Continuous Glucose Monitoring (CGM)

Components of the CGM

There are three basic parts of a continuous glucose monitor system. These are the sensor, transmitter, and reader/receiver.

- **Sensor**
  The sensor is a disposable piece. It is usually a very small wire that is inserted just under the skin. The sensor reads the glucose in the fluid under the skin and gives a reading. Wear times vary depending on the manufacturer. Typically, patients wear the sensor for 7-14 days, depending on the system.
- **Transmitter**
  The transmitter captures thesensor readings and sends them to another device for the wearer to see. It may be disposable or reusable depending on the model. It may be one piece with the sensor. It works via a radio frequency or Bluetooth.
- **Reader/receiver**
  The reader or receiver is adevice that communicates with the transmitter to display the glucose readings from the sensor. Depending on the system, it may be a smartphone,separate device, or certain insulin pumps.

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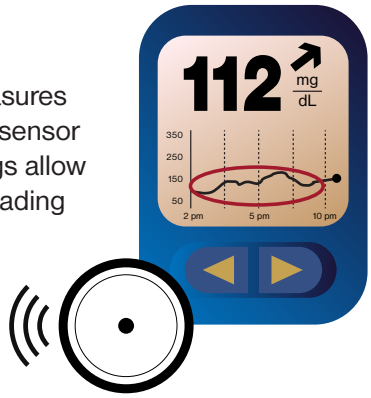

Continuous glucose monitoring (CGM) automatically measures the level of glucose in the body every few minutes with a sensor that is placed just under the skin. The continuous readings allow the system to predict the direction the glucose level is heading and displays that information as an arrow on a reader device or smartphone. The glucose level, arrow, and graph indicate where a patient's glucose has been for the past few hours, allowing them to see information more quickly about glucose levels.

Frequently Asked Questions about CGMs

What does CGM do?

Personal use CGMs have programmable alerts and alarms. CGMs can let a patient know when their glucose drops below a safe level, when it is quickly rising or falling, and when it rises above a certain target. CGM can also identify trends and patterns across several days and different times of day. Patients can see this data can on a smartphone or computer and share with their doctors.

How is a CGM different than a blood glucose meter?

A blood glucose meter shows blood glucose level at the time it is checked, but it does not show if glucose is rising or falling. CGM shows both blood glucose level and whether it is rising or falling. This helps patients recognize blood glucose levels and determine measures to take to stop it from going too high or too low. This can also help patients more clearly understand how diet and exercise can affect blood glucose levels.

How does a CGM device attach to the body?

Each type of CGM comes with a special inserter. A button is pushed or an inserter is squeezed and a small needle inserts the CGM device's tiny sensing wire just under the skin. The needle comes out immediately and the tiny wire stays in. Some CGM types are approved by the Food and Drug Administration (FDA) to be worn on the abdomen or the upper arm, but many people have tried them all over the body with success. Most people report very little or no pain from attaching the device.

Will patients still need to prick their finger?

Some systems require a couple of finger sticks to calibrate (program) the device daily, but others do not. Even with systems that require finger sticks, it will greatly reduce the number of times a typical patient must do finger sticks.

How do patients see the numbers and how can the data be accessed?

Patients access the data through an application (app) on a smartphone or a small device called a reader/receiver. All CGM systems also make it easy to see glucose reports, such as average glucose at night.

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A quick comparison of Continuous Glucose Monitors

	Abbott Freestyle Libre 2	Dexcom G6	Ascensia Eversense	Medtronic Guardian/Guardian 3
Length of use and replacement	14 days for sensor	10 days for sensor 90 days per transmitter (No charging)	180 days for sensor Recharge transmitter every 24-36 hours	Up to 7 days for sensor Recharge transmitter weekly; replace transmitter yearly
Integration with insulin pump	No	Yes, with specific pump(s)*	No	Yes, with specific pump(s)*
Alerts and alarms	Customizable and shareable	Customizable and shareable Possible to turn off all alerts except the urgent low at 55 milligrams per deciliter (mg/dL) alert	Customizable Vibrates on the body	Customizable
Smartphone integration	Android, iOS	Android, iOS, Apple Watch	Android, iOS, Apple Watch	Android, iOS
Data sharing with others	Up to 20 people with LibreLinkup app	Up to 10 people with the Dexcom Follow app	Up to five people with Eversense NOW app	Up to five people with CareLink™ Connect web app
Finger sticks	None	None required, optional	Two per day	Two per day
Separate receiver available	Yes	Yes	No	No
Water Resistance	Three feet deep for 30 minutes	Eight feet for up to 24 hours	Three feet deep for 30 minutes	7.5 feet deep for 10 minutes

*Source: Diabetesnet.com. *Check manufacturers' websites for up-to-date information. Features and costs can change/vary.*

The Endocrine Society has many helpful resources for patients on their website www.diabeteseducator.org. To access, scan the QR code or:

- Open www.diabeteseducator.org
- Select "Living with Diabetes" tab at the top of the page
- Select "Tools and Resources"
- Select "Blood Glucose Monitoring"
- Scroll down to "Pocket Guide—Continuous Glucose Monitoring: Connecting the Dots" and download

A number of practice resources from the Association of Diabetes Care & Education Specialists can also be found at www.diabeteseducator.org under the "Practice" tab.

Company Name and Website	QR code (scan to go directly to website)	Company name and Website	QR code
Abbott https://www.freestyle.abbott/us-en/home.html		Medtronic https://www.medtronic diabetes.com	
Dexcom https://www.dexcom.com		Ascensia https://www.ascensiadiabetes.com/eversense/	

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