



Optimizing the Telehealth Diabetes Visit: Glucose Monitoring Data

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Managing diabetes via telehealth has positive benefits on A1C, body mass index, quality of life, and other outcomes,^{1,2} particularly when used in conjunction with automatic mobile transmission of data or real-time feedback to patients.³

However, there are disparities by age, geography, socioeconomic status, and race/ethnicity in access to video visits.⁴ Patients need access to a reliable internet connection, a device with a webcam, and must have adequate digital literacy to conduct the visit. The additional skills and infrastructure needed to transmit glucose data could further magnify gaps in outcomes among at-risk populations. Therefore, it is critical to conduct appropriate planning and capacity building for patients and primary care teams to facilitate successful telemedicine encounters for patients with diabetes.

Methods of Glucose Monitoring and Interpretation of Data

Methods of glucose monitoring and glucose targets are discussed in detail in the Cardi-OH resource, [Beyond the A1C: Targets for Blood Glucose and Methods of Measurement](#).

Self-Monitored Blood Glucose (SMBG)

Patients not on insulin therapy may benefit from periodic structured monitoring if there is a plan to use the information or provide feedback.⁵ Patients requiring insulin should test more regularly, including before and occasionally after meals, at bedtime, during symptoms of hypoglycemia or hyperglycemia, and prior to physical activity. For examples of approaches see the [Diabetes QIP Toolkit](#).

An approach to interpretation of SMBG data is shown in Figure 1.

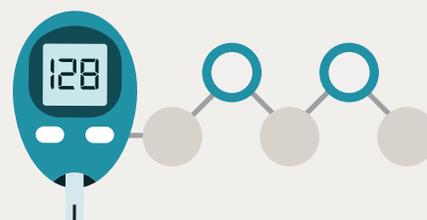


Figure 1. Blood Glucose Pattern Management

1. Review medication-taking behaviors.
2. Assess presence and timing of meals and snacks, particularly overnight.
3. Evaluate patterns related to physical activity or work.
4. Address hypoglycemia. If hypoglycemia occurs overnight or with skipped meals, reduce basal insulin or sulfonylurea.
5. Address morning glucose. If morning glucose is consistently above goal without snacks, increase basal insulin.
6. Assess other meals, particularly the largest meal of the day. Ascertain whether glucose values are pre- or post-meal.
7. Additional recommendations are available on the [Cardi-OH website](#).
8. If there is no pattern, get more data.

Continuous Glucose Monitoring (CGM)

Consider patient-owned CGM if the patient requires multiple injections of insulin per day or has hypoglycemia. CGM can be considered for other patients if cost and insurance coverage are not a barrier.

To review CGM, follow similar principles for SMBG above. In addition, the **Ambulatory Glucose Profile (AGP)** is a standardized report that displays 14 days of glucose data.⁶⁻⁹ Key components of the AGP include:

- **Percent Time in Range (TIR) 70-180 mg/dL:** As with A1C, the TIR goal should be individualized based upon age, comorbidities, and hypoglycemia risk (Table 1).
- **Glucose Management Indicator (GMI):** The GMI is valuable for estimating A1C (requiring 14 days of data).

Recommendations and Considerations for Data Sharing

The following is meant to provide an overview of a general approach to telehealth. A formal process for implementing remote glucose monitoring within a clinic is recommended.¹⁰ Clinics may choose to focus on one or two devices or platforms, especially as they roll out telehealth diabetes visits. Remote monitoring reimbursement codes can also be considered for device setup (99453 or 99454), staff communication (99457-8), and physician/advanced practice provider interpretation of digital data (99091 for SMBG, 95251 for CGM) to support the process of setting up remote monitoring. For details on conducting a successful telehealth visit, see the **Diabetes QIP Toolkit** (pages 16 & 43). **Additional Resources** on team-based care and digital literacy are available at the end of this document.

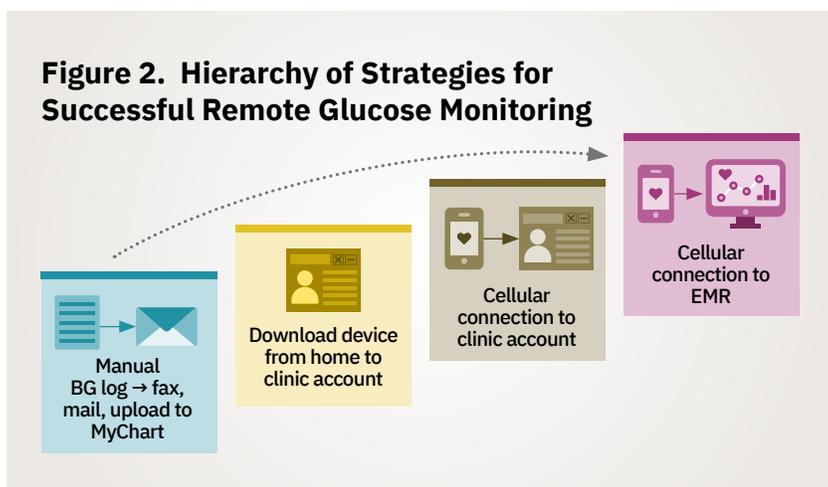
All clinical team members can play a role in ensuring the success of data collection.

- **Schedulers:** Provide glucose logs or standardized device-specific instructions.
- **Diabetes Clinicians and Providers:** Certified diabetes care and education specialists (CDCES), pharmacists, or other trained staff can assess patient readiness and barriers, set up apps and connections on a patient's phone, and train patients on how to download devices or connect to clinic accounts.¹⁰
- **Nurses/Medical Assistants:** A pre-call with a patient reduces the frequency of a failed video visit by half.⁴ A nurse or medical assistant can ensure that glucose monitoring data is obtained in advance of a visit.

Table 1. CGM and A1C Goals

A1C Goal (%)	7	7.5	8
% TIR 70-180 mg/dL	>70	>60	>50
% Time below 70 mg/dL	<4	Not specified	<1

Figure 2. Hierarchy of Strategies for Successful Remote Glucose Monitoring

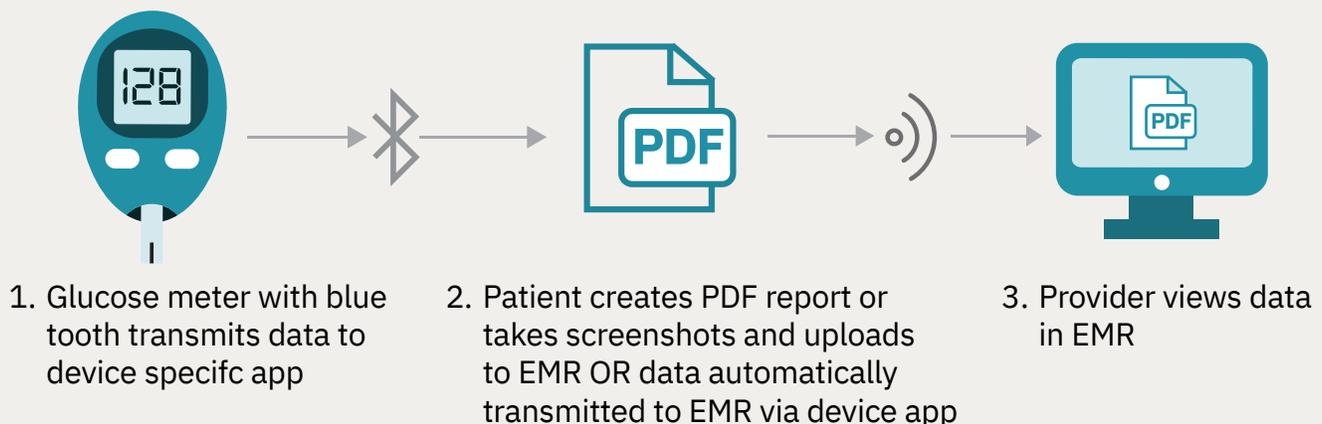


How to Remotely Share Glucose Data

The following methods of sharing data (Figure 2) are useful for virtual visits and may also be useful for streamlining in-person visits. See [Additional Resources](#) below for specific applications.

- **Patient Recall:** This method is the least reliable. If the patient is not able to send data, staff should record one week of values from the meter memory to a standard template prior to the telehealth visit.
- **Glucose Logs:** Logs that organize data in tabular format by date and time of day are preferred.
 - **Written logs:** Patients can take a picture and send electronically or mail/fax to the clinic.
 - **Apps:** Patients can collect data about medications, blood glucose values, and meals that can be saved and shared with the team as a PDF or screenshots.
 - **Patient Portal:** Many electronic medical record (EMR) systems have a portal where patients can manually enter SMBG data into a flowsheet. Ordering providers may be able to set up inbox notifications at regular intervals to review data or thresholds for more timely notification of high or low values.
- **Device Downloads:** Downloading patient data from a device helps to eliminate errors and missing data and facilitates faster, more accurate analysis.¹¹
 - **Connected Meters (Figure 3):** Ohio Medicaid covers glucose meters that link via Bluetooth to the patient's mobile phone (OneTouch Verio Flex® or Reflect®).¹² Patients can generate a screenshot or upload a PDF of reports to a patient portal. EMRs can connect certain devices directly to the glucose flowsheet via an intermediary service such as Apple HealthKit (Figure 3).¹³
 - **Device Agnostic Platforms:** Numerous platforms provide the ability to download and integrate data from multiple devices and organize data into standardized reports, facilitating efficient interpretation of data.¹⁴ Platforms vary in features, including cost, availability of a mobile application, and ability to integrate within the EMR. Tidepool is a free web service and app compatible with over 50 diabetes devices. Patient data PDF reports can be generated and downloaded (Figure 4) from a website or dedicated software. A mobile app can be used to add meals, exercise, and other events that will be displayed with glucose monitoring data.

Figure 3. Steps for Transmitting Connected Glucose Meter Data to the Clinic



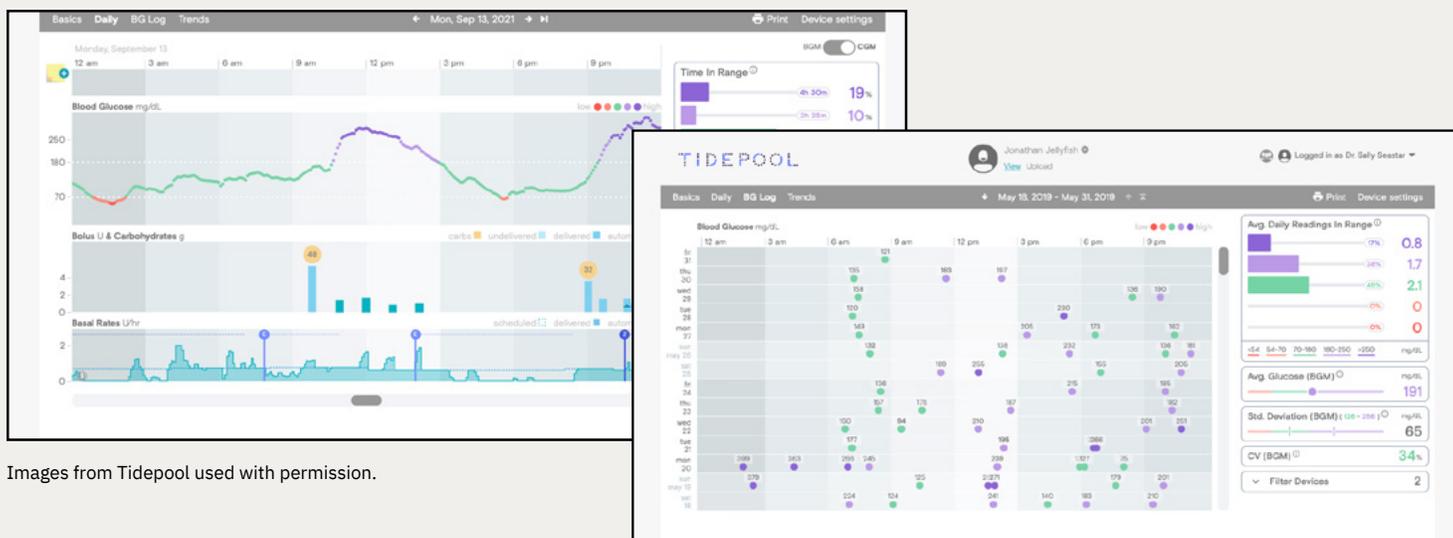
- **Cellular Glucose Monitors:** These monitors directly transmit data to a patient or clinic dashboard, allowing data transfer without the need for a smartphone.¹⁴
- **Continuous Glucose Monitors:** Several continuous glucose monitors are approved by the U.S. Food and Drug Administration (FDA) and most can transmit data via a mobile app to a device-specific clinic account.¹⁴ The following devices are covered under Ohio Medicaid:
 - FreeStyle Libre: Data can be shared with the provider via a mobile app or by connecting the reader to a computer using a USB cable. The clinic can send an invitation email that guides the patient through the process or provide a clinic code for manual entry.
 - Dexcom CLARITY: Data can be shared automatically via an app or computer download, depending on whether the patient is using a smart phone or the receiver to view data. The clinic can generate a patient-specific code and share via email, or the patient can generate his/her own code that is good for up to one year.

Future Directions

The current process for obtaining glucose monitoring data generally involves multiple steps, and there are no options to directly link data from a device to the EMR.¹⁵ Glucose monitoring devices that can link directly to a mobile phone show the most promise in this regard. In low resource populations, there is an opportunity to leverage CDCES support¹⁰ and community health workers¹⁶ to assist with collection of glucose monitoring data. Additional research is needed to optimize workflows within primary care practices. While improvements are implemented to streamline data sharing from home monitoring devices, a preplanned team approach can optimize data acquisition.

It is important to be aware that the FDA does not regulate all mobile medical applications. The FDA only regulates mobile applications that are considered medical devices, meaning they deliver clinical outcomes. In addition, patients should only use diabetes management devices authorized by the FDA in the United States and only use them for their intended purpose according to manufacturer instructions.^{17,18} Concerns remain about information security and data sharing but there is limited evidence from clinical trials about how this is addressed thus representing an important opportunity for additional research.¹⁹

Figure 4. Glucose/Insulin Report from Tidepool



Images from Tidepool used with permission.

Additional Resources

- **The American Association of Diabetes Educators**
diabeteseducator.org/practice/practice-tools#educatorguidance
- **The American Diabetes Association Education Library** (See worksheets, including All About Blood Glucose, Blood Glucose Log, Tracking Blood Glucose, Checking Blood Glucose, Low Blood Glucose).
professional.diabetes.org → Diabetes Educators → Patient Education Library (search for “Blood glucose log”).
- **Remote Patient Monitoring Information**
 - **Final Policy, Payment, and Quality Provisions Changes to the Medicare Physician Fee Schedule for Calendar Year 2021**
cms.gov/newsroom/fact-sheets/final-policy-payment-and-quality-provisions-changes-medicare-physician-fee-schedule-calendar-year-1
 - **Proposed Policy, Payment, and Quality Provisions Changes to the Medicare Physician Fee Schedule for Calendar Year 2021**
cms.gov/newsroom/fact-sheets/proposed-policy-payment-and-quality-provisions-changes-medicare-physician-fee-schedule-calendar-year-4
 - **FAQs on Coding and Billing for 99091 and 99457**
endocrine.org/-/media/endocrine/files/advocacy/qpp-macra-documents/2021-summary-and-final-rules/faqs-on-coding-and-billing-for-99091-and-99457.pdf
 - **Navigating Digital Medicine Coding and Payment**
ama-assn.org/system/files/2018-12/playbook-resources-step-5-coding-payment-REV1.pdf
- **Tidepool**
 - **Getting Started Tips for Clinicians**
support.tidepool.org/hc/en-us/articles/360040762292-Getting-Started-Tips-for-Clinicians
 - **Sharing your Data (Patient Instructions)**
support.tidepool.org/hc/en-us/articles/360029684951-Sharing-your-Data
- **FreeStyle LibreView Website and LibreLink App**
 - **Learn How to Remotely Share Glucose Data from your FreeStyle Libre 14-Day Reader with Your Healthcare Provider**
provider.myfreestyle.com/content/dam/adc/myfreestyle-hcp/provider/images/cgm-resources/pdf/Reader%20Upload%20to%20LibreView%20for%20Patients_ADC-20985%20v1.pdf
 - **Clinic Set-Up and Data Sharing**
[provider.myfreestyle.com/content/dam/adc/myfreestyle-hcp/provider/images/cgm-resources/pdf/You Can Do It Remotely_Remote Patient Monitoring Guide for Practices_ADC-20721 v1.pdf](https://provider.myfreestyle.com/content/dam/adc/myfreestyle-hcp/provider/images/cgm-resources/pdf/You%20Can%20Do%20It%20Remotely_Remote%20Patient%20Monitoring%20Guide%20for%20Practices_ADC-20721%20v1.pdf)
 - **Patient Instructions**
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- **Dexcom Clarity**
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 - **Clinic Set-Up and Data Sharing**
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 - **With a Clinic Code**
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 - **Without a Clinic Code**
dexcom.com/faqs/how-do-i-share-data-with-my-clinic-using-dexcom-clarity-app
- **Cardi-OH**
 - **Beyond the A1C: Targets for Blood Glucose and Methods of Measurement:** A1C targets and results interpretation and glucose monitoring methods.
cardi-oh.org/best-practices/diabetes-management/beyond-the-a1c-targets-for-blood-glucose-and-methods-of-measurement
 - **Diabetes Quality Improvement Project (QIP) Toolkit:** change principles and best practices to achieve optimal management.
cardi-oh.org/qip/diabetes/toolkit
 - **Hypertension Management: Tips for Telehealth:** helpful tips for clinicians to manage patients' hypertension in a telehealth visit.
cardi-oh.org/best-practices/hypertension-management-tips-for-telehealth
 - **Using Team-Based Care to Increase the Use of Home Blood Pressure Monitoring (HBPM):** tips to leverage the team-based care model to increase the use of HBPM by patients.
cardi-oh.org/capsule/using-team-based-care-to-increase-use-of-home-blood-pressure-monitoring
 - **Utilizing Huddles to Improve Team-Based Care:** descriptions of different types of huddles in clinical practice and suggested strategies for successful implementation
cardi-oh.org/best-practices/effectice-teams/utilizing-huddles-to-improve-team-based-care
 - **Optimizing Telehealth for Diabetes Care (podcast)**
cardi-oh.org/podcasts/18-optimizing-telehealth-for-diabetes-care
 - **Hypertension Management in the Era of Telehealth (podcast)**
cardi-oh.org/podcasts/3-hypertension-management-in-the-era-of-telehealth

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