



# Continuous Glucose Monitors (CGMs) Updates

**Contributors:** Faezeh Azizi, PharmD; Lauren Enser, PharmD, BCACP, CDCES; Jenny Radcliffe, PharmD, BCACP  
**Contact:** [AHPPharmacist@urmc.rochester.edu](mailto:AHPPharmacist@urmc.rochester.edu)

## Who Can Benefit?

The 2024 ADA Standards of Medical Care in Diabetes recommends personal use of CGMs to assist with reduction/maintenance of HbA1c and reduction of hypoglycemia events in patients:

- With type 1 diabetes (T1DM) – initiate as early as time of diagnosis
- With type 1 or type 2 diabetes (T2DM) on basal insulin and/or multiple daily injections or continuous subcutaneous insulin infusion
- At risk of hypoglycemia or documented hypoglycemic unawareness
- Interested in having additional glucose data to identify triggers/patterns of hyperglycemia or hypoglycemia

Initial CGM training followed by ongoing evaluation of techniques, results, and ability to utilize data to monitor and adjust therapy are imperative

## Comparison of Frequently Used CGM Devices:

Characteristics	Freestyle Libre 2	Freestyle Libre 3	Dexcom G6	Dexcom G7
Type	isCGM	rtCGM	rtCGM	
Approved ages	≥ 4 years old		≥ 2 years old	
Insulin pump integration	Not compatible		t:slim, Omnipod, iLet, and Mobi	t:slimX2
Approved site <sup>§</sup>	Back of upper arm		Abdomen	Back of upper arm
Maximum wear time	14 days		Sensor – 10 days Transmitter – 90 days	10 days
Receiver	Phone app or receiver (must choose one)		Can simultaneously use phone app and receiver	
Warm up period	60 minutes		120 minutes	30 minutes
Frequency of glucose readings	Every minute <sup>£</sup>		Every 5 minutes	
Water resistance	Up to 30 minutes at 3 ft	Up to 24 hours at 8 ft		
Interfering agents*	Vitamin C > 500 mg/day	Acetaminophen > 4 g/day and hydroxyurea		
Online monitoring portal	Providers – Libreview Care givers –Libre Link up app	Providers – Dexcom clarity		
Additional information	<ul style="list-style-type: none"><li>• Libre sensors cannot be re-calibrated if the sensor fails; Dexcom sensors can</li><li>• Dexcom G7, Freestyle Libre 2, and Freestyle Libre 3 have expanded indication for pregnant patients with T1DM; specific time-in-range target of 63-140 mg/dL.<ul style="list-style-type: none"><li>○ Insufficient data for recommending use of CGM in gestational diabetes</li></ul></li></ul>			

<sup>§</sup>For optimal result; \*Falsely elevates reading; rtCGM: real-time CGMs (measure and display glucose levels continuously); <sup>£</sup>Freestyle Libre 2 requires scanning at least every 8 hours to store data; isCGM: intermittently scanned CGMs (measure glucose levels continuously but requires scanning for visualization and storage of glucose values)

## Insurance coverage information for providers:

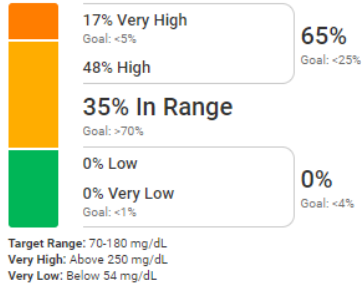
- Patients with commercial and Medicaid coverage can fill CGM prescriptions at retail pharmacies
  - Coverage eligibility depends on the patient's specific plan; most insurances require at least one insulin injection per day
- Many patients with Medicare coverage can fill CGM prescriptions at retail pharmacies, but some require use of a DME pharmacy
  - Medicare eligibility criteria:
    1. Diagnosis of diabetes
    2. CGM is prescribed in accordance with FDA indications for use
    3. At least one of the following:
      - ≥ 1 insulin injection per day
      - History of hypoglycemia with documentation of at least one of the following:
        - >1 level 2 hypoglycemic events (glucose <54 mg/dL) that persist despite multiple attempts to adjust medication(s) and/or modify the diabetes treatment plan
        - 1 level 3 hypoglycemic event (glucose <54 mg/dL) characterized by altered mental and/or physical state requiring third-party assistance for treatment
    4. Within 6 months prior to ordering the CGM, the treating practitioner has an in-person or telehealth visit with the patient to evaluate their diabetes control and determined that the above is met
  - Medicare covers 1 receiver every 5 years. If switching to a different CGM prior to 5 years, ensure that the patient can use the phone app.

## Sample CGM Reports from Dexcom Clarity (top) and Libreview (bottom):

**dexcom** | captürAGP<sup>®</sup> v5.0

### Time in Ranges Goals for Type 1 and Type 2 Diabetes

Each 5% increase in the Target Range is clinically beneficial.  
Each 1% time in range = about 15 minutes per day



Clair Fyke

DOB: February 19, 1955

### Glucose Metrics

Average Glucose Goal: <154 mg/dL	203 mg/dL
GMI Goal: <7%	8.2%
Coefficient of Variation Goal: <36%	22.9%
Time CGM Active	94.0%

## AGP Report

May 15, 2024 - May 28, 2024 (14 Days)

LibreView

### GLUCOSE STATISTICS AND TARGETS

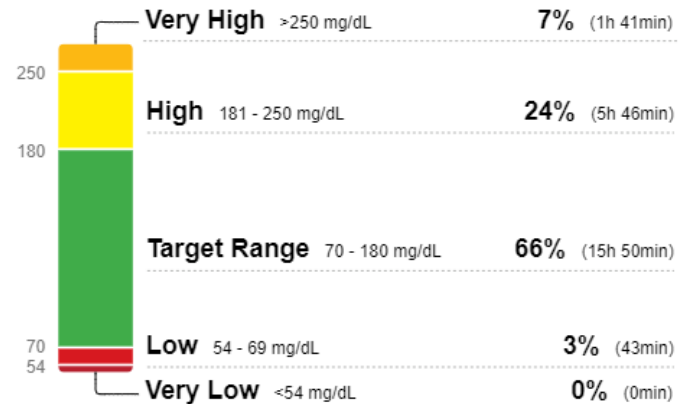
May 15, 2024 - May 28, 2024 14 Days  
Time CGM Active: 95%

Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges	Targets % of Readings (Time/Day)
Target Range 70-180 mg/dL	Greater than 70% (16h 48min)
Below 70 mg/dL	Less than 4% (58min)
Below 54 mg/dL	Less than 1% (14min)
Above 180 mg/dL	Less than 25% (6h)
Above 250 mg/dL	Less than 5% (1h 12min)

Each 5% increase in time in range (70-180 mg/dL) is clinically beneficial.

Average Glucose 154 mg/dL  
Glucose Management Indicator (GMI) 7.0%  
Glucose Variability 39.1%  
Defined as percent coefficient of variation (%CV); target ≤36%

### TIME IN RANGES



### Common CGM metrics for nonpregnant patients with T1 or T2DM:

- CGM active time of 70% or higher to accurately evaluate data
- Blood glucose between 70-180 mg/dL are considered "in range"
- Time in range (TIR): % of time patient's glucose is 70-180 mg/dL. Goal TIR ≥ 70%, which is predictive of HbA1c < 7%.
  - 10% increase in TIR correlates with 0.5% reduction in HbA1c
- Time above range (TAR): % of time patient's glucose is >180 mg/dL. Goal for most adults is < 25% of readings between 181-250 mg/dL < 5% of readings > 250 mg/dL.
- Glycemic variability (GV) or Coefficient of Variation: fluctuations in blood glucose levels. Goal is ≤ 36% to reduce risk of hypoglycemia, microvascular and macrovascular complications.
- Glucose management indicator (GMI): estimate of patient's HbA1c over the life of the sensor
  - GMI is not always equivalent to lab drawn HbA1c
  - GMI does not replace the need for lab drawn HbA1c

### Important patient counseling information:

- CGMs measure interstitial fluid glucose levels which correlates well with plasma glucose (fingerstick glucose)
- Up to a 20 mg/dL difference in CGM reading vs fingerstick reading is normal
  - CGM reading can lag behind if glucose levels are rapidly increasing/decreasing (> 2 mg/dL/min)
- Have access to a glucometer and know when to check a fingerstick glucose:
  - When CGM reader instructs to do so
  - When physical symptoms do not match the CGM reading
  - Anytime the accuracy of the CGM reading is in question
  - While waiting for CGM warm-up or if CGM supplies are delayed
- Monitor for signs of skin irritation
  - [Pantherprogram](#) offers skin adhesion recommendations