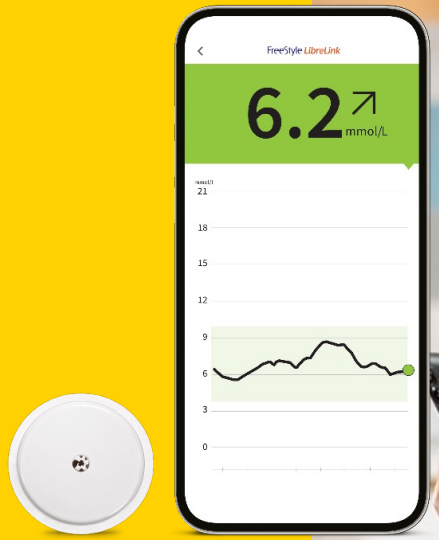
FreeStyle Libre 2

Case study

Case study: Monika



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Case study: Monika

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Age	55	**BMI**	26.5 kg/m^2
Diabetes (Type)	Latent autoimmune diabetes in adults (LADA)	**Last HbA1c value**	60.0 mmol/mol (7.6%)
Profession	Office administrator	**Target glucose range**	3.9–10 mmol/L
Duration of diabetes	15 years	**Treatment**	Basal-bolus insulin therapy

Summary

Monika is a 55-year-old lady with latent autoimmune diabetes and hypertension. She has a sedentary lifestyle and spends a lot of her day sitting probably due to the nature of her work as an office administrator.

Comorbidities

Coronary heart disease and arterial hypertension; currently prescribed metoprolol and ramipril.

Specific objective

Monika is keen to evaluate her treatment plan and her food habits to control her diabetes.

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Case study: Monika

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AGP Report

18 August 2021 - 31 August 2021 (14 Days)

LibreView

GLUCOSE STATISTICS AND TARGETS

18 August 2021 - 31 August 2021	14 Days
% Time Sensor is Active	69%

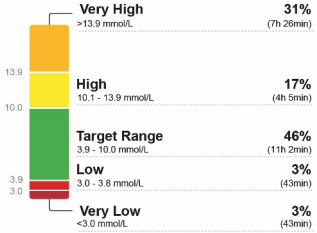
Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges	**Targets** % of Readings (Time/Day)
Target Range 3.9-10.0 mmol/L	Greater than 70% (16h 48min)
Below 3.9 mmol/L	Less than 4% (58min)
Below 3.0 mmol/L	Less than 1% (14min)
Above 10.0 mmol/L	Less than 25% (6h)
Above 13.9 mmol/L	Less than 5%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

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

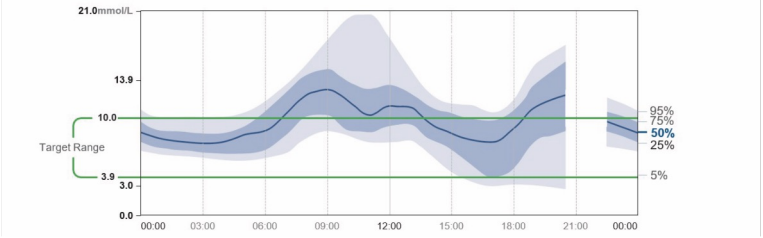
Average Glucose	9.6 mmol/L
Glucose Management Indicator (GMI)	7.7% or 61 mmol/mol
Glucose Variability	45.3%

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

TIME IN RANGES



AMBULATORY GLUCOSE PROFILE (AGP)



Snapshot

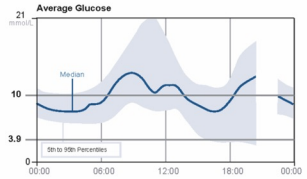
18 August 2021 - 31 August 2021 (14 Days)

LibreView

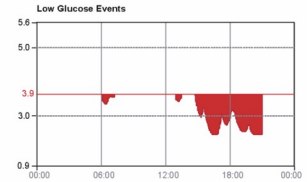
Glucose

GMI 7.7 % or 61 mmol/mol

AVERAGE GLUCOSE	9.6 mmol/L
% above target	48 %
% in target	46 %
% below target	6 %

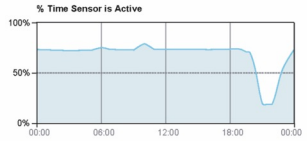


LOW GLUCOSE EVENTS	7
Average duration	122 Min



Sensor Usage

% TIME SENSOR IS ACTIVE	69 %
Average scans/views	5 / Day



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What does this 4-step review tell us?

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STEP 1

Data capture and Time in Range (TIR)

Despite gaps in data between 8:00pm and 10:00pm, Monika has tried her best to scan a few times for the rest of the day and her sensor data capture is 69%. This is close to the recommended 70% threshold, so there is value in a review of her AGP Report. Monika's Time in Range is 46%, a bit low.

STEP 2

Look for patterns of hypoglycaemia

6% of Monika's sensor glucose readings are below 3.9 mmol/L and her AGP reveals a risk of hypoglycaemia in the late afternoon and evening. Her low glucose events profile in her **Snapshot report** reveals that Monika is experiencing hypoglycaemic episodes below 3.9 mmol/L occasionally from 2:00pm onwards and this includes events below 3.0 mmol/L in the afternoon and evening. Addressing these is a priority.

STEP 3

Look for patterns of hyperglycaemia

Monika's median line is tracing above her target glucose range between 7:00am–2:00pm and again between 6:00pm–10:00pm. Her blue shaded band also tracks high at these times suggesting a consistent pattern related to her treatment parameters. Her Time Above Range is 48%, which is well above consensus targets, particularly her glucose readings above 13.9 mmol/L. This can be a focus for management, since the peaks in her glucose seem to correlate with mealtimes.

STEP 4

Look for patterns of glucose variability

Although her inner blue band is narrow at night from 11:00pm, it widens around breakfast time and stays wide throughout the day and evening, indicating treatment-related glucose variability as the day progresses, especially around mealtimes. Monika's outer grey band is very wide between 8:00am–12:00pm and again between 7:00pm–9:00pm suggesting that her glucose control is affected by aspects of her behaviour at these times. With a CV of 45.3%, Monika's glucose variability is unstable.

What actions might you agree with Monika?

- Monika should reduce her correction doses in the early-mid afternoon to address her pattern of hypoglycaemia.
- Monika is recommended to increase her mealtime insulin dose and timing at breakfast and in the evening to avoid excursions above her target range and to attempt to reduce her glycaemic variability at these times.
- A discussion is needed to reaffirm the need for Monika to follow her treatment parameters around mealtimes.
- The gaps in her data indicate that Monika needs to scan her sensor routinely in the evening.

Case study: Monika

FreeStyle Libre 2

AGP Report

31 October 2021 - 13 November 2021 (14 Days)

LibreView

GLUCOSE STATISTICS AND TARGETS

31 October 2021 - 13 November 2021	14 Days
% Time Sensor is Active	87%

Ranges And Targets For — Type 1 or Type 2 Diabetes

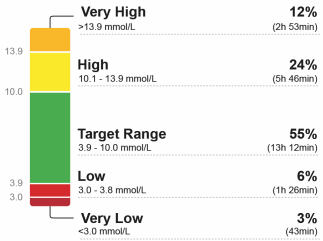
Glucose Ranges	Targets % of Readings (Time/Day)
Target Range 3.9-10.0 mmol/L	Greater than 70% (16h 48min)
Below 3.9 mmol/L	Less than 4% (58min)
Below 3.0 mmol/L	Less than 1% (14min)
Above 10.0 mmol/L	Less than 25% (6h)
Above 13.9 mmol/L	Less than 5% (1h 12min)

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

Average Glucose	8.8 mmol/L
Glucose Management Indicator (GMI)	7.2% or 55 mmol/mol
Glucose Variability	42.5%

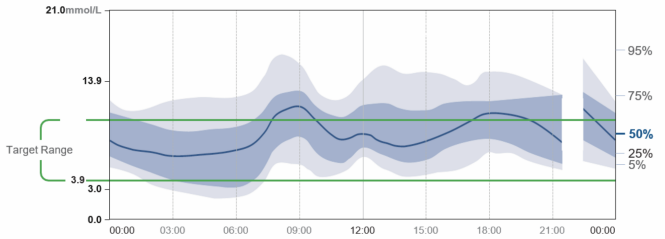
Defined as percent coefficient of variation (%CV); target ≤36%

TIME IN RANGES



Very High	>13.9 mmol/L	12% (2h 53min)
High	10.1 - 13.9 mmol/L	24% (5h 46min)
Target Range	3.9 - 10.0 mmol/L	55% (13h 12min)
Low	3.0 - 3.8 mmol/L	6% (1h 26min)
Very Low	<3.0 mmol/L	3% (43min)

AMBULATORY GLUCOSE PROFILE (AGP)



Snapshot

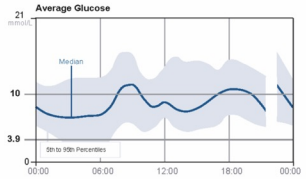
31 October 2021 - 13 November 2021 (14 Days)

LibreView

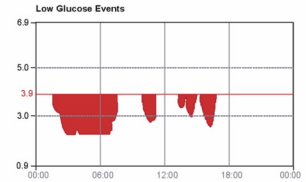
Glucose

GMI 7.2 % or 55 mmol/mol

AVERAGE GLUCOSE	8.8 mmol/L
% above target	36 %
% in target	55 %
% below target	9 %

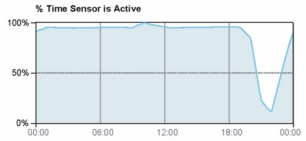


LOW GLUCOSE EVENTS	7
Average duration	17 Min



Sensor Usage

% TIME SENSOR IS ACTIVE	87 %
Average scans/views	5 / Day



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What does this 4-step review tell us?

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STEP 1

Data capture and Time in Range (TIR)

Monika's data capture has improved to 87%, now above the recommended threshold, so Monika should be encouraged to continue with this. Her Time in Range is now 55%, another positive change.

STEP 2

Look for patterns of hypoglycaemia

The blue shaded band in Monika's AGP is extending below 3.9 mmol/L from 3:00-6:00 am overnight and grey bands stray below 3.0 mmol/L at the same time. Her **Snapshot report** confirms that she is experiencing low glucose events at this time, including below 3.0 mmol/L. Overall, her Time Below Range has increased since her previous review. Monika's afternoon risk of hypoglycaemia has reduced, as her blue band is no longer straying into the low-glucose zone. Her nocturnal hypoglycaemia is now a priority for intervention and resolution.

STEP 3

Look for patterns of hyperglycaemia

The median line in Monika's AGP swings up above her target range between 7:00am–10:00am and between 5:00pm–8:00pm, suggestive of a continued need for better management at these mealtimes. Her blue and grey bands are wide and drift above the target range for much of the day and night, and her time above target continues to be poor at 36%, including 12% of time above 13.9 mmol/L.

STEP 4

Look for patterns of glucose variability

Monika's blue and grey bands continue to be wide, indicating continued significant day-to-day glucose variability, still well above 36%. Monika's therapeutic parameters in the afternoon and evening should be examined, as well as aspects of her day-to-day activities, as indicated by the wide grey band.

What actions might you agree with Monika?

- Monika is recommended to reduce her insulin correction doses in the evening to address her hypoglycaemia overnight.
- Monika must look at the timing and carbohydrate content of her meals, as well as her insulin correction doses to try and reduce her glucose variability. This should include a discussion about her daily routine, including snacks between meals.
- The need for improved scanning behaviour throughout the later parts of the say needs to be reinforced.
- A conversation about Monika's daily routines and activities is warranted, to understand the significant glucose variability within and between days.