Getting the best out of diabetes tech in T1DE

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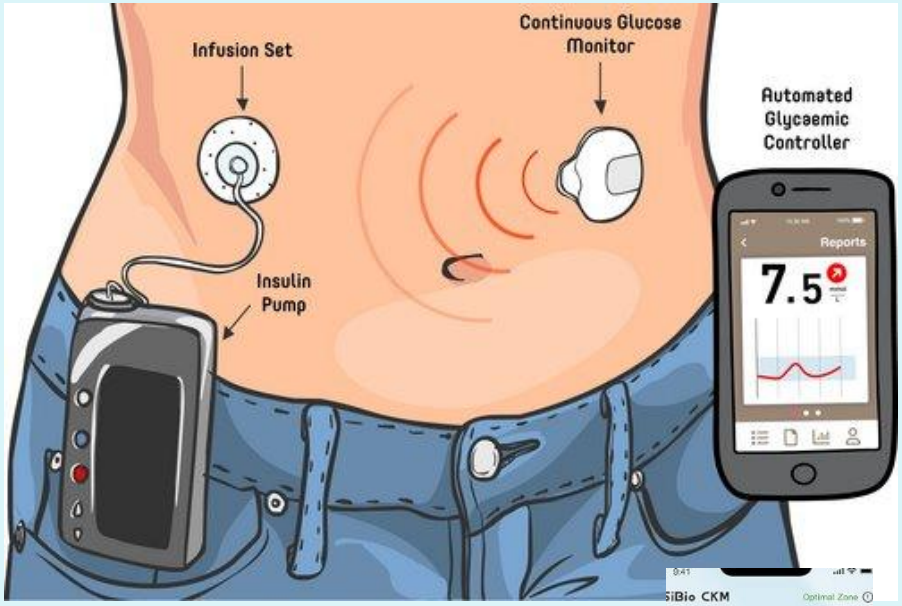
What tech are we talking about?



- CGMS
- Insulin pumps
- HCL
- Continuous ketone monitors

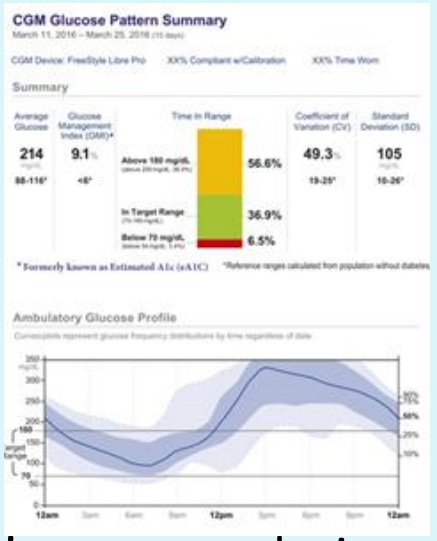
- Is anyone not familiar with tech?

Small group work

- 6 minutes to discuss
- 6 minutes to feedback for large group discussion

- 5 Groups
  - Pros and cons of CGMS
  - Pros and cons of insulin pumps/HCL
  - Things to think about for a SEDU in-patient admission re tech

CGMS Pros



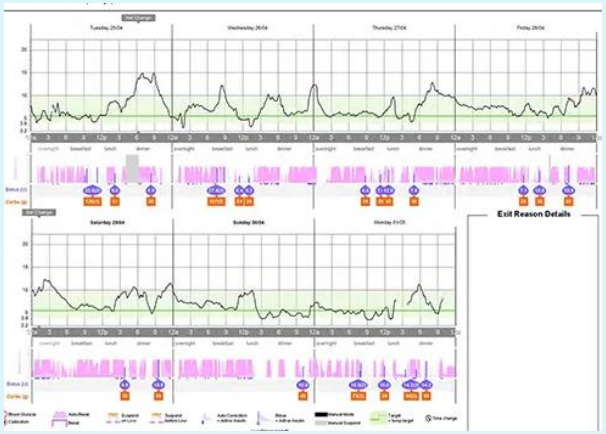
- ✓ Use of sensors is becoming normalised
- ✓ Use to guide therapy decisions and track the person's progress during therapy.
- ✓ Better understanding of glucose trends related to eating patterns.
- ✓ Helps in identifying and addressing disordered eating behaviours, for example binging, skipping meals, or omitting insulin.
- ✓ Connects with a hybrid closed loop pump for additional benefits.
- ✓ Can use shared software to make notes on food intake, mood, and goal-oriented actions. This can act as a diary to support therapy.
- ✓ Diabetes is less visible – don't need to finger prick to measure glucose. Instead, it is available on phones which are everyday devices and doesn't attract attention. (Or PDM in some cases).

- ✓ Reduced anxiety around glucose levels due to real time data and trend arrows.
- ✓ Patient and parents may feel safer having diabetes team overseeing numbers and supporting diabetes management remotely.
- ✓ Ability to eat, sleep, exercise, socialise and live more freely due to increased management of glucose levels.
- ✓ Potential for earlier intervention with hypoglycaemia (low glucose), which could make the patient feel safer. Can help identify when people delay hypo treatment, or when they binge after a hypo.
- ✓ May feel safer having arrows and allowing intervention earlier regarding hypoglycaemia where there is a fear of requiring carbohydrate intake for hypoglycaemia

CGMS Cons

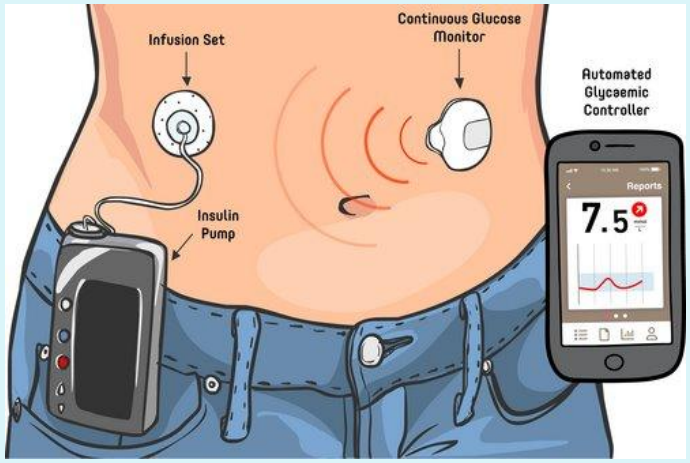
- Potential to use the data to manipulate insulin dosing for weight control, i.e. by keeping glucose /ketones raised
- Possible exacerbation of perfectionist tendencies around glucose control due to constant visibility of data.
- May trigger anxiety or compulsive checking.
- Data may exacerbate feelings of failure or frustration in response to elevated glucose levels despite best efforts. People report “doing their best”, but numbers are not always accurately reflecting this.
- Emotional impact of data: Numbers from CGMS may generate feelings of judgment or criticism from the MDT or parents. Patients might experience anxiety, shame, or frustration if they perceive their glucose numbers as "good" or "bad.“
- The downward trend of glucose and trend arrows may cause increased anxiety about hypoglycaemia and pseudo (*false*) hypoglycaemia, which can result in people consuming extra carbohydrate.
- Body image concerns related to wearing a sensor device
- Role of dehydration and accuracy
- Placement if significantly underweight
- Accuracy if significantly hyperglycaemic
- Infection/skin irritation risk

- Data sharing and control: MDT having access CGMS data may feel like a loss of control for the patient. The secretive nature of eating disorders means that retaining control by not sharing data may be important to some patients.
- Staff expertise: Non-diabetes staff may struggle to interpret CGMS data, potentially leading to patient frustration. Patients might express concerns such as, "I don't want to have to teach staff how to manage my diabetes. I am here to get better."
- Clear protocols for interpreting CGMS data (numbers and trend arrows) are required, adding complexity to T1DE management.
- Focusing on CGMS data may generate a feeling that the MDT is concerned only about numbers rather than the overall picture of the patient's health and well-being. Patients might feel that their personal experiences and struggles are overshadowed by numerical data.



Other things to consider

- Data sharing
- Frequency of scanning
- Setting expectations



Pumps/ HCL Pros

- ✓ May reduce diabetes distress with fewer diabetes self-management tasks to perform.
- ✓ May allow blood glucose numbers to be more in range with less effort.
- ✓ Going off piste?
- ✓ Targets?
- ✓ Offers hope?

Pumps/HCL Cons

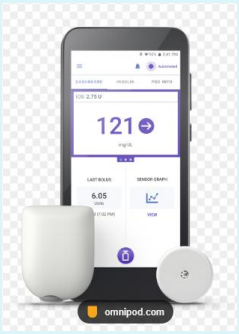
- Struggling with the idea of insulin being there all the time (many patients struggle more with long-acting insulin –personal observation) - may not tolerate the constant delivery of insulin over 24 hours.
- Knowledge that the system is going to want to administer more insulin than the patient is comfortable with may be a challenge re weight gain.
- Weight gain with HCL (about 1.8kg)
- Body image concerns wearing 2 devices permanently.
- Patients often express the need for control and the lack of control that comes with the HCL algorithm may add to anxiety and may not be tolerated.
- Opportunities for manipulation are significant with HCL particularly with non-diabetes specialist.
- Non-specialist staff not understanding the technology may lead to a lack of confidence in the HCP.
- Family/ carer expectations
- HCP expectations
- DKA risk
- Retinopathy?
- Psudohypoglycaemia

In-patients

- Keeping enough kit –how to get hold of it
- Which system
- Targets
- Downloading/ sharing data
- Relying on patient phone
- Setting guidelines and targets including arrows
- Sick day rules
- Going off piste with settings - How often to change settings
- Who will support –local diabetes team
- Sharing with IP team and diabetes team
- Troubleshooting out of hours
- Asking a lot of IP mental health team
- Risk of manipulation
- Risk of frustration/ fear if staff don’t understand

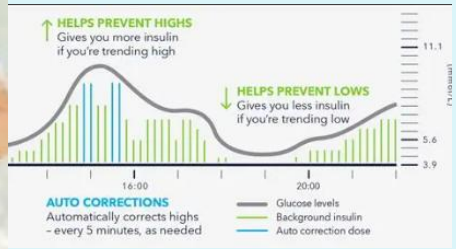
Which system to use?
Discuss Pros & Cons

Omnipod



Tandem

Medtronic



Ypsomed

Medtrum

Continuous ketone monitor

Case Studies

Sophie

- 18 month admission to SEDU under section 3
- HbA1c 120
- BMI 13
- Desperate to get better but can’t do it.
- Having insulin under restraint 2x a day
- VERY traumatic for EVERYONE
- Family very keen to try pump
- Sophie ambivalent initially but now ready to try

Sophie

- Rep supported attachment and education to MH team
- Omnipod with 8 units as basal
- additional 1 unit at meal times as meals very prescriptive in ED unit (and if she doesn't eat then won't be too much)
- Only site with enough tissue buttocks
- Tegaderm cover
- Checked 4x a day by nursing team
- PDM held by nursing team
- Had to stay on the unit during 3 day trial (1 hour walk) – Tegaderm checked after walks

Sophie

- Fantastic results for 3 days!!!!

Sophie

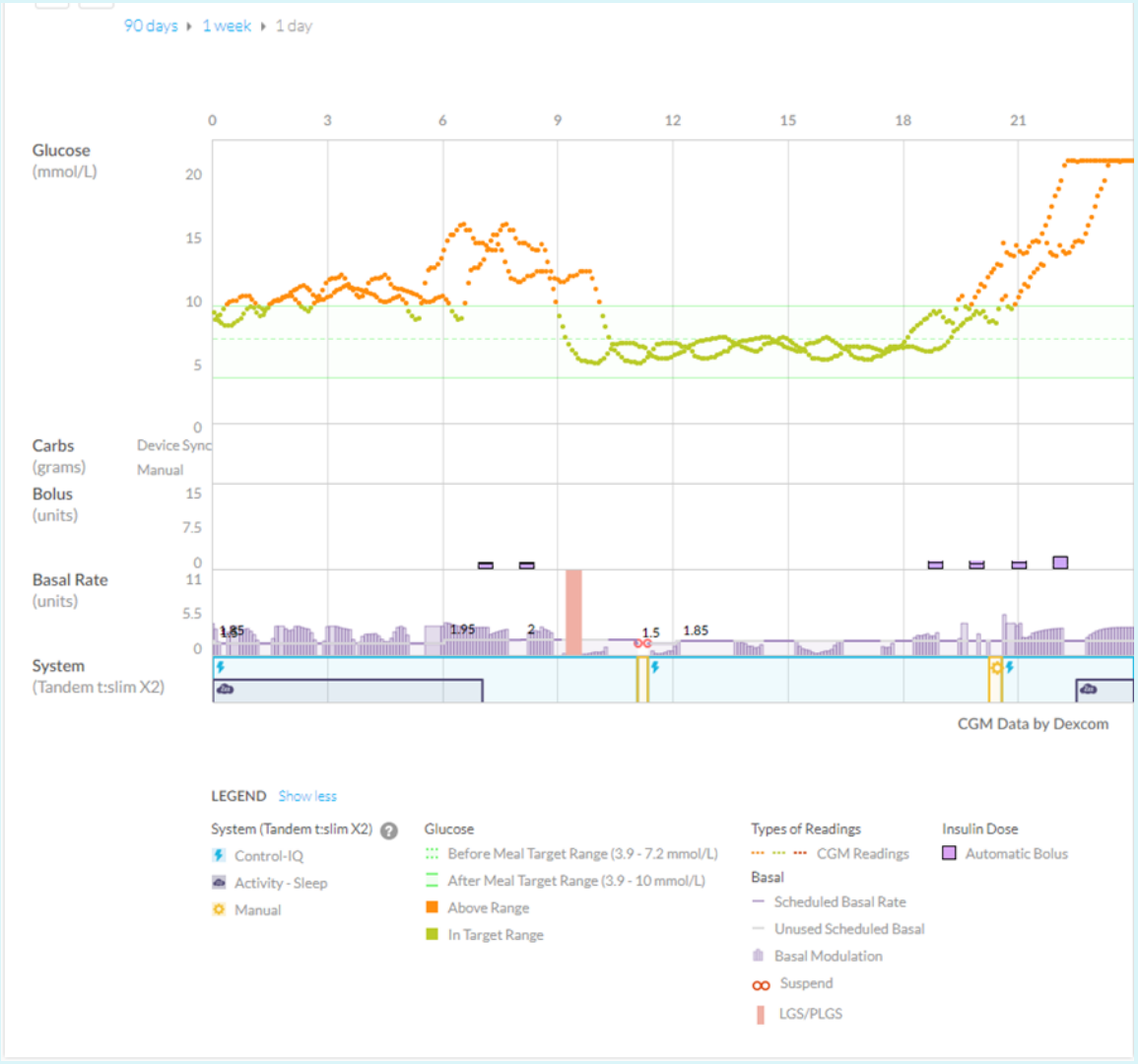
- Didn’t feel she could wear a second one!

Hannah

- 36 year old district nurse
- T1DE about 3 years
- HbA1c 200! 3 month admission to SEDU
- Worked really hard and getting stronger
- Still bingeing when stressed, family dynamics very complex
- Diabetes distress a significant part of her disease
- Using 10 units lantus and 6 units novorapid regularly
- HbA1c 90 and coming down

Hannah

- Ypsopump with CAM APS
- Target 9.5


90 days
1 week
1 day
0
3
6
9
12
15
18
21
Glucose
(mmol/L)
20
15
10
5
0
Carbs
(grams)
Device Sync
Manual
Bolus
(units)
15
7.5
0
Basal Rate
(units)
11
5.5
0
1.85
1.95
2
1.5
1.85
System
(Tandem t:slim X2)
CGM Data by Dexcom
LEGEND
Show less
System (Tandem t:slim X2)
Control-IQ
Activity - Sleep
Manual
Glucose
Before Meal Target Range (3.9 - 7.2 mmol/L)
After Meal Target Range (3.9 - 10 mmol/L)
Above Range
In Target Range
Types of Readings
CGM Readings
Basal
Scheduled Basal Rate
Unused Scheduled Basal
Basal Modulation
Suspend
LGS/PLGS
Insulin Dose
Automatic Bolus

Time in Range

18% Very High > 13.9 mmol/L
29% High 10.1-13.9 mmol/L
48% Target Range 3.9-10 mmol/L
5% Low 3-3.8 mmol/L
0% Very Low < 3 mmol/L

10.3 mmol/L
Average Glucose

Total insulin – Device

From insulin pump

68% (41.7 units) Basal
32% (19.8 units) Bolus

61.5 units Total insulin
42.6 units Scheduled Basal

System Details

Tandem t:slim X2 (1d)

Control-IQ 56% (13h)
Activity - Sleep 30% (7h)
Activity - Exercise 0%
Manual 44% (11h)

Lila

- Referred from Paeds St Elsewhere age 16–adult team not confident –would we see
- Multiple DKA admissions with paeds
- 3 month admission to paeds ward –supervised insulin – couldn't give herself
- Met with psychologist –diagnosed with T1DE
- Arranged for DN to go in daily 6pm Mon-Fri–Tresiba 20 units and adjustment Novorapid (0-12 units)
- For admission if ketones >3
- At weekends Mum supported giving tresiba

Lila

- 1st clinic with me
- 4 siblings, parents separated, lives with mum
- “Mum never there”
- Lila is “mum to all the sisters since age 12”
- Works part time in evenings “if mum comes home”
- Waits for DN to arrive, “gets insulin in as fast as she can so can get out the house and go to work”
- Never declined DN insulin –always needs 12 units
- Weekends –mum not there so doesn’t support with tresiba
- Takes 24 units NR on a Monday lunchtime so ketones not high when DN visits

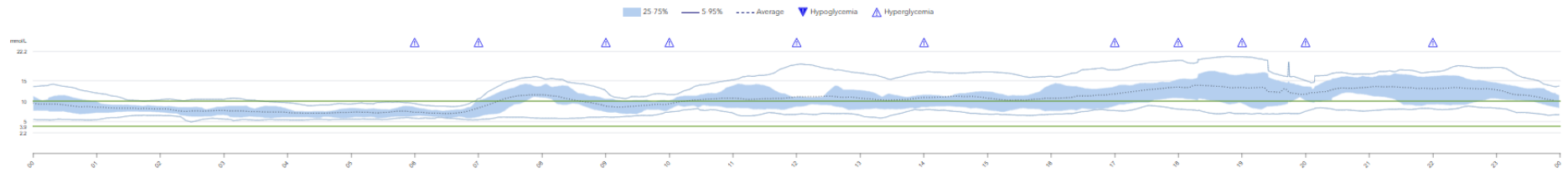
- Thoughts……

Lila

- Happy to see the psychologist……”I know how to manipulate them”
- “I know how to say what they want to hear”

- They haven’t met Linda!!!

24-hour sensor glucose overview



Device Settings

Based on device settings of last upload 23/05/2026

SMARTGUARD™ TARGET
6.7 mmol/L

ACTIVE INSULIN TIME
4 h

CARB RATIO (G/U)

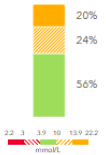
Glucose overview

AVERAGE SENSOR GLUCOSE
10.4 ± 3.7 mmol/L

GLUCOSE MANAGEMENT INDICATOR (GMI)
7.8% (61.5 mmol/mol)

COEFFICIENT OF VARIATION (CV)
35.6%

Time in range



Insulin per day

TOTAL DAILY DOSE
30.7 U

BOLUS (35%)
10.8 U
AUTO CORRECTION 9.6U (89%)

BASAL (65%)
19.9 U

Device usage

GUARDIAN™ 4 SENSOR
72%
5 DAY(S) 1 HOUR(S) PER WEEK

SMARTGUARD™ USE
76%
5 DAY(S) 7 HOUR(S) PER WEEK

SET CHANGE / RESERVOIR CHANGE

Hypoglycemic episodes

Hyperglycemic episodes

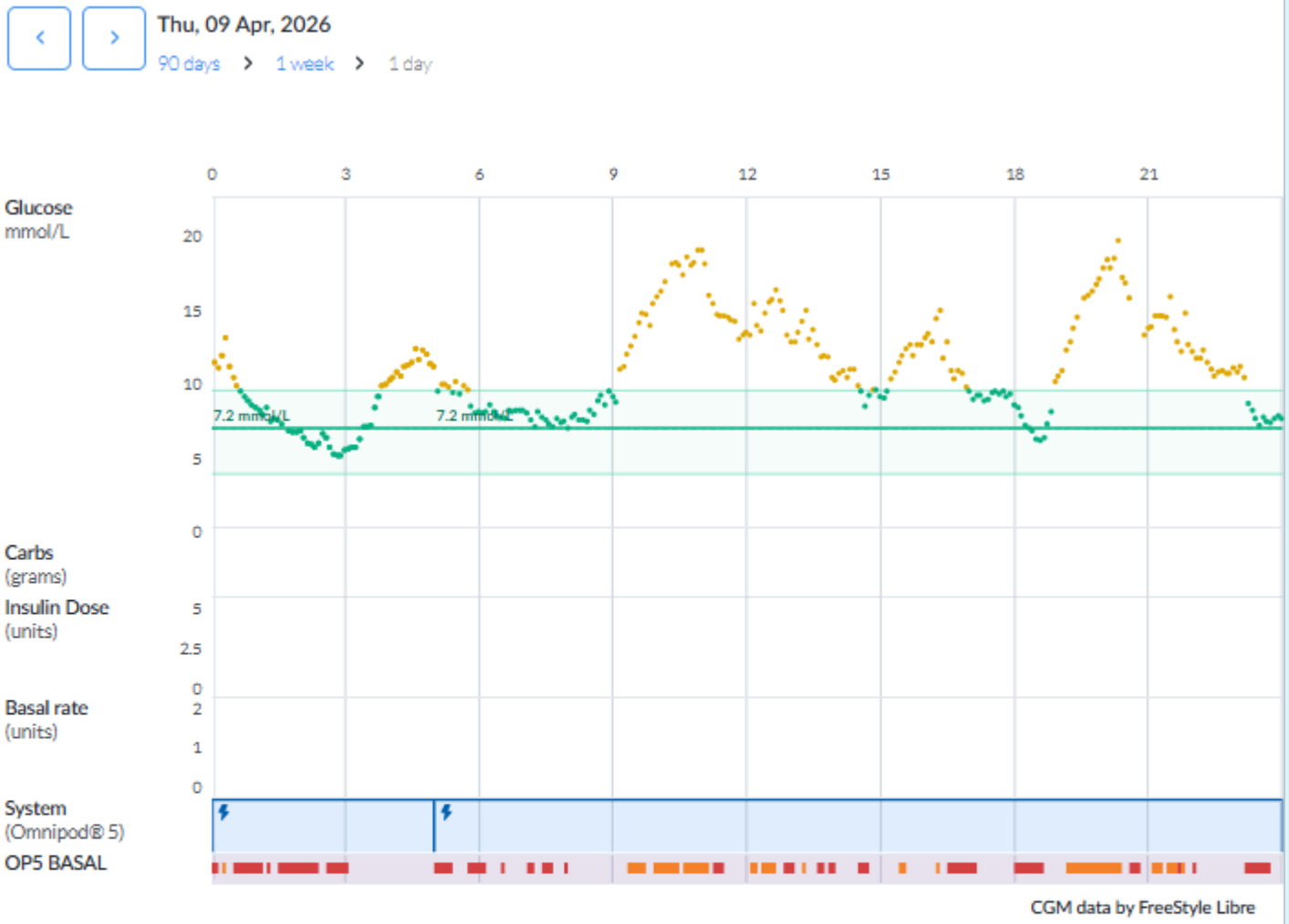
Exit Reason Details

1 - Sensor Updating

SmartGuard exit due to SG not available. Sensor was trying to update, and recovery did not occur within 4 hours.

Lucy

- 46 year old
- Type 1 since age 6
- Difficult family dynamics
- Really wants a baby, not in a relationship
- Never really had a longterm relationship
- HbA1c 127
- Really keen on pump/HCL –has had one in the past and DIY APS
- Would only wear Omnipod
- What would you do?



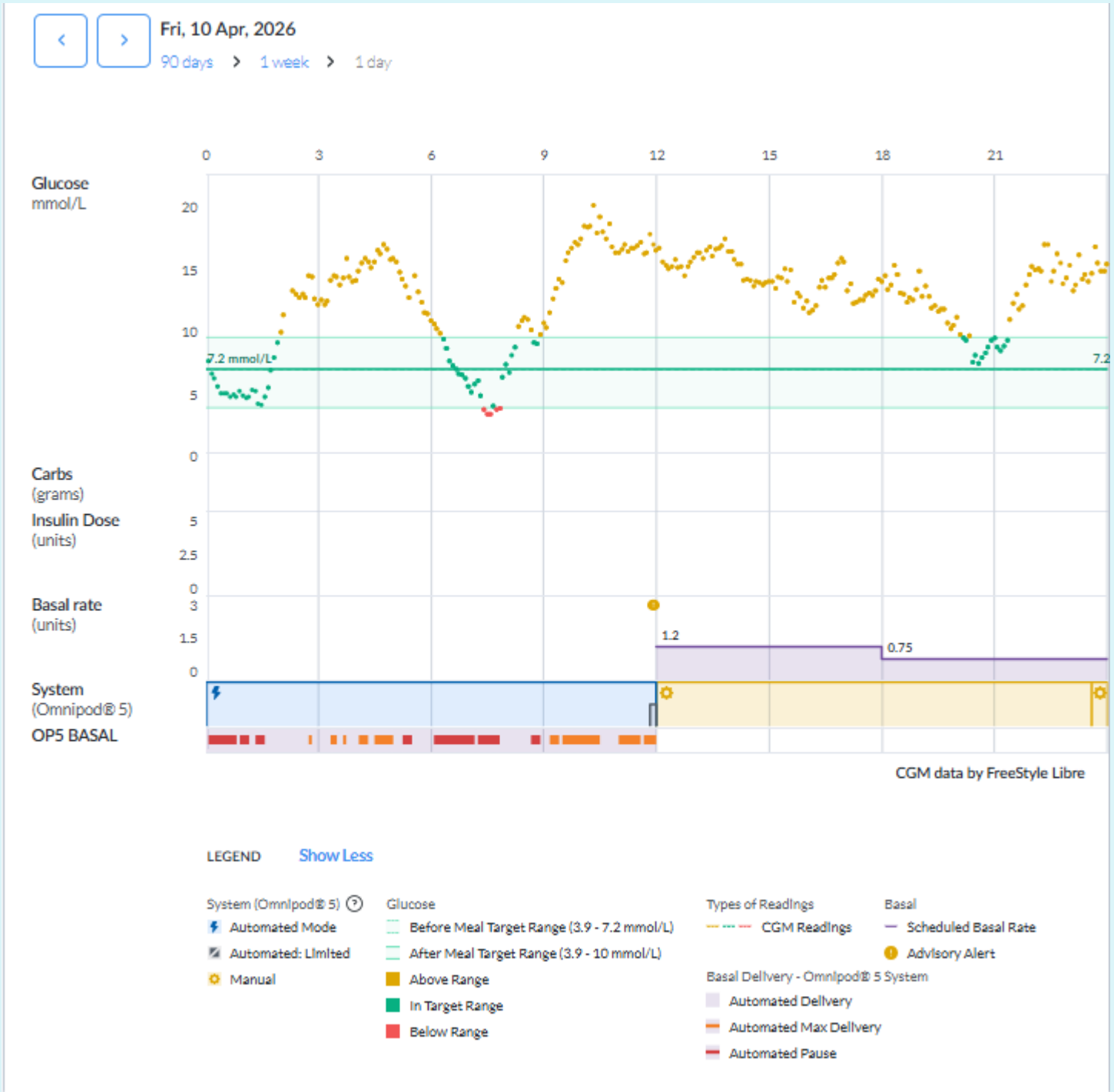
LEGEND Show Less

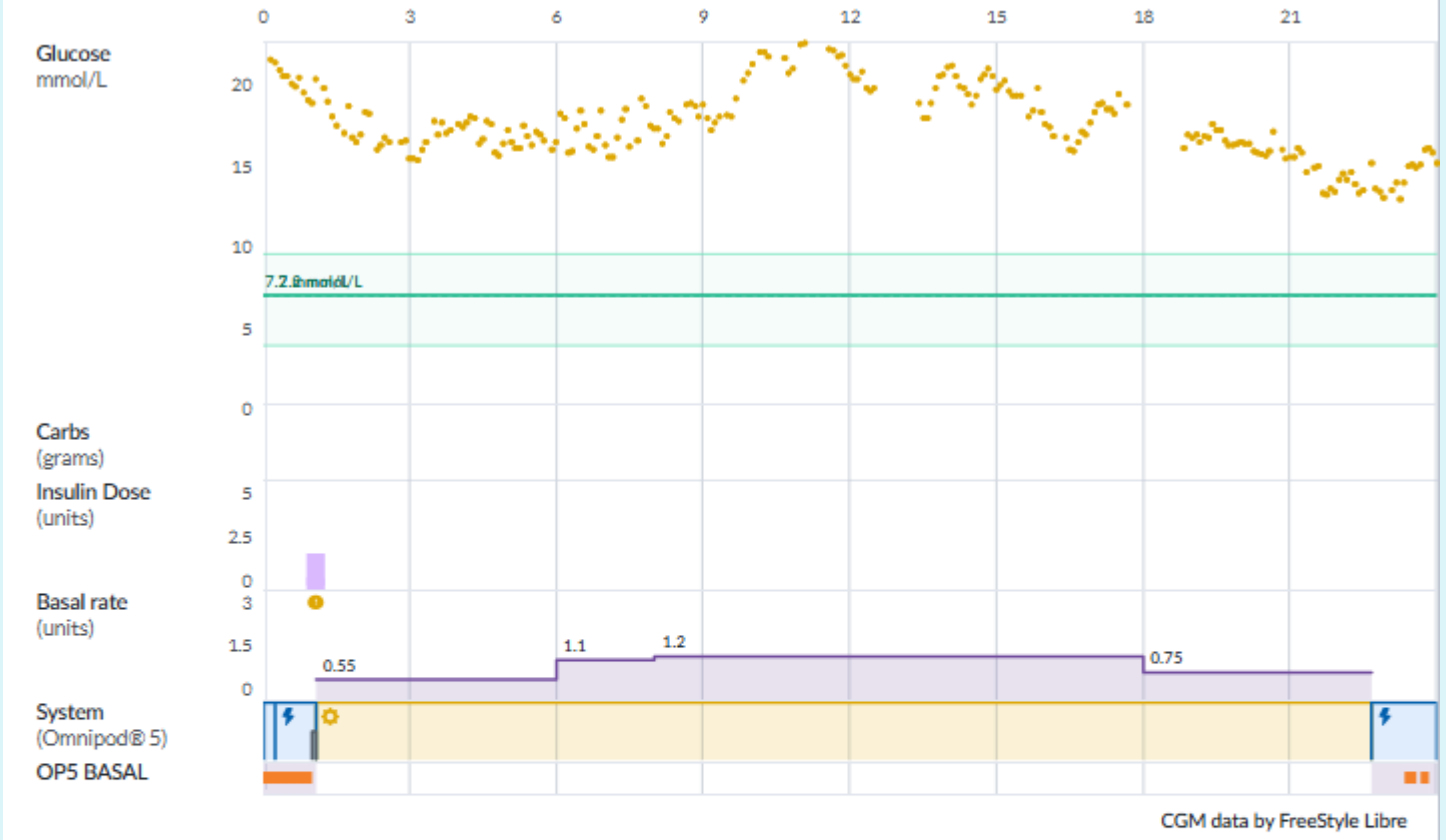
System (Omnipod® 5)
- Automated Mode

Glucose
- Before Meal Target Range (3.9 - 7.2 mmol/L)
- After Meal Target Range (3.9 - 10 mmol/L)
- Above Range
- In Target Range

Types of Readings
- CGM Readings

Basal Delivery - Omnipod® 5 System
- Automated Delivery
- Automated Max Delivery
- Automated Pause


Fri, 10 Apr, 2026
90 days
1 week
1 day
Glucose
mmol/L
0
3
6
9
12
15
18
21
20
15
10
5
0
7.2 mmol/L
7.2
Carbs
(grams)
Insulin Dose
(units)
5
2.5
0
Basal rate
(units)
3
1.5
0
1.2
0.75
System
(Omnipod® 5)
OP5 BASAL
CGM data by FreeStyle Libre
LEGEND
Show Less
System (Omnipod® 5)
Automated Mode
Automated: Limited
Manual
Glucose
Before Meal Target Range (3.9 - 7.2 mmol/L)
After Meal Target Range (3.9 - 10 mmol/L)
Above Range
In Target Range
Below Range
Types of Readings
CGM Readings
Basal
Scheduled Basal Rate
Advisory Alert
Basal Delivery - Omnipod® 5 System
Automated Delivery
Automated Max Delivery
Automated Pause



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System (Omnipod® 5)
- Automated Mode
- Automated: Limited
- Manual

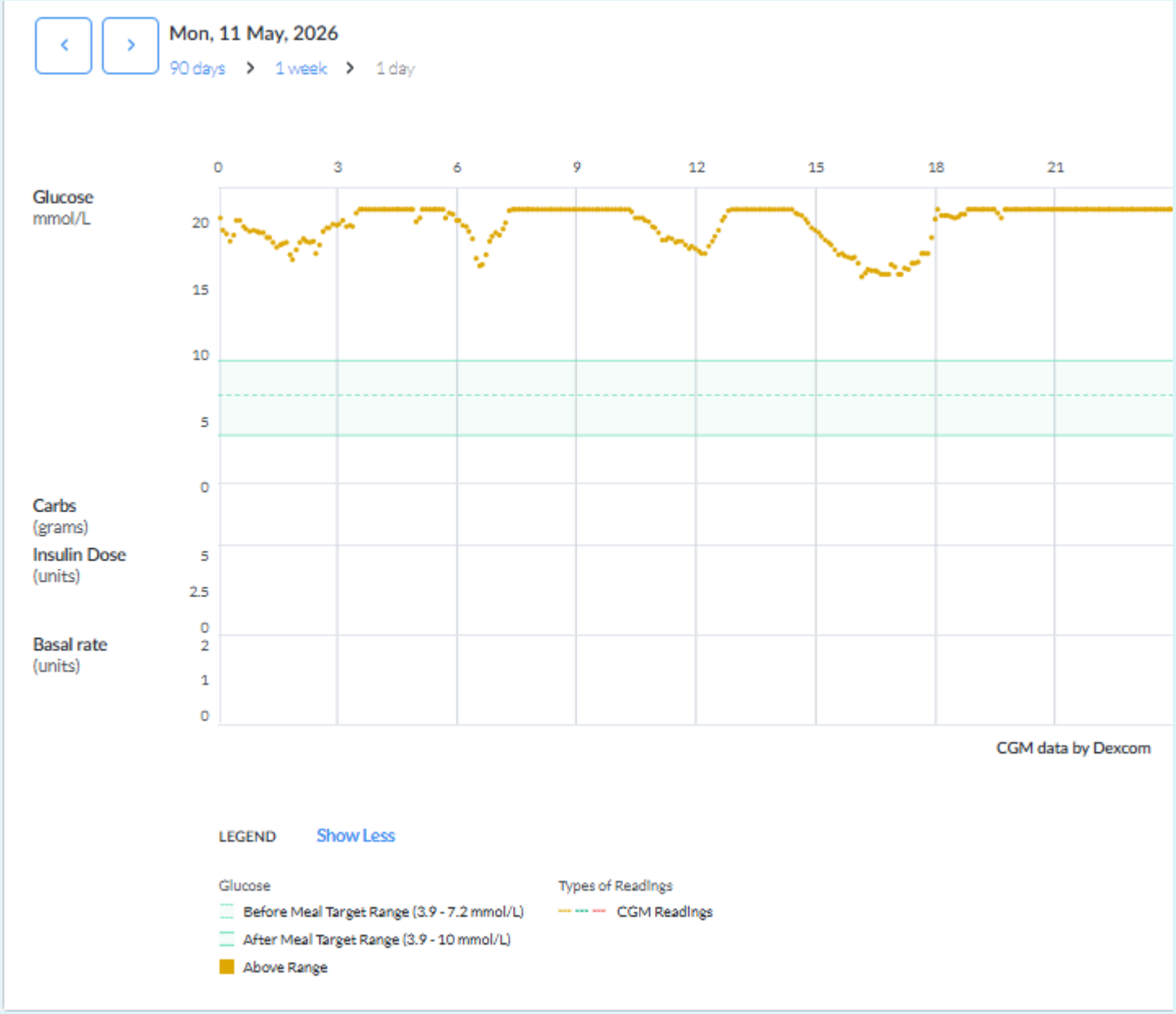
Glucose
- Before Meal Target Range (3.9 - 7.2 mmol/L)
- After Meal Target Range (3.9 - 10 mmol/L)
- Above Range

Types of Readings
- CGM Readings

Basal
- Scheduled Basal Rate
- Advisory Alert

Insulin Dose
- Bolus (Delivered)

Basal Delivery - Omnipod® 5 System
- Automated Delivery
- Automated Max Delivery


Mon, 11 May, 2026
90 days
1 week
1 day
0
3
6
9
12
15
18
21
Glucose
mmol/L
20
15
10
5
0
Carbs
(grams)
Insulin Dose
(units)
5
2.5
0
Basal rate
(units)
2
1
0
CGM data by Dexcom
LEGEND
Show Less
Glucose
Before Meal Target Range (3.9 - 7.2 mmol/L)
After Meal Target Range (3.9 - 10 mmol/L)
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Any further questions?