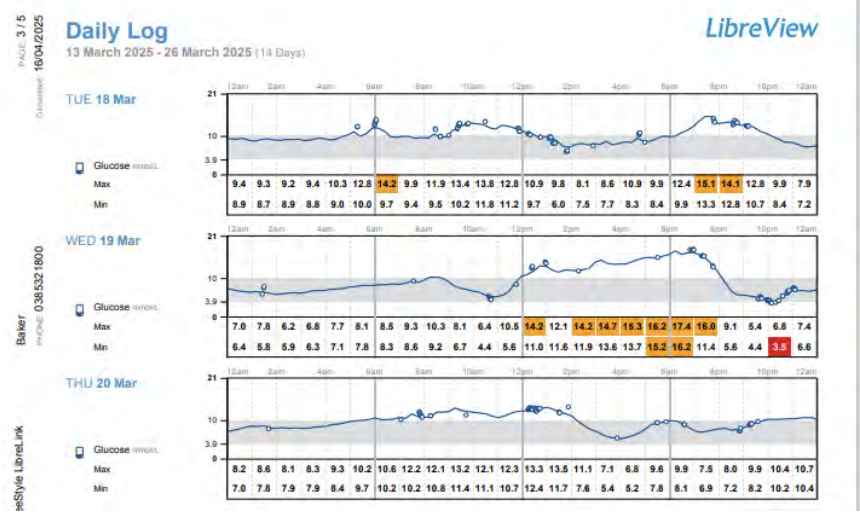
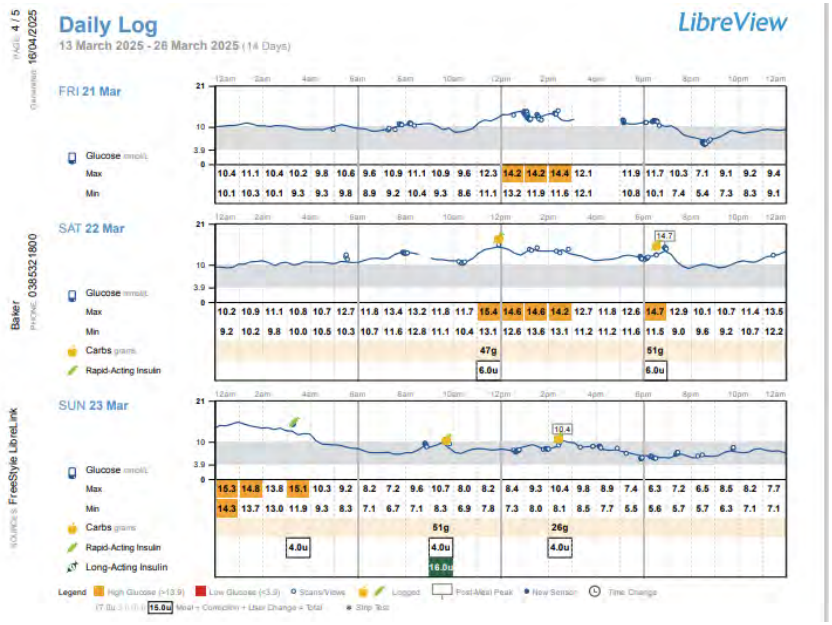

AGP Report
13 March 2025 - 26 March 2025 (14 Days)
LibreView
GLUCOSE STATISTICS AND TARGETS
13 March 2025 - 26 March 2025
14 Days
Time Sensor Active:
100%
Ranges And Targets For
Type 1 or Type 2 Diabetes
Glucose Ranges
Target Range 3.9-10.0 mmol/L
Targets % of Readings (Time/Day)
Greater than 70% (16h 48min)
Below 3.9 mmol/L
Less than 4% (58min)
Below 3.0 mmol/L
Less than 1% (14min)
Above 10.0 mmol/L
Less than 25% (6h)
Above 13.9 mmol/L
Less than 5% (1h 12min)
Each 5% increase in time in range (3.9-10.0 mmol/L) is clinically beneficial.
Average Glucose
9.6 mmol/L
Glucose Management Indicator (GMI)
7.4% or 58 mmol/mol
Glucose Variability
28.9%
Defined as percent coefficient of variation (%CV); target ≤36%
TIME IN RANGES
13.9
10.0
3.9
3.0
Very High >13.9 mmol/L
7% (1h 41min)
High 10.1 - 13.9 mmol/L
32% (7h 41min)
Target Range 3.9 - 10.0 mmol/L
61% (14h 38min)
Low 3.0 - 3.8 mmol/L
0% (0min)
Very Low <3.0 mmol/L
0% (0min)
AMBULATORY GLUCOSE PROFILE (AGP)
AGP is a summary of glucose values from the report period, with median (50%) and other percentiles shown as if occurring in a single day.
21.0mmol/L
13.9
10.0
Target Range
3.9
3.0
0.0
12am
3am
6am
9am
12pm
3pm
6pm
9pm
12am
95%
75%
50%
25%
5%
DAILY GLUCOSE PROFILES
Each daily profile represents a midnight to midnight period with the date displayed in the upper left corner.
Thursday
Friday
Saturday
Sunday
Monday
Tuesday
Wednesday
13
14
15
16
17
18
19
20
21
22
23
24
25
26
10.0
3.9
12am
12pm

Figure 3


PAGE 1 / 5
Generated: 16/04/2025
Daily Log
13 March 2025 - 26 March 2025 (14 Days)
LibreView
THU 13 Mar
Glucose mmol/L
Max
Min
Carbs grams
Rapid-Acting Insulin
Long-Acting Insulin
Notes
4.0u
16.0u
1 slice of rye bread with tomato
FRI 14 Mar
Glucose mmol/L
Max
Min
Carbs grams
Rapid-Acting Insulin
Long-Acting Insulin
Notes
55g
13g
4.0u
4.0u
Exercise
Baker
PHONE: 0385321800
reeStyle LibreLink


PAGE 3 / 5
Generated: 16/04/2025
Daily Log
13 March 2025 - 26 March 2025 (14 Days)
LibreView
TUE 18 Mar
Glucose mmol/L
Max
Min
WED 19 Mar
Glucose mmol/L
Max
Min
THU 20 Mar
Glucose mmol/L
Max
Min
Baker
PHONE: 0385321800
esStyle LibreLink


PAGE 4 / 5
Generated 16/04/2025
Daily Log
13 March 2025 - 26 March 2025 (14 Days)
LibreView
FRI 21 Mar
SAT 22 Mar
SUN 23 Mar
Glucose mmol/L
Max
Min
Carbs grams
Rapid-Acting Insulin
Long-Acting Insulin
Baker
PHONE 0385321800
SOURCE FreeStyle LibreLink
47g
6.0u
51g
4.0u
26g
Legend

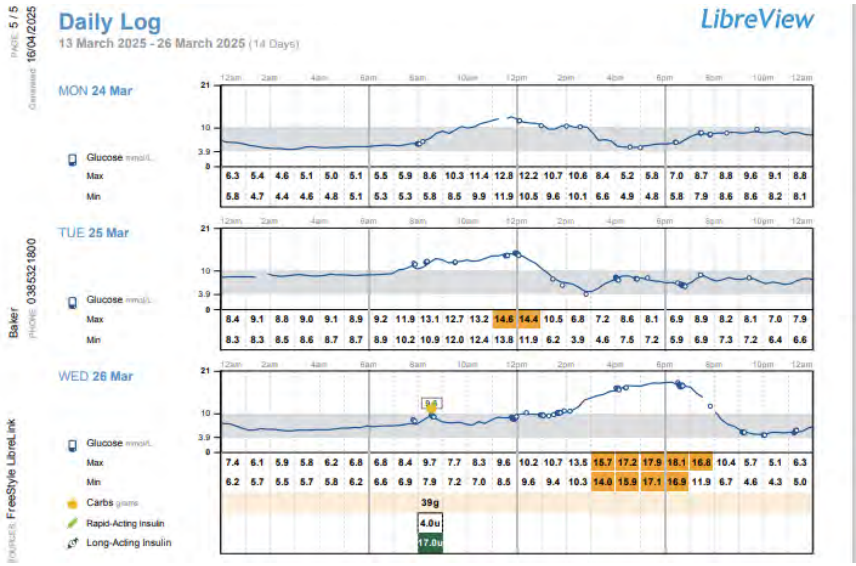

PAGE 5 / 5
Generated 16/04/2025
Daily Log
13 March 2025 - 26 March 2025 (14 Days)
LibreView
MON 24 Mar
TUE 25 Mar
WED 26 Mar
Glucose mmol/L
Max
Min
Carbs grams
Rapid-Acting Insulin
Long-Acting Insulin
Baker
PHONE 0385321800
SOURCE FreeStyle LibreLink
39g
4.0u
17.0u

Figure 4

No further changes were made to Anne's insulin doses at this appointment. Instead, we focused on discussing the principles of insulin self-adjustment. While Anne has demonstrated increased confidence and knowledge in managing her diabetes, she will require additional time and practice to consolidate the extensive information provided. Therefore, Anne was encouraged to continue practicing her carbohydrate-counting skills and to discuss the principles of flexible insulin therapy in the next appointment in 1 month.

Conclusion

This case has reinforced our understanding and practice of person-centred care, highlighting the importance of supporting patients' knowledge, self-efficacy, and empowerment in effectively managing diabetes. Through a collaborative, team-based approach, we have supported Anne in regaining a sense of control and confidence over her health and quality of life.

The FreeStyle Libre 2 played a key role not only in improving Anne's glycaemic management but also in enhancing her emotional acceptance of the diagnosis. Initially overwhelmed by her sudden diagnosis, Anne now feels more confident and empowered in managing her condition. The visual data provided by the FreeStyle Libre 2 helped Anne and her husband understand how factors such as sleep, physical activity, stress, and diet affect her glucose levels. She identified sleep and exercise as essential to her recovery, and the FreeStyle Libre 2's alerts and alarms have helped her feel safer and less anxious about hypoglycaemia.

Regular data uploads via LibreView and Anne's detailed note-taking have enabled more timely communication with the care team, particularly around insulin adjustments. This will support her upcoming transition to flexible insulin therapy, which will help her effectively self-manage diabetes while still living life to the fullest.

Although the FreeStyle Libre 2 system has proven to be a valuable tool, and Anne is fortunate to continue using it despite not receiving NDSS subsidies,

this case highlights the need for further advocacy and policy change to improve access for others with a similar diagnosis.

References

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Notes