



Training Guidelines

**Continuous Glucose
Monitoring System**

Definition and proper use of a CGM System

A CGM is : a system which is placed subcutaneously on a human body, able to monitor and project the glucose levels along with its trends, within a specific time period.

A CGM System consists of :

***A disposable Sensor** which is placed on the body along with a probe that is inserted subcutaneously under the skin. Sensor executes regular Glucose measurements (the concentration of Glucose in Blood Plasma) every 3-5 minutes.

***A Semi-disposable Transmitter** which constantly transmits those electric signal values to another device, via Bluetooth.

***A Receiver** which is actually a Smart-Phone. On that device, a specific application is installed. Through applications' environment, electrical signals are evaluated, converted and projected on Smart-Phones' screen, as a current BG value along with a trend arrow.

Alarms and Alerts

A CGM System provides multiple alarms and alerts for keeping you informed whenever your Glucose levels are low or high.

Follow your HCPs' instructions, in order to set your target-range of glucose levels properly.

Whenever glucose is reaching your upper-lower limits, the system alerts you to act efficiently.

Thus will help you to keep your glucose levels within target-range (Time in Range) longer. The longer Time in Range the better the therapy.

Glucose Trend

Apart from the current glucose **value**, a CGM system, provides its **trend** as well .

Besides each value there are arrows defining whether your glucose is stable or it is trending low or high and how fast.
(↑, ↗, ↓, ↘, →).

That results in taking the right decisions.

75↓
it is not equal
to 75↗



What should I have to be careful when using a CGM?



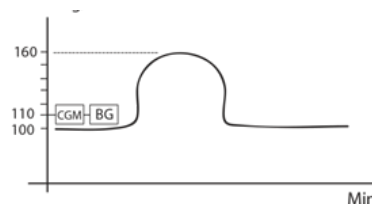
Time Delay

CGM systems measure glucose values in the **interstitial fluid of the cells**, when BG meters measure blood glucose levels inside capillaries, through the fingers.

Between those two methods of measuring glucose there is a **time-difference of 10 min.** due to the fact that the changes of its concentration are appeared inside capillary blood earlier.

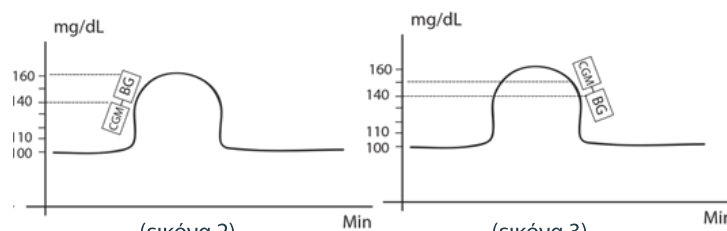
Therefore, what we see on CGM screen, is what we potentially would had seen on our BG meter screen 10 min. ago.

When our glucose levels are stable, there is no difference between CGM and BG meter value. (image 1).



(εικόνα 1)

When glucose levels increase or decrease abruptly, for example after eating carbs or injecting insulin, value on CGM and BGM may differs, due to the time delay mentioned above (images 2-3).



(εικόνα 2)

(εικόνα 3)

Difference between a CGM and a BGM value increases in proportion with the abrupt blood glucose levels change.

Where and how should I put my sensor on?

The right site-choice (where do I put it on) along with the proper insertion of my sensor play a major impact on CGMs' performance.

The compatible and suggested sites are the abdomen and the back side of the arms.

You should avoid to put your sensor on:

*a muscle (or muscle area).The sensors' probe performs only on fatty areas.

*On areas with scars or tattoos.

*On areas with lipodystrophies



Whenever we hit a blood vessel while insertion, sensor must be removed.



When put your sensor on the arm, use the back side, in order to find more fatty sites than muscles, for proper insertion.



False Hypo events may occur in case of sensor is pressed to the body, due to a physical activity (for exp. During sleeping). In that case, probe loses access to the interstitial fluid, and it touches the muscle area. Then the glucose levels may appear low.



Having the data evaluated, not all of the suggested insertion sensors' insertion sites perform in the same way, according to users' needs. Some sites perform better than others; it depends on each user. Therefore, you should try a wide spreading, concerning your insertion choices your choices, in order to find out which sites suit your case better.



Last but not least, insulin's infusion area must be at least 7 cm. away from the sensor. The presence of insulin affects on probes' performance, since it reacts with the materials of the probe and destroys them. That results in a poor and inaccurate data outcome, or even in the termination of the sensor.

Calibration is a key-factor for achieving accuracy!



Continuous Monitoring systems are based on an initial given BG measurement with a strip.

As soon as the warm up period has ended, CGM will ask the current BG value, from a regular BG meter (for example 132 mg/dl). Then, the system adapts that value, in order to monitor the on going activity of glucose and its trends. **This is a Calibration.**

Calibrations are needed during the whole period of a CGM systems' performance.

Calibrations must be executed and entered to the system **only when**, our BG levels are **stable** and **no** active insulin or carbs are present at that moment. In any other case you should have **first** to correct yourself (upwards or downwards) **and then** to calibrate.

However, it is very important to enter only stable calibrations to the system, **at the first two days of use**. In any case, do not calibrate right after a meal has been consumed or a bolus of insulin has been injected.

Sum up all the above...

- We always pay attention at glucose trends. We evaluate the prediction in order to prepare ourselves to act properly and fast.
- We set alerts and alarms for Hi and Low's. That allow us to be informed and to intervene in-time, so we achieve a higher TIR (time in range).
- A 10-20 min time-delay is accepted.
- Always consider the value of a proper site choice for sensor insertion. Use the fatty areas very thoroughly.
- We keep the CGM system at least 7 cm away from any insulin injection site.
- We calibrate wisely. It is better to encourage than to disappoint your CGM system.

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Keizersgracht 241, Amsterdam, 1016EA, Netherlands



Tel: 0031 20 800 4992



www.intelligofre.com