Using Continuous Glucose Monitoring and the Ambulatory Glucose Profile in Clinical Decision-Making for Primary Care

A Summary Manuscript for the Video Series

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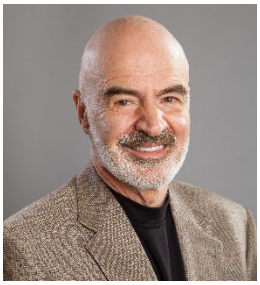
About the Authors



Stephen Brunton, MD, **FAAFP**, **CDCES** is the executive director of the Primary Care Metabolic Group (PCMG) and executive vice president for education for PCEC. He works in a group practice in rural South Carolina and holds the faculty rank of adjunct associate clinical professor at Touro University in Vallejo, California. Additionally, he currently serves as the editor-in-chief for *Clinical Diabetes*.

Dr. Brunton earned his medical degree at Monash University Medical School in Melbourne, Australia and completed his residency in family practice at Long Beach Memorial Medical Center in California. He is a board-certified family physician, with a certificate of added qualifications in geriatrics. As former president of the California Academy of Family Physicians and the Association of Family Medicine Residency Directors (AFMRD), Dr. Brunton has held many positions within the American Academy of Family Physicians (AAFP). He served as director of the division of education in the early 1980s and was a family practice residency director in California for 13 years. A frequent lecturer, Dr Brunton has published numerous articles, chapters, and monographs on family medicine and related clinical topics. He has served as a reviewer for *American Family Physician*, *Journal of Current Medical Research and Opinion* (*CMRO)*, *Southern Medical Journal*, *Expert Review of Endocrinology and Metabolism* and the *Journal of Family Practice.*

Davida F. Kruger, MSN, APN-BC, BC-ADM has been a certified nurse practitioner in diabetes at Henry Ford Health System in Detroit, MI, for more than 35 years. She earned her Master of Science in nursing degree from Wayne State University in Detroit and her Bachelor of Science in nursing from Boston College, in Boston, MA. Her role includes both clinical practice and research, and she is board-certified in both primary care and advanced diabetes management. Ms. Kruger has been a

co-investigator on numerous studies of diabetes interventions and care, including the National Institutes of Health (NIH)-funded multicenter EDIC and ACCORD trials. She lectures extensively throughout the United States on maximizing outcomes in diabetes and diabetes management. She is a past chair of the American Diabetes Association (ADA) Research Foundation and has served on the ADA Research Policy Committee. She is also an ADA past president, health care and education. She has published more than 50 abstracts, articles, and chapters on diabetes management and authored the 2006 second edition of *The Diabetes Travel Guide*. She has also served as editor-in-chief of two ADA journals, *Diabetes Spectrum* and *Clinical Diabetes*. She has been awarded: the Florence Nightingale Award for Excellence in Research, ADA's Rachmiel Levine Award for Distinguished Service, Award for Outstanding Service in Diabetes Research Funding, Wendell Mays Award, and 2017 Outstanding Educator in Diabetes Award; the 2014 Clara Ford Award for Nursing Excellence in Research and Education, the 2014 Wayne State University School of Nursing Alumna of the Year Award; and the 2017 International Diabetes Center Donnell Etzwiler Memorial Award.

Eden Miller, DO, a board-certified family physician, received her medical degree from Kirksville College of Osteopathic Medicine, Kirksville, MO, in 1997. She returned to her native Northwest to complete her residency in family practice at East Moreland Hospital in Portland, Oregon. Recently receiving certification in obesity management, she is the founder of Diabetes Nation, a nonprofit organization, and is CEO and a practicing physician at Diabetes and Obesity Care in Bend, Oregon.

Dr. Miller cultivated a special interest in diabetes after contracting type 1 diabetes while in medical school. Out of that personal experience, her practice has extended into a subspecialty of diabetes care. An impassioned speaker and advocate, Dr. Miller has given more than 1000 lectures in the field of diabetes to health care professionals and patients alike, on subjects such as diabetes management, CGM technology, insulin pump therapy, obesity, metabolism intervention, clinical research, and healthcare policy. Her adage for care is that she "only succeeds as a clinician if she turns patients into experts on their own disease." Dr. Miller believes that a "physiologic patient individualized approach to diabetes intervention is crucial to success."

Eugene Wright, MD, serves as consulting associate in the department of medicine of Duke University Medical Center. He has more than 40 years of clinical experience as a private practitioner, academic clinician and educator, medical administrator, physician in rural southeastern North Carolina and volunteer physician. Since 2018, he has worked with the Charlotte Area Health Education Center (AHEC) in performance improvement, in Charlotte, NC. Dr. Wright is also an associate editor of *Clinical Diabetes* and has worked with several advisory and editorial boards, including *Diabetes Technology and Therapeutics,* and as a content reviewer for *UpToDate*. Dr. Wright has served on the planning committee of the ADA's clinical conference since 2009. He served as the inaugural chair of the ADA Primary Care Interest Group and as a member of the ADA/AHA Know Diabetes by Heart Science Advisory Group. Dr. Wright has published several articles on diabetes diagnosis, treatment, and management and has presented at national and international meetings on new treatments and technology for diabetes. Dr. Wright has an undergraduate Bachelor of Science degree in electrical engineering from Princeton University and a medical degree from Duke University School of Medicine. He completed his internship and residency in Internal Medicine at Duke University Hospital in 1981.

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Summary Manuscript for "Using CGM & AGP for Clinical Decision-Making"

VIDEO ONE: Introduction

We're hearing more and more about continuous glucose monitoring (CGM) and the impact it is having on the lives of our patients with diabetes. Every year, there are more devices, with greater accuracy, and a longer life. Every year, coverage extends as all of us involved in the treatment of diabetes recognize that CGM needs to be STANDARD OF CARE for our patients with diabetes. In this video series, Using Continuous Glucose Monitoring for Clinical Decision-Making in Primary Care, we will provide a quick refresher on the available devices, accessing the data they produce, and using that data to make clinical decisions, in partnership with our patients – decisions that improve the lives of those patients.

Let's kick off this first segment by talking about the revolution in diabetes management that was introduced with continuous glucose monitoring.

It's quite clear that every patient with diabetes can benefit from continuous glucose monitoring, but we know that not every patient will have coverage, not every patient will be willing to try CGM, and some patients are in greater need of its benefits that others. Who do you consider most in need of CGM **(FIGURES ONE - TWO)**?

We have two types of FDA-approved CGM devices, personal (owned by the patient) and professional (owned by the clinician's practice). The list of FDA-approved personal CGM devices is shown in **TABLE ONE** (as of April 1, 2023).

Professional (clinic-owned) devices are very similar to the personal devices in some ways, but quite different in others. There are situations in which it is preferable to use a professional rather than a personal device **(FIGURE THREE). TABLE TWO** shows the FDA-approved professional devices as of April 1, 2023.

CGM is making an enormous difference in diabetes care, allowing us to make better, evidence-based clinical decisions in ways that just weren't possible before the advent of CGM. And these aren't decisions we're making on our own – these are decisions made in partnership with our patients, newly empowered by the real-world knowledge they gain from seeing the impacts of their behavior – and their environment – on their blood glucose. In our next segment, we'll take a look at the Ambulatory Glucose Profile or AGP, and its role in clinical decision-making.

Video Two: Accessing and Reviewing CGM Data

What is the AGP, how did it come to be, and what does it show us?

Davida Kruger: "About ten or twelve years ago we're all sitting in a big room, and the participants were individuals like myself who worked with insulin pumps, each of the insulin pump companies, the American Diabetes Association, the Endocrine Society and even the FDA. We came together and we said: 'Listen, we've got all of this information coming at us, but it looks crazy because every time I look at someone's continuous glucose monitor, I have different data staring at me and I have to wrap my head around that. What we want is what the cardiologists have with an EKG. It doesn't matter what brand because when the EKG prints out, everybody knows what that data means.' Over time, all the companies agreed that they would give us something that was consistent, no matter what device we were using, and that is the Ambulator Glucose Profile (AGP) **(FIGURE FOUR)**."

There are three sections on the AGP.

The first section is the metric, the values, the goals. That sections helps me figure out where our patient is with regards to our goals. We're usually looking for a time in range (TIR) of 70% or more, with less than 5% low blood sugar. We have goals for TIR, time above range (TAR) and time below range (TBR). This section also tells us how many days the sensor was worn. If there are only have two days of data, it's going to be difficulting to see patterns. The GMI (glucose management indicator), while not the same as the A1c, estimates what the A1c WOULD BE if the patient maintained this pattern of behavior over the entire time period measured by the A1c. This section also gives us a figure for glucose variability – how much the glucose values vary from high to low. Our goal for that number is less than 30, not a lot of highs and lows.

In the second section, the first thing you need to understand is that the AGP takes the data for a period of time (often ten to fourteen days) and presents it as if all those readings took place over 24 hours. It allows us to quickly see where we have patterns of lows and highs and provides us a visual representation of variability.

The third section is daily views. The daily views give us the opportunity to further refine what we've seen in section two, by looking closing at individual days. Are there problematic patterns that are only occurring on the

weekends? On particular days of the week? Does our patient have activities on those days only that are causing issues?

Each device has different mechanisms for ACCESSING the AGP information, and some devices offer an option for sharing data with family, caregivers, and clinicians **(FIGURES FIVE - EIGHT).**

What does the ideal section two of the AGP look like? In **FIGURE SIX**, below, the goals for the average patient with diabetes are illustrated, along with examples of various 24-hour representations from AGPS, with the best indicated with the arrow **(FIGURE NINE).**

There are clear goals for the AGP for our patients with diabetes, but the goals aren't the same for every patient. Some exceptions to the usual rules are shown below in **FIGURE TEN**.

Dr. Richard Bergenstahl has presented a series of steps to use in examining a patient's AGP, shown in **FIGURE ELEVEN**. Following those steps, the clinician can see an immediate hypoglycemia problem revealed in the sample AGP discussed earlier, as well as hyperglycemia issues and too much glycemic variability **(FIGURE TWELVE).**

We've learned that the AGP tells us so much more about our patient's struggles than any test that has been available to us in the past. It serves to educate both the clinician and the patient about areas for improvement in care, and areas of real and present danger for the patient, particularly in terms of hypoglycemia. In our next segment, we'll take a look at some case studies from real patients in our panelists' practices and see how access to the AGP has informed their clinical decision making.

Video Three: Case Studies

Our first case study involves a patient whose insurance does not cover personal CGM, but intermittent professional CGM is covered **(FIGURES THIRTEEN - FIFTEEN)**.

For this patient, the clinician will definitely be using professional CGM in the future to see the results of treatment changes.

Our next case study presents a patient who is close to A1c goal, but the AGP shows us a concerning number of instances of hyperglycemia **(FIGURES SIXTEEN-EIGHTEEN)**.

Our third case studies follows a patient through several AGPS over the course of six months **(FIGURES NINETEEN - TWENTY-TWO)** The patient has an average glucose of 207 mg/dL, and a lot of work stress. Here, Dr. Miller plans a strategy for improvement glycemic control that we follow over time.

In summary, we've illustrated in this segment what we talked about in the 2nd segment – the AGP tells us SO MUCH MORE than we've ever known before and creates an exciting opportunity to empower our patients and work with them more meaningfully to reach target goals. So now that you KNOW what CGM makes possible. How do you get your office on board and making the most out of continuous glucose monitoring? We'll address those concerns in the 4th segment – Practical Implementation Within Your Office.

Video 4: Practical Implementation Within Your Office

In this segment, we're looking at practical approaches to creating a CGM workflow in your practice environment.

Our panelists today have all been intimately involved in not only educating other clinicians on the benefits of CGM, but in setting up CGM workflows in their own practices.

Getting your colleagues excited about CGM can be a challenge. However, Dr. Wright points out that, in addition to the benefits that we see for our patients with increased engagement and increased involvement in the management of their diabetes, these reports save the clinician time, allow for better evidence-based decision-making AND you get paid for it! People do need to be educated, and that does require some work for the practice, but, in the long run, CGM will save you time. CGM is an investment that really pays off.

Dr. Miller describes recently setting up her own clinic and making CGM part of the foundation of the structure. "You have to be prepared to create a work flow in the clinical practice. This is one of my favorite things to discuss, because I want to make sure to break down those barriers to overcome the inertia that may slow progress. The first thing you must do as a clinic is decide that you are going to incorporate CGM into your practice. You can choose to work with one or more specific devices or be knowledgeable about all of them. You want to identify and create the team members who need to be involved. Identify a diabetes champion, someone well-versed in all aspects of CGM **(FIGURE TWENTY-THREE)**. You'll have front and back-

office tasks to make sure that reports are available and reviewable prior to the patient visit **(FIGURE TWENTY-FOUR)**. Remember we have a resource toolkit that we'll provide a link to at the end of the webinar and that will have very helpful resources for you to set up an effective CGM workflow."

Once your office is set up and you are prescribing CGM, inserting devices, and interpreting CGM data, there are billing codes, separated by professional and personal devices that will be crucial to getting your practice CGM workflow paid for **(FIGURE TWENTY-FIVE and TABLE THREE)**.

Dr. Wright reminds participants that CGM satisfies the QUADRUPLE AIMS in medicine: lower costs, better outcomes, and improved clinician and patient experience **(FIGURE TWENTY-SIX)**.

Dr. Stephen Brunton: "I'm sure you've all gotten the point that continuous glucose monitoring really is a revolutionary tool in diabetes management and it is absolutely something that you can learn to work with. Have we discussed everything you'd like to know? Well, that would be pretty much impossible in a single hour, so let me draw your attention to a resource toolkit you'll find at the Primary Care Metabolic Group website. Not only do we have links to every resource mentioned here, as well as separate linked pages for every device mentioned here, but we also offer videos with more AGP case studies, and links to additional articles covering everything from cost comparisons to actual device insertion. You can also download a PDF of these slides. The resource toolkit isn't just designed to be used in conjunction with this webinar series, but also, you can easily look back whenever you have a question about continuous glucose monitoring. We hope you'll take advantage of it."

A link and a QR code for the resource toolkit are provided in **FIGURE TWENTY-SEVEN.**

END

Shouldn't 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, but there are some patients who benefit MORE, and who are likely to have insurance coverage.
  - Patients on insulin, particularly multiple daily injections, or those using an insulin pump
  - Patients with "problematic" hypoglycemia *(On October 6, 2022, The Centers for Medicaid and Medicare Services (CMS) published a proposed local coverage determination (LCD) that modifies the coverage criteria for continuous glucose monitors (CGM) to include people with diabetes who have a history of problematic hypoglycemia.) ICD-10-CM Diagnosis Code E16.2*
  - Patients with co-morbid conditions, who struggle with glycemic control

Every year, coverage is expanding as CGM becomes more and more the standard of care for patients with diabetes.

FIGURE TWO

More of your patients qualify under Medicare

- As of April 16, patients with diabetes qualify for Medicare coverage if…insulin treated or with a history of problematic hypoglycemia with documentation of either
  - •Recurrent (more than one) level 2 hypoglycemic events (glucose <54mg/dL (3.0mmol/L)) that persist despite multiple (more than one) attempts to adjust medication(s) and/or modify the diabetes treatment plan; or,
  - •A history of one level 3 hypoglycemic event (glucose <54mg/dL (3.0mmol/L)) characterized by altered mental and/or physical state requiring third-party assistance for treatment of hypoglycemia

FDA-Approved Personal CGM Devices

TABLE ONE

	Abbott FreeStyle Libre 14-day/2/3	Dexcom G6 G7 approved by FDA 12/8	Medtronic Guardian Sensor 3 (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 ≥2 fingerstick calibrations/d
Age	≥18 y/≥2 y/≥2 y	≥2 y	≥14y	≥18 y
Medicare coverage	Yes/Yes/Not Yet	Yes	Sensor 3: Yes; Connect: No	Yes
Wear length	14 d/2 & 3 up to 15 ds	10 d/10 d + 12 hr	7 d	90/180 d
Warm-up	1 hr	2 hr/up to 30 min	2 hr	24 hours after implementation
Alarms	No/Yes/Yes	Yes	Yes	Yes
Data Display/ Integration	Reader; Android and iPhone apps; 2 & 3 approved for integration with automatic insulin delivery systems.	Reader; Android and iPhone apps; smartwatches; Tandem t:slim X2 pump, Omnipod 5.	Reader; Android and iPhone apps; 630G, 670G or 770G pump; Guardian Connect	Android and iPhone apps
Form	Disposable transmitter integrated with sensor patch	G6: Transmitter (3-month use) separate from sensor/G7 integrated	Transmitter (rechargeable) separate from sensor	Transmitter (rechargeable) separate from sensor
Accuracy* (lower numbers are more accurate)	11.4%/9.3%/7.9%[1]	9%/8.2%[1]	9.6%/9-11%[1]	8.5%-9.5%[1]
Expense[2]	Least expensive	2nd most expense	2nd least expensive	Most expensive

*Accuracy measured by MARD (mean absolute relative difference) relative to **VENOUS** glucose. Lower numbers indicate a more accurate device.

[1]Accuracy figures provided by manufacturers.

[2]What is a CGM and how do I choose one? Healthline Diabetes Mine. Updated December 14, 2021. Accessed February 12, 2023. https://www.healthline.com/diabetesmine/ what-is-continuous-glucose-monitor-and-choosing-one

FIGURE THREE

Which CGM is best for the person?

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 varying lengths depending on model, then data can be downloaded for retrospective review

Personal CGM

- Patient-owned device that can be used on a daily basis
- Can be stand-alone or linked to other compatible devices
- Glucose values are visible and actionable
- Sensor worn for 7, 10, 14 days or 180 days for implanted device

Professional CGM[1]

TABLE TWO

	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]

While information on the Medtronic system is still available online, it does not appear to be available for acquisition at this time.

[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.

FIGURE FOUR

The Ambulatory Glucose Profile (AGP)

1. **Metrics, Values, Goals**
   Summary of values to help assess the overall quality of glucose management

2. **AGP Profile**
   Shows all values as if collected over a single 24-hour period. Shows variability in the mean glucose and patterned areas of highs and lows.

3. **Daily Views**
   Shows daily values – helpful in determining causes of patterns or exceptions to usual patterns.

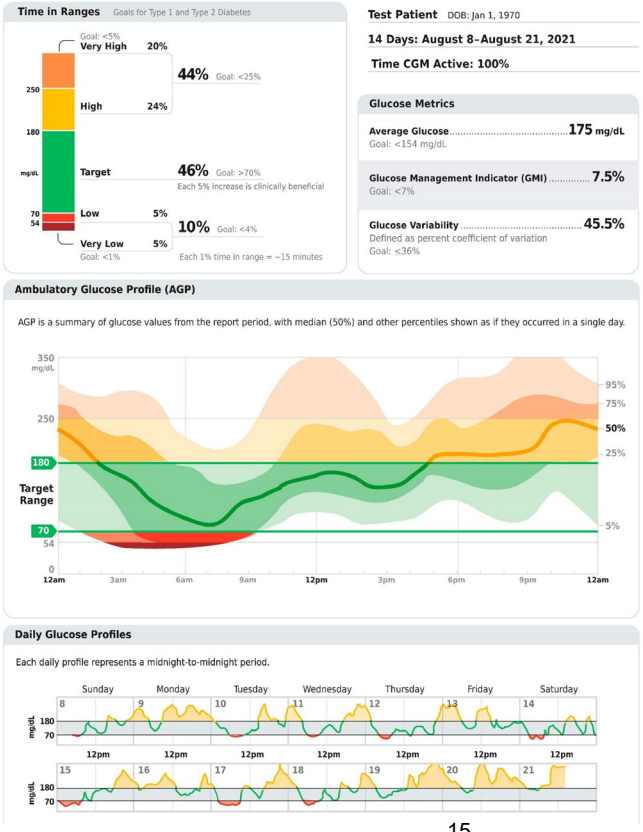

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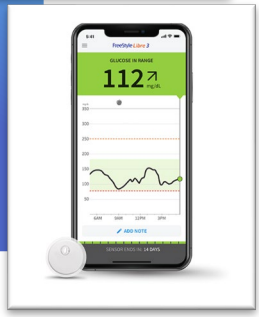
FIGURE FIVE

Freestyle Libre 14-day/2/3

+ Libre 14 days (LibreLink) and Libre 2/3 sensor phone-based apps IOS/Android
+ *Linkup* for family/friends
+ *Libre View* for download reports Libre 14 day and Libre 2/3

Libre Link Libre LinkUp



The latest Libre View offers the GLUCOSE PATTERN INSIGHTS REPORT (GPI), designed to help you identify and treat trouble spots in the AGP.

Dexcom G6/G7

+ Dexcom iOS and Android apps for data
+ *Share* for family/friends
+ Clarity for download reports

Medtronic Guardian

+ Phone based data apps
+ Guardian System with *Connect* for family/friends and Carelink software for downloading reports

Senseonics Eversense

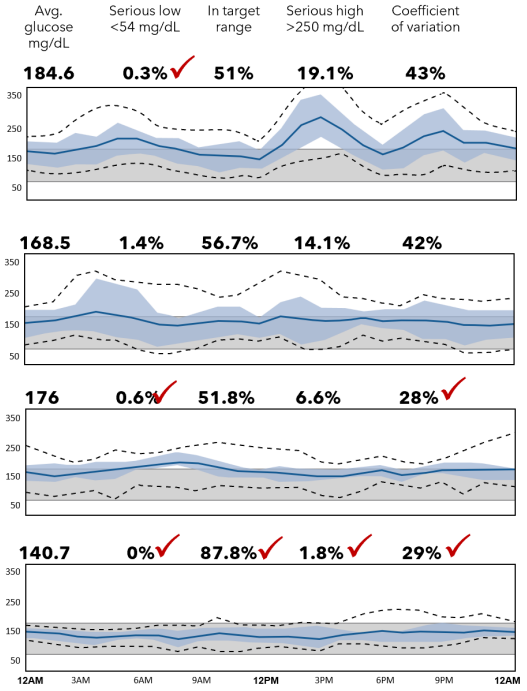
+ Eversense Mobile App iOS and Android
+ Download user data at https://pro.eversensedms.com

The Ideal Ambulatory Glucose Profile

Desired Targets*[1]

- Time in range (TIR) (70-180 mg/dL): >70%
- Time below range (TBR):
  <70 mg/dL: <4%
  <54 mg/dL: <1%
- Time above range (TAR):
  >180 mg/dL: <25%
  >250 mg/dL: <5%
- Coefficient of variation (glucose variability): <36%

*For most adults with T1DM or T2DM and age 25-65 y



Not flat, not narrow, not in range

Flat, not narrow, not in range

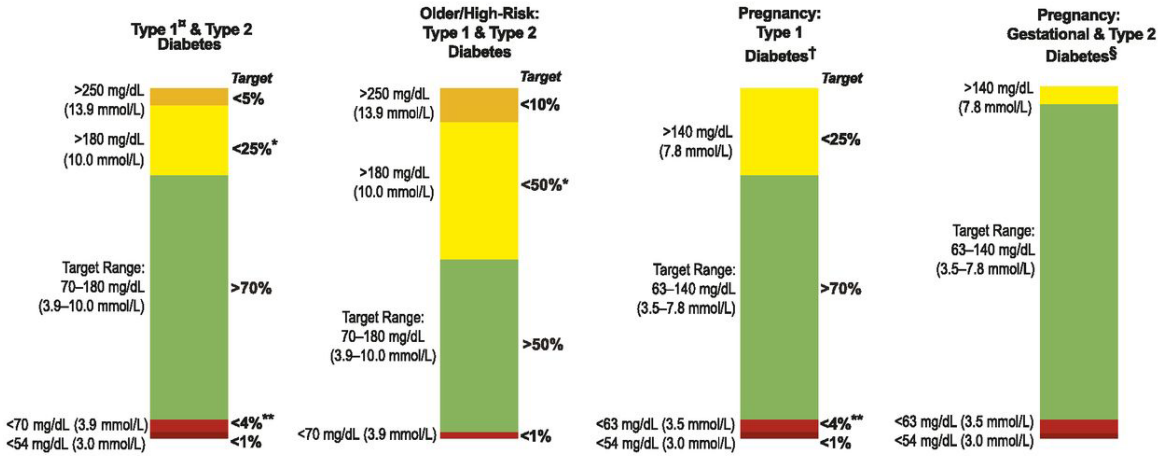
Flat, narrow, not in range

Flat, narrow, and in range!

1. Battelino T, et al. *Diabetes Care*. 2019;42:1593-1603.
2. With permission of Richard Bergenstal, MD, International Diabetes Center

FIGURE TEN

Not all patients have the same TIR goals



¤ For age <25 yr., if the A1C goal is 7.5%, then set TIR target to approximately 60%. (See *Clinical Applications of Time in Ranges* section in the text for additional information regarding target goal setting in pediatric management.)
† Percentages of time in ranges are based on limited evidence. More research is needed.
§ Percentages of time in ranges have not been included because there is very limited evidence in this area. More research is needed. Please see *Pregnancy* section in text for more considerations on targets for these groups.
* Includes percentage of values >250 mg/dL (13.9 mmol/L).
** Includes percentage of values <54 mg/dL (3.0 mmol/L).

Battelino T, et al. *Diabetes Care*. 2019;42:1593-1603.

Steps to Interpret the AGP

1. Check for adequate data.
2. Mark up the AGP, noting factors affecting management.
3. Ask the patient "What do you see?" Listen.
4. Look for patterns of low blood glucose levels.
5. Look for patterns of high blood glucose levels.
6. Look for areas of wide glucose variability.
7. Compare to past AGP and reinforce successful strategies.
8. Agree on an action plan with the patient.

The Ambulatory Glucose Profile (AGP)

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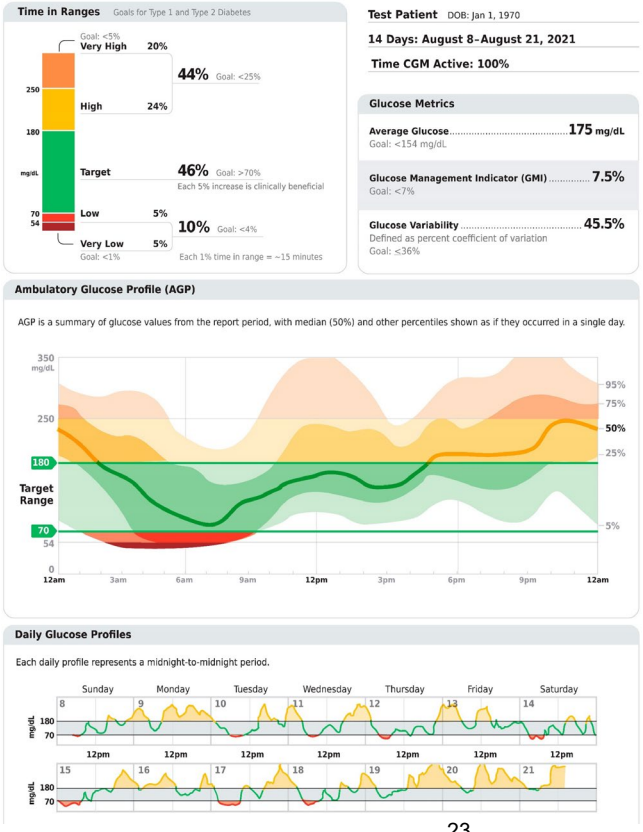

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FIGURE THIRTEEN

Case Study One

Patient Current Medical History

- No insurance coverage for CGM
- 62 year old white woman
- Type 2 diabetes 22 years
- Hypertension, Elevated lipids, CKD
- Fingerstick Data: Reports FBS 140-160 range, Bed Bg 180 range, no data brought to clinic, no meter to upload, not sure what is happening before meals to guide insulin
- Hypoglycemia: denies
- A1c: 8.4 %

Current Medications (with comments)

- Basal Insulin 42 units 9 PM
- Meal time insulin: Prescribed based on BG and Carbohydrate intake, (unsure if being taken)
- Sglt-2 inhibitor
- Metformin XR 1000 M daily
- Does not tolerate GLP1 RA

FIGURE FOURTEEN

Case Study One

(cont)

- Professional CGM (covered)

What do we see?

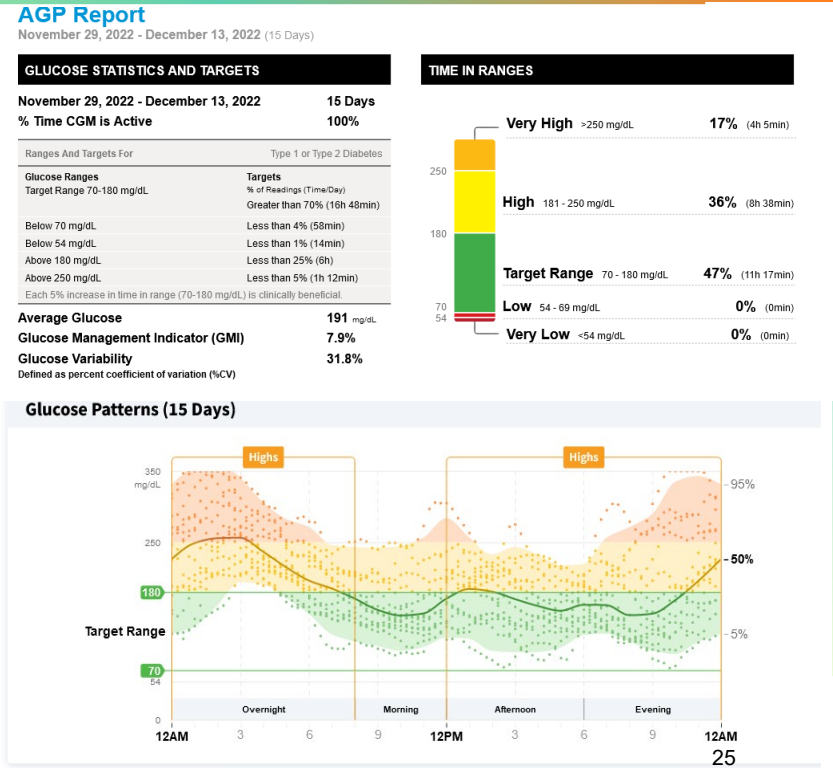


FIGURE FIFTEEN

Case Study One (cont)

The Plan

- Encourage patient to take all insulin as prescribed
- Increase basal insulin to 46 units, consider a longer acting basal insulin
- Mealtime insulin: Patient not doing BG before meals and typically omitting insulin. Provide a set dose of insulin for each meal
- Continue: Sglt2 inhibitor, Metformin XR 1000 M daily
- Discuss GLP1 and consider again with more education and nutrition counseling

FIGURE SIXTEEN

Case Study Two

Patient Current Medical History

- 56-year-old black male
- Type 2 diabetes 14 years
- History of hypertension, elevated lipids - both well controlled
- Returns for 3 month follow up
- Weight: BMI 29
- A1c 7.6 % (goal <7% with >70% TIR and <5% low BG)

Present Medications

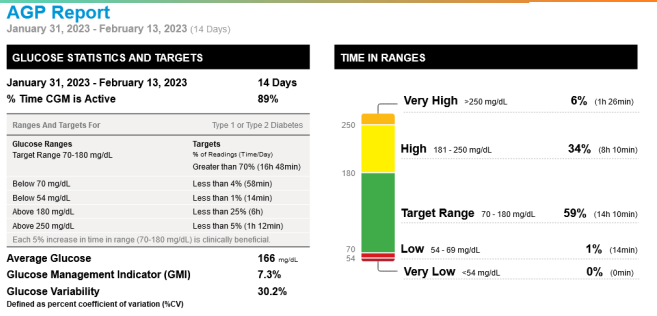
- Daily GLP-1 at max dose tolerated
- Metformin 1000mg daily (max tolerated)
- Sglt2 Inhibitor

FIGURE SEVENTEEN

Case Study Two

(cont)

What do we see and what do we try to fix first?



AGP Report

January 31, 2023 - February 13, 2023 (14 Days)

GLUCOSE STATISTICS AND TARGETS

January 31, 2023 - February 13, 2023	14 Days
% Time CGM is Active	89%

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	166 mg/dL
Glucose Management Indicator (GMI)	7.3%
Glucose Variability Defined as percent coefficient of variation (%CV)	30.2%

TIME IN RANGES

Very High	>250 mg/dL	6% (1h 26min)
High	181 - 250 mg/dL	34% (8h 10min)
Target Range	70 - 180 mg/dL	59% (14h 10min)
Low	54 - 69 mg/dL	1% (14min)
Very Low	<54 mg/dL	0% (0min)

250 180 70 54

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.

Daily Patterns

January 31, 2023 - February 13, 2023 (14 Days)

LibreView

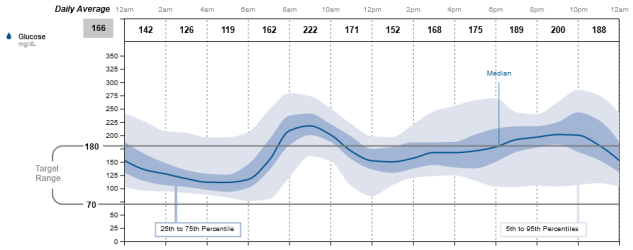


FIGURE EIGHTEEN

Case Study Two (cont)

The Plan

- A1c goal <7% with >70% TIR and <5% low BG
- Switch to a once weekly GLP-1
- Refer for Medical Nutritional Therapy and Diabetes Education
- Continue 1000mg Metformin
- Continue SGLT2 inhibitor
- Advise patient that while we are connected in the cloud I will not look at CGM data unless asked
- Patient asks me to look at data 2-4 weeks after change in GLP1
- May need basal insulin, decide after once weekly GLP1 titrated
- Return 3 months

FIGURE NINETEEN

Case Study Three

Patient Current Medical History

- 60-year-old female
- Breast Cancer
- Hypertension
- Hyperlipidemia
- BMI 40.3, 265# 68”
- A1c 10.7%
- Insulin Degludec 45 units in AM
- Dapagliflozin 10 mg QD
- Metformin 1000 mg BID
- Patient works nights at care home and has some stress at work

In Office…

- Applied continuous glucose monitor
- Patient was to be mindful of the effects of food on glucose and make notes of these times
- Advised patient to titrate insulin initially to AM glucose of less than 200 mg/dl
- Addition of .75 Dulaglutide sub Q weekly
- She will return in 2 weeks for first review of AGP (Ambulatory Glucose Profile)

FIGURE TWENTY

Case Study Three (cont.)

1st AGP Report (2 wk. follow-up)

- First FU appt after CGM application
- Patient reports learning the effects of food on glucose levels
- She has been slowly increasing the insulin one unit ever 3 days and is up to 49 units
- Her AM glucose is still above target range
- She has noticed her glucoses falling much more now after meals

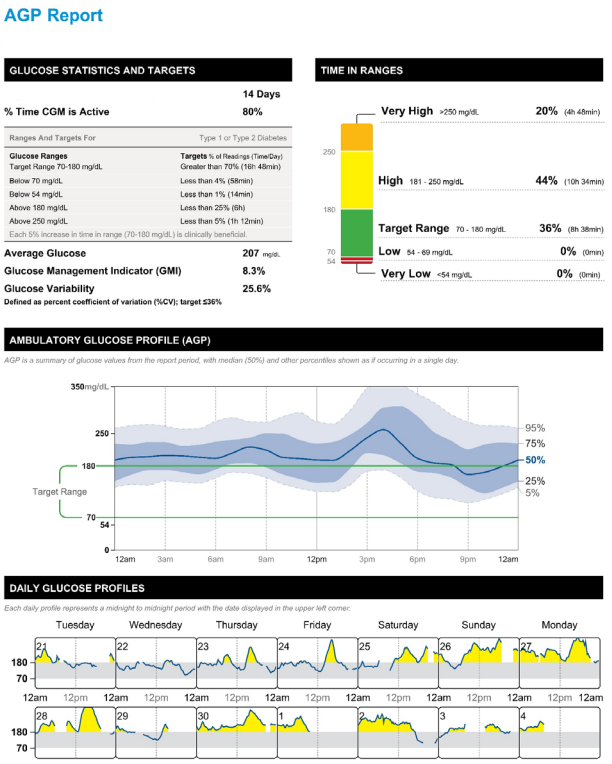


FIGURE TWENTY-ONE

Case Study Three (cont.)

2nd AGP Report (3 mo. follow-up)

- Insulin Degludec up to 52 units
- Weight loss 10 #
- BMI 38.6
- A1c is 7.6%
- Tolerating 1.5 Dulaglutide weekly
- Learning foods effect on glucose
- Note GMI 7.4%
- Some dawn phenomenon
- AM scan around 150 mg/dl
- Still some data gaps and scanning needed.
- She indicates this sometimes can be hard when at work
- Advised to further increase Dulaglutide to 3mg weekly
- Continue target long acting try for less then 140 or near 120
- FU appt in 3 mos

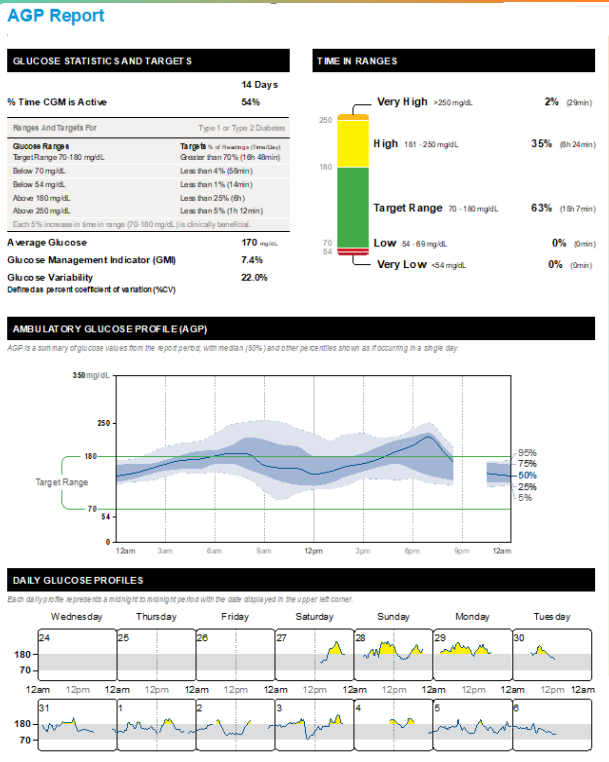


FIGURE TWENTY-TWO

Case Study Three (cont.)

3rd AGP Report (5 mo. follow-up)

- Current a1c 6.9% GMI is 7.0%
- Insulin Degludec at 52 units
- Dulaglutide increase prior to follow up is now at 4.5mg weekly as she called and noticed post meal glucoses over 200
- BMI 37.2
- Additional 4# weight loss
- Total weight loss 14#
- Watching her food and trying to lose additional weight
- Additional engagement and scanning needed
- Discussion switching to another device by the same manufacturer for streaming capability

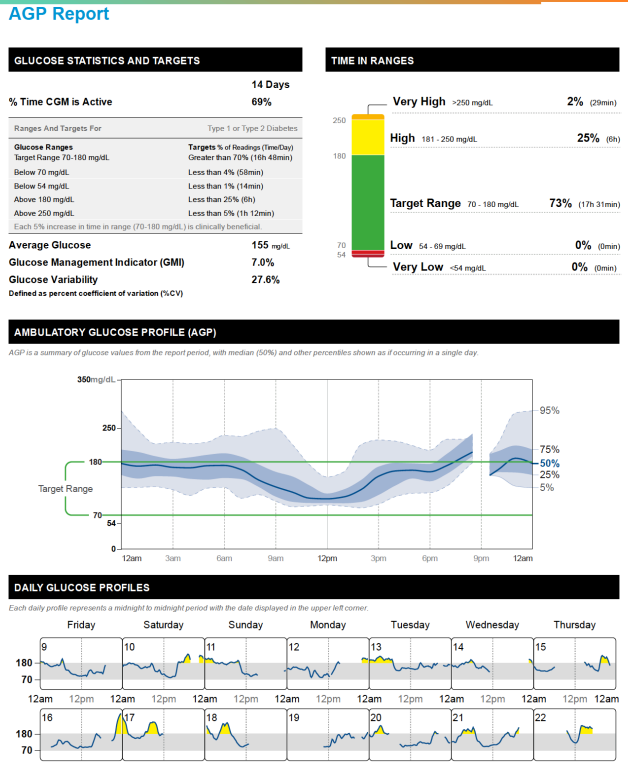


FIGURE TWENTY-THREE

How do you get your practice ready?

Make a clinic decision for CGM utilization

Create Team Diabetes-CGM

Identify a Diabetes Champion

Determine which systems to integrate

Gain additional initiation support through online resources or representatives

Create a workflow that works for you and your staff

FIGURE TWENTY-FOUR

Preparing your colleagues/staff

The Front Office

- Reminder calls with encouragement to collect additional data (food/exercise/stress/meds)
- Collect devices
- Get staff started on data access (can be before appointment or when patient shows up with devices)

The Back Office

- Familiar with all CGM systems used
- Have set up a clinic log-in profile
- Able to access the AGP for all systems
- Download data and upload to chart at or prior to appointment

FIGURE TWENTY-FIVE

Prepare for billing

Who owns the equipment?

Patient or Provider: Unique codes for each

Service occurs > 1 day

Minimum of 72 hours of wear

Download of receiver occurs in office, cloud based printed out, or electronic transfer

Service can be charged at the day of download or time of analysis

Interpretation of data

Minimum of 72 hours of wear time

Face to face is not required, CPT stand alone or with E&M Code

Limitations of who can bill: Physician, NP, PA (those who can prescribe)

CODES & DESCRIPTIONS

TABLE THREE

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 and printout of recording (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:

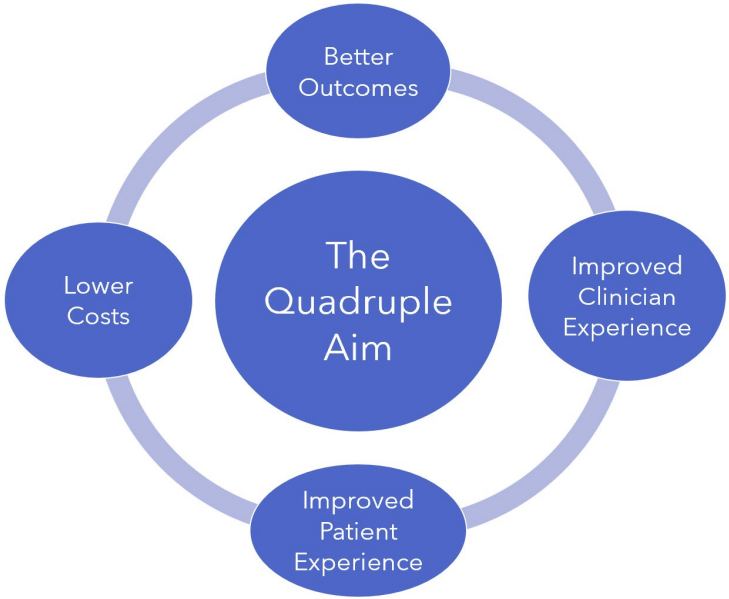
Ambulatory continuous glucose monitoring of interstitial tissue fluid via a subcutaneous sensor for a minimum of 72 hours; interpretation and report (Do not report more than 1x/m)

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)



Bodenheimer T, Sinsky C. From Triple to Quadruple Aim: Care of the Patient Requires Care of the Provider. Ann Fam Med, Nov 2014;12(6):573-576. DOI: 10.1370/afm.1713.

FIGURE TWENTY-SEVEN

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