

# Pattern Management & Sensor Usage

Diabetes Care Coaching



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## Before We Begin ...



- Our goal is to create a safe space where all participants are comfortable to learn, share, ask questions
  - Everyone brings knowledge and expertise
  - I am always learning too
  - We won't record discussions, but will share monthly education videos
- The coaching sessions will focus on practical pieces of working in diabetes. For details, it is always best to reference the Diabetes Canada Clinical Practice Guidelines ([guidelines.diabetes.ca](https://guidelines.diabetes.ca))

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Questions from last session?  
Anything to share?

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## What We Plan to Cover Today

- Intro to pattern management
- Sensors:
  - Freestyle Libre
  - Dexcom

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# An Intro to Pattern Management

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## Pattern Management



- Trends that happen at the same time of day for 2 or more consecutive days = pattern
- What can the pattern tell you about:
  - Hyperglycemia
  - Hypoglycemia
  - Variability

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# Pattern Management



1. Celebrate wins
2. Hypoglycemia?
3. Fasting and post-prandial
  - Glucose should hold stable within 1.7 mmol/L overnight
  - 2 hour post prandial rise < 3 mmol/L
  - 4 hour post prandial +/- 1 mmol/L pre-meal value

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# Pattern Management



- You don't need to have all the answers, it's a conversation!
- Think about:
  - What caused lows?
  - What contributed to the more even blood sugar days?
  - Stress? Illness? Pain?
  - Timing of medication?
  - Consistency with medication (missed doses)?

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• A1C 7.1%

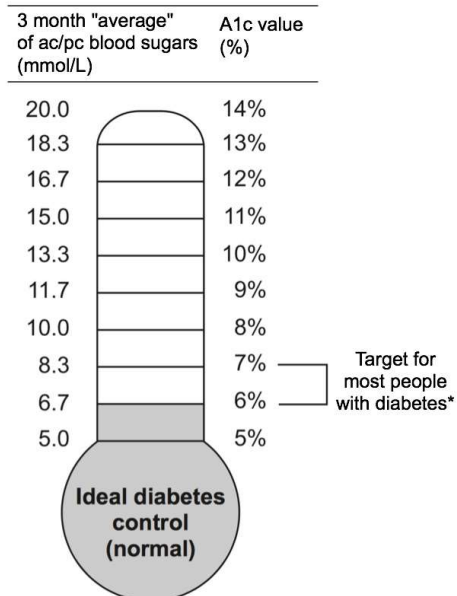


Morning	After Lunch	After Supper
8.1	10.6	
7.5		
6.3		
7.4		
7.0		
8.7		
6.0		
5.8		

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## Hemoglobin A1c

### A1c and Average Glucose Level



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- A1C 9.9%

Before-Break	2 Hours After-Break	Before-Lunch	2 Hours After-Lunch	Before-Supper	2 Hours After-	Bedtime
7.5		8		11		
6.2		9		7.3		
12.2		11.1		8.4		
6.2		7.1		9.3		
12.4		8.9		7.9		
6.3		7.1		7.5		



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## Sensors

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## Two Brands of Sensors Available in Canada



### Freestyle Libre 2

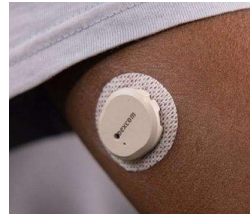
- Only approved for back of upper arm
- 4 years+



*(Libre 3 is coming...)*

### Dexcom

- G7 (G6 still in use too)
- Approved for abdomen, back of the upper arm (age 2 years and older), or the upper buttocks (ages 2-17 years)

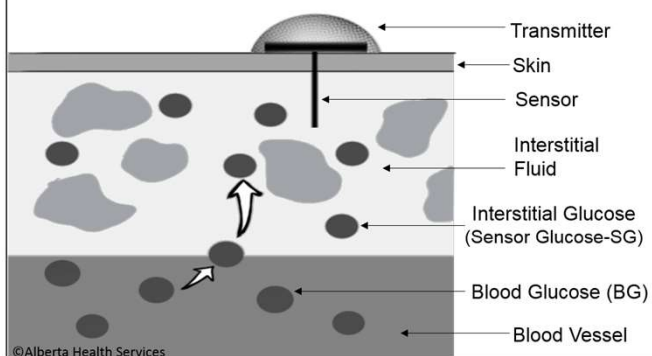


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## Real-Time Continuous Glucose Management

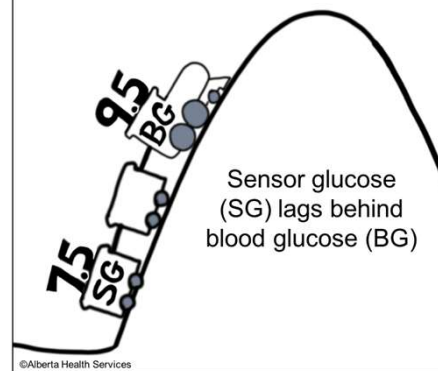


### CGM glucose sensor measures interstitial glucose



©Alberta Health Services

### SG Lags Behind BG



©Alberta Health Services

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## Potential Benefits of Sensors



- Less finger pokes and more information
- Improved glycemic control
  - Improved A1C for type 1 and type 2 diabetes
  - Reduced hypo and hyperglycemia
- Can help with self-management
  - Insight into food, exercise, stress, sleep, menstruation, timing of meds ...
  - It's all personalized feedback!

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## Potential Limitations/Challenges



- Accuracy:
  - Can be inaccurate at low blood sugars
  - Lag can be frustrating for patients
- Irritation, site selection, adhesion, sensor failure
- Cost/coverage
- Too much information? Unrealistic expectations?

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## Sensors can be scary!



- Technology
- Always on/always watching
- Fear it will be painful
- What have you done to help clients work through this?

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## Applying the Sensor



Libre Application: <https://www.youtube.com/watch?v=rnxwMIIFeBw&t=24s>

Dexcom Application: <https://www.youtube.com/watch?v=1WxOa6UUNI4>

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## Connecting to App/Reader



- Freestyle Libre
  - Simulator: <https://ca.fsllsimulator.app/fsl2/hcp-as>



- Dexcom
- Can also plug-in receivers to get reports



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## Accessing Reports



- Set-up a clinic code
  - LibreView (your own account) > “Create a New Practice”
  - Dexcom Clarity > “Register Your Clinic” (clinic account)
  - Customize Practice ID
- Patients can connect with you from the app (for both Libre and Dexcom G7 now!)

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## Interpreting CGM Reports



- [http://agpreport.org/agp/sites/default/files/CGM\\_Clinical\\_Guide\\_AGP.pdf](http://agpreport.org/agp/sites/default/files/CGM_Clinical_Guide_AGP.pdf)

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## Example of a Report



### GLUCOSE STATISTICS AND TARGETS

30 October 2024 - 12 November 2024 **14 Days**

Time Sensor Active: **37%**

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.	

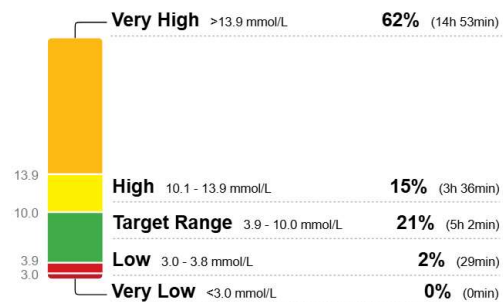
**Average Glucose** **15.7** mmol/L

**Glucose Management Indicator (GMI)** **-**

**Glucose Variability** **40.7%**

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

### TIME IN RANGES

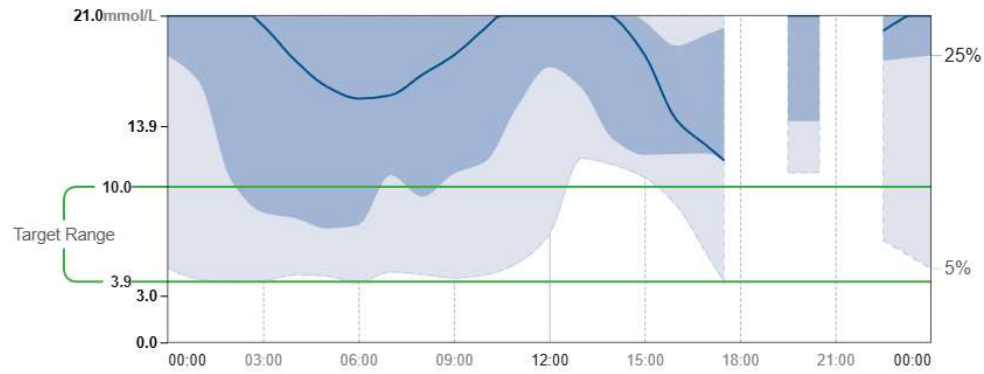


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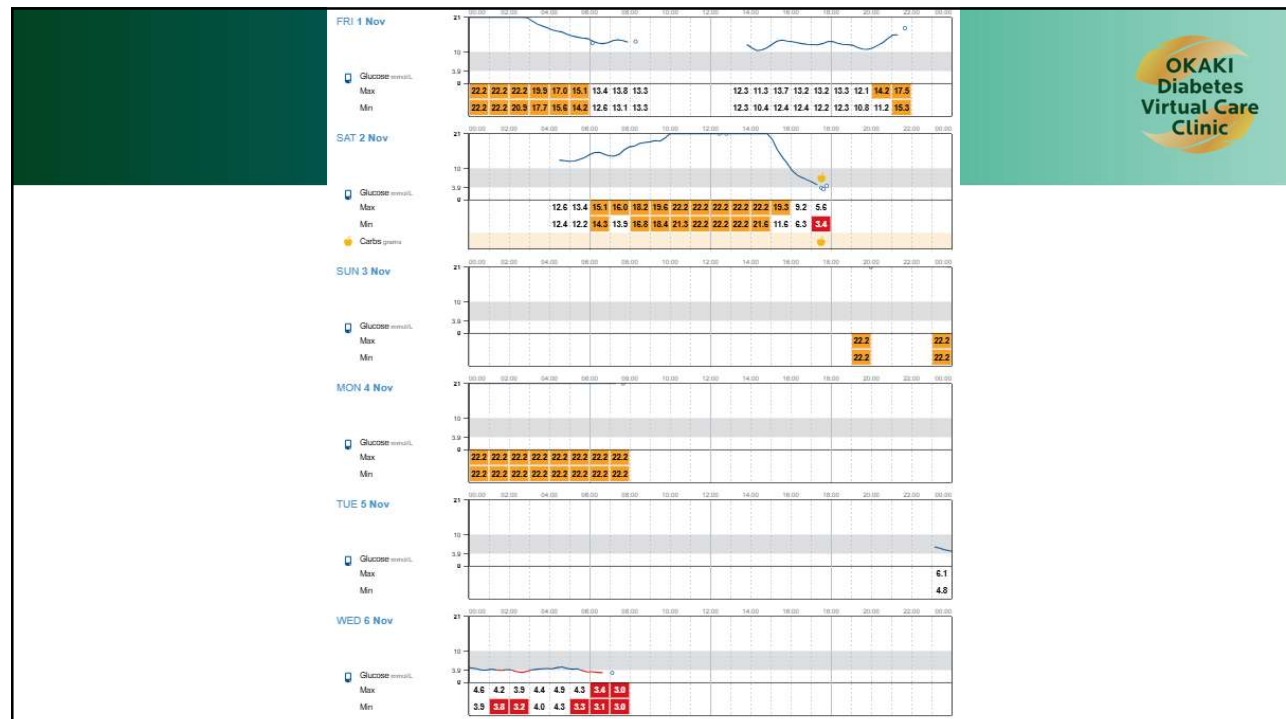


### AMBULATORY GLUCOSE PROFILE (AGP)

AGP is a summary of glucose values from the report period, with median (50%) and other percentiles shown as if occurring in a single day.



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## Another Example of a Report



### GLUCOSE STATISTICS AND TARGETS

29 October 2024 - 11 November 2024

14 Days

Time Sensor Active:

73%

Ranges And Targets For	Type 1 or Type 2 Diabetes
<b>Glucose Ranges</b>	<b>Targets % of Readings (Time/Day)</b>
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** 7.2 mmol/L

**Glucose Management Indicator (GMI)** 6.4% or 47 mmol/mol

**Glucose Variability** 21.8%

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

### TIME IN RANGES

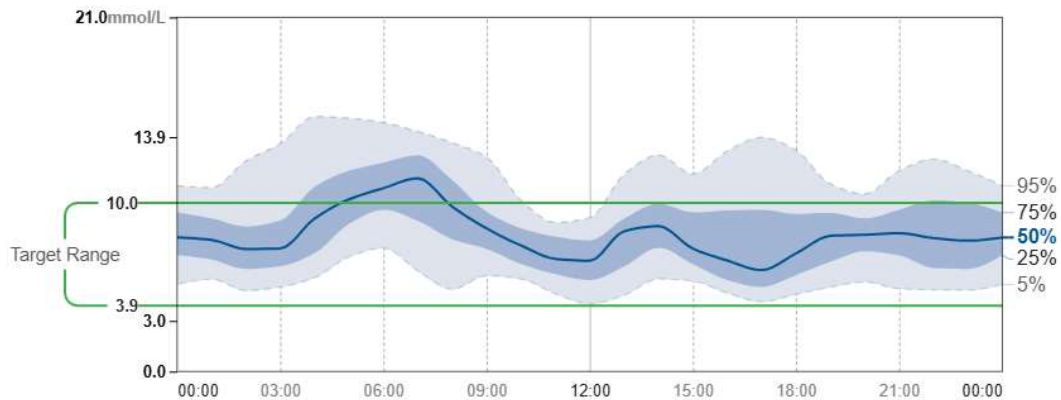


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### AMBULATORY GLUCOSE PROFILE (AGP)

AGP is a summary of glucose values from the report period, with median (50%) and other percentiles shown as if occurring in a single day.

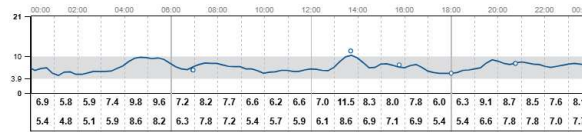


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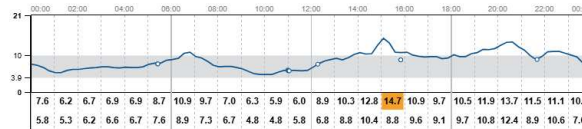
THU 31 Oct

Glucose mmol/L  
Max  
Min



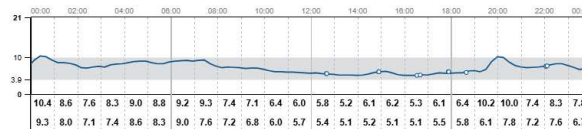
FRI 1 Nov

Glucose mmol/L  
Max  
Min



SAT 2 Nov

Glucose mmol/L  
Max  
Min



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## More information on CGM



- <https://diabeteseducatorsalgary.ca/lifestyle/glucose-monitoring/continuous-glucose-monitors.html>
- This is a great site to bookmark for all kinds of helpful information!

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## Wrapping Up...



- Do you have one or two takeaways that you can use in your work?
- Next Session: December 18<sup>th</sup> at 9:00 AM