

# UNDERSTANDING & APPLYING GMI & %CV USING CARELINK™

## WHAT IS THE GLUCOSE MANAGEMENT INDICATOR (GMI)?


- The GMI is a formula to estimate A1C based on average sensor glucose (SG) data measured in many individuals with diabetes (average glucose is ideally derived from  $\geq 14$  days of sensor data).
- GMI and laboratory measured A1c are not the same and may differ to some extent as A1C measures the amount of glucose attached to hemoglobin (red blood cells) over 2-3 months.
- Additionally, differences between GMI and A1c may be also caused by an individual's biology or a short-term fluctuation in glucose control.

## WHY IS IT IMPORTANT TO UNDERSTAND GMI?

- GMI will replace estimated A1C (eA1c) on CareLink™ Reports as all CGM manufacturers standardize reporting markers.

## WHAT IS THE GMI UNIT OF MEASUREMENT?

- GMI can be measured in 2 ways:
  1. In mmol/mol as seen on the report below (59.5 mmol/mol), OR
  2. As a percentage (using a GMI calculator)<sup>1</sup>. For example, a GMI of 59.5 mmol/mol is equivalent to a calculated percentage of 7.6%.
- Note: a future software update to CareLink will provide GMI as a % value.

Statistics		(A)
 Auto Mode (per week)	98% (6d 20h)	
Manual Mode (per week)	2% (04h)	
Sensor Wear (per week)	97% (6d 18h)	
Average SG $\pm$ SD	9.9 $\pm$ 3.5 mmol/L	
Glucose Management Indicator	59.5 mmol/mol	
Coefficient of Variation (%)	35.0%	

## WHAT IS THE COEFFICIENT OF VARIATION (%CV)?


- The %CV is a method to measure glycemic variability.

## WHY IS IT IMPORTANT TO UNDERSTAND %CV?

- %CV provides a marker of glucose stability.
- The smaller the %CV, the smaller (tighter) the variation of glucose (i.e. more stable).
  - Stable glucose levels are defined as a %CV <36%.
  - Unstable glucose levels are defined as %CV ≥36%.
- Below is an example using %CV to evaluate the relative risk of hypoglycemia (lows):

Average Sensor Glucose	Standard Deviation	Coefficient of Variation (%)	Relative Risk of Lows
10 mmol/L	2.7 mmol/L	26.7%	Lower risk for lows (because the %CV is lower than 36%)
10 mmol/L	4.9 mmol/L	48.9%	Higher risk for lows (because the %CV is higher than 36%)

- On the CareLink Assessment & Progress report, the %CV is found under the GMI.
- In the example below, the Coefficient of Variation is 35.0%, which suggests a stable glucose.

Statistics		A
	Auto Mode (per week)	98% (6d 20h)
	Manual Mode (per week)	2% (04h)
	Sensor Wear (per week)	97% (6d 18h)
	Average SG ± SD	9.9 ± 3.5 mmol/L
	Glucose Management Indicator	59.5 mmol/mol
	Coefficient of Variation (%)	35.0%

### Additional Resources & References

- 1.GMI Calculator: <https://www.jaeb.org/gmi/>.
- 2.GMI: Bergenstal RM et al. Glucose Management Indicator (GMI): A New Term for Estimating A1C From Continuous Glucose Monitoring. Diabetes Care. Nov;41(11):2275-2280.
- 3.%CV: Danne, T, et al. International Consensus on Use of Continuous Glucose Monitoring. Diabetes Care. Dec;40(12):1631-1640.