

Healthy Eating for Gestational Diabetes

Gestational Diabetes (GDM) occurs when glucose levels in the blood are higher than usual during pregnancy. This can put the health of you and your baby at risk. Healthy eating specific for GDM can help achieve good blood glucose control and healthy weight gain for mother and baby during pregnancy.

Carbohydrates

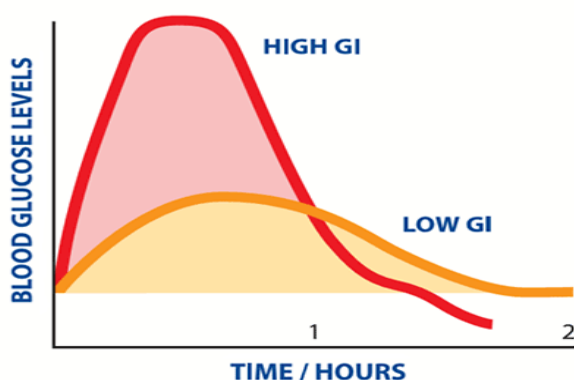
- Carbohydrate is found in a variety of food and drink and provides the body with fuel (energy)
- Many foods containing carbohydrate also provide fibre, vitamins and minerals
- Carbohydrate breaks down into glucose during digestion and is absorbed into the blood stream
- The type and quantity of carbohydrate you eat will affect your blood glucose levels

Which Foods Contain Carbohydrates?

Healthy Carbohydrate Choices	Less Healthy Carbohydrate Choices
<ul style="list-style-type: none"> ✓ Wholegrain Bread ✓ Wholegrain Breakfast Cereal ✓ Grains e.g. Barley, Quinoa ✓ Pasta, Noodles ✓ Rice ✓ Wholegrain & Wholemeal Flour ✓ Lentils and Legumes ✓ Starchy Vegetables - Potato, Sweet Potato, Corn ✓ Fruit ✓ Milk, Yoghurt 	<ul style="list-style-type: none"> ❖ Biscuits ❖ Cakes, Pastry ❖ Sugar, Jam ❖ Honey, Maple Syrup ❖ Chocolate, Confectionary ❖ Regular Soft Drink, Cordial ❖ Fruit Juice ❖ Potato Crisps, Corn Chips ❖ Ice-cream, Custard

Glycaemic Index

Glycaemic Index (GI) is a measure of how quickly or slowly a carbohydrate food is digested and increases blood glucose levels.



Higher GI Carbohydrates





Increase blood glucose levels more **quickly**
Choose these less often




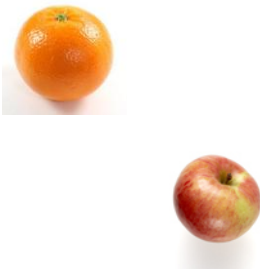
Lower GI Carbohydrates



Increase blood glucose levels more **slowly**
These are the preferred choice

Summary of Lower and Higher Glycaemic Index Choices

Remember that both the GI and the quantity of carbohydrate foods consumed will affect your blood glucose levels. **Lower GI choices are preferable.**

Food	✓ Lower GI	❖ Higher GI
<p>Bread</p> 	<ul style="list-style-type: none"> ✓ Multigrain ✓ Traditional Sourdough ✓ Pumpernickel ✓ Fruit & Grain ✓ Baker's Delight Low GI White ✓ Wholemeal Pita ✓ Goodness Superfoods Barley Wraps 	<ul style="list-style-type: none"> ❖ White ❖ Wholemeal ❖ Dark & Light Rye ❖ Bagel ❖ Turkish & Foccacia ❖ Crumpets ❖ English Muffins
Suggested Serve Size		
<p>Breakfast Cereal</p> 	<ul style="list-style-type: none"> ✓ Untoasted Muesli ✓ Rolled Oats (Porridge) ✓ Kellogg's All-Bran, Guardian ✓ Uncle Toby's Oatbribs ✓ Multigrain Weetbix 	<ul style="list-style-type: none"> ❖ Sultana Bran, Lite n Tasty ❖ Instant Oats (Porridge) ❖ Just Right ❖ Cornflakes ❖ Rice Bubbles ❖ Puffed Wheat
Suggested Serve Size		
<p>Pasta & Noodles</p> 	<ul style="list-style-type: none"> ✓ Wheat Pasta ✓ Vermicelli, Mung Bean Noodles ✓ Soba Noodles ✓ Rice Noodles 	<ul style="list-style-type: none"> ❖ Canned Spaghetti ❖ Corn & Rice Pasta ❖ Potato Gnocchi ❖ Udon Noodles ❖ Instant Noodles
Suggested Serve Size		
<p>Rice</p> 	<ul style="list-style-type: none"> ✓ Basmati Long Grain ✓ Mahatma Long Grain ✓ Wild ✓ Moolgiri ✓ SunRice Doongara CleverRice ✓ SunRice Low GI Brown Rice ✓ Black or Red ✓ Chia and Quinoa Rice Blends 	<ul style="list-style-type: none"> ❖ Jasmine ❖ Medium Grain – White & Brown ❖ Arborio (risotto) ❖ White Rice Congee ❖ Sushi Rice
Suggested Serve Size		

Food	✓ Lower GI	❖ Higher GI
Grains 	<ul style="list-style-type: none"> ✓ Quinoa ✓ Bulghur (cracked wheat) ✓ Barley ✓ Pearl / Israeli Cous Cous ✓ Buckwheat, Freekeh ✓ Semolina 	<ul style="list-style-type: none"> ❖ Polenta ❖ Cous Cous
Suggested Serve Size		
Lentils & Legumes 	<ul style="list-style-type: none"> ✓ All Dried and Canned e.g. Kidney Beans, Chickpeas, Brown Lentils, Baked Beans 	
Suggested Serve Size		
Starchy Vegetables 	<ul style="list-style-type: none"> ✓ Potato: Carisma, Nicola ✓ Sweet Potato (orange flesh) ✓ Corn ✓ Yam <p>Note:</p> <p>Eat skin on potato to help lower GI.</p> <p>Most salad, stir fry, green & coloured vegetables contain very little or no carbohydrate and do not have a GI value</p>	<ul style="list-style-type: none"> ❖ Potato: Desiree, New, Pontiac, Sebago ❖ Sweet Potato (purple skin & kumara) <p>Note:</p> <p>Some semi-starchy vegetables (e.g. pumpkin, peas, carrot, parsnip, broad beans and beetroot) have a GI value, but rarely elevate blood glucose levels unless consumed in large quantities.</p>
Suggested Serve Size		
Fruit 	<ul style="list-style-type: none"> ✓ Apple, Pear ✓ Banana ✓ Nectarine, Peach ✓ Apricot, Plum ✓ Orange, Mandarin, Grapefruit ✓ Berries ✓ Kiwi Fruit ✓ Grapes ✓ Pineapple ✓ Paw Paw, Mango ✓ Figs 	<ul style="list-style-type: none"> ❖ Cantaloupe ❖ Watermelon ❖ Lychee (canned in syrup) <p>Note:</p> <p>Although fruit juice and dried fruit have a lower GI, consume only small amounts occasionally. Fresh fruit is preferable. Lower GI fruit canned in juice can be consumed if excess juice is drained.</p>
Suggested Serve Size		

Food	✓ Lower GI	❖ Higher GI
<p>Milk & Yoghurt</p> 	<ul style="list-style-type: none"> ✓ Milk & Yoghurt ✓ Soy Milk & Yoghurt ✓ Almond Milk <p>Note:</p> <p>Choose reduced fat, reduced sugar varieties for heart health and weight management</p>	<ul style="list-style-type: none"> ❖ Sweetened Condensed Milk ❖ Rice Milk ❖ Oat Milk
Suggested Serve Size		
<p>Savoury Biscuits</p> 	<ul style="list-style-type: none"> ✓ Vita-Weat 9 Grain ✓ Ryvita Multigrain ✓ Ryvita Pumpkin Seeds & Oats 	<ul style="list-style-type: none"> ❖ Rice Crackers ❖ Salada, Sao ❖ Corn Thins & Rice Cakes ❖ Kavli, Cruskits, Matza ❖ Water Crackers ❖ Pretzels
Suggested Serve Size		

Health Benefits of Lower GI Foods:

- They result in a slower rise in blood glucose levels after eating
- They result in a lower “peak” or rise in blood glucose levels
- They provide a feeling of fullness for longer and therefore may assist weight control

Tips to Lower the GI

- Acidity will lower the GI of a meal. Add vinegar or lemon juice to meals as a dressing.
- Fibre, particularly soluble fibre can lower GI. Add psyllium husks to breakfast cereal; salad vegetables to a sandwich; lentils to soup and choose high-fibre wholegrain bread and cereal.
- Cooking then cooling rice or potato (e.g. a rice or potato salad) can lower the GI.
- Eating protein as part of a meal can lower the GI. Combine a serve of fish, lean meat, skinless chicken, egg or tofu with a serve of a lower GI carbohydrate food and plenty of low carbohydrate vegetables. Refer to the “Plate Model” resource for more information.

Low GI Symbol

Look for the Low GI symbol on packaged foods.

Note that some food manufacturers choose not to have their products GI tested.



Sample Meal Plans During Pregnancy



Sample Meal Plan One

Breakfast	2 slices grain toast, 2 teaspoons peanut butter or 1 tablespoon avocado 1 cup reduced fat milk
Morning Tea	1 banana
Lunch	125g tin of legumes (e.g. Kidney Beans, Chickpeas) 125g can corn kernels Small can tuna or 2 boiled eggs Salad vegetables – mixed lettuce, cucumber, tomato etc. 2 kiwi fruit or 1 apple
Afternoon Tea	4 vitaweat crackers, 2 slices reduced fat cheese
Dinner	1.5 cups cooked pasta Beef Bolognese or Spinach & nut pesto Side salad or steamed green vegetables
Supper	1 small tub reduced fat yoghurt

Sample Meal Plan Two

Breakfast	1 cup Kellogg's Guardian cereal with reduced fat milk
Morning Tea	1 apple, 1 small handful of nuts
Lunch	Toasted Sandwich - 2 slices grain bread 2 slices reduced fat cheese Vegetables – baby spinach leaves, capsicum, tomato etc. 1 orange or 2 small mandarins
Afternoon Tea	1 small tub reduced fat yoghurt
Dinner	½ medium size sweet potato Grilled skinless chicken or Salmon Vegetables – carrot, broccoli, cauliflower etc.
Supper	1 muesli bar (e.g. Goodness Superfoods Fibre Boost Bar)

Sample Meal Plan Three

Breakfast	½ cup rolled raw oats or (1 cup cooked) with reduced fat milk 1 banana
Morning Tea	1 small tub reduced fat yoghurt
Lunch	1 medium size wholemeal chapatti bread or 1 slice grain bread Lentil and vegetable curry (no potato) or Soup (no potato)
Afternoon Tea	½ medium size mango
Dinner	1 cup cooked basmati rice Lamb or Tofu curry Vegetables – capsicum, eggplant, green beans etc. or side salad
Supper	1 cup reduced fat milk

Sample Meal Plan Four

Breakfast	1 cup Congee (rice porridge) using SunRice Low GI rice or 1 vegetable pancake (using wholemeal flour) 1 glass of dairy or soy milk
Morning Tea	1 pear, 1 small handful of nuts
Lunch	1 cup cooked vermicelli / hokkien noodles (stir fry or soup) Stir-fry chicken or Egg omelette Mixed non starch vegetables - snow pea, mushroom, capsicum etc. 2 small mandarin
Afternoon Tea	1 cup reduced fat milk
Dinner	4 dumplings (average size) or 1 cup cooked SunRice Low GI rice Beef or Tofu Mixed vegetables – bok choy, carrot, broccoli, cabbage etc.
Supper	1 tub reduced fat yoghurt

- *Water is the best choice.*
- *Limit drinks containing caffeine.*
- *Avoid regular soft drink, fruit juice and alcohol.*



Healthy Snacks

Eating snacks allows you to spread your carbohydrate intake over the day to help control blood glucose levels. It is important that carbohydrate snacks are consumed **after** you have completed a blood glucose test **2 hours after** your last meal. This prevents the snack from affecting your blood glucose level result.

Below are some healthy snacks that can be eaten between meals. A Dietitian can assist you choosing snacks to help manage your blood glucose levels and satisfy your appetite.

Carbohydrate snacks (Choose <u>one</u> option between meals)	Non carbohydrate snacks (Can be eaten <u>in addition</u> to carbohydrate snack if hungry)
<ul style="list-style-type: none"> • 1 small tub reduced fat yoghurt • 1 glass of reduced fat milk – dairy or soy • 1 fist sized fruit or 2 smaller sized fruit • 4 Vitaweat crackers with 1 tablespoon of avocado or peanut butter or 1-2 slices of reduced fat cheese • 1 Muesli bar (e.g. Goodness Superfoods Fibre Boost Muesli Bar) • 1 small packet of roasted chickpeas (e.g. Chick nuts) • 130g can baked beans (salt reduced) • 1 cup air popped popcorn 	<ul style="list-style-type: none"> • Small handful nuts e.g. almond, walnut (<i>large amounts of peanut, cashew and pistachio nuts contain more carbohydrate</i>) • ¼ cup of mixed seeds e.g. sunflower, pumpkin seeds • 1 small can of tuna, salmon, sardines or chicken • 1 hard-boiled egg • Vegetable sticks e.g. celery, carrot, celery, cucumber, capsicum etc. • 1-2 slices of reduced fat cheese • Vegetable soup (low carbohydrate veg) or Miso soup

Lifestyle Considerations During Pregnancy

Healthy Weight Gain During Pregnancy

Excess weight gain during pregnancy makes managing blood glucose levels during pregnancy more difficult and can increase the risk of complications at delivery.

For women who are underweight at the time of conception, extra weight gain may be required to support the baby's growth during pregnancy and breastfeeding after delivery.

Recommended maternal weight gain for most women during pregnancy:

Pre - Pregnancy Maternal Weight Range	BMI (kg/m ²)	Maternal Weight Gain During Pregnancy
Underweight	Less than 18.5	12.5 – 18kg
Healthy weight	18.5 - 24.9	11.5 – 16kg
Overweight	25 - 29.9	7.0 - 11.5kg
Obese	More than 30	5 – 9kg

Institute of Medicine. New Recommendations for Total and Rate of Weight Gain during Pregnancy 2010.

Additional weight gain is expected for mothers pregnant with twins or triplets.

Discuss your individual weight gain expectations with your doctor.

The Benefits of Exercise

- Regular physical activity is important to help lower blood glucose levels, especially after meals.
- Aim to include an activity or short walk after meals to assist lowering blood glucose readings.
- Continue any current physical activity you are regularly doing.

Post Meal Blood Glucose Testing



If your blood glucose level is high after a meal, check that you:

- Waited **2 hours** after the start of your meal to test your blood glucose levels?
- Ate lower GI carbohydrate foods?
- Chose a suitable size of carbohydrate food?
- Did not eat a carbohydrate snack in between your meal and test time?
- Are doing regular physical activity?
- Washed your hands prior to testing?

What happens if you need to commence Insulin?

Some women may require insulin therapy during their pregnancy in addition to healthy diet and lifestyle. Remember that over-restricting carbohydrates in an attempt to avoid insulin therapy is **not** recommended as it can be harmful to the health of both mother and baby.






Dietary Considerations During Pregnancy

Healthy Eating For Pregnancy

A variety of foods are recommended to support you and your growing baby. Eating less than the recommended serves while pregnant can compromise the health of mother and baby.

However, there is no reason to “eat for two” as nutritional requirements only increase slightly in the second and third trimesters. A dietitian can help you understand and achieve your individual nutrition needs.

Remember that carbohydrates are found in many different foods including fruit, some vegetables, bread, cereal, grains, lentils and some dairy products.

Food Group	Recommended <u>daily</u> serves	1 Serve = 1 Dot Point
Vegetables 	5	<ul style="list-style-type: none"> ▪ 1 cup green leafy vegetables ▪ 1 cup raw vegetables or salad vegetables ▪ ½ cup cooked green or orange vegetables ▪ ½ medium potato or sweet potato or ½ cup corn ▪ ½ cup cooked legumes or lentils
Fruit 	2	<ul style="list-style-type: none"> ▪ 1 medium size fresh fruit e.g. apple, orange ▪ 2 small size fresh fruit e.g. kiwi fruit, mandarin ▪ 1 cup chopped or canned fruit <p>Occasionally:</p> <ul style="list-style-type: none"> ▪ 30g dried fruit or ½ cup fruit juice (no added sugar)
Bread & Cereals 	8.5	<ul style="list-style-type: none"> ▪ 1 slice bread ▪ ½ medium bread roll or flat bread ▪ 3 dry biscuits / crisp bread ▪ 2/3 cup cereal flakes ▪ ½ cup cooked porridge ▪ ¼ cup muesli ▪ ½ cup cooked rice, pasta, noodles, other grains
Meat & Alternatives 	3.5	<ul style="list-style-type: none"> ▪ 65g (100g raw) cooked lean meat ▪ 80g (100g raw) cooked skinless chicken / turkey ▪ 100g (115g raw) low mercury fish ▪ 170g tofu ▪ 2 eggs ▪ 1 cup of cooked or canned legumes or lentils
Dairy 	2.5	<ul style="list-style-type: none"> ▪ 1 cup reduced fat milk ▪ 1 cup soy milk (fortified with calcium) ▪ 200g reduced fat yoghurt ▪ 40g (2 slices) reduced fat cheese

- ✓ Drink plenty of water (minimum 2L)
- ✓ Limit intake of foods containing saturated fat, added salt and added sugars
- ✓ Avoid alcohol. There is no known safe level of alcohol during pregnancy or breastfeeding.

Adapted from: www.eatforhealth.gov.au: Healthy Eating During Your Pregnancy

Multivitamin Supplements

A multivitamin supplement is commonly recommended during pregnancy. Discuss your requirements with your treating doctor and dietitian.

Multivitamins not formulated specifically for pregnancy are not recommended as there is a danger of excess intake of Vitamin A, Vitamin D and Vitamin B6, but inadequate iodine and iron. A supplement containing at least 150ug iodine is recommended for most pregnant women.

If you have a thyroid condition or haemochromatosis, discuss suitable supplementation with your treating doctor before taking any supplement containing iodine or iron.

Suitable Multivitamins for Pre-conception & Pregnancy (1/day) include:

- **Cenovis** Once Daily Pregnancy + Breastfeeding Multi
- **Elevit**
- **Ethical Nutrients** Pregnancy Support
- **Fefol** Multi-Preg
- **Nature's Own** Pregnancy Platinum
- **Swisse** Pregnancy+ Ultivite



Iron

A mother's iron requirements increase during pregnancy.

All pregnant women should have their iron levels tested at 28 weeks to check for iron deficiency.

Iron rich foods include:

- Lean red meat, poultry and fish contain haem iron which is well absorbed
- Legumes and lentils, grains, nuts, green leafy vegetables and iron fortified cereals contain non-haem iron which is less well absorbed

To maximise iron absorption, combine foods that are rich in iron with foods that are rich in vitamin C such as green leafy vegetables, red capsicum or parsley.



Tea, coffee and wheat bran can reduce iron absorption. Therefore, try to include a 30 minute break between consuming tea, coffee or wheat bran and eating an iron rich meal or taking a supplement containing iron.

Mercury in Fish

High levels of methyl mercury can damage the nervous system. Babies and young children are particularly vulnerable.

Number of Serves of Different Types of Fish You Can Safely Eat.

Pregnant Women & Women Planning Pregnancy (1 serve = 150g)

2-3 serves per week of any fish and seafood not listed below (e.g. salmon, tuna, flathead)

OR

1 serve per week of Orange Roughy (Sea Perch) or Catfish and **no other fish that week**

OR

1 serve per fortnight of Shark (Flake) or Billfish (Swordfish / Broadbill / Marlin) and **no other fish in that fortnight**

<http://www.foodstandards.gov.au/consumer/chemicals/mercury/pages/default.aspx>

Caffeine

Consuming excessive caffeine may increase the risk of pregnancy complications. Limit your daily caffeine intake to 200mg or less per day during pregnancy and breastfeeding.

Caffeine Counter (approximate values)

Product	Average Serve	Caffeine
Decaffeinated Coffee	1 teaspoon	3mg
Instant Coffee	1 teaspoon	60mg
Espresso Coffee	1 regular shot	90mg
Herbal Tea	1 cup/tea bag	0mg
Green Tea	1 cup/tea bag	30mg
Black Tea	1 cup/tea bag	50mg
Hot Chocolate / Cocoa	1 cup	10-70mg
Cola Drinks	500ml	40mg
Chocolate	60g	40mg



Sugar and Artificial Sweeteners

Limiting foods and drinks with *added sugar* (such as soft drink and lollies) is advised. Too much added sugar may make blood glucose control more difficult and contribute to excess weight gain during pregnancy. Artificial sweeteners (e.g. equal or splenda) or natural sweeteners (e.g. stevia) and artificially sweetened products (e.g. diet soft drink, sugar free gum) are safe alternatives to sugar, and food and drink containing added sugar.

Food Hygiene and Listeria

During pregnancy extra precautions for food hygiene are encouraged to reduce the risk food borne infections. Pregnant women are best to avoid foods at “high risk” of contamination to reduce the risk of miscarriage, stillbirth or premature labour. Refer to **Listeria** brochure for more detail.

<http://www.foodstandards.gov.au/consumer/safety/listeria/documents/listeria-1.pdf>

Reflux / Heartburn

As the size of the baby increases, space in the mother’s abdominal cavity reduces, putting pressure on the stomach. This pressure may cause reflux. To reduce the frequency and severity of reflux:

- Avoid eating large amounts at mealtimes and avoid eating late at night
- Stay upright after meals e.g. sitting up straight or light walking
- Avoid bending over or lifting after meals

Before taking any medication for reflux, discuss this with your doctor or pharmacist



Constipation

Pregnancy hormones can slow down the muscles that assist bowel movement causing constipation. Iron supplements can also contribute to constipation. To prevent and manage constipation:

- Drink plenty of fluid, especially water
- Increase dietary fibre e.g. add extra non-starch vegetables, choose wholegrain bread & cereal
- Add a natural fibre supplement e.g. psyllium to breakfast cereal or try Metamucil
- Maintain regular physical activity

Before taking any medication for constipation, discuss this with your doctor or pharmacist.

After Your Pregnancy

Reduce Your Risk of Type 2 Diabetes

Women who have had GDM are at increased risk of GDM in future pregnancy and developing type 2 diabetes in the future. To keep yourself healthy and reduce your risk of developing Type 2 Diabetes:

- Follow a healthy balanced eating plan including vegetables, fruit, wholegrain bread and cereals, lean protein - meat, poultry, fish, tofu, legumes and eggs and reduced fat dairy.
- Keep physically active. Aim for a minimum of at least 30 minutes of physical activity daily.
- Aim to achieve and maintain a healthy body weight. Breastfeeding can assist this.
- Attend all recommended medical appointments including a repeat oral glucose tolerance test 6-8 weeks after birth and every 1-2 years thereafter.
- Join support groups and lifestyle modification programs e.g. Life! Helping You Prevent Diabetes, Heart Disease and Stroke program - www.diabeteslife.org.au.

Breastfeeding

Breastfeeding is recommended and can provide all the nutrients and fluid a baby needs until around 6 months of age when solid foods can be introduced. Breastfeeding can continue beyond 6 months for as long as mother and child would like to keep going. Babies who are not breastfed require a commercial infant formula to meet their nutritional needs.



The benefits of breastfeeding include:

- Protection for baby against chest, gastrointestinal and urinary infections
- Reduced risk of obesity and other diseases such as diabetes later in the baby's life
- Weight management post pregnancy for mother
- Reduced risk of breast and ovarian cancer for mother in the future
- Reduced cost and preparation time compared to formula feeding



A mother's nutritional needs increase when breastfeeding.

Recommended food serves increase for the following food groups:

Food Group	Recommended daily serves	1 Serve = 1 Dot Point
Vegetables 	7.5	<ul style="list-style-type: none"> ▪ 1 cup green leafy vegetables ▪ 1 cup raw vegetables or salad vegetables ▪ ½ cup cooked green or orange vegetables ▪ ½ medium potato or sweet potato or ½ cup corn ▪ ½ cup cooked legumes or lentils
Bread & Cereals 	9	<ul style="list-style-type: none"> ▪ 1 slice bread or ½ medium bread roll or flat bread ▪ 3 dry biscuits / crisp bread ▪ 2/3 cup cereal flakes ▪ ½ cup cooked porridge ▪ ¼ cup muesli ▪ ½ cup cooked rice, pasta, noodles, other grains

To discuss your individual nutrition requirements after your pregnancy, make an appointment to see an Accredited Practising Dietitian.

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