

Continuous glucose monitoring

Information about continuous glucose monitoring

Continuous glucose monitoring (CGM) is a way to observe glucose levels by continually monitoring and displaying glucose levels throughout the day and night.

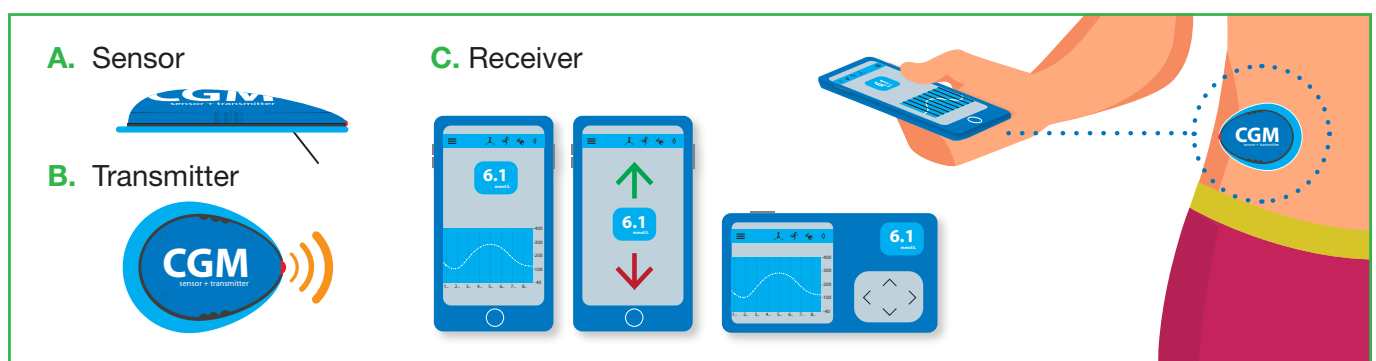
CGM can help you see the effects of insulin and other medicines, food, physical activity, and illness on your blood glucose levels. CGM provides more information than finger prick blood glucose monitoring. It can help you keep your glucose levels in a healthy range. It may also help identify trends or changes in glucose levels that you can share with your health care team or use for self-management decisions.

How do CGM devices work?

CGM devices are small wearable monitors that measure and display your glucose levels throughout the day and night. They can be programmed to sound alarms and send warnings if your glucose levels are outside your set target range. CGM devices also display arrows to show whether your glucose levels are rising, falling or steady.

CGM devices have three main parts

- The **sensor** is a small electrode inserted just under the skin, usually on the abdomen or arm. It measures the level of glucose in the fluid between your cells. A new sensor needs to be inserted every 6 to 7 days, depending on the device.
- The **transmitter** is attached to the sensor and sends glucose readings to a wireless receiver, insulin pump or compatible smartphone. Transmitters are reusable but, depending on the device, need to be replaced every 3–12 months.
- The **receiver** allows you to view your glucose data. The receiver may be a standalone device, an insulin pump or compatible smartphone (via an app). The receiver also stores glucose data, which can be uploaded for you (and your health care team) to review. This can help make decisions about changes to insulin doses or pump settings as well as food choices and physical activity.



Find this resource at ndss.com.au

Why use CGM?

CGM has a number of benefits:

- » **24/7 readings.** CGM allows you to see glucose levels across the day and night, rather than just at a single point in time. CGM graphs on the receiver can show patterns that may help you identify how factors, such as food and physical activity, affect your glucose levels.
- » **Trend arrows.** These show if your glucose levels are rising, falling or stable and how quickly they are changing.
- » **Alarms.** You can set the CGM device to sound an alarm if your glucose levels are rising too high or if you are at risk of a hypo (hypoglycaemia, or low glucose levels). This allows you to act before glucose levels rise too high or drop too low. Alarms can be especially useful if you cannot always tell when you are having a hypo.
- » **Overnight monitoring.** CGM devices measure glucose levels throughout the night without you having to wake to do finger prick blood glucose checks (calibrations may sometimes be needed overnight but advice from a health professional on how to time them can help avoid this).
- » **Reduced need for finger prick checks.** CGM does not completely replace the need to do finger prick checks, but it does reduce the number needed. People using CGM are advised to speak with their health professionals about when and how often they should do finger prick checks.
- » **Peace of mind.** Being able to see your glucose levels at any time and receiving alerts if your glucose levels go outside your target range can provide reassurance and reduce fear of hypos.
- » **Data sharing.** Some CGM devices let you share glucose readings with others via an app on their smartphone/smart device or notify them of alerts and alarms via SMS messages. This can be particularly useful for parents or carers. Data can also be shared with your diabetes health care team.
- » **Insulin pump integration to prevent hypos.** Some CGM devices work with a compatible insulin pump and can temporarily stop insulin delivery from the pump if glucose levels drop below your target range (or if the sensor predicts that the glucose level will become too low). This may help prevent hypos or make them easier to correct.

Downsides to CGM

While CGM offers many benefits, there are also some downsides that are important to consider.

- » **Does not replace blood glucose monitoring.** While using CGM can reduce the number of finger prick checks you need, devices still need calibrating at least twice a day by entering a finger prick reading. Finger prick checks are recommended for other situations, such as to confirm a hypo and before giving an insulin correction dose.
- » **Accuracy.** CGM devices measure glucose levels in the interstitial fluid (the fluid between your cells) rather than the blood. Because glucose travels to the blood first and then to the interstitial fluid, CGM readings and blood glucose levels are not expected to be the same. The difference is because of a time delay (between 6-12 minutes) from when glucose moves from the blood (finger prick reading) and into the layer under the skin (CGM reading). You will see the greatest difference between these readings when your glucose levels are changing rapidly.

- » **Being attached.** Some people do not like wearing the sensor and transmitter, particularly if they already use an insulin pump, as they then have two different devices attached to their body. For some people, particularly children and older people, it can be difficult to find suitable sites to insert the sensor. Your health professional can help you work out the best sites for wearing the sensor.
- » **Staying attached.** It can be difficult for some people to keep the sensor attached, particularly if they spend a lot of time in water and/or sweat a lot during physical activity. The sensor might also get knocked off while playing or during sport.
- » **Skin reactions.** Some people may experience allergic reactions, skin rashes, itching, bleeding or bruising in the area where the sensor is inserted.
- » **Information overload.** While the additional information that CGM provides has many benefits, it can also be overwhelming to see what your glucose levels are doing all the time. It can also be overwhelming for carers if you have chosen to share your readings with them.
- » **Alarm fatigue.** While CGM alarms can be very helpful, if they occur often, some people can find them annoying and disruptive. Your health professional can help you set up your alarms to best suit your needs.
- » **Data sharing.** While it may be beneficial to share your readings from CGM with your family, carer or friends, your privacy and security should be considered before sharing data. This is a personal choice and should not deter people from using CGM.

It is important for you to discuss all the pros and cons of CGM with your diabetes health professional to decide whether CGM may be right for you.

Government-subsidised CGM

The Australian Government provides access to fully subsidised CGM products for eligible people with diabetes through the National Diabetes Services Scheme (NDSS). Eligible people are the following groups:

- » **Type 1 diabetes; Age Under 21 Years.** Children and young people with type 1 diabetes aged under 21 years
- » **Type 1 diabetes; Age 21 Years and Older with Valid Concessional Status.** People with type 1 diabetes aged 21 years and older who have valid concessional status
- » **Type 1 diabetes; Pregnancy/Post-Pregnancy.** Women with type 1 diabetes who are actively planning pregnancy, pregnant or immediately post-pregnancy
- » **Conditions similar to type 1 diabetes; Age Under 21 Years.** Children and young people aged under 21 years with conditions very similar to type 1 diabetes who require insulin

For more information about the eligibility criteria for each of these groups, visit ndss.com.au/cgm.

Cost: CGM is considerably more expensive than finger prick blood glucose monitoring.

If you are not eligible for fully subsidised CGM products through the NDSS, the cost of CGM is around \$4,000–\$5,000 per year. CGM will usually not be covered by private health insurance.

Available CGM devices

Your choice of CGM device will depend on many factors, such as if you are using a compatible insulin pump, a smartphone or a separate receiver, and whether you want the option of sharing CGM readings.

Choosing the right CGM device for you should be done with your health professional. They can provide you with all the information you need about the different types of CGM devices and answer any questions you might have.

An up-to-date list of fully subsidised CGM products available through the NDSS and their compatibility with insulin pumps and smartphones can be found on the NDSS website at ndss.com.au/cgm-device-chart.

Accessing fully subsidised CGM products

To access fully subsidised CGM products through the NDSS you will need to be registered with the NDSS and meet CGM eligibility criteria. If eligible, your authorising health professional will need to fill out and sign the Continuous and Flash Glucose Monitoring Access Form appropriate to your eligibility group. These forms are available on the NDSS website at ndss.com.au/forms#cgm and include a list of the health professionals who are authorised to certify eligibility in each group. When the form has been submitted and processed, the NDSS will contact you to confirm your eligibility.

If you are new to CGM, a Starter Kit will be sent to the health professional nominated on your Continuous and Flash Glucose Monitoring Access Form. They will then show you how to set up and use your CGM device.

After this, you can start to order CGM products through your community pharmacy (also known as an NDSS Access Point), just like you can order blood glucose monitoring strips, insulin pen needles and/or insulin pump consumables.

If you are already using CGM, you can order your products through your community pharmacy, once your eligibility has been confirmed.

For more information about accessing CGM through the NDSS, visit ndss.com.au/cgm.



More information

If you are interested in learning more about CGM:

- Speak with your health care team.
- Visit the NDSS website ndss.com.au.
- Call the NDSS Helpline on **1800 637 700**. The Helpline operates between 8:30am and 5pm Monday to Friday and between 9am and 12 noon on Saturdays and national public holidays.

More information on the CGM devices available through the CGM Initiative can also be found by visiting the supplier websites:

- AMSL Diabetes (for Dexcom products) amsl.com.au
- Medtronic medtronic.com.au

The NDSS and you

A wide range of services and support is available through the NDSS to help you manage your diabetes. This includes information on diabetes management through the NDSS Helpline and website. The products, services and education programs available can help you stay on top of your diabetes.