

Continuous glucose monitoring in type 2 diabetes: Overcoming barriers to optimize outcomes



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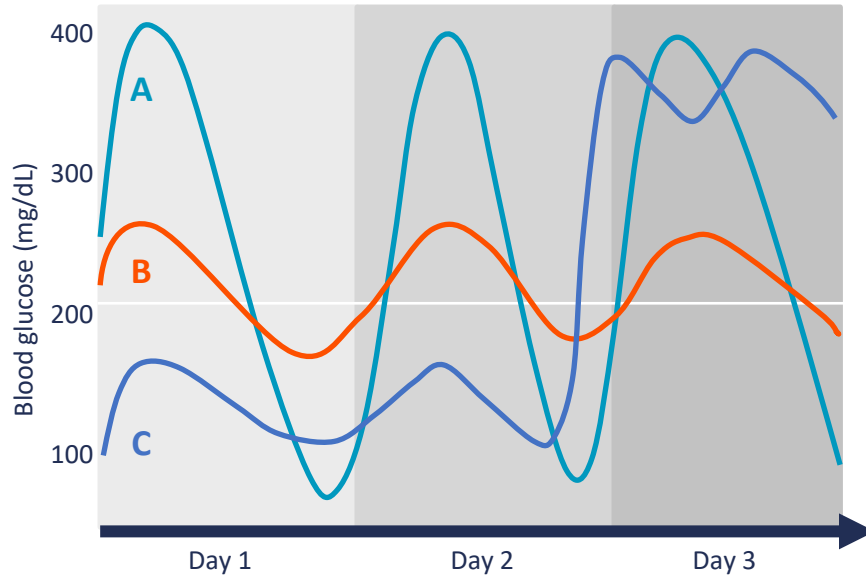
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Why should CGM be considered for patients with T2D?

HbA1c does not provide the full picture of an individual's glucose profile

Glycaemic variation in three hypothetical patients who have the same mean HbA1c¹

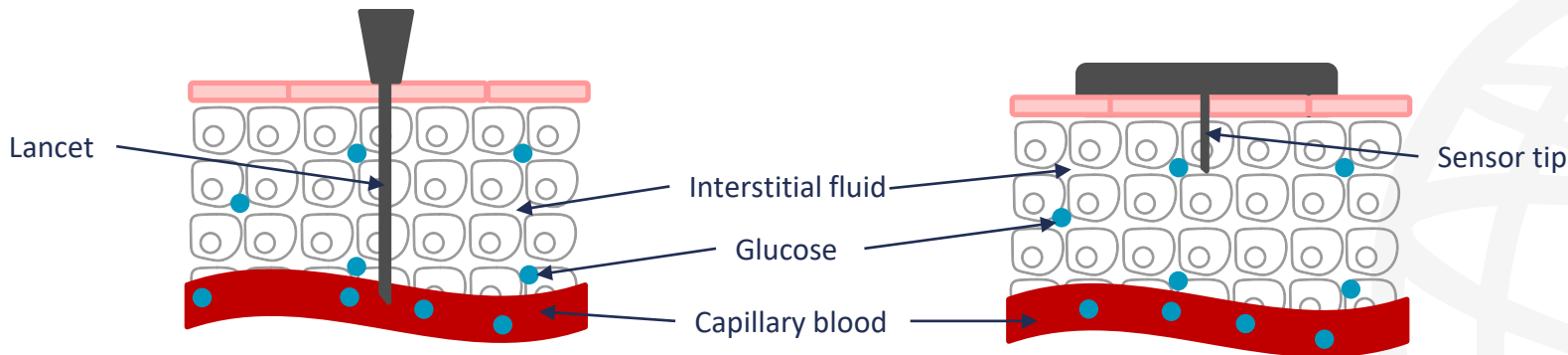


- Different glycaemic patterns can be associated with the same HbA1c¹
- HbA1c is not a significant predictor of hypoglycaemia²
- It is difficult for clinicians to treat T2D based on HbA1c alone^{3,4}

Figure reproduced from Suh S, Kim JH. *Diabetes Metab J.* 2015;39:273–82 under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>). HbA1c, glycated haemoglobin; T2D, type 2 diabetes.

1. Suh S, Kim JH. *Diabetes Metab J.* 2015;39:273–82; 2. Khunti K, et al. *Diabetes Obes Metab.* 2016;18:907–15; 3. Kushner PR, Kruger DF. *Clin Diabetes.* 2020;38:348–56; 4. Bergenstal RM, et al. *Diabetes Care.* 2018;41:2275–80.

CGM measures glucose in the interstitial fluid, unlike traditional BG measurement methods¹



Capillary glucose:²

- Insertion through the skin with steel lancet
- Capillary blood absorbed from the skin by test strip

Interstitial glucose:^{1,3}

- Insertion through the skin – metal inserter leaves after inserted
- Small filament remains in interstitial fluid to obtain glucose sample

KEEP THIS IN MIND – Interstitial fluid is a DIFFERENT sample source¹











Images for illustrative purposes only and are not drawn to scale.

BG, blood glucose; CGM, continuous glucose monitoring.

1. Siegmund T, et al. *J Diabetes Sci Technol*. 2017;11:766–72; 2. Williams V, et al. *BMJ Open*. 2022;12:e059254; 3. Cleveland Clinic. 2024. Available at:

<https://my.clevelandclinic.org/health/articles/continuous-glucose-monitoring-cgm> (accessed 18 July 2024).

There is a wide range of CGM sensors for use in T2D

	G6 ¹	G6 Pro ²	G7 ³	Freestyle Libre			Eversense E3 ¹⁰	Guardian connect ^{11,12}	iPro2 ¹³	
				2 ⁴⁻⁶	2 plus ⁴⁻⁶	3 ^{5,7}				Pro ^{8,9}
Age (years)	≥2	≥2	≥2	≥4 [‡]	≥2 [‡]	≥4 [‡]	≥18	≥14	≥18	
Type	rtCGM	rtCGM + Professional	rtCGM	isCGM	isCGM	rtCGM	Professional	rtCGM	Professional	
Warm-up time (minutes)	120	120	<30	60	60	60	60	10	60	
Calibration required	✗	✗	✗	✗	✗	✗	✓ 2x daily	✓ Every 12 hrs	✓ ≥4x daily	
Sensor duration (days)	10	10	10	14	15	14	14	180	7	
Sensor placement										

It is the policy of touchIME and USF Health to avoid the mention of brand names of specific manufacturers in accredited educational activities; however, the brand names of available CGM devices are provided in this activity to provide clarity.

*Children 2–17 years; †Children 2–6 years; ‡Indication for children ≤12 is limited to those supervised by caregiver who is at least 18 years of age. CGM, continuous glucose monitoring; isCGM, intermittently scanned CGM; rtCGM, real-time CGM; SC, subcutaneous; T2D, type 2 diabetes. 1. G6 user guide. Available at: <https://bit.ly/3S9QCLf> (accessed 18 July 2024); 2. G6 Pro user guide. Available at: <https://bit.ly/3zTqeyE> (accessed 18 July 2024); 3. G7 user guide. Available at: <https://bit.ly/3Y53xlv> (accessed 18 July 2024); 4. Freestyle Libre 2. Available at: <https://bit.ly/4cg3gil> (accessed 18 July 2024); 5. Freestyle Libre FAQ. Available at: <https://bit.ly/4ckLdbG> (accessed 18 July 2024); 6. Freestyle Libre 2 user manual. Available at: <https://bit.ly/3z1SAF> (accessed 18 July 2024); 7. Freestyle Libre 3 User's Manual. Available at: <https://bit.ly/4d1Tu4U> (accessed 18 July 2024); 8. Freestyle Libre Pro In-service Guide. Available at: <https://bit.ly/3Y4TXPo> (accessed 18 July 2024); 9. Freestyle Libre Pro operators guide. Available at: <https://bit.ly/4d1Z86T> (accessed 18 July 2024); 10. Eversense E3 user guide. Available at: <https://bit.ly/3zljuns> (accessed 18 July 2024); 11. ADA. Consumer Guide. Guardian Connect CGM System. Available at: <https://bit.ly/3VGLQGY> (accessed 18 July 2024); 12. Guardian Connect. Available at: <https://bit.ly/3KHGOio> (accessed 18 July 2024); 13. iPro2 user guide. Available at: <https://bit.ly/3W32TCi> (accessed 18 July 2024).



How can we increase uptake of CGM in patients with T2D?

There are multiple barriers to CGM uptake in T2D

Awareness



"The biggest barriers are not necessarily patient barriers, but having providers aware of the availability of the resource"¹

Technology



"Sometimes too much data can make interpretation challenging"²

Cost



"[Insurance] is not covering these devices and thousands of patients are being discriminated against"²

Time in consultations



"Often it takes more time than I have during a visit to review data and plan with patients"²

"A major barrier to the uptake of CGM in primary care is that physicians and patients are often intimidated by the technology, feeling that it takes too much time and is difficult to use"¹



"Many patients cannot afford to use [CGM] who would otherwise benefit"²



Implementation challenges

"Wearing [CGM] is not enough, [we] need to have enough time and education to help patients best"²



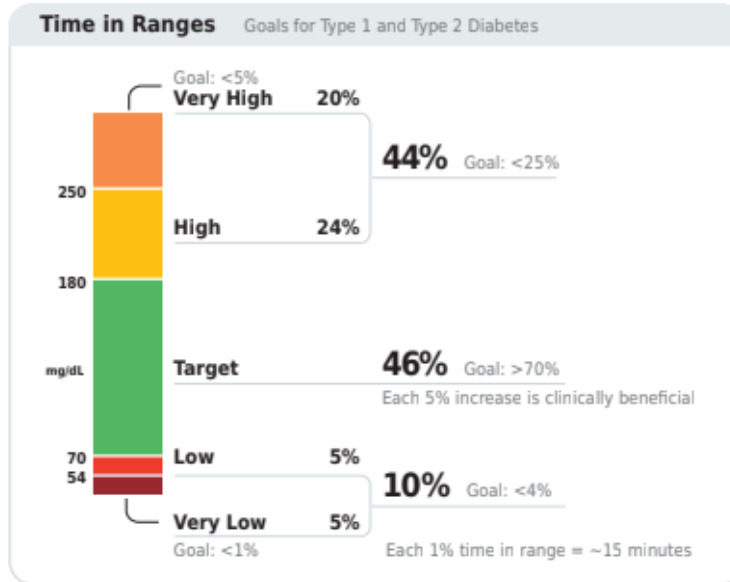
"I get the feeling that visits will be much longer if the [CGM] technology is not easy for the doctor to use."¹



"Developing a standardized process agreed upon by the entire practices [is necessary to implement CGM]"²



CGM reports provide a range of data for interpretation



Test Patient DOB: Jan 1, 1970

14 Days: August 8-August 21, 2021

Time CGM Active: 100%

Glucose Metrics

Average Glucose **175 mg/dL**
Goal: <154 mg/dL

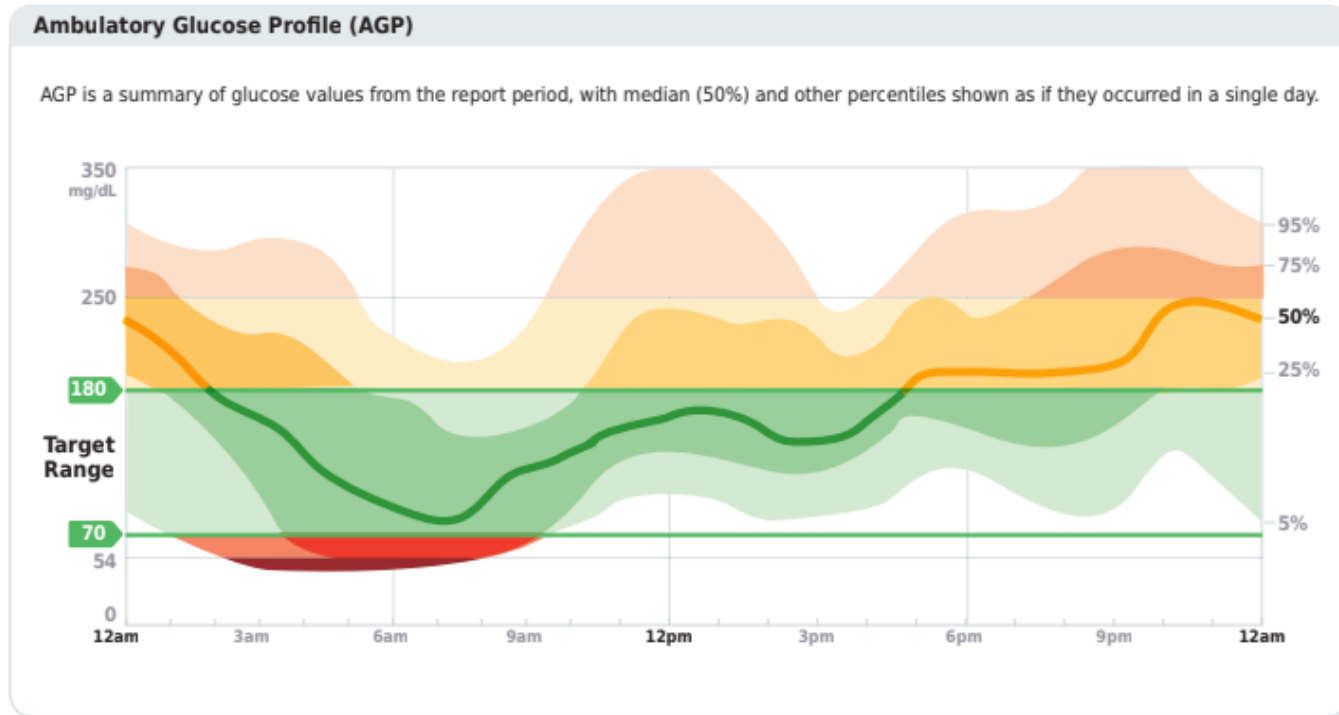
Glucose Management Indicator (GMI) **7.5%**
Goal: <7%

Glucose Variability **45.5%**
Defined as percent coefficient of variation
Goal: \leq 36%

ADA, American Diabetes Association; CGM, continuous glucose monitoring.

Figure reproduced with permission from: ADA Professional Practice Committee; 6. Glycemic Goals and Hypoglycemia: Standards of Care in Diabetes—2024. *Diabetes Care*. 2024;47(Suppl.1): S111–25.

CGM reports provide a range of data for interpretation



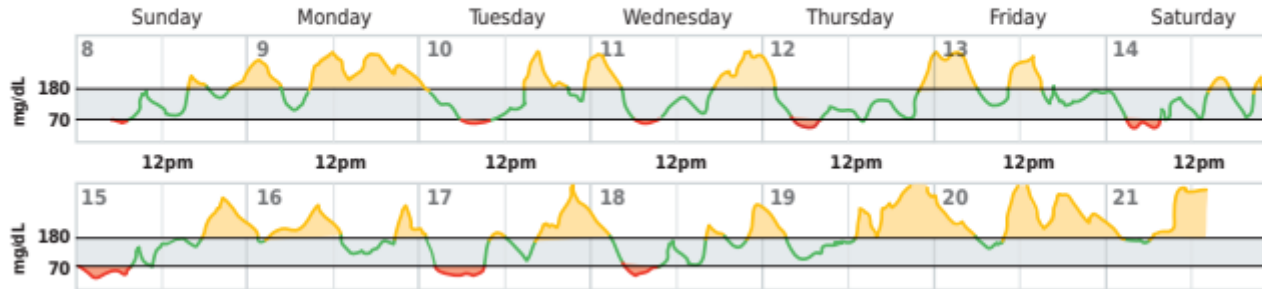
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CGM reports provide a range of data for interpretation

Daily Glucose Profiles

Each daily profile represents a midnight-to-midnight period.



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