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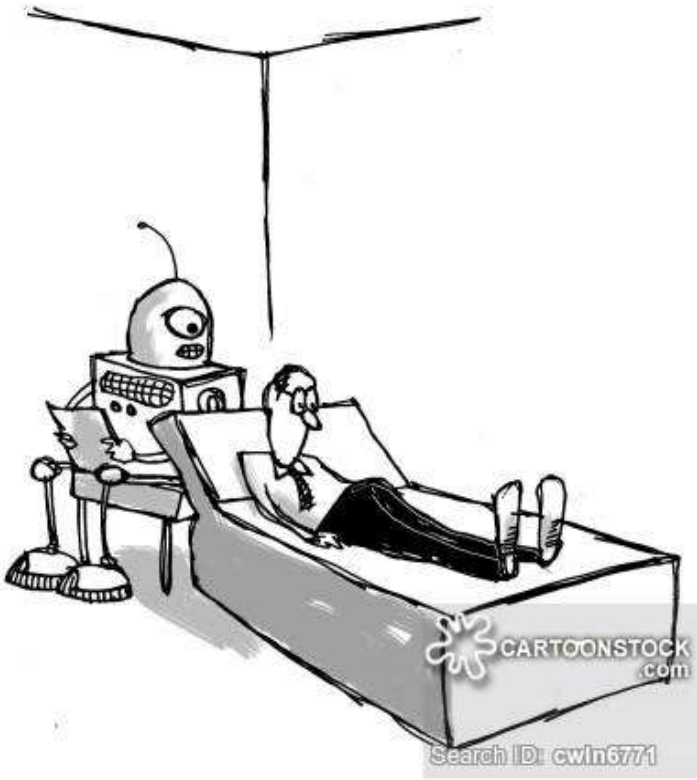
Getting the most out of uploaded glucose data

Maggie McDonald
Diabetes Specialist Nurse
West Hampshire Community
Diabetes Service

OUR VALUES

1. Fear of Flying
2. Public Speaking
5. INTIMACY
4. The Dark
www.SelfHelpCollective.com
8. REJECTION
9. Fear of Spiders
TOP 10 FEARS
3. Fear of Heights
10. Commitment!
6. Fear of Death
7. Fear of Failure

What fears do you have?
What fears do the people with diabetes have?



West Hampshire Community Diabetes Service

NHS Southern Health NHS Foundation Trust

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Our aim: West Hampshire Community Diabetes Service

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To ensure all people with diabetes have **access** to excellent skills and knowledge so they can **achieve** their individual goals and become **active** participants in their care whenever possible

Active participants

Achieve individual goals

Access to excellent skills & knowledge

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Aims:

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- Inspire you to review glucose data with your patients
- 4 – STEP guide to reviewing AGP
- Signpost to further learning resources

How do we monitor glucose levels in diabetes?

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HbA1c

How sugary your red cells got in 3 months

Blood glucose

What's happening now

Time in Range (TIR) & glucose goals achieved

Flash glucose monitoring
Interstitial glucose plus trend with element of continuous glucose monitoring

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Three key aims of flash glucose/CGM monitoring

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Review of results from patients using Freestyle Libre device under NHS funding

Since NHS funding for the Libre device became available in 2018, 31 WHCDS patients have used Libre for at least 6 months.

- 13 (42%) were male and 18 (58%) were female, with an average age of 47 years (range 22 to 79 years)

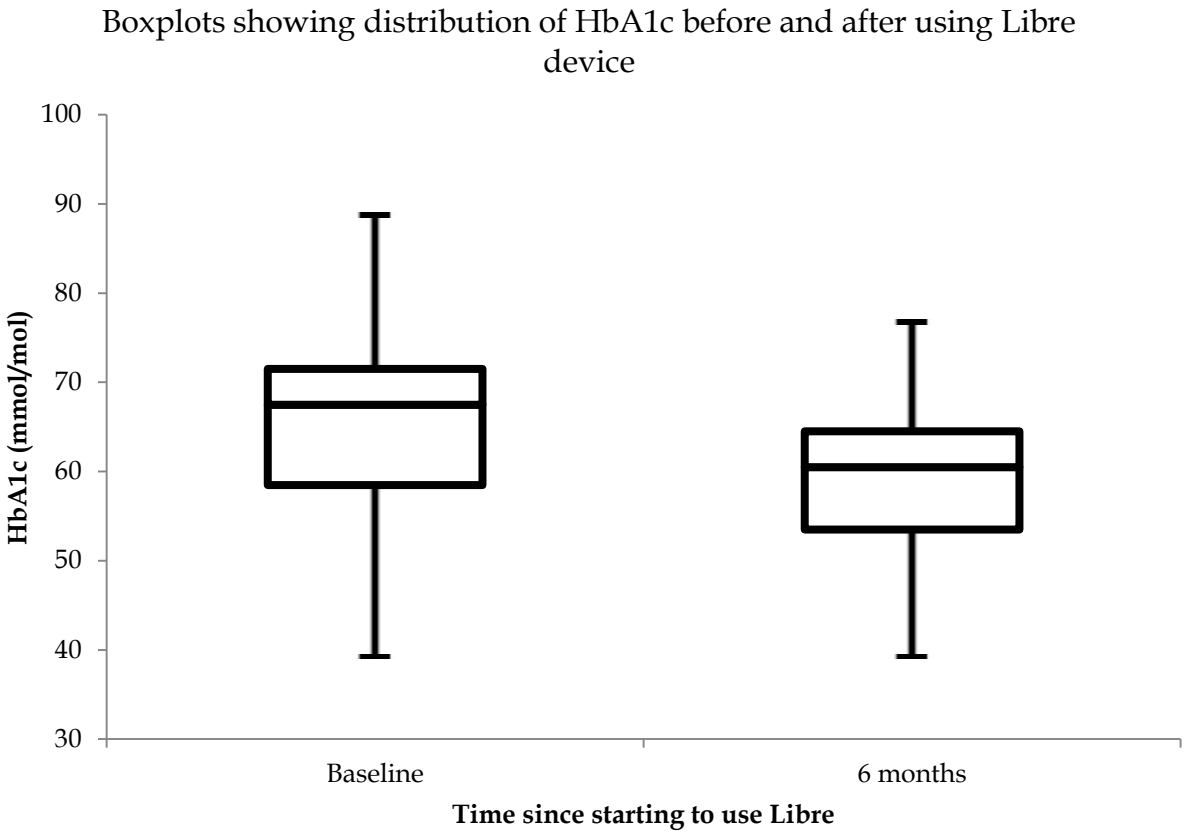
- 27 (87%) of these people have attended formal type 1 education (one of the criteria for accessing this technology)

Change in HbA1c at 6 months

The average HbA1c among these people fell from

64 mmol/mol at baseline to

59 mmol/mol after 6 months of using Libre.



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Reviewing glucose data in your diabetes clinic

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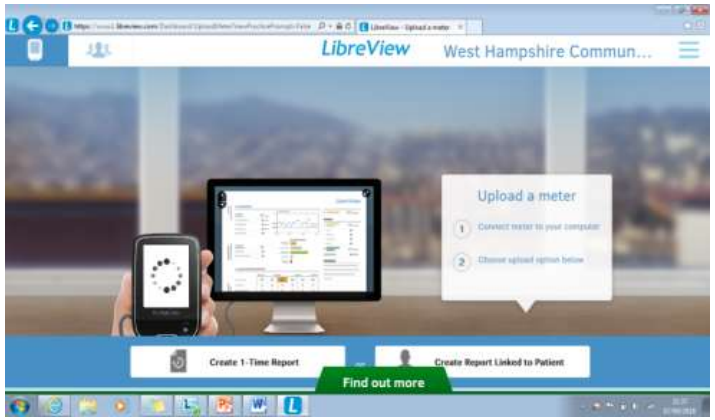

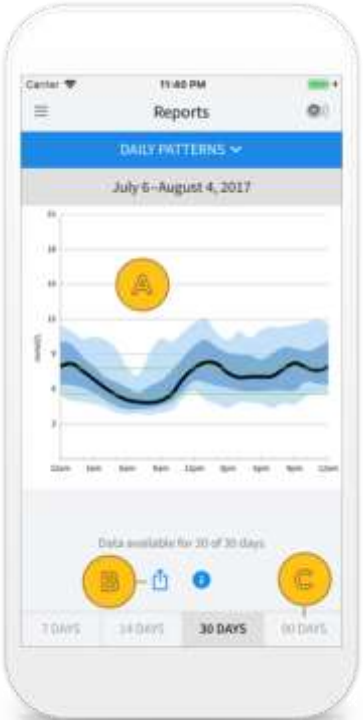

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Freestyle Libre Reader

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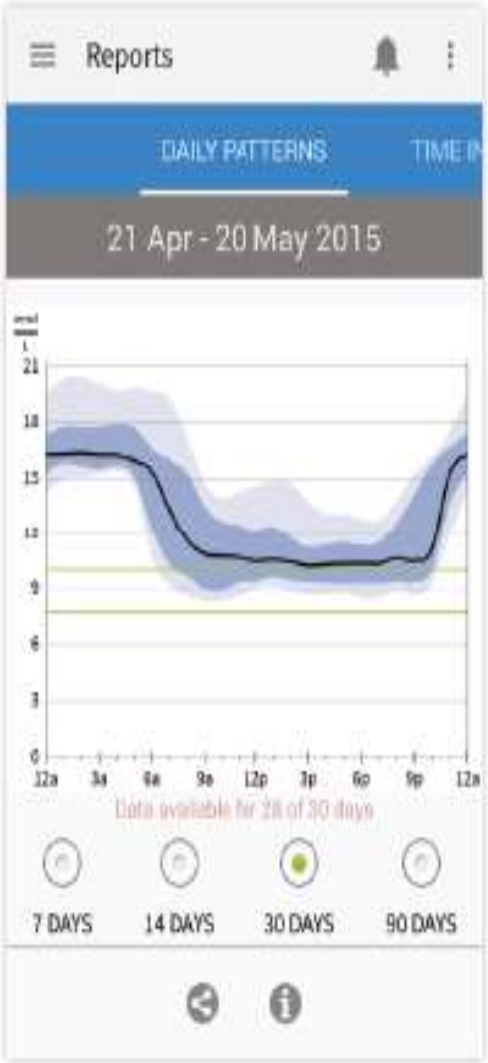
Libre Link App



glooko + diasend.

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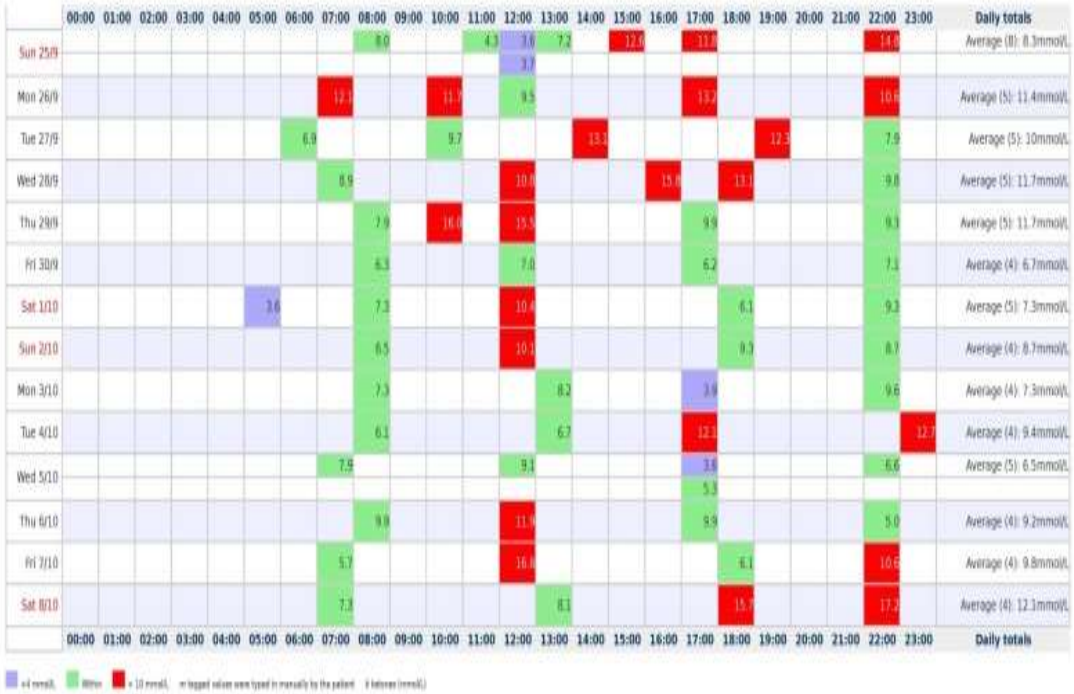

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Abbott FreeStyle Libre

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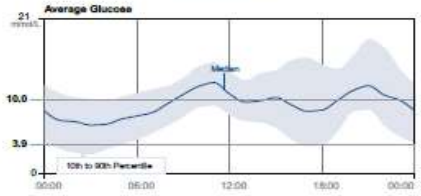
LibreView

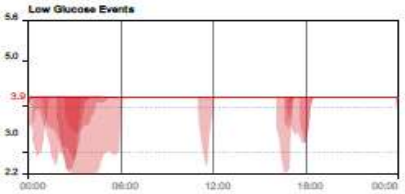
Snapshot
25 May 2017 - 7 June 2017 (14 Days)

Glucose — Estimated A1c 7.6% or 60 mmol/mol

AVERAGE Glucose	9.5 mmol/L
% above target	43 %
% in target	51 %
% below target	6 %

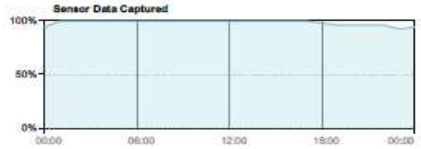


LOW GLUCOSE EVENTS	12
Average duration	122 Min



Sensor Usage

SENSOR DATA CAPTURED	100 %
Daily scans	27



DAILY CARBS	grams/day

Insulin

RAPID-ACTING INSULIN	units/day
Meal	
Correction	
User Change	
Manual	
LONG-ACTING INSULIN	units/day
Total Daily Insulin	units/day

Comments

- Gaps found in the insulin data. 14 days in this reporting period have no recorded insulin events.
- Gaps found in food data. 14 days in this reporting period have no recorded food events.

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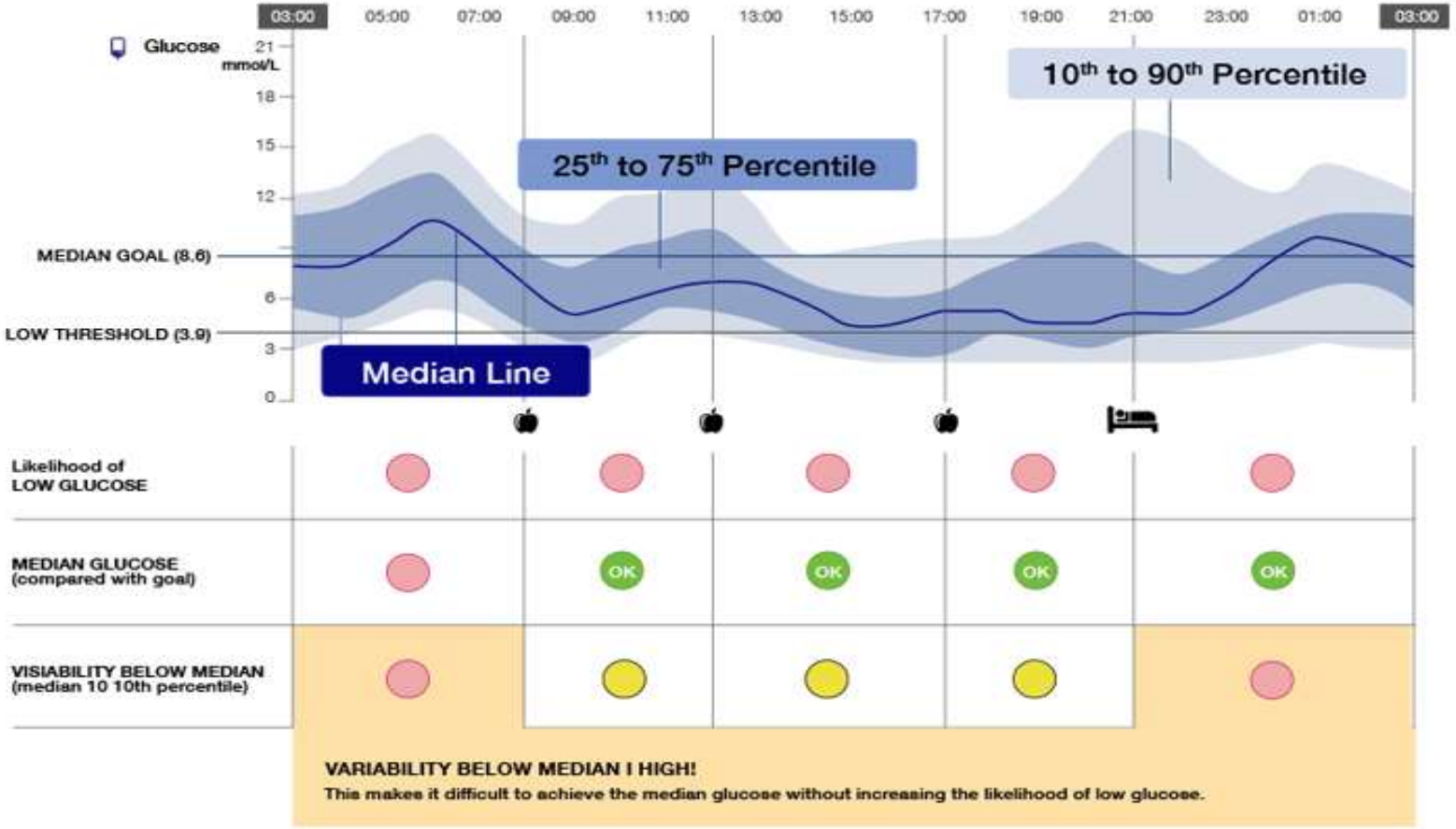
Glucose Pattern Insights

12 January 2014 - 24 January 2014 (15 days)

LOW-GLUCOSE ALLOWANCE SETTING: Medium

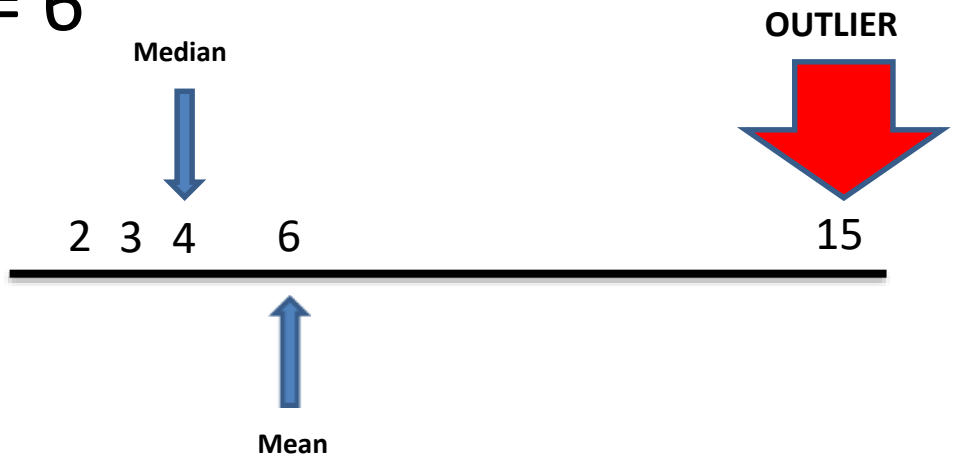
MEDIAN GOALSETTING: 8.6 mmol/L (A1c: 7.0% or 53 mmol/mol)

Estimated A1c 6.2% or 44 mmol/mol



Median Line

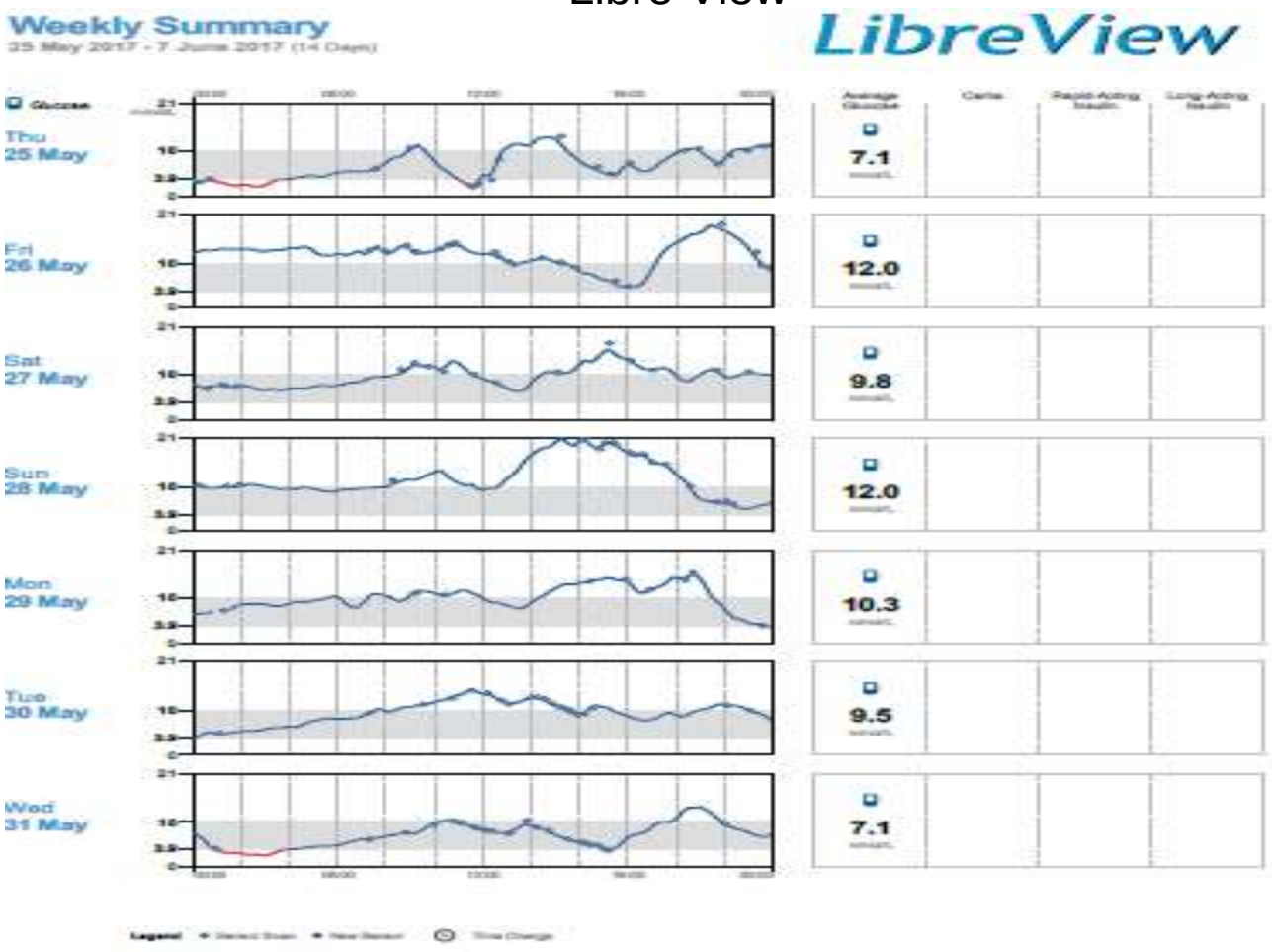
- 2+3+4+6+15=30/5 = 6
- Mean is 6
- Median is 4



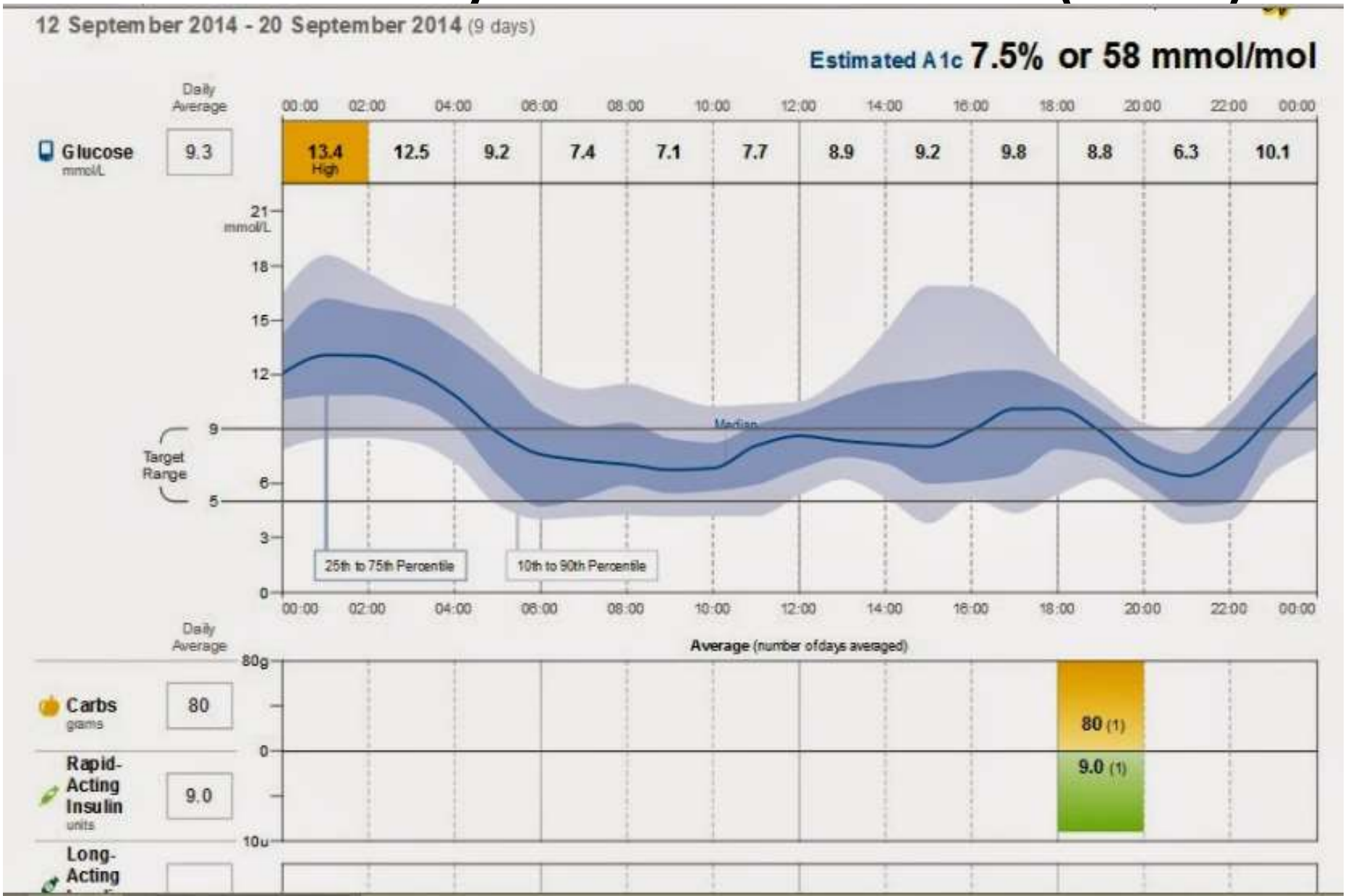
- The effect of using a median means that outliers have less of an effect

Weekly Summary

Libre View



Ambulatory Glucose Profile (AGP)



Ambulatory Glucose Profile
AGP 4 step guide Step 1 – Positive

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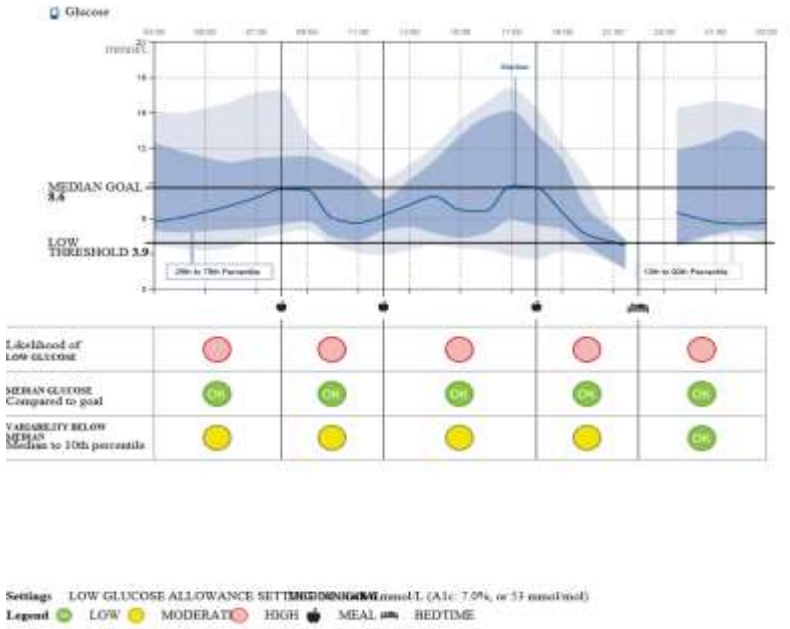
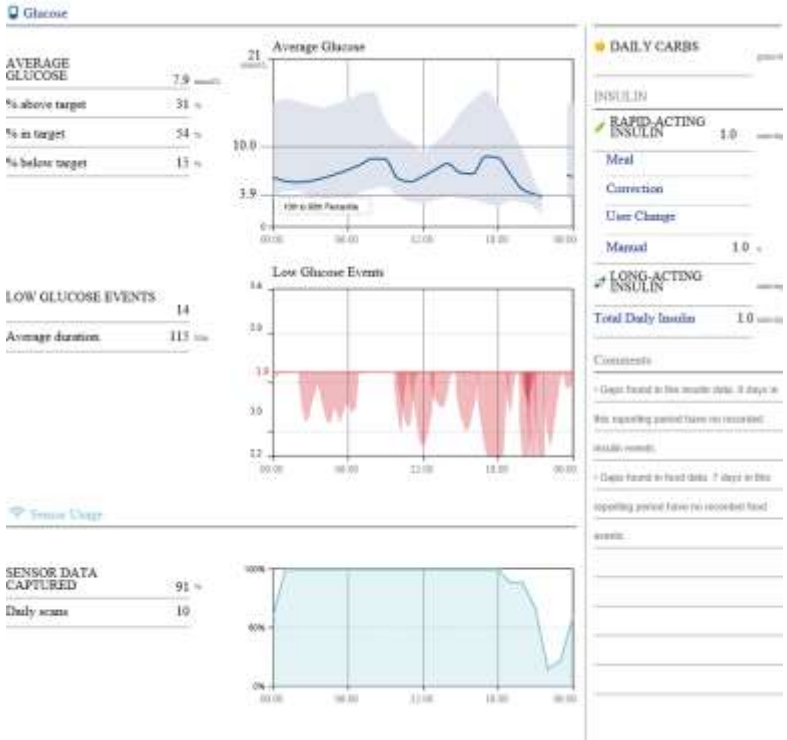
AGP – 4 step guide Step 2
Low - hypoglycaemia





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AGP – 4 step guide Step 3
High - hyperglycaemia

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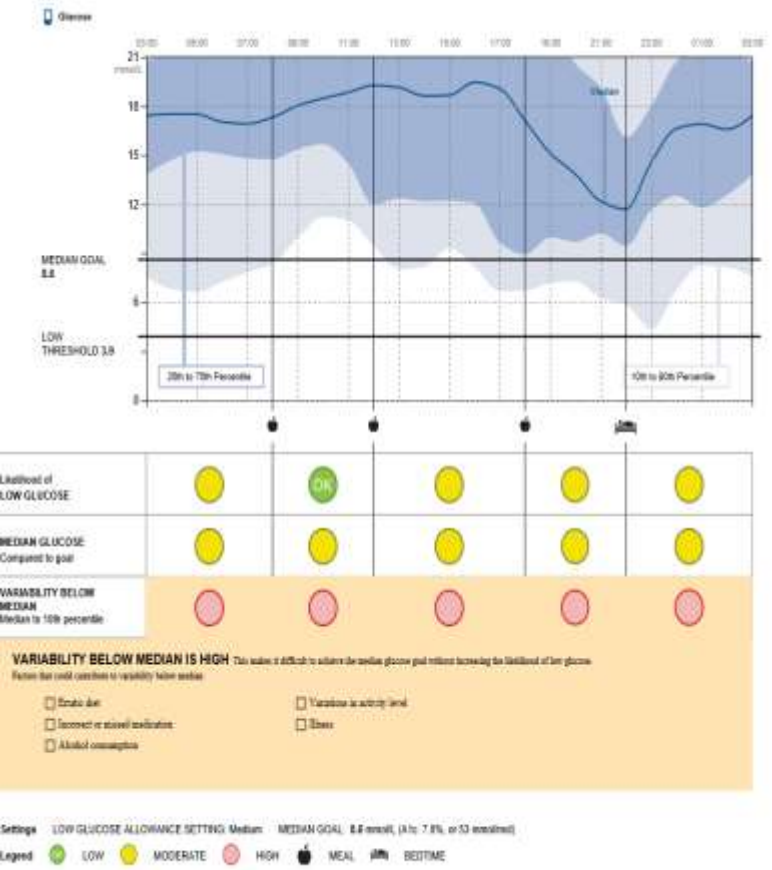

AGP – 4 step guide Step 4

Wide - thin snake or fat snake variability throughout day variability day to day

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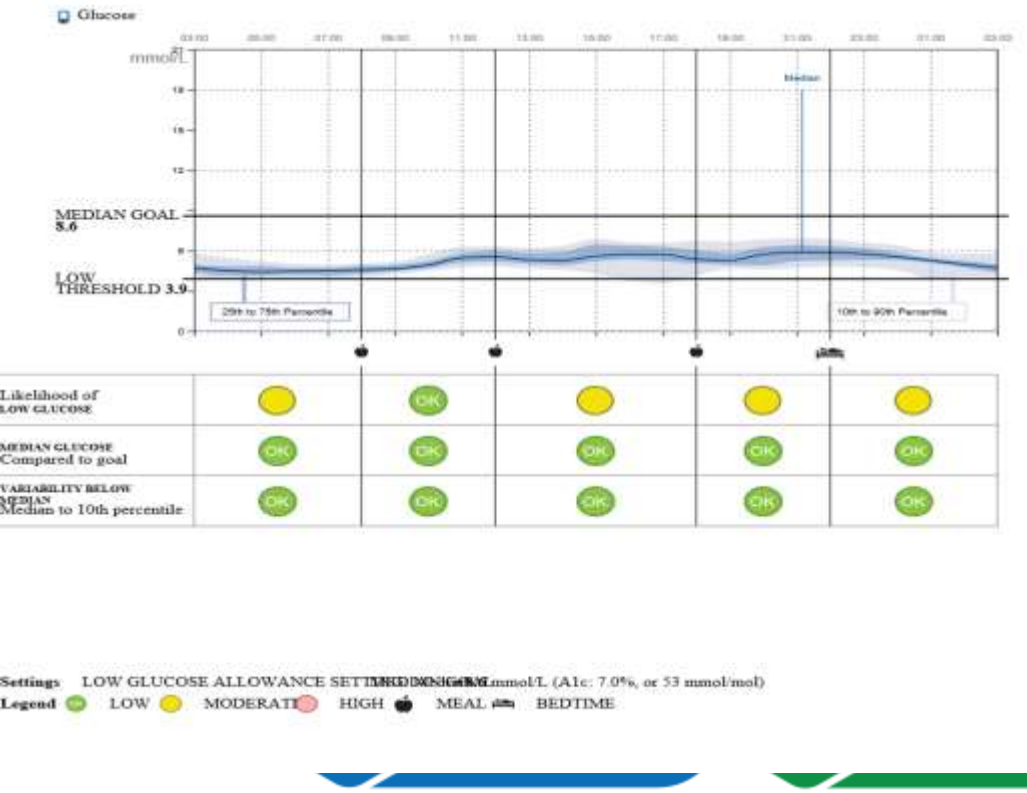

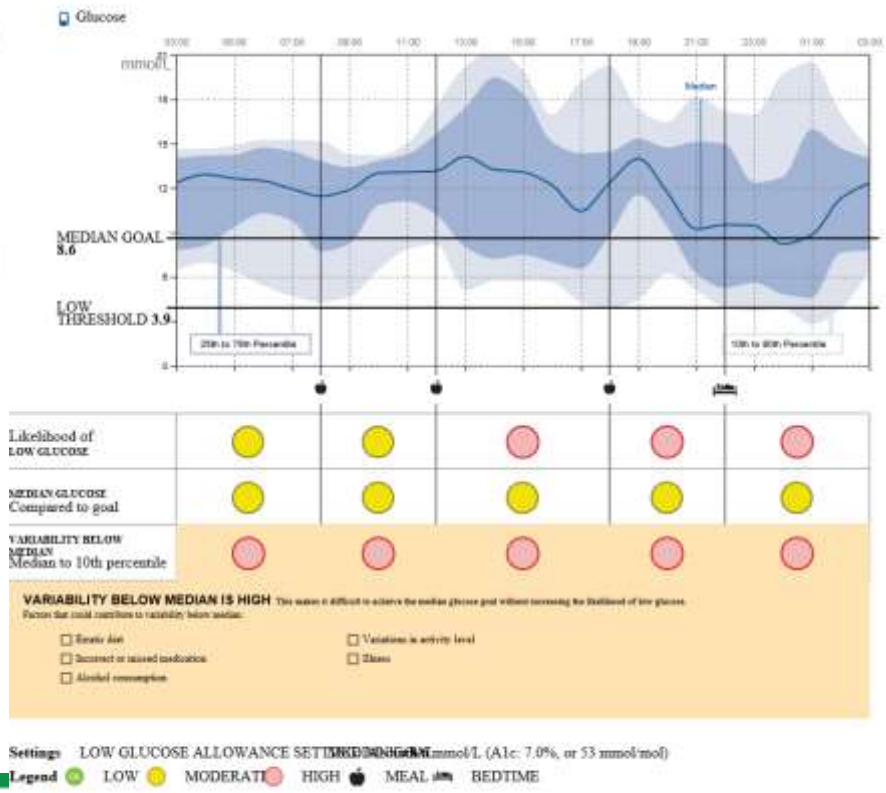

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Case Studies
Practical Session

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Glucose values summary (capillary glucose testing) April 2019	
Average (mmol/L)	6.7
Median (mmol/L)	6.7
Highest value (mmol/L)	14.8
Lowest value (mmol/L)	2.0
Standard deviation (SD)	2.3
Values per day	10.1
Number of values	302
Values above goal (10 mmol/L)	25
Values within goal (4-10 mmol/L)	238
Values below goal (4 mmol/L)	39

Case 1 56 year old woman Type 1 diabetes 38 years HbA1c 47mmol/mol
Impaired hypo awareness
Severe hypo led to loss of driving license.
Basal bolus insulin regimen

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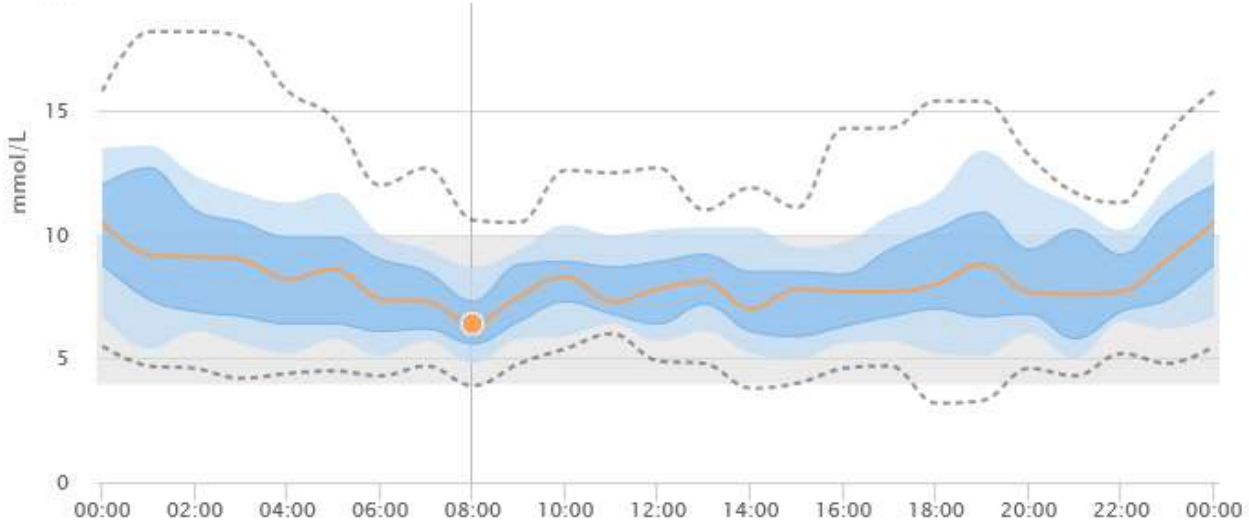
Case 1 Now using Dexcom CGM (has alarm)

HbA1c 49mmol/mol	CGM >10mmol/l	21%
Average glucose 8.3mmol/l	CGM 4-10mmol/l	79%
	CGM <4mmol/l	0%



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Case 2

57 year old man

Type 1 diabetes

38years

HbA1c 64mmol/mol

Basal bolus insulin regimen

2.5unit:10g

1unit reduces 3 mmol/l.

>10mmol/l 45%

4-10mmol/l 47%

<4mmol/l 8%

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Glucose values summary	
Average (mmol/L)	10.4
Median (mmol/L)	9.6
Highest value (mmol/L)	25.5
Lowest value (mmol/L)	2.8
Standard deviation (SD)	4.8
Values per day	6.1
Number of values	183
Values above goal (10 mmol/L)	82
Values within goal (4-10 mmol/L)	87
Values below goal (4 mmol/L)	14

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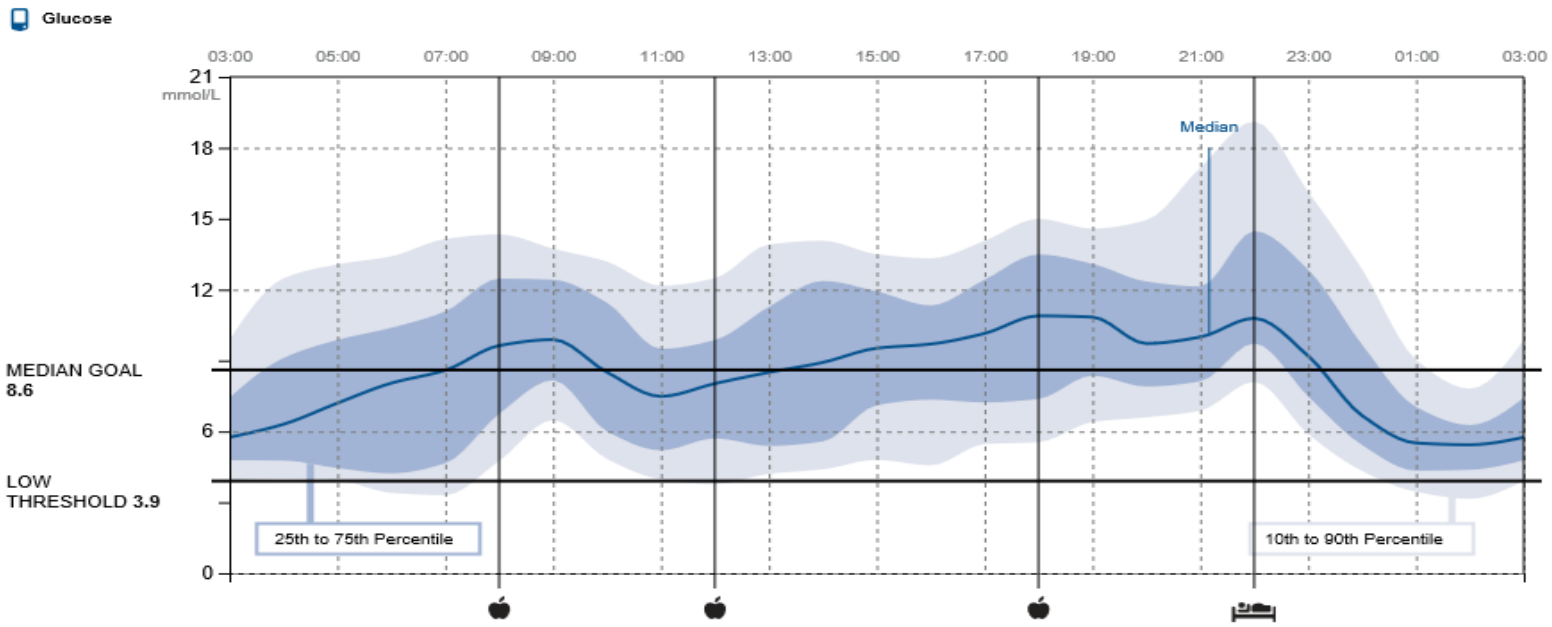

Likelihood of **LOW GLUCOSE**					
MEDIAN GLUCOSE Compared to goal	OK				OK
VARIABILITY BELOW MEDIAN Median to 10th percentile					

VARIABILITY BELOW MEDIAN IS HIGH This makes it difficult to achieve the median glucose goal without increasing the likelihood of low glucose.

Factors that could contribute to variability below median:

- ☐ Erratic diet
- ☐ Incorrect or missed medication
- ☐ Alcohol consumption
- ☐ Variations in activity level
- ☐ Illness

Settings LOW GLUCOSE ALLOWANCE SETTING: Medium MEDIAN GOAL: **8.6** mmol/L (A1c: 7.0%, or 53 mmol/mol)

Legend OK LOW MODERATE HIGH MEAL BEDTIME

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Case 2
57 year old man Type 1 diabetes 38years
HbA1c 64mmol/mol
Basal bolus insulin regimen
2.5unit:10g
1unit – 3 mmol/l.

HbA1c reduced by 9mmol/mol
October 2018 64mmol/mol
April 2019 55mmol/mol
Reduced test strip useage.

Average glucose 8.7mmol/l
above 10mmol/l 35%
4-10mmol/l 58%
below <4mmol/l 7%
sensor data captured 86%
daily scans 10

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Aims:

- Inspire you to review glucose data with your patients
- 4 – STEP guide to reviewing AGP
- Signpost to further learning resources

Further learning

Association of British Clinical Diabetologists

https://abcd.care/resource/reviewing-data

Abbott Freestyle Academy

https://freestylediabetes.co.uk/health-care-professionals/education

Freestyle Libre Live Webinars – see website to register or watch webinars on demand

https://freestylediabetes.co.uk/health-care-professionals/HCPwebinars

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Thank you for listening

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