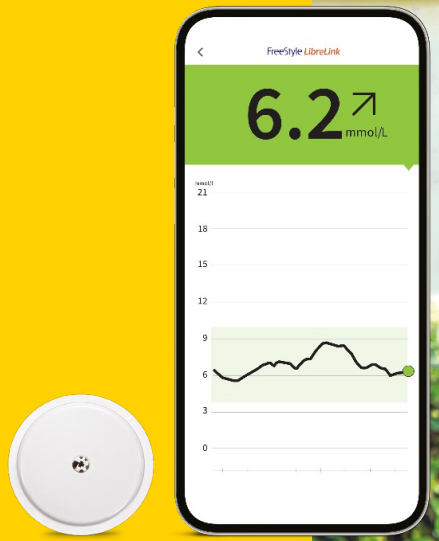
FreeStyle Libre 2

Case study: Tony



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Abbott

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Case study: Tony

FreeStyle Libre 2

Age	53	**BMI**	28.4 kg/m^2
Diabetes (Type)	Type 2 diabetes	**Last HbA1c value**	56 mmol/mol (7.3%)
Profession	Machine operator (night shift)	**Target glucose range**	3.9–10 mmol/L
Duration of diabetes	6 years	**Treatment**	Basal-bolus insulin therapy

Summary

Tony is a machine operator at a local factory, who developed Type 2 diabetes 6 years ago. His job is quite physical, and he regularly works the night shift.

Specific objective

Reduce the incidence of hypoglycaemia late in the evening and overnight while Tony is working.

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Case study: Tony

FreeStyle Libre 2

AGP Report

11 May 2021 - 24 May 2021 (14 Days)

LibreView

GLUCOSE STATISTICS AND TARGETS

11 May 2021 - 24 May 2021	14 Days
% Time Sensor is Active	89%

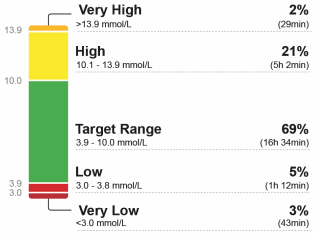
Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges	**Targets** % of Readings (Time/Day)
Target Range 3.9-10.0 mmol/L	Greater than 70% (16h 48min)
Below 3.9 mmol/L	Less than 4% (58min)
Below 3.0 mmol/L	Less than 1% (14min)
Above 10.0 mmol/L	Less than 25% (6h)
Above 13.9 mmol/L	Less than 5%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

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

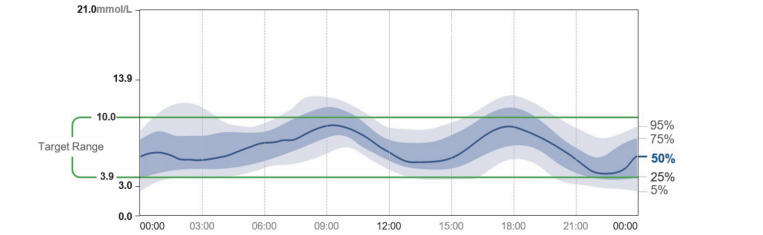
Average Glucose	7.4 mmol/L
Glucose Management Indicator (GMI)	6.3% or 45 mmol/mol
Glucose Variability	32.3%

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

TIME IN RANGES



AMBULATORY GLUCOSE PROFILE (AGP)



Snapshot

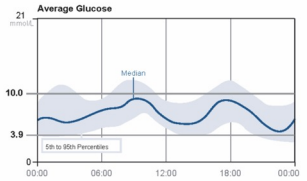
11 May 2021 - 24 May 2021 (14 Days)

LibreView

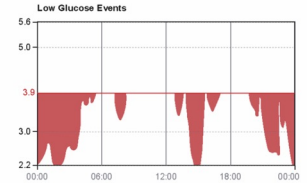
Glucose

GMI 6.3 % or 45 mmol/mol

AVERAGE GLUCOSE	7.4 mmol/L
% above target	23 %
% in target	69 %
% below target	8 %

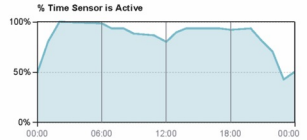


LOW GLUCOSE EVENTS	15
Average duration	110 Min



Sensor Usage

% TIME SENSOR IS ACTIVE	89 %
Daily scans	9 / Day



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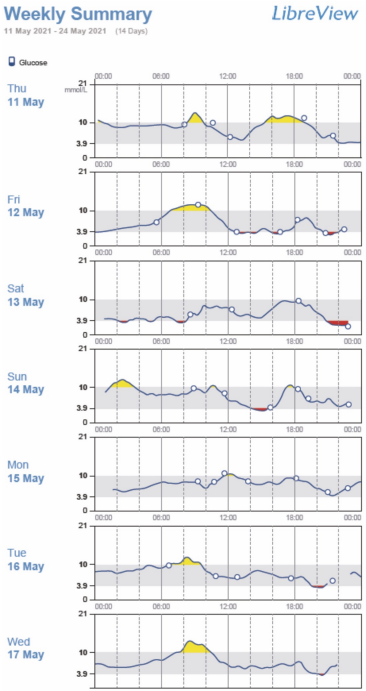
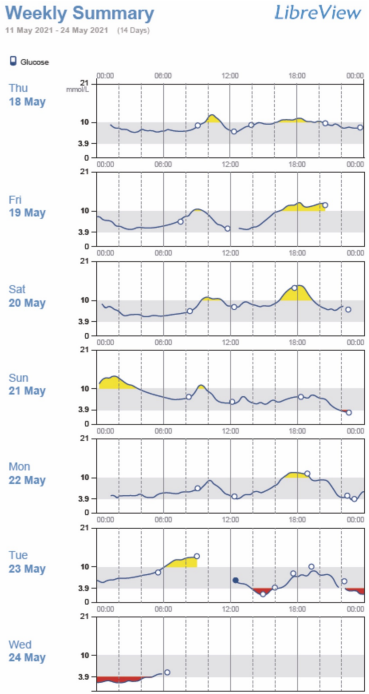
Case study: Tony





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What does the 4-step review tell us?

FreeStyle Libre 2

STEP 1

Data capture and Time in Range (TIR)

Tony's 89% data capture and his Time in Range of 69% are very good achievements. He should be commended for this, especially with his work pattern.

STEP 2

Look for patterns of hypoglycaemia

There is a significant risk of hypoglycaemia in the evenings and overnight; Tony's median line skirts the lower limit of his target range in the evening, with his blue and grey bands of variability straying below this level from 8:00pm. A look at Tony's Snapshot report shows that he is experiencing low glucose events in the later evening and overnight, often below 3.0 mmol/L. Given that this is when Tony is at work, this requires urgent action.

STEP 3

Look for patterns of hyperglycaemia

There is a gradual rise in the blue median line from about 2:00am through breakfast time. It then shows another peak from 3:00pm until 7:00pm. These elevations are matched by Tony's blue shaded band, suggesting a consistent trend, as confirmed in the daily profiles in his Weekly Summary reports. However, his Time in Range is currently 69% and he spends 23% of time above the 10 mmol/L threshold, so there is nothing to be concerned about here.

STEP 4

Look for patterns of glucose variability

The width of Tony's blue and grey bands indicate low variability, except overnight where the grey band is wider. Again, this could be reflective of Tony's shift patterns and his CV is below 36%, indicating a stable glucose variability profile.

What actions might you agree with Tony?

- A reduction in Tony's basal insulin is recommended to reduce the evening and overnight incidence and risk of hypoglycaemia.
- It would be beneficial to understand more about the demands of Tony's job and shift patterns to further tailor his medication.

Case study: Tony

FreeStyle Libre 2

AGP Report

4 August 2021 - 17 August 2021 (14 Days)

LibreView

GLUCOSE STATISTICS AND TARGETS

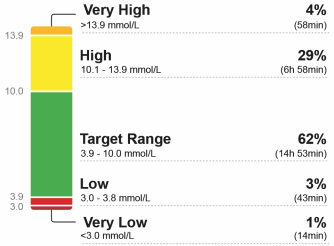
4 August 2021 - 17 August 2021	14 Days
% Time Sensor is Active	93%

Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges	**Targets** % of Readings (Time/Day)
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.	

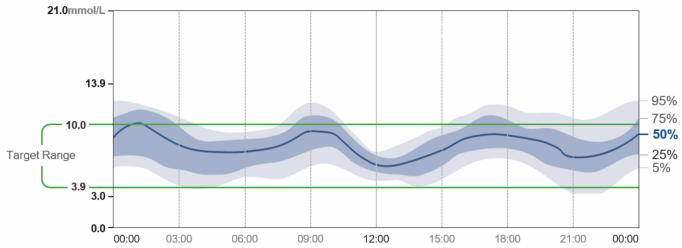
Average Glucose	7.8 mmol/L
Glucose Management Indicator (GMI)	6.5% or 48 mmol/mol
Glucose Variability	33.8% mol

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

TIME IN RANGES



AMBULATORY GLUCOSE PROFILE (AGP)



Snapshot

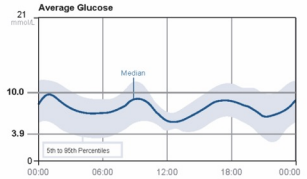
4 August 2021 - 17 August 2021 (14 Days)

LibreView

Glucose

GMI 6.5 % or 48 mmol/mol

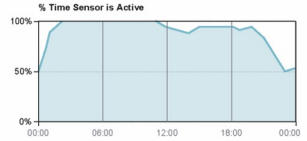
AVERAGE GLUCOSE	7.8 mmol/L
% above target	33 %
% in target	62 %
% below target	4 %



LOW GLUCOSE EVENTS	5
Average duration	132 Min

Sensor Usage

% TIME SENSOR IS ACTIVE	93 %
Daily scans	5 / Day



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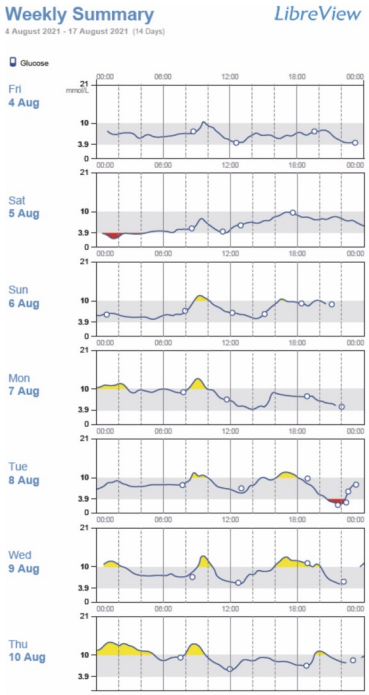
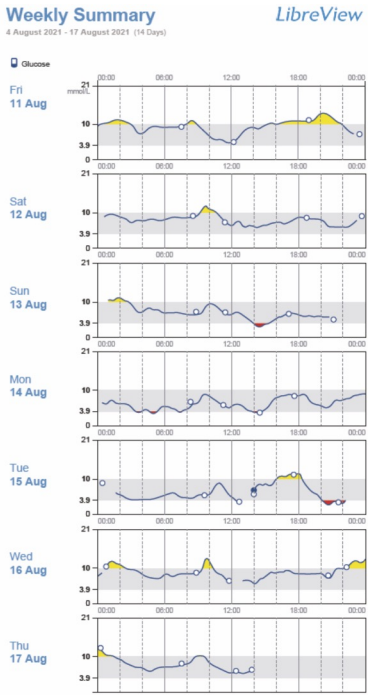
Case study: Tony





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What does the 4-step review tell us?

FreeStyle Libre 2

STEP 1

Data capture and Time in Range (TIR)

Tony's data capture is excellent at 93%, however his Time in Range has declined to 62% from 69%, so it is worth understanding why.

STEP 2

Look for patterns of hypoglycaemia

There has been an improvement in Tony's Time Below Range, both in the amount of time below 3.9 mmol/L and below 3.0 mmol/L. Tony's **Snapshot report** shows that he is experiencing fewer low glucose event, but that he is at risk of hypoglycaemia late in the evening and overnight, from 9:00pm onwards.

STEP 3

Look for patterns of hyperglycaemia

There is still undulation in Tony's AGP profile around mealtimes, that takes him above 10 mmol/L, such that his Time Above Range has increased from 23% to 33%, with a reduction in Time in Range from 69% to 62%, . This is confirmed again the daily glucose profiles in his **Weekly Summary report** and makes this a focus for improvement.

STEP 4

Look for patterns of glucose variability

Tony's blue and grey bands continue to indicate low variability, especially during the day. His grey band is wider from 8:00pm and through the night. Although his CV has increased to 33.8%, it is still below 36%.

What actions might you agree with Tony?

- Tony should be encouraged to lose weight; with his duration of type 2 diabetes this may provide an opportunity for the elimination of insulin to further reduce the risk of hypoglycaemia.
- Given his current lifestyle with varying and unpredictable physical activities, Tony should be congratulated for maintaining his current glucose control.