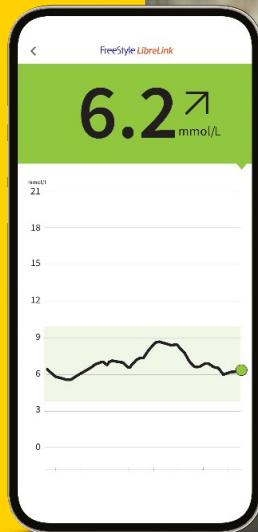




FreeStyle  
Libre 2

Case study

# Case study: Edward



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# Case study: Edward

<b>Age</b>	45	<b>BMI</b>	29.4 kg/m <sup>2</sup>
<b>Diabetes (Type)</b>	Type 1 diabetes	<b>Last HbA1c value</b>	55 mmol/mol (7.2%)
<b>Profession</b>	Hospital doctor	<b>Target glucose range</b>	3.9–10 mmol/L
<b>Duration of diabetes</b>	13 years	<b>Treatment</b>	Basal-bolus insulin therapy



## Summary

Edward is a hospital doctor, and works long hours associated, including night shifts. He uses an insulin pump to help him manage his condition.



## Comorbidities

Hypothyroidism; currently treated with levothyroxine.



## Specific objective

To improve time in range and reduce his median sensor glucose levels.

# Case study: Edward

## AGP Report

29 January 2021 - 11 February 2021 (14 Days)

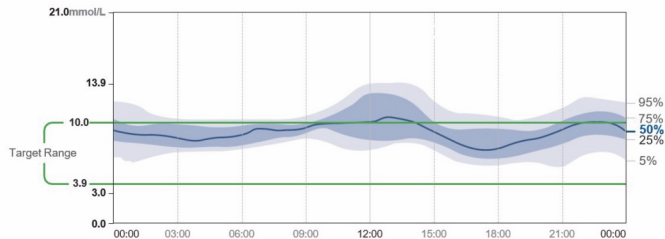
### GLUCOSE STATISTICS AND TARGETS

29 January 2021 - 11 February 2021 **14 Days**  
 % Time Sensor is Active **99%**

Ranges And Targets For	Type 1 or Type 2 Diabetes
<b>Glucose Ranges</b>	<b>Targets % of Readings (Time/Day)</b>
Target Range 3.9-10.0 mmol/L	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** 9.3 mmol/L  
**Glucose Management Indicator (GMI)** 7.5% or 58 mmol/mol  
**Glucose Variability** 32.0%  
 Defined as percent coefficient of variation (%CV); target ≤36%

### AMBULATORY GLUCOSE PROFILE (AGP)



## LibreView

### TIME IN RANGES



Images are for illustrative purposes only. Not actual patient data.

## Snapshot

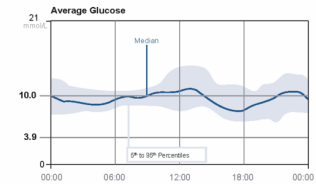
29 January 2021 - 11 February 2021 (14 Days)

## LibreView

### Glucose

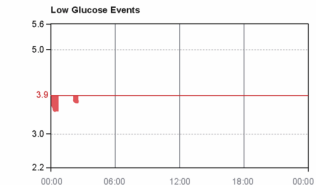
GMI 7.5% or 58 mmol/mol

**AVERAGE GLUCOSE** 9.3 mmol/L  
 % above target 40%  
 % in target 59%  
 % below target 1%



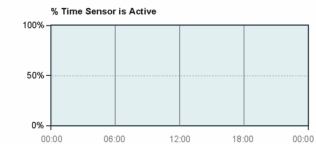
### LOW GLUCOSE EVENTS

**2**  
 Average duration 45 min



### Sensor Usage

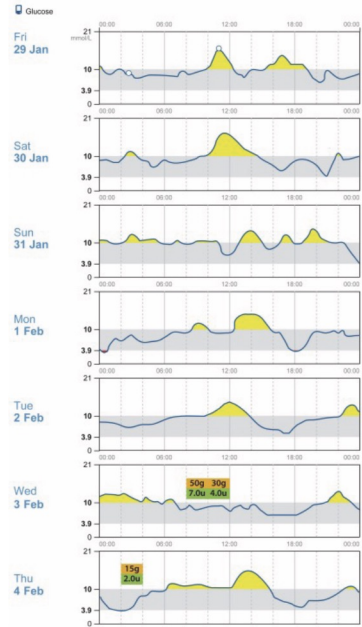
**% TIME SENSOR IS ACTIVE** 99%  
 Average scans/Views 26 / Day



# Case study: Edward

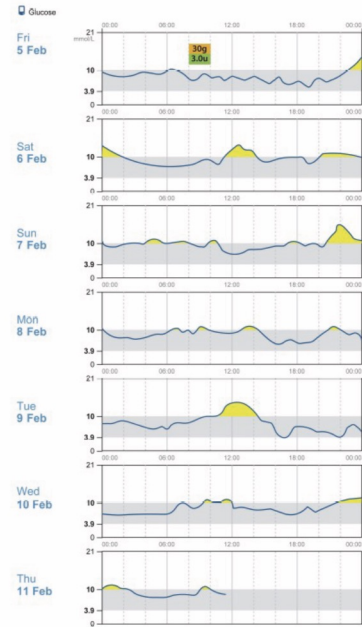
## Weekly Summary LibreView

29 January 2021 - 11 February 2021 (14 Days)



## Weekly Summary LibreView

29 January 2021 - 11 February 2021 (14 Days)



Images are for illustrative purposes only. Not actual patient data.

# What does the 4-step review tell us?

## STEP 1

### Data capture and Time in Range (TIR)

Edward has captured 99% of his glucose data and his Time in Range of 59% are good achievements, considering his job and changing shift patterns.

## STEP 2

### Look for patterns of hypoglycaemia

Overall, Edward's sensor readings do not tend towards the lower end of his target range, suggesting he is at low risk of experiencing hypoglycaemia. 2 low glucose events in his Snapshot report do not get close to 3.0 mmol/L, so there are concerns here.

## STEP 3

### Look for patterns of hyperglycaemia

Edward's blue median line stays largely within his target range, but his blue and grey bands extend above 10 mmol/L around midday and again in the evening. A look at his daily profiles in his **Weekly Summary report** confirms his tendency for glucose to spike around midday. His Time Above Range is 40%, with 9% of readings above 13.9 mmol/L. There is a lot of 'air under the clouds' suggesting he could tighten his glucose control without risking hypoglycaemia.

## STEP 4

### Look for patterns of glucose variability

Both Edward's blue and grey shaded bands are narrow, indicating low glucose variability, with an exception around noon. His grey band is also wide in the evening until around 3:00am. It is during this time that the greatest variability can be seen, which may correspond with his schedule. Looking at his daily glucose profiles confirms this is happening consistently. However, his CV is below 36%, so this is not a priority for attention.

### What actions might you agree with Edward?

- Increase Edward's bolus insulin dose with his morning and evening meals to try and bring his glucose levels within his target range at these times.
- An increase in basal rate from 10:00pm until 2:00am can lower the variability in glucose overnight.

# Case study: Edward

## AGP Report

6 May 2021 - 19 May 2021 (14 Days)

### GLUCOSE STATISTICS AND TARGETS

6 May 2021 - 19 May 2021 **14 Days**  
 % Time Sensor is Active **99%**

Ranges And Targets For		Type 1 or Type 2 Diabetes
<b>Glucose Ranges</b>	<b>Targets % of Readings (Time/Day)</b>	
Target Range 3.9-10.0 mmol/L	Greater than 70% (16h 48min)	
Below 3.9 mmol/L	Less than 4% (56min)	
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.		

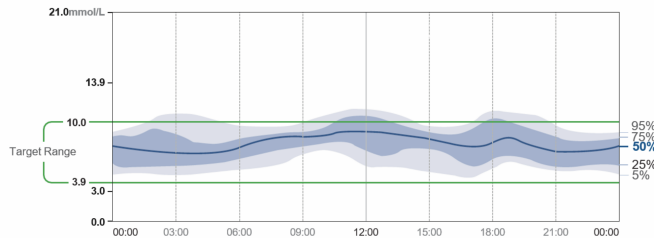
Average Glucose **7.9** mmol/L

Glucose Management Indicator (GMI) **6.6% or 49** mmol/mol

Glucose Variability **32.2%**

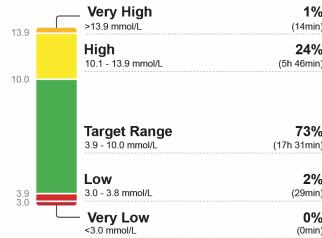
Defined as percent coefficient of variation (%CV); target  $\leq 36\%$

### AMBULATORY GLUCOSE PROFILE (AGP)



## LibreView

### TIME IN RANGES



## Snapshot

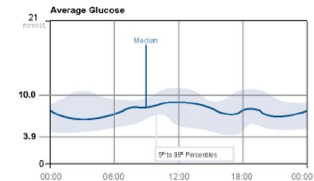
6 May 2021 - 19 May 2021 (14 Days)

## LibreView

### Glucose

GMI **6.6** % or **49** mmol/mol

<b>AVERAGE GLUCOSE</b>	<b>7.9</b> mmol/L
% above target	25 %
% in target	73 %
% below target	2 %



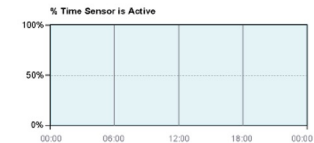
### LOW GLUCOSE EVENTS

**5**  
Average duration **72** min



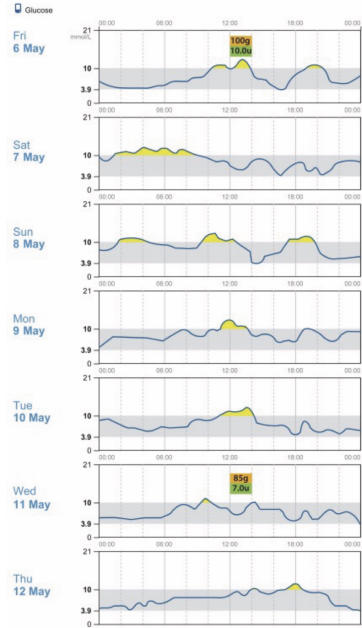
### Sensor Usage

% TIME SENSOR IS ACTIVE **99** %  
Average scans/views **21 / Day**

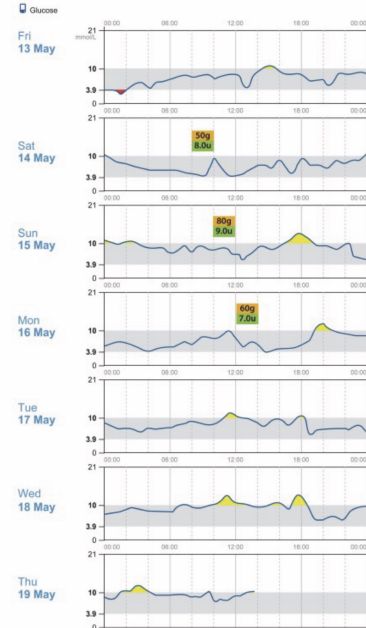


# Case study: Edward

Weekly Summary LibreView  
6 May 2021 - 19 May 2021 (14 Days)



Weekly Summary LibreView  
6 May 2021 - 19 May 2021 (14 Days)



Images are for illustrative purposes only. Not actual patient data.

# What does the 4-step review tell us?

## STEP 1

### Data capture and Time in Range (TIR)

Edward is capturing 99% of his glucose sensor readings and Time in Range has increased to 73%. Congratulate him on his success!

## STEP 2

### Look for patterns of hypoglycaemia

The change in Edward's insulin regime has resulted in a shift downwards in his median line and his blue IQR band to within his target range overnight, without skirting the 3.9 mmol/L lower limit of his target range. His grey shaded band is now skirting the lower limit of his target range overnight and should be monitored, but no intervention is warranted as he is experiencing only a small number of low glucose events and none below 3.0 mmol/L.

## STEP 3

### Look for patterns of hyperglycaemia

The occasional glucose variability shown by Edward's grey shaded band is higher between 1:00am–6:00am. This may be due to the different shift patterns he is working and is not a cause for concern. His median line and blue IQR band do show rising glucose after breakfast but a look at the daily profiles in his **Weekly Summary report** indicate that this is not a consistent feature of every day, and his Time Above Range is 25%, with only 1% above 13.9 mmol/L. No action needs to be prioritised.

## STEP 4

### Look for patterns of glucose variability

The variability indicated by Edward's blue shaded band is still low and the high seen previously at 12:00pm has been reduced. His CV remains well below 36%, so this is not a priority for attention.

### What actions might you agree with Edward?

- Increase Edward's mealtime insulin dose at breakfast to smooth his glucose trend here. This can be done without a risk of hypoglycaemia.
- It is relatively clear that Edward's meals and his insulin needs at night are insufficiently covered. Keep an eye on Edward's overnight control, to ensure the variability seen in his profile does not lead to an increase in low glucose events.