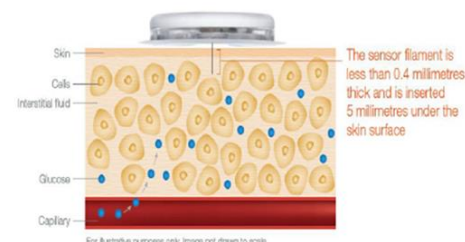


TOP TIPS: Using Dexcom G6 Real-Time CGM in Pregnancy

This leaflet has been written to complement the information you will get during your Dexcom sensor training. The G6 sensor is **approved for use in pregnancy** and doesn't require fingerstick calibrations. The sensor accuracy is best when worn on the **back of the arm**.

Your sensor sits just under the skin and measures the glucose in the fluid around the cells every minute. The sensor glucose measurement is around 5-10 minutes behind what the blood glucose is reading.



The sensor glucose can be displayed in three ways:

1. Glucose reading now
2. Glucose direction which can be steady (grey), rising (yellow) or falling (red)
3. Glucose history (previous 1, 3, 6, 12 or 24 hours)

The sensor sends glucose data to your mobile phone (and sometimes a smart watch) using the Dexcom Clarity App. If your phone is not compatible with the G6 App we can provide you with a receiver.

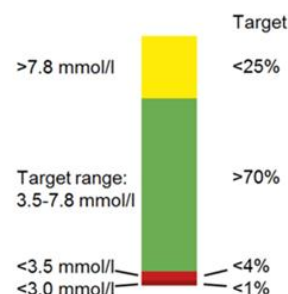


REVIEWING SENSOR GLUCOSE LEVELS

TIME IN RANGE gives a good overall picture of your sensor glucose levels over a 1-2 week time period. Most women start pregnancy with around 50% Time in Range, aiming to get to 70% as soon as possible. We know that this is challenging but your diabetes team are here to help you every step of the way. The **Dexcom G6**, together with a **lot of attention to carbohydrate choices** and **timing of pre-meal insulin** doses, will help you achieve your glucose targets.

- ✓ More than **70%** (16hrs 48mins/day) **Time in Range 3.5-7.8 mmol/L**
- ✓ Less than **25%** (6hrs/day) **above 7.8 mmol/L**
- ✓ Less than **4%** (1hr/day) **below 3.5mmol/L**
- ✓ Less than **1%** (15 mins/day) **below 3.0 mmols/L**

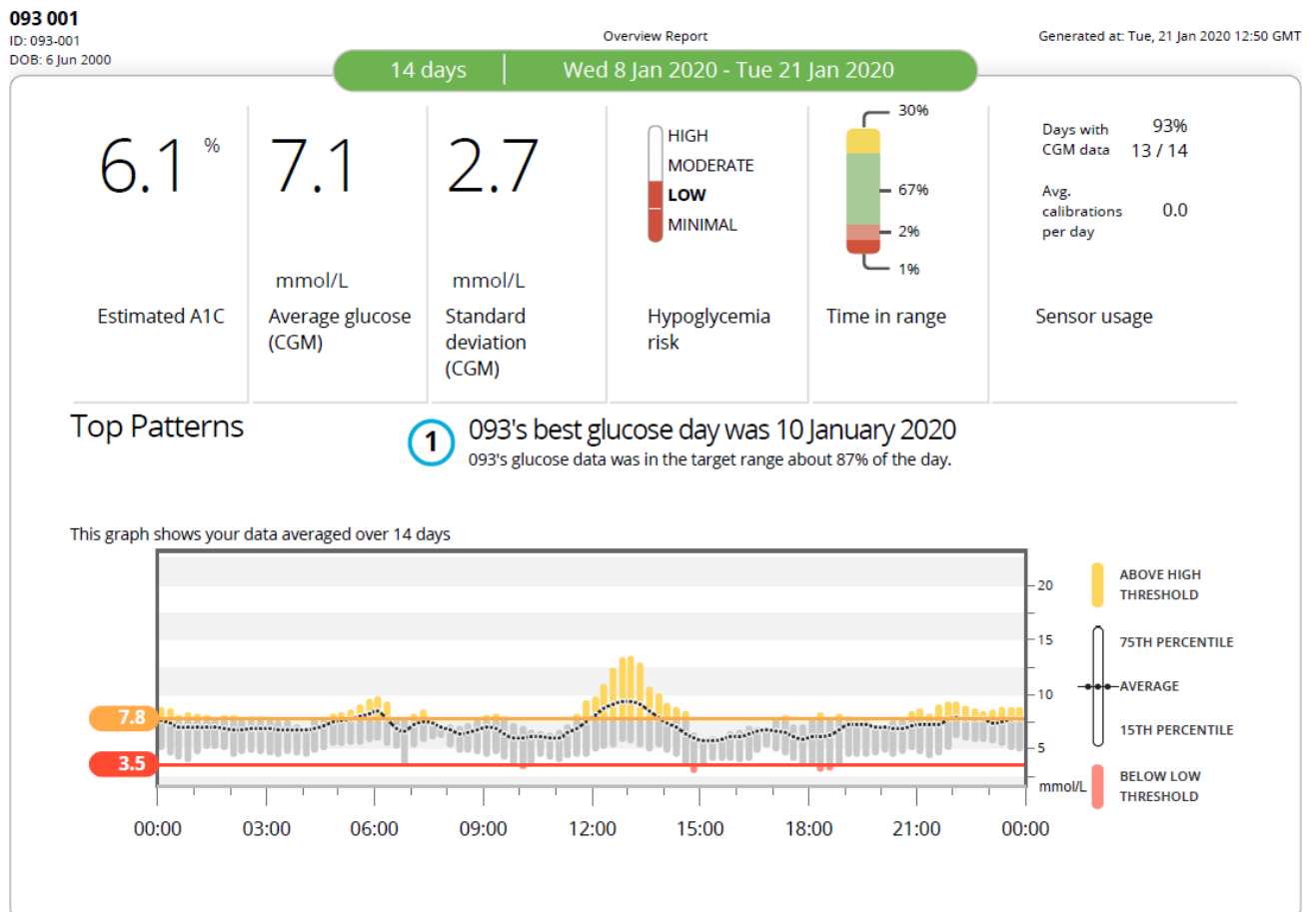
Every extra 5% Time in Range has benefits for you and your baby!



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

CONSIDERATIONS WHEN STARTING Glucose Sensors in Pregnancy:

- Be prepared to see many more glucose readings out of target!
- It is important **not to overreact** to readings which are above target with aggressive **correction doses** of insulin. Remember insulin takes time (typically 3-4 hours) to lower above target glucose levels so **don't correct in the first 2 hours after eating!**
- When your glucose levels are above target, reflect on what might have **caused the increase?**
 - under-estimating or eating **too much carbohydrates** (very easy to do with rice, pasta and potato meals),
 - quickly absorbed **carbohydrate choices** (e.g. most breakfast cereals, shop bought sandwiches, white flour products),
 - not injecting your pre-meal insulin bolus early enough before eating (aim for at **15±5 mins before eating in trimester 1, 30 ±10 mins in trimester 2 and 45±15 mins in trimester 3**)
- Steady or gentle changes in glucose indicate that your carbohydrate choices and timing of insulin bolus doses are working well
- Some women choose to set a high alert for 10mmol/L or 12mmol/L – entirely optional
- The **Urgent Low Alarm** is set at **3.1mmol/L** and cannot be turned off. **This is for your safety!**
- Steady or gentle changes in glucose indicate that your carbohydrate choices and timing of insulin boluses are working well
- Sharing your sensor data means that that you and your diabetes team can review your glucose patterns at every clinic appointment. The data shared does not include your name/personal details



WHEN TO DO FINGER STICK CHECKS:

- To confirm hypoglycaemia and monitor recovery from a hypo
- If the sensor reading doesn't match how you feel or the glucose you were expecting
- If the sensor is not working







There are times when the sensor glucose data may be less reliable and you might want to do some finger stick checks, for example during

- the first 24 hours of new sensor
- times of rapidly changing glucose levels (following recovery from a hypo)
- moderate exercise or activity

AVOIDING HYPOGLYCAEMIA

In pregnancy, you may find your symptoms of hypoglycaemia become more subtle and sometimes disappear. Being able to check your glucoses more frequently and using the directional arrows on your sensor can be helpful. The **Urgent Low Alarm** is set at **3.1mmol/L**. This cannot be turned off.

Established sensor users sometimes set an **Urgent Low Soon Alert**: this alerts **20 min before** sensor glucose predicted to reach 3.1 mmol/l, giving more time for hypo prevention. Others prefer to set a higher personalised **Low Glucose Threshold Alert** between **3.5-4.5 mmol/L**. These alerts are optional but early treatment with 5-10g of carbohydrate (sometimes called "micro-carbs") can raise glucose by 1-2 mmols/L and may help you to prevent a hypo event.

Directional Arrows	Over past 15 minutes your glucose has been	If this trend continues how will glucose change?		Hypoglycaemia avoidance and treatment suggestions	
		How long to change by 1 mmol/l?	In 30 minutes		
	Slowly falling	10 mins	2-3 mmol/L		1 GlucoTab or 1 jelly baby = 4g carb
	Falling	5-7 mins	3-5 mmol/L		2 GlucoTabs or 2 jelly babies = 8g carb
	QUICKLY FALLING	Less than 5 mins	Up to 5mmol/L ACT NOW!		3-4 GlucoTabs or 3-4 Jelly babies = 15g carb*

- Remember your **sensor glucose is 5-10 minutes behind** your blood glucose level and can remain low even when your blood glucose is back in range. Using sensor glucose to monitor recovery from hypoglycaemia may result in over treatment of hypoglycaemia.
- **200mls of orange juice or 1 Lift (Formerly GlucoJuice) drink** contain 15g carb raise glucose levels quickly and **work well for hypo treatment**
- Always use a finger stick glucose to confirm hypoglycaemia and monitor recovery from a hypo
- During pregnancy, most hypos occur between meals (1-4 hours after eating). These are caused by a mismatch between **quickly absorbed carbohydrates** and **slowly absorbed pre-meal insulin**.
- Frequent between meal hypos indicate that your carbohydrate choices and timing of insulin doses may not be working so well. Ask your diabetes team for advice!

CORRECTING

Post meal: It is not recommended to correct glucose readings above target within 2 hours of eating as this can result in a low glucose later.

At 1 hour: If your glucose is reading above target and or with upward trending arrows reflect on what might have caused this and can it be avoided in the future? Think about the **type of carbohydrate, amount of carbohydrate, insulin timing** and your **activity levels**. 10-15 minutes of post-meal activity (walking, housework etc) will speed up insulin absorption and lower your glucose levels

At 2 hours: If sensor glucose is the same or higher AND is either stable (**no arrows**) or rising (**upward arrow**) then it is reasonable to give a correction dose. Pump users should use the bolus advisor (which takes account of the insulin on board). If using injected insulin, ask for a bolus calculator device (e.g Expert meter) to calculate your correction dose.

Do not correct if sensor glucose is falling (**any downward arrow**).

If you are unwell, have glucose levels above 12mmol/L or have ketones then follow your Sick Day Rules.

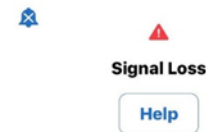
TROUBLESHOOTING

- **Keep the sensor packet** until the sensor has been used effectively and removed. If the sensor ends early or falls off make a note on the packet and bring the lid with the lot number to your next clinic appointment
- If the sensor does not deploy properly and the needle doesn't retract then bring the whole device back in the packet and your team will provide replacements

Sensor signal loss

Sensor signal can occasionally drop out and should automatically reconnect. If it doesn't try

- Turning your Bluetooth off and on again. Turning your phone off and on again can also help..
- If you have persistent signal loss contact the Dexcom technical support helpline
- **Always keep a finger stick meter with you. Don't rely 100% on the sensor glucose levels**



SKIN CARE

The sensor should stay securely attached to your skin using its own adhesive. Some women find adhesive barrier wipes (Skin Tac™) helpful to improve skin "stickiness", others use medical tape around the edges of the adhesive patch (making sure not to cover the transmitter). Medical adhesive removers (Lift Plus) can also be used to remove residual adhesive. Your study team can supply these for you to try.

LABOUR & DELIVERY

More and more women continue sensor use during antenatal hospital admissions, after steroids and throughout labour and delivery. Midwives may not always be familiar with sensors and may take additional glucose measurements on hospital meters for their records. Your research team will provide written guidance for obstetric teams so that you can be supported to continue sensor use in hospital.

Here are some suggestions for managing your glucose levels during pregnancy

☐ EATING THE RIGHT AMOUNT OF CARBOHYDRATE



It is important to eat enough carbohydrate to provide enough energy and nutrition to support a healthy pregnancy. However too much carbohydrate makes it challenging to achieve the post-meal glucose target of **below 7.8mmol/L**. Carbohydrate is better tolerated when eaten in smaller quantities so eating small amounts at meals with carbohydrate containing snacks between can be very helpful.

The carbohydrate amounts below are a good place to start.

Breakfast: 15-20g carbohydrate

Lunch and dinner: 40-60g carbohydrate

Snacks: 10-15g carbohydrate

☐ EATING THE RIGHT TYPE OF CARBOHYDRATE



Different carbohydrates can have very different effects on blood glucose levels after eating. Choosing the right type of carbohydrate can make all the difference to keeping the 1 hour post meal glucose **below the target of 7.8mmols/L**.

Carbohydrates that are unrefined, high in fibre with a low glycaemic index (below 55) create a lower rise in glucose levels.

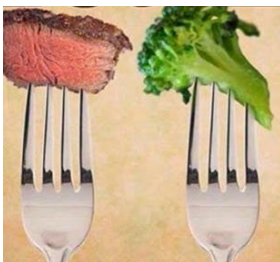
The table attached lists the foods that most women find don't work well in pregnancy with better alternatives.

☐ AVOID EATING CARBOHYDRATE LATE IN EVENING

Overnight can be as much as a third of your day so getting your glucose levels in range before bed will really help.

Eating your evening meal as early as possible **before 7.30pm** and keeping to lower doses of carbohydrate (20-30g) if you eat later than 7.30pm can make all the difference to achieving the pre-bed, overnight and fasting glucose targets.

☐ BULKING UP MEALS WITH MORE PROTEIN AND VEGETABLES / SALAD



Eating more protein foods such as meat, fish, chicken, cheese, eggs, tofu, Quorn, pulses and vegetables will stop you from feeling hungry. These foods flatten out the post-meal glucose rise and will help you achieve your glucose targets whilst avoiding hypoglycaemia.

☐ TIMING OF BOLUS INSULIN

to



30

the third trimester.



Giving your bolus insulin before eating will help limit the post-meal rise in glucose levels. Try giving insulin **15±5 mins** before eating (unless hypo) in the first trimester, extending to **±10 mins** in the second, and **45±15 mins** in

□ GETTING BREAKFAST RIGHT



Breakfast is the most challenging meal for pregnant women! Carbohydrate is not well tolerated at this time of day. Most women have to avoid breakfast cereals, add some good quality fats or protein (eggs, avocado, cheese, ham) or spread their breakfast over 2 smaller 15-20g meals.

Good breakfast choices:

- ✓ 1 slice whole-wheat toast (15g) with a topping e.g. poached or scrambled eggs / mushrooms / tomato / cheese / ham / bacon / avocado.
- ✓ 1 small pot of natural or greek yoghurt (15g) with topped with chopped fruit (10-15g) or berries or nuts / seeds
- ✓ 25g jumbo porridge oats (15g) soaked overnight in crème fraiche (carb free) or milk/yoghurt (10-15g) and topped with nuts / seeds
- ✓ 40g jumbo porridge oats (C25g) cooked with water and single cream

□ BEING ACTIVE AFTER EATING



Being active for **10-15 minutes** after eating will lower your post meal glucose level by 1- 2mmols/L lower and you to achieve your post-meal glucose target of **below 7.8mmol/L**. This can be going for a walk or being active around the house or work place.

TAKE A QUICK WALK AFTER EATING! TRY TO AVOID BEING INACTIVE AFTER MEALS

• SNACKS

Snacking can be helpful to avoid post-meal hypos, and optimise your nutrition. Make your snack choices healthy, and high in nutrients. Try fruit, yogurt, carrots and hummus, cherry tomatoes, wholewheat crackers & oatcakes with a protein topping like cheese, philadelphia.

Remember, during pregnancy your baby eats what you eat!

It can be tempting to go for sweeter more refined carbohydrates (sweets, cakes, confectionary) but these foods make it difficult to keep glucose levels in target.



CARBOHYDRATE CHOICES FOR A HEALTHY PREGNANCY

REFINED CARBOHYDRATES TO AVOID (High GI)	TRY INSTEAD (Low GI)
All white breads: Rolls, pitta, naan, baguette, croissant, chapattis, panini, wraps.	High fibre breads: Rye and sourdough bread have the lowest GI. Whole-wheat, stoneground, granary and multi-grain breads or wholemeal chapattis have lower GIs. <i>Freezing bread can help lower the GI</i>
White flour based foods: Cakes, biscuits, cream crackers, water biscuits, Ritz, Tuc, Yorkshire pudding, dumplings, Pizza, Pastry (pies, pasties, quiche, sausage rolls, spring rolls). Breaded and battered foods e.g. fish fingers, battered fish.	Oatcakes, whole-wheat crackers and crisp-bread e.g. Ryvita, cracker wheat. Wheatmeal Digestives, Hobnobs, Hovis biscuits (one or two)
Low fibre and sugar coated breakfast cereals: Cornflakes, Rice Krispies, Special K, Sugar Puffs, Cocoa Pops, sweetened muesli and granola	High fibre cereals: Porridge oats (Jumbo) <i>Most women don't tolerate breakfast cereal in pregnancy.</i> <i>You may tolerate small amounts of some high fibre cereals in very early pregnancy: All Bran, Bran Buds, Shredded Wheat</i>
Rice, pasta, grains: No types need to be avoided.	Couscous, Bulgur wheat, semolina, tapioca, quinoa The best rice is basmati. Brown rice and whole-wheat pasta also sometimes work in small doses. <i>Cooling rice, pasta and potato after cooking and then eating cold or re-heating will lower the GI</i>
Processed potato products: Oven chips, French Fries, Smiley faces, waffles, Croquettes, frozen roast potatoes, instant potato, ready meals with instant potato topping	Home cooked potatoes – boiled is best Sweet potato, yam, cassava
Processed savoury snacks: Hula Hoops, Quavers, Pringles, Monster Munch, French Fries, Skips, baked crisps	Sliced potato crisps, for example Walker's or Kettle crisps. Ryvita snacks Vegetable crisps Salted or natural popcorn
Cold drinks: Fruit juices and smoothies, full sugar squash and fizzy drinks. Lucozade.	Sugar free squash, Sugar free carbonated drinks. Water.
Sugar: Sugar, glucose, maltose, dextrose, honey, treacle and syrup	Artificial sweeteners if a variety are used and in small quantities Splenda, Sweetex, Hermesetas, Nutrasweet, Candarel, Stevia
Preserves: Jam, marmalade, Honey, Lemon curd, maple syrup, chocolate spread	Marmite, Vegemite, Peanut Butter (if no allergies)
Sweets / Desserts: Melon, Mango, Pineapple, dried fruit sweets, chocolates, mints Sweet puddings and Ice cream, Tinned fruit in syrup	Fresh fruit, frozen fruit, tinned fruit in natural juice (juice drained off), 1 cup of fresh or frozen berries, sugar free jelly Yogurt, "fromage frais" (under 15g total carbohydrate / pot)
Condensed, evaporated milk	Crème Fraiche, Cream
Ready meals/stir in sauces/take away: Some ready meals and sauces contain significant amounts of sugar, for example sweet and sour sauces, jar or packet Chinese sauces. Chinese takeaway. Tomato soup, Baked Beans, tinned spaghetti	Tomato-based pasta sauces Tomato-based/dry curries Reduced sugar baked beans (drain off sauce)
Bed-time and Malted drinks such as Ovaltine, Horlicks, drinking chocolate.	Cadbury's Highlight, Ovaltine Options, cocoa powder.

