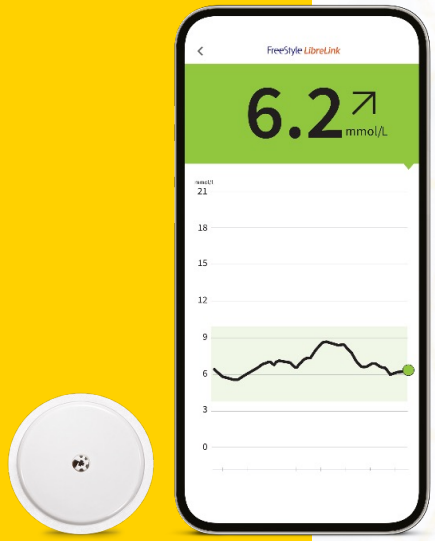
FreeStyle Libre 2

Case study: Karen



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Case study: Karen

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Age	32	**BMI**	31.0 kg/m^2
Diabetes (Type)	Type 1 diabetes	**Last HbA1c value**	46 mmol/mol (6.4%)
Profession	Sales executive	**Target glucose range**	3.5–7.8 mmol/L
Duration of diabetes	17 years	**Treatment**	Basal-bolus insulin therapy

Summary

Karen wants to keep her diabetes in check throughout her pregnancy and deliver a healthy baby.

Comorbidities

Pregnancy, 3rd trimester.

Specific objective

Tight glycaemic control is critical to a successful pregnancy for Karen and the birth of her baby.

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Case study: Karen

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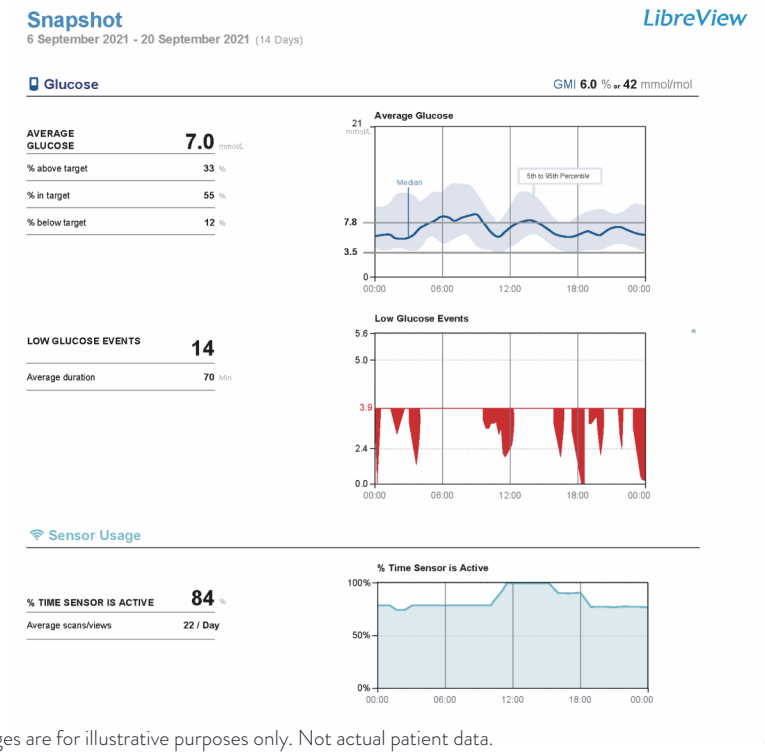

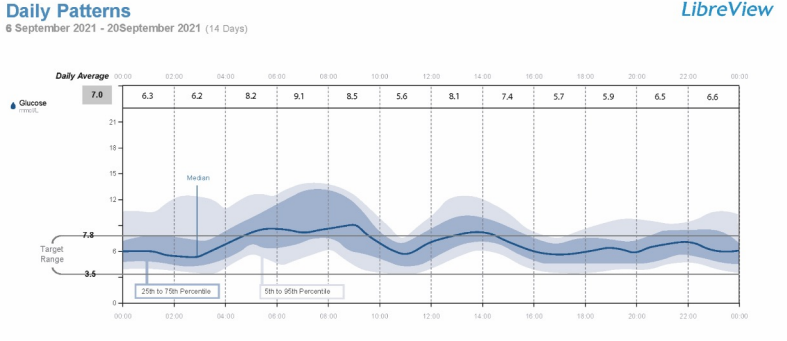

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What does the 4-step review tell us?

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STEP 1

Data capture and Time in Range (TIR)

Because Karen is pregnant, the normal AGP Report summary will not reflect the target glucose range recommended for pregnancy, which is 3.5 - 7.8 mmol/L. The **Snapshot Report** and her **Daily Patterns** chart will reflect this target range and Karen's time in range metrics. She has a Time in Range of 55%, and has captured 84% of her readings, a good achievement.

STEP 2

Look for patterns of hypoglycaemia

12% of Karen's readings are below target and remember, as a pregnant woman with diabetes, she does have a low-glucose target of 3.5 mmol/L. Karen's **Snapshot Report** reveals a significant risk of hypoglycaemia below 3.9 mmol/L overnight, mid-morning and through the afternoon. Karen's outer grey band is dipping towards or below her target glucose range at these times. Her low-glucose events data confirm some readings below 3.0 mmol/L. This must be a focus for management.

STEP 3

Look for patterns of hyperglycaemia

With 33% of readings above target, Karen is above consensus targets for Time Above Range (<25%). The key feature in Karen's AGP is a significant excursion above target from 4:00am until mid-morning. A smaller bump above target is evident between noon and 4:00pm. Getting the median line and the blue IQR band reduced between 4:00am–10:00am should be a goal and reducing her Time Above Range from 33%.

STEP 4

Look for patterns of glucose variability

The blue and grey bands in Karen's **Daily Patterns** chart show most day-to-day variability between 4:00am–10:00am. A discussion with Karen should help pinpoint issues with treatment or other aspects of her behaviour. Has she got the early-morning munchies and not taking corrective insulin? The variability here and the excursion between noon–4:00pm suggest Karen's glucose is unstable. There is definite scope for improvement in her Time in Range, which is currently 55%.

What actions might you agree with Karen?

- Karen is recommended to change from NPH insulin to insulin detemir 2x injections, one in the morning, one in the evening, to aid her basal glucose control.
- Karen should be counselled to match her snacks and meals to her rapid-acting insulin, especially between 4:00am–10:00am, and also at lunchtime.

Case study: Karen

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Snapshot

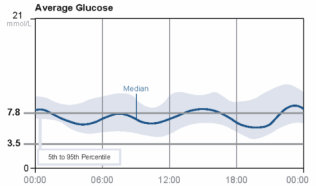
7 November 2021 - 21 November2021 (14 Days)

LibreView

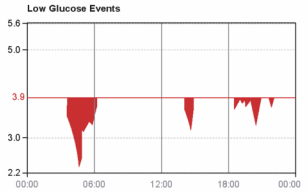
Glucose

GMI **6.1** % or **43** mmol/mol

AVERAGE GLUCOSE	**7.2** mmol/L
% above target	**37** %
% in target	**58** %
% below target	**5** %

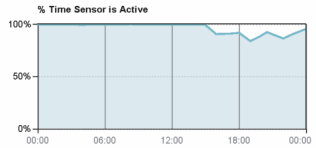


LOW GLUCOSE EVENTS	**6**
Average duration	**18** Min



Sensor Usage

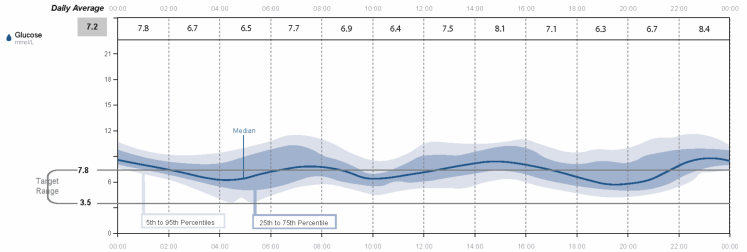
% TIME SENSOR IS ACTIVE	**98** %
Average scans/views	**18 / Day**



Daily Patterns

7 November 2021 - 21 November 2021 (14 Days)

LibreView



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What does the 4-step review tell us?

FreeStyle Libre 2

STEP 1

Data capture and Time in Range (TIR)

Karen's Time in Range has increased to 58%, a good achievement, and her data capture is now 98%!

STEP 2

Look for patterns of hypoglycaemia

Karen has reduced her low-glucose exposure from 12% to 5% of time, notably in the areas of concern (overnight, mid-morning and through the afternoon). However, she is still seeing some readings below 3.9 mmol/L and even below 3.0 mmol/L in the early morning. This must be a continued focus for management.

STEP 3

Look for patterns of hyperglycaemia

The morning glucose excursion above her target range is considerably blunted. However, her time above target range has increased from 33% to 37%. Given her specific goals, this can still be a focus for attention. The upswing in her average glucose in the evening is still a feature to be considered.

STEP 4

Look for patterns of glucose variability

The blue and grey bands in Karen's Daily Patterns report do not balloon as much in the early morning period, indicating reduced variability. However, this period still shows scope for further improvement, as does the noon–4:00pm period. A further conversation with Karen is needed to understand her routines at these times of day, especially with regard to snacks, timing of insulin and exercise. Although her Time in Range has increased from 55% to 58%, it should be a goal to further improve this.

What actions might you agree with Karen?

- Karen is recommended to up-titrate her dose of insulin detemir in the morning and evening to further improve basal glucose control.
- Karen's evening mealtime dose and timing of rapid-acting insulin should also be increased to try and avoid the upswing in her average glucose in the evening.
- Better logging of meal timings and sizes, insulin timings and doses, as well as any exercise, would really help understand the continuing issues with glucose variability.