

Gestational Diabetes



Obstetrics & Gynaecology Department

GESTATIONAL DIABETES

Gestational diabetes is a form of diabetes that occurs during pregnancy. This usually develops around the 24th to 28th week of pregnancy. For most women, diabetes goes away after the baby is born.

Gestational diabetes will not lead to your baby being born with diabetes.

Who is at increased risk of gestational diabetes?

Women with an increased risk of gestational diabetes include those who:

- have had gestational diabetes in a previous pregnancy
- are older, especially over 40 years of age
- are from a Melanesian, Polynesian, Indian subcontinent, Middle Eastern or Asian background
- have had elevated blood glucose levels in the past
- have a family history of type 2 diabetes or a first-degree relative (mother or sister) who has had gestational diabetes
- are above the healthy weight range
- have polycystic ovary syndrome
- have gained weight too rapidly in the first half of pregnancy
- have had a large baby (weighing more than 4,500g) or complications in a previous pregnancy

Some women without known risk factors will also develop gestational diabetes.

How is gestational diabetes diagnosed?

All women should be tested for gestational diabetes during pregnancy. This usually occurs between 24 and 28 weeks of pregnancy, although some women may be advised to be tested earlier.

An oral glucose tolerance test (OGTT) is used to check how your body responds to a glucose load. After fasting (not eating) for 8–12 hours, a blood sample is taken. You then have a drink containing 75g of glucose, and blood samples are taken one and two hours later.

HbA1c test is done during first trimester to identify women with pre-existing diabetes. HbA1c value $\geq 6.5\%$ (114)



Why does gestational diabetes need to be treated?

Women with gestational diabetes are also at greater risk of developing high blood pressure and pre-eclampsia (high blood pressure, protein in the urine and fluid retention or swelling) during pregnancy.



How is gestational diabetes managed?

You can manage gestational diabetes by:

- following a healthy eating plan
- doing regular physical activity
- monitoring blood glucose levels, and
- taking medication (if needed).

Managing gestational diabetes will help keep blood glucose levels within the target range for a healthy pregnancy. Eating well and being active will also help you to manage your pregnancy weight gain.

Healthy Eating

When you have gestational diabetes, following a healthy eating plan can help to keep your blood glucose levels within the target range, provide nutrition for you and your growing baby, and achieve appropriate weight changes during your pregnancy.



Healthy eating for gestational diabetes includes:

- ✓ eating 3 moderate sized meals and 2–3 snacks, spread out over the day or 5-7 small frequent meals.
- ✓ choosing the right type and amount of carbohydrate foods at each meal and snack
- ✓ choosing foods that are low in saturated fat
- ✓ making high-fibre food choices
- ✓ eating a variety of foods that provide the nutrients you need during pregnancy

Nutrients required in higher amounts for pregnancy include iron (found in red meat, chicken, fish, legumes), folate (found in dark green leafy vegetables) and iodine (found in fish, bread, dairy foods).

Your dietitian can advise you on how to get the nutrition you need for you and your baby, while helping you to make healthy food choices that will help you manage your blood glucose levels.

Carbohydrates

Carbohydrate foods are broken down into glucose and used by the body for energy. They are very important for you and your baby.

To manage your blood glucose levels, you need to eat the right amount and type of carbohydrate foods.

Type of carbohydrate choices include:

Breads - dense wholegrain/seeded breads, multigrain bread, raisin bread, mixed grain wraps

Cereals – traditional or steel cut rolled oats, natural muesli

Pasta – most fresh and dried pasta cooked 'al dente' (not overcooked)

Noodles – vermicelli, hokkien, buckwheat, udon, soba or fresh rice noodles

Rice - SunRice Low GI rice (white/brown) or basmati rice (white/brown)

Grains – pearl barley, cracked wheat and quinoa

Dairy and alternatives – milk, soy milk and yoghurt

Vegetables and legumes – sweet potato, corn, taro, lentils, chickpeas, kidney beans

Fruit – most fresh fruit, canned fruit in natural juice

When making low GI food choices, it is still important to consider the amount of carbohydrate you eat, as recommended by your dietitian.

Acknowledgement: glycemicindex.com

Sugars and sweeteners

Limit added sugars and avoid foods and drinks that are high in sugar such as soft drinks, cordials, fruit juices, cakes, biscuits, and chocolates



Fats

Healthy fats, such as olive or canola oils and spreads, unsalted nuts, seeds, and avocado.

Choose lean meats, skinless chicken, and low-fat dairy foods. Limit butter, ghee, cream, sour cream, and coconut milk/cream.



Avoid takeaways and processed foods high in saturated fat.



Eat plenty of vegetables

Eating plenty of vegetables is important for a healthy pregnancy. They are a good source of fibre, vitamins, and minerals. Most vegetables are low in carbohydrate and will not affect your blood glucose levels (except for potato, corn, sweet potato, taro, and cassava).

Eat a variety of different coloured vegetables and salads, such as tomatoes, cucumber, celery, capsicum, onions, cauliflower, zucchini, broccoli, spinach, peas, cabbage, lettuce, green beans, eggplant, carrot, leek, squash, pumpkin, and Asian greens.



Breakfast ideas

Choose one of the following options:

- ☐ Porridge: 1 cup cooked traditional oats served with reduced-fat milk,
- ☐ 1 tablespoon natural or plain Greek yoghurt and ½ cup sliced strawberries
- ☐ 1–2 slices wholegrain toast with poly or monounsaturated spread, served with 1–2 boiled eggs, plus 1 cup reduced-fat milk or soy milk (with added calcium)
- ☐ ½ cup untoasted muesli or 1 cup Special K Advantage® with reduced-fat milk and 1 tablespoon natural or plain Greek yoghurt
- ☐ 1 cup fresh fruit salad served with ½ cup natural or plain Greek yoghurt and 30g mixed nuts/seeds
- ☐ 1–2 slices wholegrain toast lightly spread with avocado or peanut butter, plus 1 serve of whole fresh fruit
- ☐ 2–3 small idli with ¼ cup sambar, plus chopped cucumber and tomatoes
- ☐ 1 medium bowl (1½ cups) of congee (try brown/black rice or a mixture of rice, rolled oats, barley or lentils) with vegetables and egg, tofu or lean meat

Lunch Ideas

Choose one of the following options:

- ☐ 1 wholegrain bread roll/sandwich/medium wrap filled with boiled egg/reduced-fat cheese/tinned salmon/tinned tuna/freshly cooked chicken with salad and avocado, plus 1 serve of whole fresh fruit

- ❑ 4 Vita-Weats or Vita Grains with avocado, tomato, and reduced-fat cheese, plus 100g tub fruit yoghurt and 1 serve of whole fresh fruit
- ❑ Pasta salad: 1 cup cooked pasta, tinned tuna and salad vegetables served with olive oil vinaigrette
- ❑ 2 egg and vegetable omelet served with 2 slices wholegrain toast, plus 1 serve of whole fresh fruit
- ❑ Stir-fry with a moderate serve of lean beef/chicken/fish/tofu and vegetables*, plus 1 cup cooked (small Chinese bowl) low-GI noodles
- ❑ 1 medium bowl (2 cups) homemade vegetable and lentil soup, plus 1 slice wholegrain bread
- ❑ 1 cup dhal with 1–2 small (15cm) chapati/roti (try multigrain atta or ½ chickpea flour and ½ whole meal flour) and salad

*** Not including potato, sweet potato, corn, taro or cassava**



Dinner Ideas

Choose one of the following options:

- ☐ Serve of lean beef Bolognese sauce with 1 cup cooked pasta, served with garden salad and a drizzle of olive oil dressing
- ☐ Serve of cooked fresh fish with 1 cup cooked sweet potato, 1 small corn cob, steamed green vegetables and lemon wedges
- ☐ Stir-fry with a moderate serve of lean chicken/beef/pork/tofu and vegetables* served with 1 cup cooked (small Chinese bowl) low-GI rice (white/brown)
- ☐ Tomato-based casserole with a moderate serve of lean lamb/skinless chicken/beef and vegetables* served with 1 cup cooked pasta
- ☐ Moderate serve of pan-fried lean steak/skinless chicken/salmon with a small wholegrain roll, a garden salad and 1 small corn cob
- ☐ Moderate serve lean meat-based curry (gosht) or soya chunks (Nutrela™) curry with green vegetables served with 1 cup cooked basmati rice (white/brown) and salad
- ☐ Asian style soup (fat removed) with vegetables* and lean meat/fish/tofu/ skinless chicken and 1 cup cooked low-GI noodles

*** Not including potato, sweet potato, corn, taro or cassava**



Snack suggestions

Choose 1–2 of the following options for snacks, such as morning tea, afternoon tea and supper (before-bed snack):



- ☐ 1 serve whole fresh fruit (e.g., apple, orange, small banana, or pear)
- ☐ 2–3 small fruits (e.g., mandarins, plums)
- ☐ $\frac{3}{4}$ cup canned fruit in natural juice (drained)
- ☐ 100g tub fruit yoghurt
- ☐ 1 cup reduced-fat milk or soy milk (with added calcium)
- ☐ 200g tub natural or plain Greek yoghurt topped with fresh berries or passionfruit
- ☐ One thin slice wholegrain fruit toast with poly or monounsaturated spread
- ☐ Small handful (30g) unsalted mixed nuts and seeds with 1 tablespoon sultanas or 6 dried apricot halves or 2–3 small dates
- ☐ 4 Vita-Weats™ or Vita Grains™ + reduced fat cheese + vegetable sticks (carrot, cucumber, celery, capsicum)
- ☐ 2 wholegrain Ryvita® crispbread with reduced-fat cheese and tomato
- ☐ 1 x 25g packet Happy Snack Company Roasted Chickpeas
- ☐ 1 small cob of corn or $\frac{1}{2}$ small golden sweet potato

Food Safety

Pregnant women are at greater risk of food poisoning and should prepare and store food carefully. This includes preparing raw and cooked foods separately, avoiding raw or undercooked meat/chicken/seafood and following food cooking and storage instructions.

Certain types of fish, including shark/flake, swordfish, herring, tilefish, cobia, king mackerel and deep-sea perch, also need to be limited during pregnancy due to their high mercury content.

Drinks

Choose water, plain mineral water or soda water instead — try these flavoured with slices of fresh lemon or lime for something different. A



Pregnancy weight gain

It is usual to gain some weight during your pregnancy, as your baby grows. How much weight you should gain depends on your weight before you were pregnant.

Gaining too much weight during pregnancy can increase the risk of health problems such as high blood pressure, having a large baby and increased risk of birth complications, and a caesarean section.

$\text{BMI} = \text{pre-pregnancy weight (kg)} \div (\text{height (m)} \times \text{height (m)})$

Pre-pregnancy BMI	Weight range	Pregnancy weight gain (kg)	Monthly weight gain 2 nd and 3 rd trimester (kg)
< 18.5	Underweight	12.5–18	2
18.5–24.9	Healthy weight	11.5–16	1.5
25–29.9	Overweight	7–11.5	1
> 30	Obese	5–9	1

These weight gain targets do not apply to women having a multiple pregnancy

Physical activity

try and be active every day.

For women with gestational diabetes without any other medical or pregnancy complications, aim for 30 minutes of moderate physical activity on most days of the week. This can also be broken up into shorter periods of at least 10 minutes, three times a day.



During pregnancy, avoid activities that involve lying flat or increase the risk of falling, as well as contact or extreme sports.

Medication

If your blood glucose levels cannot be managed by healthy eating and physical activity alone, your doctor may suggest medication.

Insulin

Insulin treatment may be needed to bring blood glucose levels into the target range.

Metformin

May be used to help control blood sugar . Starting dose will be discussed and You will continue to monitor your blood sugars.

Every woman's experience with gestational diabetes and how it is managed will be different.



The birth

Your diabetes and pregnancy health professionals will continue to monitor you and your baby throughout your pregnancy.

This will include regular checks of your blood pressure and ultrasounds to check your baby's growth and well-being. Extra blood tests will also be organised as needed. Most women with gestational diabetes will be able to deliver close to their due date and most are able to have a vaginal delivery.

If the baby grows too large or there are any other concerns about the pregnancy, the health professionals looking after your pregnancy may suggest 'inducing' the birth one or two weeks early. If an earlier birth is required, labour is usually induced after using a medication that prepares the cervix for delivery.



Birth plan

You can discuss your birth plan with your doctor or midwife. This is a good way to let them know what kind of care you would like in labour.

Caesarean section

As with all pregnant women, there is a possibility that you may need a caesarean birth.



After the birth

The midwives will perform blood glucose tests (using heel pricks) on your baby to make sure their blood glucose levels are not too low (that is, less than 2.6mmol/L). If your baby's blood glucose level is low, your baby may need to have supplementary feeds or breast milk.

Benefits of breastfeeding

Breastfeeding has many benefits, both for you and your baby. These include benefits for your baby's immune system, growth, and development, and it can help with bonding between you and your baby. Breastfeeding has also been shown to have long-term health benefits for mother and baby, including reducing the risk of future type 2 diabetes.

You will be encouraged to have skin-to-skin contact with your baby and breastfeed as soon as possible after delivery. Breastfeeding at least every three hours during the first few days will help maintain your baby's blood glucose levels.



Medication after the birth

Medications used to treat gestational diabetes (insulin or metformin) will usually be stopped after your baby is born.

6–12 weeks after the birth

Most women will no longer have diabetes after the baby is born. However, some women will continue to have high blood glucose levels after delivery. An oral glucose tolerance test (OGTT) is very important to check that blood glucose levels have returned to normal. You will be advised to have this test 6–12 weeks after your baby is born (or as soon as possible after this time).

Remember to remind your doctor that you have gestational diabetes



Future health

Once you have had gestational diabetes, you are at a higher risk of developing type 2 diabetes in the future. If you have another pregnancy, there is also an increased risk of developing gestational diabetes again.

Eating well and being active can reduce your risk of developing type 2 diabetes. Depending on your risk factors and the results of your oral glucose tolerance

test (done after you give birth), you will also need to be checked for type 2 diabetes again every one to three years.

You can reduce your risk of future diabetes by:

- » being in the healthy weight range
- » making healthy food choices
- » being physically active every day.

Babies born to women who have had gestational diabetes also have an increased risk of childhood obesity and type 2 diabetes later in life. It is recommended that the whole family eat well and stay active to reduce this risk.

Approximately half of all women who have had gestational diabetes will develop type 2 diabetes or prediabetes within 10–



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