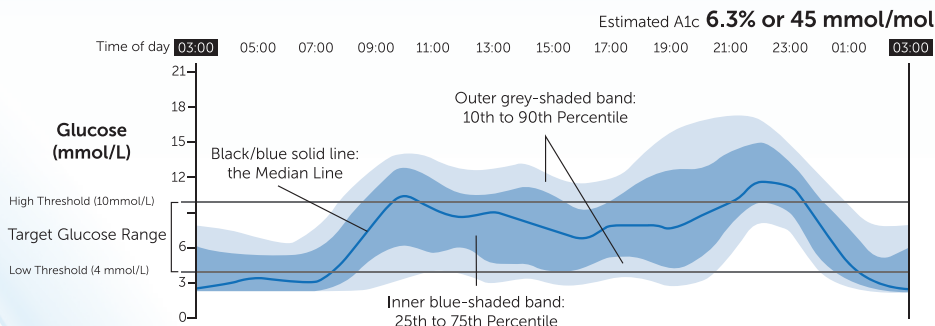


The Ambulatory Glucose Profile (AGP) in 4-steps



AGP at a glance

- 1. Black/Blue Solid line (Median Line)** – The average (middle) point of all glucose levels. Is it in the target glucose range and does it swing up and down a lot each day?
- 2. Inner Blue-Shaded Band (25th to 75th Percentile)** – most common glucose levels and how they vary from day-to-day.
- 3. Outer Grey-Shaded band (10th to 90th Percentile)** – less common glucose levels and how they vary from day-to-day.
- 4. Two parallel lines** – Target Glucose Range, where we want to be as much as possible.

4-Step guide to managing an AGP review

Step	What to focus on
1. Positive	No matter what the AGP reveals, start by focusing on a 'good news' part of the story.
2. Low	Hypos: Is any of the inner-blue band in the hypo zone? A narrow blue band indicates a consistent trend and a need to consider adjusting daily treatment at these times, e.g. dose and timing of basal or mealtime insulin. A wider band suggests lifestyle and behaviour management.
3. High	Hyperglycaemia: Look for trends towards high glucose, especially if persistent, with a high solid average glucose line with a narrow inner-blue band. If you see 'white space' between the lower target glucose line and lower edge of the outer grey band, it suggests there may be scope to adjust insulin doses or the insulin:carbohydrate ratio to bring glucose down.
4. Wide	Variability: Wide, billowing inner-blue and outer-grey bands mean significant glucose fluctuations from one day to the next and suggest a need for better management of factors that happen on some days but not others.

Simulated data for illustrative purposes only. Not real patient or data.

Top tips that make the most of an AGP review

Consultation time is always limited, so let's look at how to make the most of this precious time.

- **Perspective:** It is important to keep perspective on the results during an AGP review and look back at AGPs from previous appointments. Also, patients may not look at their AGP outside of the clinic review. Always remind them to reflect on how their lifestyle can influence the AGP.
- **Focus on glucose levels overnight:** The period between going to bed and waking before breakfast covers around a third of the day. If this part of the day is under control, then you can focus on the task of dealing with everything that impacts on daytime glucose control.
- **Consider medication, lifestyle & behaviour:** When you see high or low glucose, use the shaded bands to guide you to the cause. A narrow inner-blue band indicates a trend that is happening consistently each day, so consider medication and mealtimes. A wider outer-grey band reflects glucose variation for different reasons on different days, so focus on aspects of behaviour or lifestyle, such as a missed insulin injection, periodic exercise, social events or illness.
- **Always sense-check your assumptions:** Let the patient guide the AGP review, as their agenda is paramount. Only they can provide the personal insights that give meaning to the patterns and trends that the AGP reveals. This will empower them to take control of day-to-day decisions in their diabetes self-management.
- **Use patient friendly analogies:** patients are not seasoned healthcare professionals, they use language that means something to them every day. Hypoglycaemia in their world is 'going a bit wobbly' or 'feeling a bit all over the place'. In an AGP review, use analogies for what you are discussing that will be understood, such as those below.

Simple Analogies:

Analogy	What it is describing	Interpretation
Air under the clouds	Significant hyperglycaemia	The visible white space between the lower line of the Target Glucose Range, and the lower edge of the outer-grey band. The visible white space under this profile, the air under the clouds, shows the patient that there is room to improve glucose control without creating a risk of hypoglycaemia, which is a real fear for many patients.
Billowing or ballooning	Significant glucose variability around the average glucose line	As day-to-day glucose variability increases, the shaded bands become wider, visibly billowing or ballooning. The aim is to reduce this visible ballooning and thus improve day-to-day glucose variability.
Rollercoaster	Significant high-low oscillation of average glucose levels	The patient can see that 'getting off the rollercoaster and onto the merry-go-round' is a good thing. This reinforces the concept of unwanted high-low variability, with the aim to get a patient towards a flatter profile with less variability.
Merry-go-round	Moderate oscillation of average glucose levels	

Case Study: Beth

Patient Information:

Age	26	Gender	Female
Diabetes (Type)	Type 1 diabetes	BMI	25
Duration of diabetes	8 years	Last HbA1c value	46 mmol/mol
Profession	Assistant	Target range	4-10mmol/L

Treatment Parameters:

Insulin	Quantity of insulin	Correction factor	Target value	Basal insulin
Novorapid	1u:10g CHO	1u:3mmol/l	5 mmol/L	Levemir

Co-morbidities:

Nil

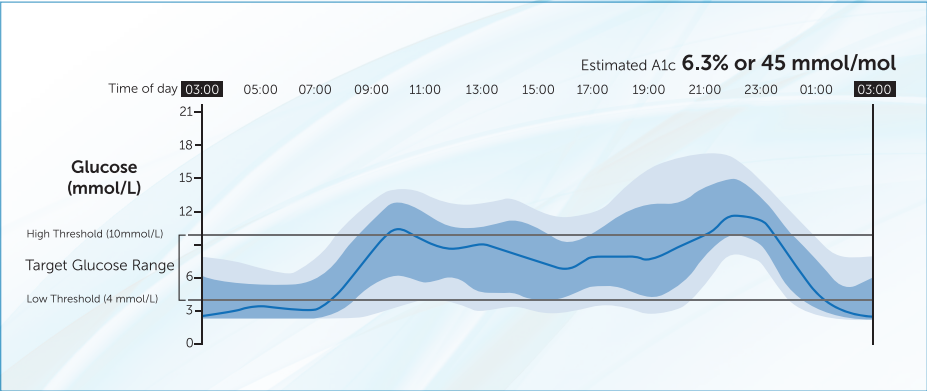
Summary:

Keen to conceive and trying to improve glucose control. Beth reports that she cannot feel her hypos coming on as well as she used to.

Specific objective:

Pre-conception preparation: improving glucose time in range and reducing HbA1c.

Consultation AGP



Step 1. Positive

Beth is keen to achieve a low HbA1c pre-pregnancy and she has achieved this. Acknowledge and congratulate her on the achievement of her goal.

Step 2. Low

The most striking aspect of this AGP is that the blue average line is in the hypo range overnight. This tells us that Beth is hypoglycaemic at night on most days when her basal insulin is acting. This indicates that basal insulin may need to be reduced. The significant amount of hypoglycaemia on this AGP raises the question of impaired awareness of hypoglycaemia which needs to be addressed with Beth during the consultation.

Step 3. High

There is high average glucose in the evening, after the evening meal. However, it returns back to the normal/hypoglycaemia range before bed. The peak in glucose could be reduced by ensuring the evening dose of rapid acting insulin is given 15-20 minutes before the meal. However, the priority to address in this consultation is resolving the hypoglycaemia identified in step 2

Step 4. Wide

The blue and grey bands are billowing through much of the day and evening, indicating significant day-to-day glucose variability. However, the striking nocturnal hypoglycaemia should be the priority for this consultation. Once the trend of overnight low glucose is addressed, the variability identified in Step 4 can become a focus for management.

Treatment decision:

The striking nocturnal hypoglycaemia should be the priority. Reduce the basal insulin, aiming to prevent hypoglycaemia.

Further reading: For more information on the AGP see Bergenstal RM et al. Diabetes Technology Ther 2013, 15: 198-21.

The information provided is intended for educational purposes only and is not a substitute for professional medical advice. Individual symptoms, situations and circumstances may vary.

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