CASE STUDIES IN CONTINUOUS GLUCOSE MONITORING

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  - to commit to changes in your practice behaviors
  - to specify what those changes are, and
  - to provide your name and email address.
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CE Information for Nurse Practitioners

The American Association of Nurse Practitioners Certification Program and the American Nurses Credentialing Center accept AAFP Prescribed Category 1 Credits™.

Faculty Disclosure Information

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Disclosures

- **Eden Miller,** DO, discloses that she serves on the advisory board and speakers bureau for Abbott, Eli Lilly, Novo Nordisk, Bayer, and Embecta. She also serves on the advisory board for Insulet.

- **Austin Ulrich, PharmD,** medical writer, and **Michael Hanak**, MD, CME Reviewer, have no disclosures to report.

- All relevant financial relationships have been mitigated.

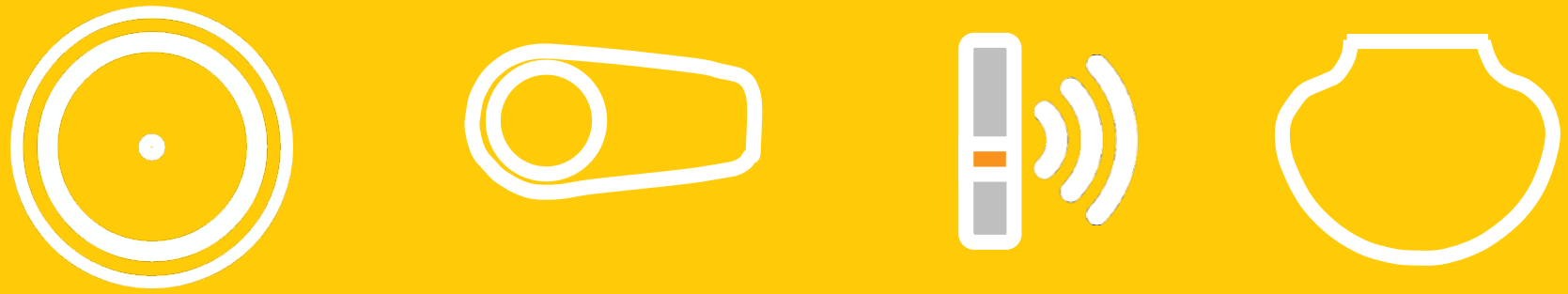
Learning Objectives

Participants in this presentation should be able to…
Comfortably prescribe CGM for all appropriate patients.
Learn to recognize patterns shown in the AGP that may create challenges for the treatment plan.
Modify the treatment plan based on CGM data to improve patient outcomes and increase Time in Range (TIR).
Recognize and address treatment disparities in an effort to make CGM more accessible to patients.

CGM Systems are More than New Monitors

- Moves us beyond point-in-time care
- Predictive glucose measurement
- More data; more insights

But……monitoring is not managing.



What Does the Patient Get with CGM?

- Opportunity for increased individual engagement with their own disease
- Individually driven
- Trend arrow up/stable/down showing current rate of change
- Glycemic effects of food, time of day, activity level, and illness
- Ease of mind for loved ones or care givers to monitor

What Does the Provider Get with CGM?

- Opportunity for increased individual engagement with their disease
- Increased hypoglycemic awareness that can improve prevention
- Reveals therapeutic impacts on glucose management
- Compiled printable data revealing hypoglycemic risk, glycemic excursion (high to low), time-in-range, and data visualization known as the AGP

Professional CGM vs Personal CGM

Professional CGM

- Device owned by the healthcare professional and loaned to the patient
- Approved for multiple use when cleaned and used according to labeling (disposable systems also available)
- Collects real time glucose data (data can be displayed to patient in unblinded mode)
- Worn for 3, 6, 7, 14 days, then data can be downloaded for retrospective review

Professional CGM vs Personal CGM
(cont)

Personal CGM

- Patient-owned device that can be used on a daily basis
- Can be stand-alone or link to other compatible devices
- Glucose values are visible and actionable
- Sensor worn for 7, 10, 14/15 days or 90/180 days for implanted device
- Real-time and scan version available

Identifying the Right Person for CGM

In the US: Persons ≥2 years of age who need or want more engagement with their diabetes.

Now available for those who are pregnant with Type 2 DM

Persons at risk for hypoglycemia who may or may not need alarms and those needing modification of current treatment intervention .

Sulfonylureas, basal insulin, mealtime insulin or IDD (pumps)

Persons with poorly managed diabetes who benefit from understanding influence of diet, activity, and medication on glycemic management.

IDD = insulin-dependent

Should every patient with diabetes have a CGM?

Every person with diabetes could benefit from the information offered by real time CGM as well as the data provided by the compiled Ambulatory Glucose Profile (AGP) report. However, accessibility and utility depend on three questions for consideration.

1. Will my patient have insurance coverage for CGM or be able to afford it?
2. Is my patient willing to wear a CGM?
3. Is my office ready to take full advantage of that wealth of information CGM can offer?

This presentation is all about helping you get ready to make the most of continuous glucose monitoring.

What is available (FDA-approved) in personal CGM?

	Abbott FreeStyle Libre 14-day/2 and 2 Plus/3	Dexcom G6/ G7	Medtronic Guardian Sensor 3 and 4 (pump integrated) and Guardian Connect (stand-alone)	Senseonics Eversense
Approved labeling	Replaces fingersticks for treatment decisions; no fingerstick calibration required	Replaces fingersticks for treatment decisions; no fingerstick calibration required	Requires ≥2 fingerstick calibrations/d	Replaces fingersticks for treatment decisions; requires 1 fingerstick calibrations/d after 21 days
Age	≥18 y/≥2 y/≥2 y	≥2 y	≥14y/≥7y	≥18 y
Medicare coverage	Yes/Yes/Yes	Yes	Sensor 3: Yes; Connect: No	Yes
Wear length	14 d/2 & 3 – up to 15 days new 2 plus	10 d	7 d	90-180 d

What is available (FDA-approved) in personal CGM? (cont.)

	Abbott FreeStyle Libre 14-day/2 and 2 Plus/3	Dexcom G6/ G7	Medtronic Guardian Sensor 3 and 4 (pump integrated) and Guardian Connect (stand-alone)	Senseonics Eversense
Warmup	1 h	2 h/27 min)	2 h	24 h after implantation
Alarms	No/Yes/Yes	Yes	Yes	Yes
Data display/ Integra-tion	Reader; Android, iPhone apps; Libre 2 plus integrated with Tandem, (Pending integration with Omnipod 5 2024)	Reader; Android, iPhone apps; smartwatches; Tandem pump, iLet (Omnipod 5 in 2024)	630G, 670G, 770G, 780G pump (Sensor 4 only); Guardian Connect; Android, iPhone apps	Android, iPhone apps
Form	Disposable transmitter integrated with sensor patch	G6: Transmitter (3-month use) separate from sensor/G7 integrated transmitter	Transmitter (rechargeable) separate from sensor	Transmitter (rechargeable) separate from sensor
Accuracy*	3 = 7.9%[1] (others higher)	9%/8.2%[1]	9.6%/9-11%[1]	8.5-9.5%[1]

*Accuracy measured by MARD (mean absolute relative difference) relative to **VENOUS** glucose.

[1]Accuracy figures provided by manufacturers.

Commercially Available CGM Devices in US

Freestyle
Libre
14 day

Senseonics
Eversense

Freestyle
Libre 2 and 2+

Freestyle
Libre 3

Dexcom G6/G7

Medtronic
Guardian
Connect

Note FreeStyle Libre 2 PLUS looks just like the 2.

What is available in professional CGM?[1]

	Abbott FreeStyle Libre PRO	Dexcom G6 Pro* (expected G7 in 2023)	Medtronic iPro 2
Blinded or unblinded	Blinded	Either	Blinded
Wear Time	14 days	10 days	6 days
Calibration?	0	0	3-4 times daily
Care between use	Disposable sensor/transmitter	Disposable sensor/transmitter	Sensor must be cleaned and disinfected
Insertion	Single-step process with auto-inserter	Two-step process which includes inserting sensor and attaching transmitter	Multi-step process which includes inserting and taping both the sensor and transmitter.
Site	Upper Arm	Abdomen	Abdomen
Downloading/ Data Reports	LibreView (download in office)	Blinded: Clarity (download in office) Unblinded: reader/apps	Carelink (download in office)

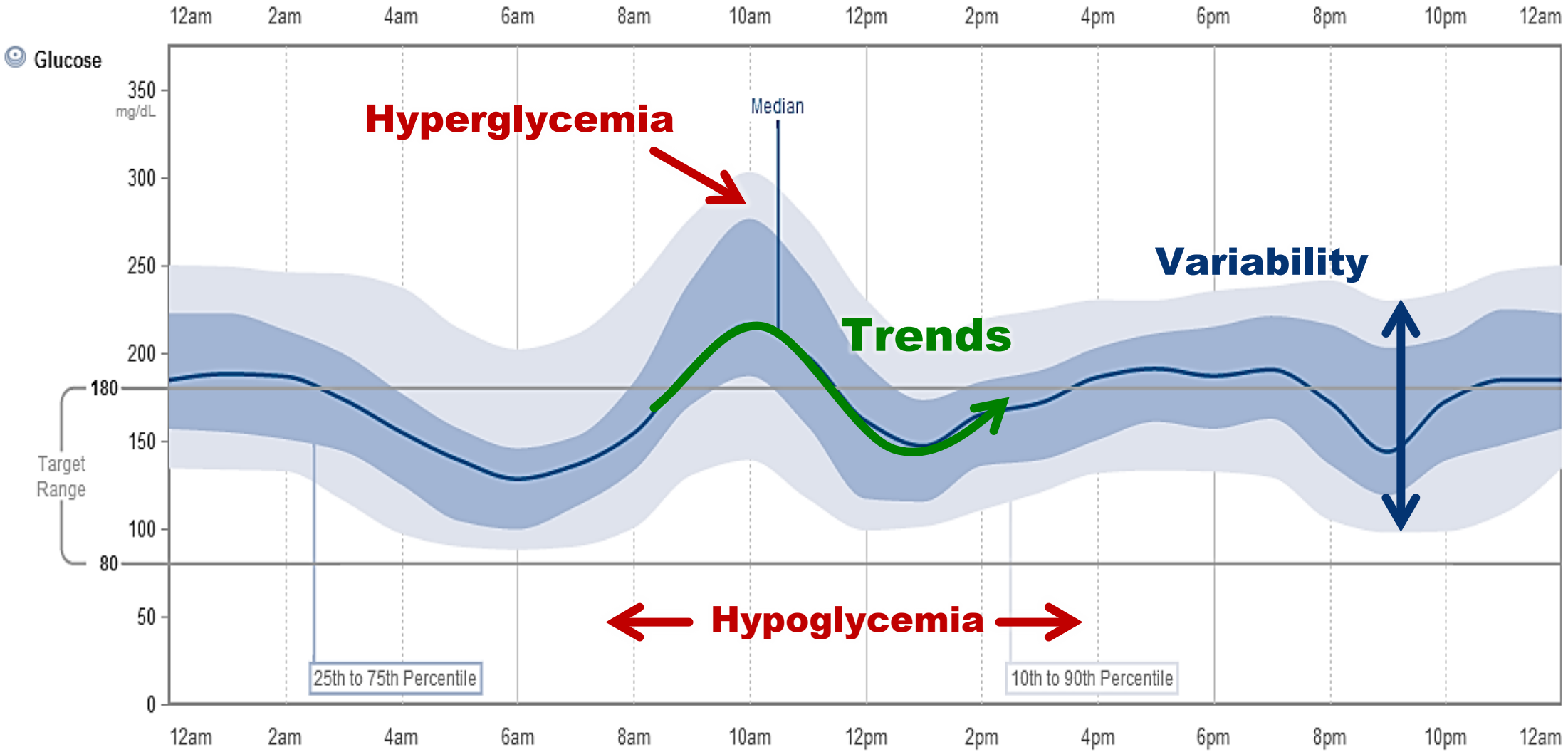
May be covered by insurance intermittently, multiple times per year, even when personal CGM is not covered.

With professional CGM, there is no need or very limited need for insurance authorization.[2]

Professional CGM is a great option for your patient who may not feel ready to commit to a personal CGM.

[1]Professional Glucose Monitoring Implementation Handbook. Association of Diabetes Care & Education Specialists and the American Association of Nurse Practitioners (https://www.diabeteseducator.org/practice/practice-tools/app-resources/professional-cgm-play. [2]CGM. AAFP website. https://www.aafp.org/family-physician/patient-care/care-resources/continuous-glucose-monitoring.html. Accessed 11/30/2022.

Ambulatory Glucose Profile



Conversion: mg/dL × 0.0555 = mmol/L.

Used with the permission of Richard M. Bergenstal

AGP Report

Name

MRN

GLUCOSE STATISTICS AND TARGETS

26 Feb 2019 – 10 Mar 2019	**13 days**
% Time CGM is Active	**99.9%**

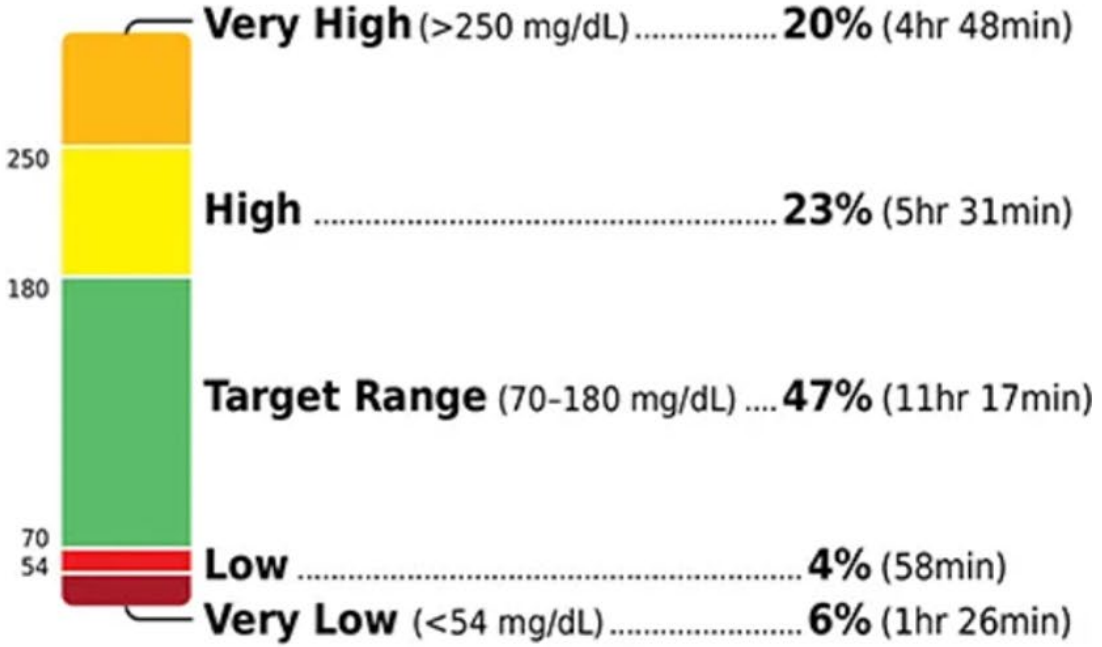
Glucose Ranges	**Targets** [% of Readings (Time/Day)]
Target Range 70-180 mg/dL	Greater than 70% (16hr 48min)
Below 70 mg/dL	Less than 4% (58min)
Below 54 mg/dL	Less than 1% (14min)
Above 250 mg/dL	Less than 5% (1hr 12min)

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

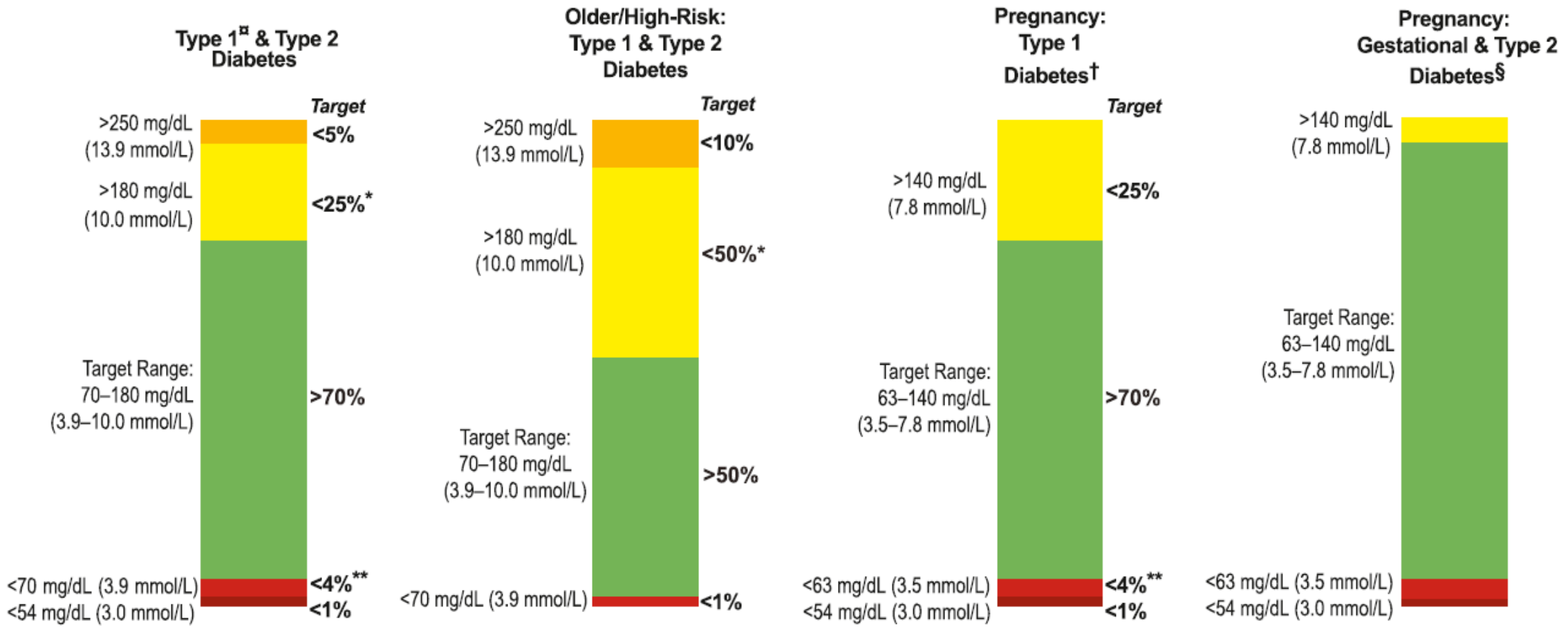
Average Glucose	**173 mg/dL**
Glucose Management Indicator (GMI)	**7.6%**
Glucose Variability	**49.5%**

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

TIME IN RANGES



Time in Range: International Consensus



Battelino T et al. Clinical Targets for Continuous Glucose Monitoring Data Interpretation: Recommendations From the International Consensus on Time in Range. Diabetes Care. https://doi.org/10.2337/dci19-0028

Nine Steps to Interpreting AGP

1. Download and Print off AGP Report
2. Check for Adequate Data
3. Look for patterns of **Low** glucose levels / hypoglycemic risk
4. Look for patterns of **High** glucose levels
5. Look for areas of wide **Glucose Variability**/ range of glucose values
6. Determine appropriate **Time in Range** (TIR)
7. **Ask** the Person with DM what they see when they look at AGP.
8. Discuss potential solutions and agree on an **action plan** based on the AGP
9. Mark up the AGP report and copy at the end of the visit for the PWD

PWD = person with diabetes

Therapeutic Interventions Considering AGP Results

- Check for adequate data
- Mark up AGP - Where to swipe more since using Libre, note when medication is taken and its effect, mealtimes, and other notable activities
- Ask if the patient can see this effect on the AGP?
- Are there any lows or risk for lows with current therapy or new interventions?
- Look for high glucose levels—this person has mealtime and over all elevation

Therapeutic Interventions Considering AGP Results (cont)

- Discuss personalized treatment or lifestyle interventions based on the results of AGP; in this case a need for post meal reduction and fasting lowering, but not increased risk of hypoglycemia, keeping all co-morbidities in mind
- Agree on the plan; this provider and patient chose a DPP4 and to keep sulfonylurea dose the same
  - Other options?
- Schedule short interval follow-up interval to avoid inertia, and copy AGP to person

Trials with the two most frequently prescribed CGM devices: Abbott and Dexcom.

HbA1c Reduction After Initiation of the FreeStyle Libre® System in Type 2 Diabetes Patients on Long-Acting Insulin or Non-Insulin Therapy[1]

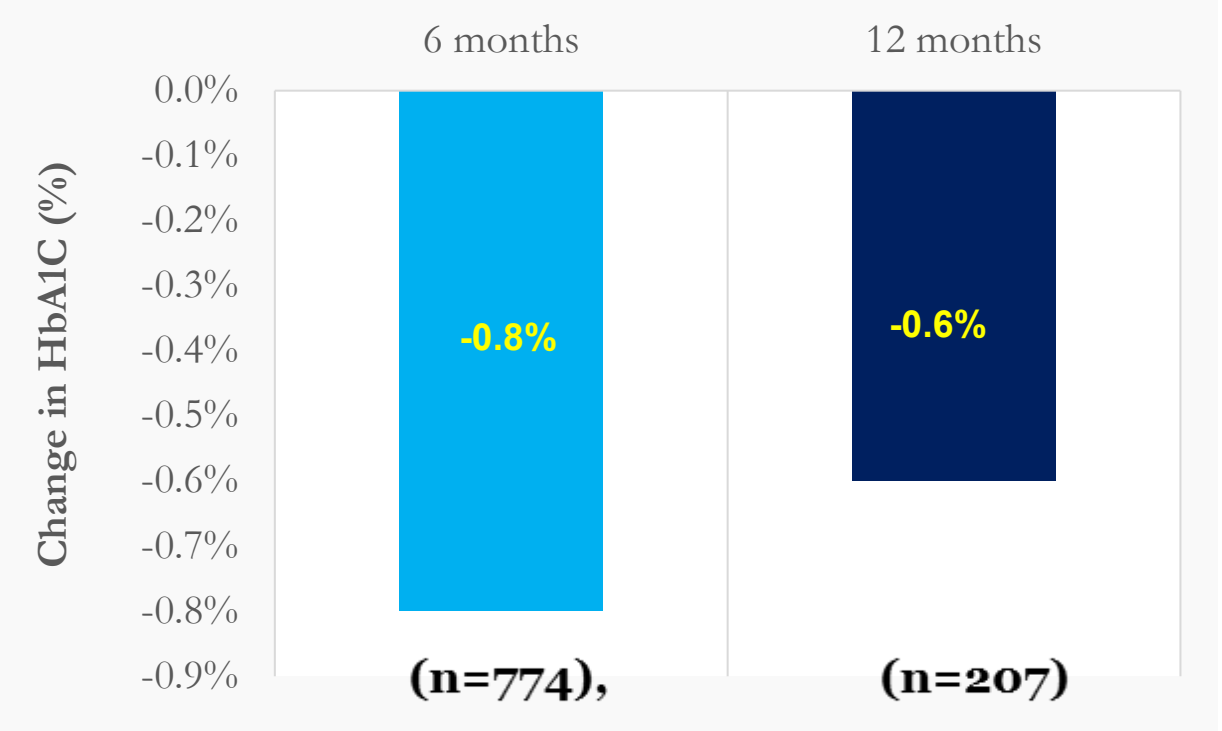
- Eden Miller, DO; Laura Brandner, Eugene Wright, MD

- **Aim:**
- **Evaluate the change in HbA1c from baseline to 6mo and baseline to 12mo after starting a FreeStyle Libre system for T2DM patients on long-acting insulin (LAI) and non-insulin (including GLP-1) therapy**
- **Methods:**
  - **Retrospective, observational analysis of deidentified data**
  - **Data from three different data sets were used and linked together during the analysis timeframe**
  - ***LibreView* ®:** Index was the first date of data in LibreView (Nov 2017–Sept 2019)
  - ***Quest Diagnostics™ :*** HbA1c testing results
  - ***Decision Resources Group (DRG):*** Medication and diagnosis derived from DRG
- **Inclusion criteria:**
  - Baseline A1c must be ≥ 6.5% within 6mo prior to index
  - HbA1c tests closest to +180 days (+150-210) used for 6mo
  - HbA1c tests closest to +360 days (+330-390) used for 12mo

1. Miller E et al. [84-LB]. Poster presented at: American Diabetes Association 80th Scientific Session; June 12-16, 2020;Virtul.

HbA1c Reduction After Initiation of the FreeStyle Libre® System in Type 2 Diabetes Patients on Long-Acting Insulin or Non-Insulin Therapy[1]

Reduction in A1c after FreeStyle Libre initiation was seen in all type of patients
(p<0.0001)



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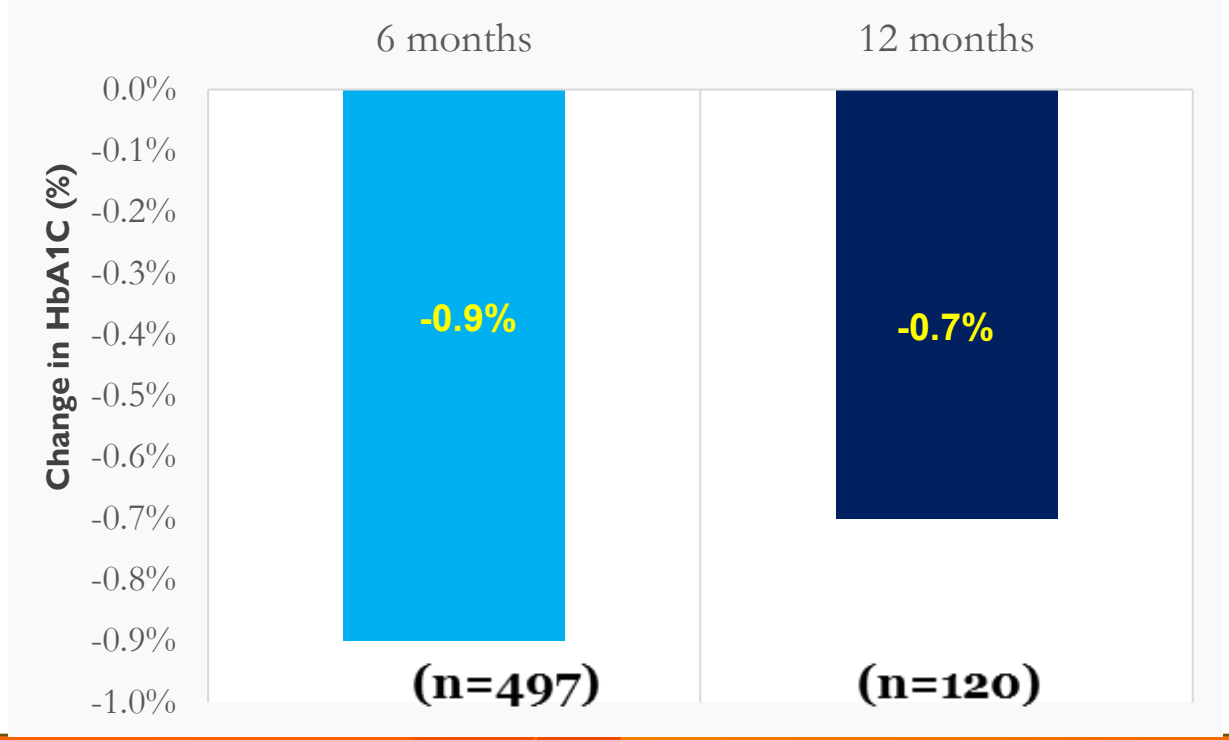
HbA1c Reduction After Initiation of the FreeStyle Libre® System in Type 2 Diabetes Patients on Long-Acting Insulin or Non-Insulin Therapy[1] (CONT)

The greatest reduction in A1c was seen in the T2DM non-insulin group
(p<0.0001)



1. Miller E et al. [84-LB]. Poster presented at: American Diabetes Association 80th Scientific Session; June 12-16, 2020;Virtul.

Effect of Continuous Glucose Monitoring on Glycemic Control in Patients With Type 2 Diabetes Treated With Basal Insulin

A Randomized Clinical Trial Thomas Martens, MD[1]; Roy W. Beck, MD, PhD[2]; Ryan Bailey, MS[2]; et al.

JAMA. 2021;325(22):2262-2272. doi:10.1001/jama.2021.7444

Results

- Among 175 randomized participants (mean [SD] age, 57 [9] years; 88 women [50%]; 92 racial/ethnic minority individuals [53%]; mean [SD] baseline HbA_{1c} level, 9.1% [0.9%]), 165 (94%) completed the trial. Mean HbA_{1c} level decreased from 9.1% at baseline to 8.0% at 8 months in the CGM group and from 9.0% to 8.4% in the BGM group (adjusted difference, −0.4% [95% CI, −0.8% to −0.1%]; *P* = .02).

- In the CGM group, compared with the BGM group, the mean percentage of CGM-measured time in the target glucose range of 70 to 180 mg/dL was 59% vs 43% (adjusted difference, 15% [95% CI, 8% to 23%]; *P* < .001), the mean percentage of time at greater than 250 mg/dL was 11% vs 27% (adjusted difference, −16% [95% CI, −21% to −11%]; *P* < .001), and the means of the mean glucose values were 179 mg/dL vs 206 mg/dL (adjusted difference, −26 mg/dL [95% CI, −41 to −12]; *P* < .001).

Medicare Criteria When Ordering CGM

- Patient has diagnosis of diabetes
- Patient is insulin-treated at least one injection daily, acute related diabetes event, or chronic condition that puts them at risk for hypoglycemia. (no documentation of finger stick required)
- Insulin regimen requires frequent adjustments on basis of CGM data.
- Clinic visit within 6 mo prior to ordering CGM to evaluate glucose control and determine that the above criteria are met.
- Following initial prescription of CGM, in-person visit with clinician every 3-6 mos to assess adherence to CGM regimen and diabetes treatment plan (document in chart notes may be requested).
- CGM covered under Part B (Durable Medical Equipment) Medicare Benefit

◦ CMS. 2023. Accessed April 26, 2023. https://www.cms.gov/Medicare-coverage-database/view/article.aspx?articleid=52464&ver=49&contractorName=all&sortBy=updated&bc=13

Codes for billing

Code and Description

95249:

Personal CGM – Startup/Training: Ambulatory continuous glucose monitoring of interstitial tissue fluid via a subcutaneous sensor for a minimum of 72 hours; patient-provided equipment, sensor placement, hook-up, calibration of monitor, patient training , printout or HER copy of report (Do not report more than once while patient owns device)

95250:

Professional CGM - Ambulatory continuous glucose monitoring of interstitial fluid via a subcutaneous sensor for a minimum of 72 hours; clinician-provided equipment, sensor placement, hook-up, calibration of monitor, patient training removal of sensor, and printout of recording. (Do not report more than once per month)

95251:

Ambulatory continuous glucose monitoring of interstitial tissue fluid via a subcutaneous sensor for a minimum of 72 hours; interpretation and report (Do not report more than 1x/m)

May be billed separate or with an E & M visit in-person or remote.

Codes for billing (cont.)

Code and Description
Evaluation and Management (E/M) Codes 99212-99215 Established Patient Visit or G0463 (Medicare Outpatient Clinic Visits)
Eversense Only Codes: 0446T (creation of subcutaneous pocket with insertion of implantable sensor, including system activation and patient education), 0447T (removal of implantable sensor from subcutaneous pocket via incision), 0448T(removal of sensor with creation of new pocket for new sensor at a different location, including system activation)

Case 1-Rural Person with T2DM with Medicare on long- acting insulin

67 yo white male

PMHX of T2DM (Diagnosed at 51), CAD, HTN, obesity, hyperlipidemia and kidney disease with macro albuminuria

PSHX 4 vessel bypass

Labs and Vitals

Stage 3a A3 disease with proteinuria at 460 9.4% 2 mos ago

Estimated Glomerular Filtration Rate (eGFR) 57

Urine Albumin-Creatinine Ratio (UACR) 460; Weight 312 lb; height 73”; Body Mass Index (BMI) 41.5

Blood Pressure (BP) 141/89

Stage 3a A3 disease with proteinuria at 460 9.4% 2 mos ago

“*Was told by Physician ‘that is good enough control.’”*

PMHX=Past Medical History; CAD=Coronary Artery Disease; HTM=Hypertension; PSHX=Past Surgical History

Case 1-Rural Person with T2DM with Medicare on long- acting insulin (cont)

Medications:
metformin 1000mg BID
glipizide 4 mg BID
dulaglutide 3mg
empagliflozin 10mg 3 mos ago (no A1c since start of that medication)
lisinopril 10mg
fenofibrate 48 mg
ASA 81mg
simvastatin 40mg

Currently gives 2 injections of basal insulin per day (not FDA approved)
glargine 50 in the AM 65 PM

ASA=Aspirin

Recommendations for next step

Apply CGM sensor in office and begin journaling lifestyle and effects glucose

Discontinue glipizide due to CAD history

Increase empagliflozin to 25mg

Keep metformin 1000mg BID

Discontinue dulaglutide

Initiate tirzepatide and titrate to 15mg over 6 mos

Discontinue BID insulin and change dose to 90 units in the PM with glargine titrated every day to fasting AM glucose of less than 100

Short Interval Follow up for AGP discussion and titration of medications

BID = 2x/day

GLUCOSE STATISTICS AND TARGETS

April 20, 2023 - May 3, 2023 — **14 Days**

Time CGM Active: — **96%**

Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges Target Range 70-180 mg/dL	**Targets** % of Readings (Time/Day) 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.	

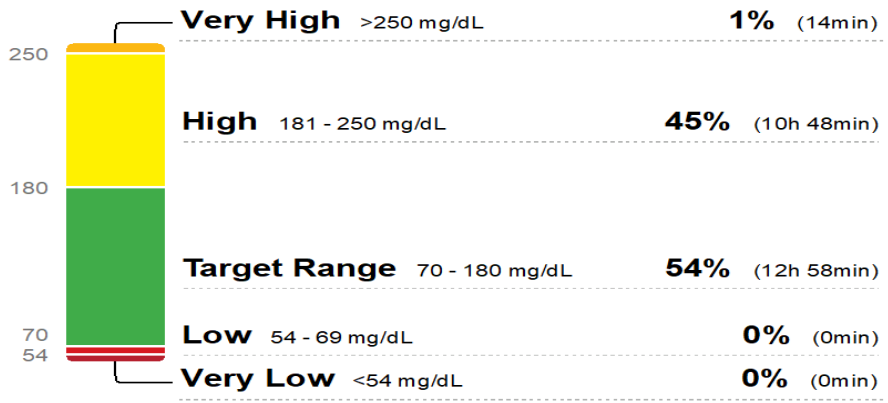
Average Glucose — **181** mg/dL

Glucose Management Indicator (GMI) — **7.6%**

Glucose Variability — **15.6%**

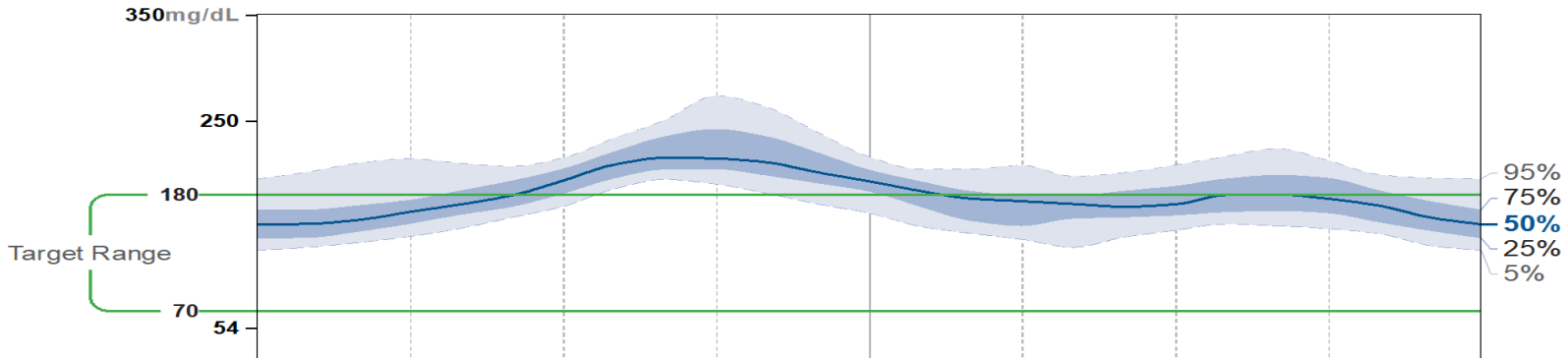
Defined as percent coefficient of variation (%CV)

TIME IN RANGES



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.



Baseline AGP reviewed remotely

At tele-appointment 3 weeks after application

Patient reports seeing the effects that food choices and exercise have on his glucose numbers.

GLUCOSE STATISTICS AND TARGETS

December 29, 2023 - January 11, 2024	**14 Days**
Time CGM Active:	**94%**

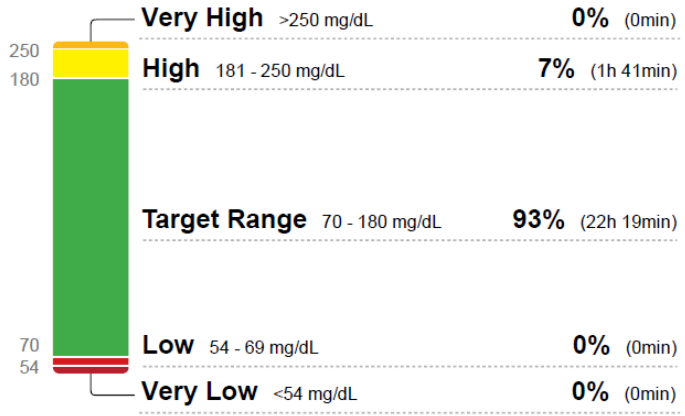
Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges Target Range 70-180 mg/dL	**Targets** % of Readings (Time/Day) Greater than 70% (16h 48min)
Below 70 mg/dL	Less than 4% (58min)
Below 54 mg/dL	Less than 1% (14min)
Above 180 mg/dL	Less than 25% (6h)
Above 250 mg/dL	Less than 5% (1h 12min)

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

Average Glucose	**135** mg/dL
Glucose Management Indicator (GMI)	**6.5%**
Glucose Variability	**20.8%**

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

TIME IN RANGES



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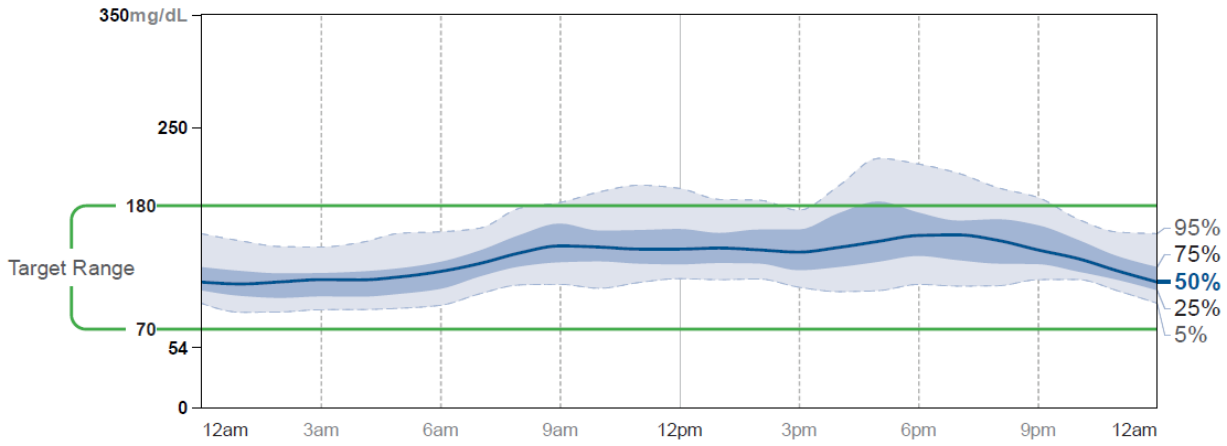


6 month follow up appt
Telemedicine: Remote monitoring

Weight 284
BMI 37.47
A1c 6.7%
UACR 123
eGFR 59

tirzepatide 15 mg
glargine 108 u AM
All other medications remain the same

Case 2-59 yr old White Male T2DM using U500 with IDD

Currently not using CGM as Oregon Medicaid has not approved CGM for persons with Type 2 Diabetes even though he is on a pump.

PHMX Using U500 insulin in the pump due to his severe insulin resistance, hyperlipidemia, BPH, non-alcoholic fatty liver disease, hypertension and chronic degenerative joint pain with chronic pain management.

He has had diabetes now for 29 years.
His C-peptide is less than 1.0 and indicates that every time he gets an A1c it's between 5.8 and 6.2. He admits to a severe hypoglycemic episode where he did a fingerstick (50 mg/dL). He is on a concentrated insulin with an insulin pump without a continuous glucose monitor – given his history with hypoglycemia, this is a concern and not in keeping with the American Diabetes Association's Standards of Care. Diabetes

Case 2–59 yr old White Male T2DM using U500 with IDD (cont)

Medication:
empagliflozin 25 mg
dulaglutide 4.5 mg
U500 insulin .8 ml per day
losartan 100 mg
tamulosin 4 mg
levothyroxine 150 µg
fenofibrate 145 mg
atorvastatin 40 mg
hydrocodone Q6H
gabapentin 600mg TID
ASA 81mg

Point-of-care (POC) rapid A1c in office 5.5%.
How did no one notice this didn't make sense?

Q6H = every 6 hours; TID = 3 times a day

AGP Report

May 3, 2022 - May 16, 2022 (14 Days)

GLUCOSE STATISTICS AND TARGETS

May 3, 2022 - May 16, 2022	**14 Days**
% Time CGM is Active	**62%**

Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges Target Range 70-180 mg/dL	**Targets** % of Readings (Time/Day) 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.	

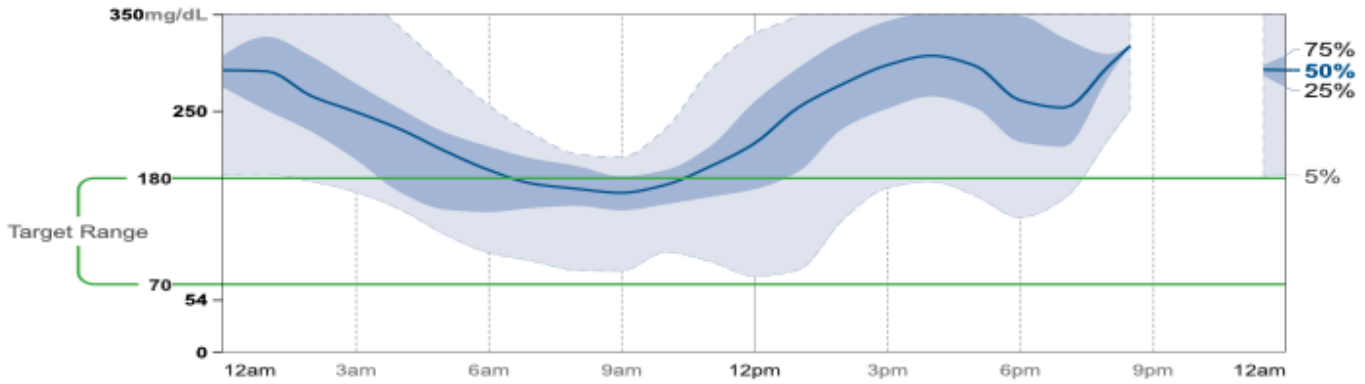
Average Glucose	**239** mg/dL
Glucose Management Indicator (GMI)	**9.0%**
Glucose Variability	**35.0%**

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

TIME IN RANGES

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.



Applied CGM in office and sent Rx as he indicates if he likes it, he could pay cash.

4 week follow up for AGP review - Significant discordance of GMI/CGM data with POC A1c in office as well as past lab A1c draws.

Baseline AGP

What is going on?

Solving the mystery

- Additional work up is completed, and it is determined that he has a hemoglobinopathy and the A1c results are not valid. As a result, we are no longer using A1c for control but rather the CGM data, as the interstitial CGM is unaffected by hemoglobinopathies.

- With the analysis of his AGP completed, there was a discussion of timing of eating, carb counting, and bolusing using the pump settings, and manually inputting the glucose from the CGM.

- When insurance asked for documentation for ongoing supplies for the pump, the sensor derived GMI (the sensor equivalent of the A1c) was provided, and a peer-to-peer meeting was held, notifying the insurance of his hemoglobinopathy.

- Those gaps in the report mean he isn't scanning often enough. There are CGMs that don't require scanning.

- As he is on an insulin pump, there are now TWO CGMS that integrate. This may help with his insurance issues.

GLUCOSE STATISTICS AND TARGETS

August 2, 2022 - August 15, 2022	14 Days
% Time CGM is Active	58%

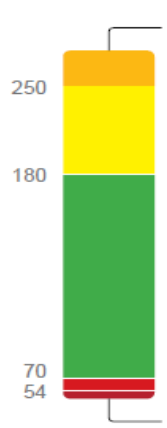
Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges	**Targets** % of Readings (Time/Day)
Target Range 70-180 mg/dL	Greater than 70% (16h 48min)
Below 70 mg/dL	Less than 4% (58min)
Below 54 mg/dL	Less than 1% (14min)
Above 180 mg/dL	Less than 25% (6h)
Above 250 mg/dL	Less than 5% (1h 12min)

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

Average Glucose	176 mg/dL
Glucose Management Indicator (GMI)	-
Glucose Variability	32.0%

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

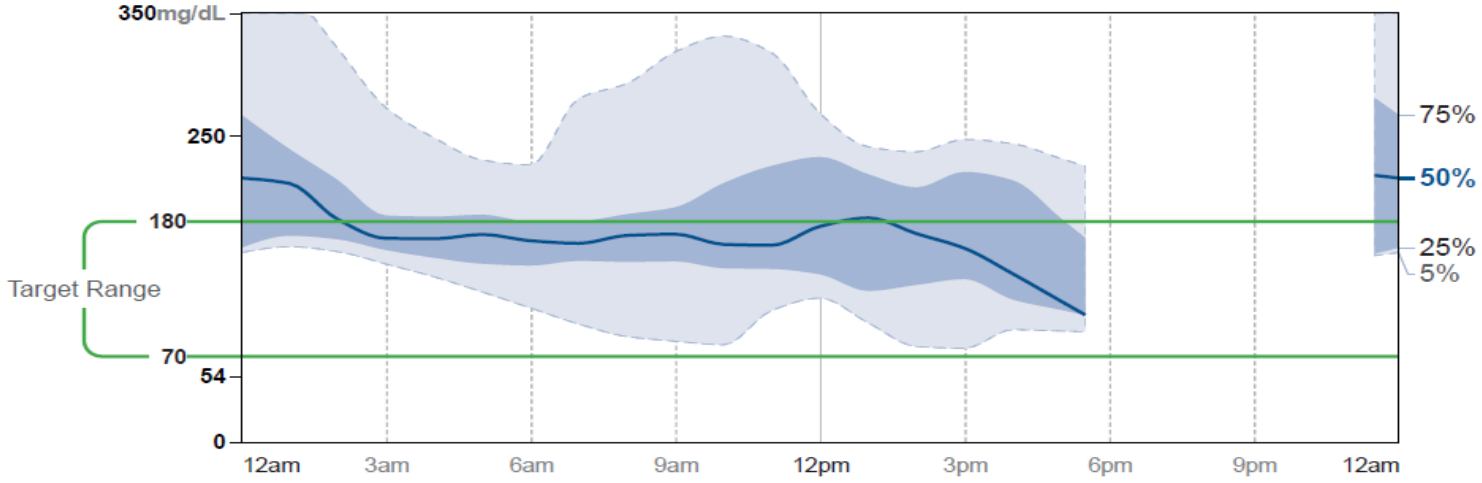
TIME IN RANGES



Very High	>250 mg/dL	9%	(2h 10min)
High	181 - 250 mg/dL	26%	(6h 14min)
Target Range	70 - 180 mg/dL	64%	(15h 22min)
Low	54 - 69 mg/dL	1%	(14min)
Very Low	<54 mg/dL	0%	(0min)

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.



Case 3- 42 yr old Asian female with T2DM

- She was diagnosed with T2DM 7 years ago.
- She indicates she is frustrated with her overall control.
- Her current A1c is 8.2%

At her last appointment with her primary care physician, initiation of insulin was discussed, and she has been fearful ever since.

- She has a history of slight microalbuminuria: eGFR is 62, UACR 34.
- BMI.27.98; Height 62”; Weight 153 lb; Blood Pressure 121/89

Medication

- glipizide 4mg BID
- metformin 1000 mg BID
- lisinopril 10mg
- Stopped statin due to muscle aches
- Previous medications SGLT2 (Side effect: yeast infections). dulaglutide (side effect: severe GI heartburn)
- PMHX T2DM, Microalbuminuria without HTN, Hyperlipidemia

Shared Decision for intervention

- Application of CGM in office with app on phone
- Discontinued glipizide
- tirzepatide dose titrate to 7.5mg over 3 mos
- SGLT2 dapagliflozin 10mg for *UACR elevation despite on ACE*
- Peri care instructions given to avoid vulvar irritation
- Engagement on effects of food, stress and exercise on glycemia

In office
3 week follow up to review AGP and her journal

Average Glucose

247 mg/dL

Time in Range

42% Very High
47% High
11% In Range
0% Low
0% Very Low

Target Range:
70-180 mg/dL

Sensor Usage

Days with CGM data
79 %
11/14

Standard Deviation
56 mg/dL

GMI
N/A

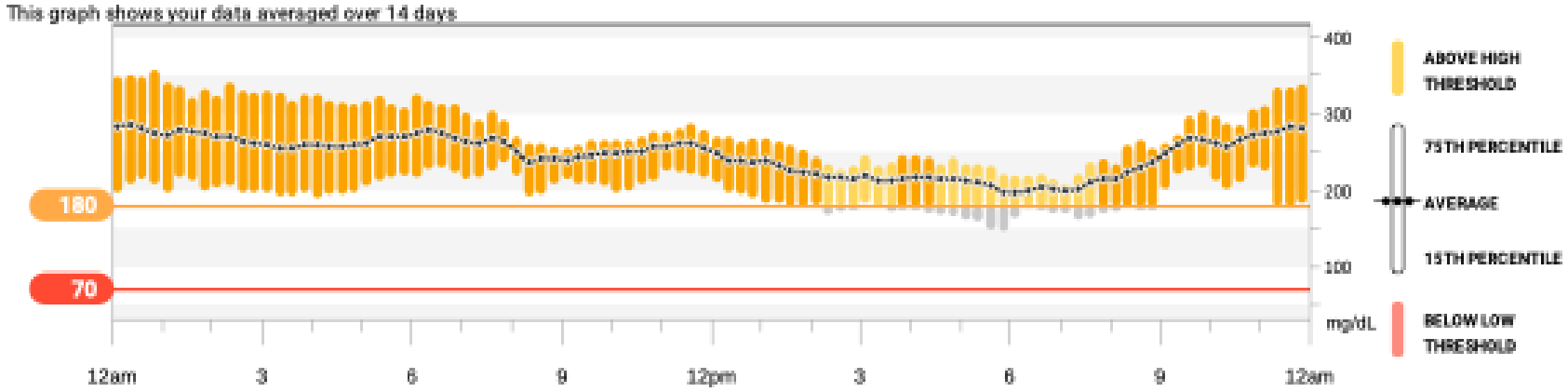
Avg. calibrations per day
0.0

Top Patterns

She has a pattern of significant highs between 7:55 PM and 2:00 AM.

She had a pattern of significant highs between 3:55 PM and 4:25 PM.

Her glucose data was in the target range about 19% of the day.



129 mg/dL

0% Very High
4% High
96% In Range
0% Low
0% Very Low

Target Range:
70-180 mg/dL

Days with CGM data
79%
11/14

Standard Deviation
23 mg/dL

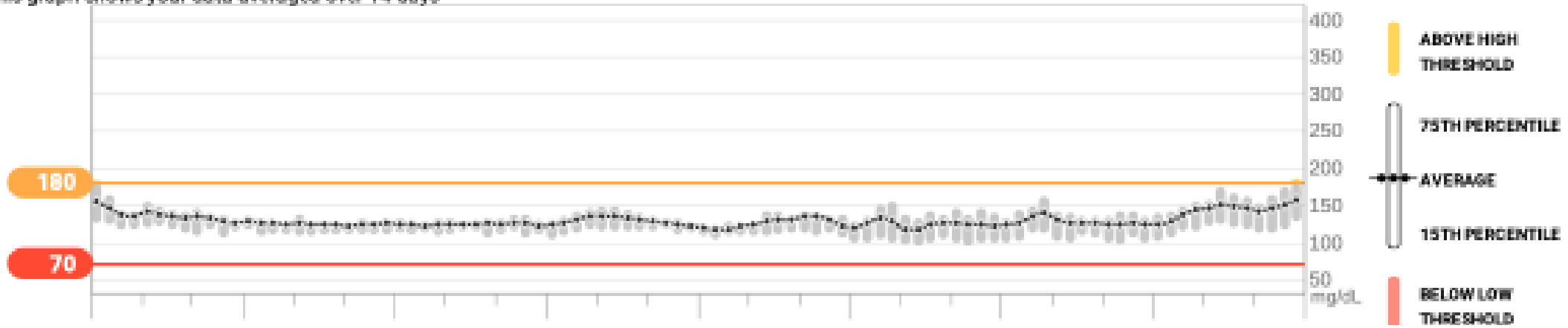
GMI
N/A

Avg. calibrations per day
0.0

Top Patterns

Follow up AGP 5 mos later
Weight 126.4; Height 62”; BP 115/80
BMI 23.12; A1c 5.8% POC in office
Doing well on dapagliflozin 10mg and tirzepatide 7.5mg

This graph shows your data averaged over 14 days



Address disparities where you can

In an extensive study of over 73,000 patients with type 1 or type 2 diabetes

rates of CGM use were lowest in Black and Hispanic adults.[1]

Causes for disparities in treatment range beyond race and ethnic considerations. Other factors include

socioeconomic status

geographical location

access to quality healthcare

limited healthcare providers

restrictive coverage eligibility

excessive documentation requirements, as well as implicit or overt bias.[2]

Watch for barriers to treatment resulting from these disparities and do what you can to address them, whether through using telehealth for patients in rural settings, finding cost-savings in CGM provision, or helping with documentation requirements. We can make a difference in addressing treatment inequities.

1 Aljedaani SM, et al. Racial & Ethnic Disparities in CGM Use among Adults with Diabetes. Diabetes. 2022;71(Supplement_1).
2 Isaacs D, et al. Health Care Disparities in Use of CGM. *Diabetes Technol Ther.* 2021 Sept;23(S3:S81-S87.

Watch out for barriers to treatment!

What can you do?

- Consider telehealth for patients in rural settings or who have challenges making appointments
- Look for cost-savings in CGM provision
- Assist with documentation requirements
- Discuss these barriers/inequities with your patients
- We can make a difference in addressing treatment inequities.

Where does CGM go from here?

- Expect coverage for CGM to continue to expand
- Expect ever smaller, more accurate devices, more interconnectivity with other devices, including pumps (smaller pumps, too!), and more applications, and a device aimed at patients with T2D.
- Around the corner? CGM with integrated ketone sensing, to allow for early detection of ketoacidosis, a first of its kind bio wearable.
- It's an exciting time in the treatment of diabetes!

Resource Toolkit:
https://www.pcmg-us.org/toolkit/cgm

Links to pages devoted to the individual devices, both professional and personal, including insertion videos

Links to references used in this presentation

Links to download the deck and review the presentation (share with colleagues who can also earn additional CME credit)

Extensive cost and use data

A list of helpful resources from the ADA, diaTribe, AAFP, the Association of Diabetes Care & Education Specialists, and more

Learning Objectives

We've covered the learning objectives. You should be able to…
Comfortably prescribe CGM for all appropriate patients.
Learn to recognize patterns shown in the AGP that may create challenges for the treatment plan.
Modify the treatment plan based on CGM data to improve patient outcomes and increase Time in Range (TIR).
Recognize and address treatment disparities in an effort to make CGM more accessible to patients.

Knowledge Question One

?

For those patients utilizing Medicare which of the following is true regarding the prescribing and acquisition of CGM following Medicare guidelines?

A. They must be on at least 3 shots of insulin and can obtain at pharmacy with an RX under their Part D benefit.

B. They must be using at least one insulin shot and can obtain with a Rx at the pharmacy using Part D benefits.

C. They must be using at least one insulin shot and obtain with a Rx through DME (Durable Medical Equipment) or pharmacy that processes Part B benefits.

D. Medicare rarely covers CGM and often only in situations using multiple daily injections and requires fingerstick records.

Knowledge Question Two

The time to review and document Ambulatory Glucose Profile Reports from a CGM can be billed using the CPT code 95251, but only in conjunction with an E & M visit code.

A. True

B. False

C. I am unsure

CASE STUDIES IN CONTINUOUS GLUCOSE MONITORING

Please take our very brief POST-Survey via QR code or link below to receive your certificate.

https://www.pcmg-us.org/survey/post/cgm1