

# Gestational Diabetes

Caring for yourself and your baby



**Disclaimer:**

This information booklet is intended as a guide only. It should not replace individual medical advice and if you have any concerns about your health or further questions you should raise them with your doctor.

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# Introduction

In Australia, at least 17,000 women develop gestational diabetes every year – you are not alone! The number of women developing gestational diabetes is expected to grow significantly over the next few decades.

Gestational diabetes is associated with an increased risk of complications in pregnancy and birth, as well as a greater likelihood of mother and child developing type 2 diabetes later in life. The good news is that with good management of gestational diabetes, these risks are significantly reduced.

There have been huge advances in the knowledge about the management and treatment of gestational diabetes and the importance of a healthy lifestyle in keeping gestational diabetes and its complications under control. This booklet aims to provide you with information about gestational diabetes, how to look after your gestational diabetes and where to get assistance if you need it.

The booklet is not designed to take the place of the valuable advice you will receive from your diabetes team. It is designed to help you learn as much as you can about gestational diabetes and the importance of managing your gestational diabetes and continuing to enjoy a healthy lifestyle after you have had your baby.

# What is gestational diabetes?

Gestational diabetes is a form of diabetes that occurs during pregnancy and usually goes away after the baby is born. Between 5% to 8% of pregnant women will develop gestational diabetes and this usually occurs around the 24th to 28th week of pregnancy.

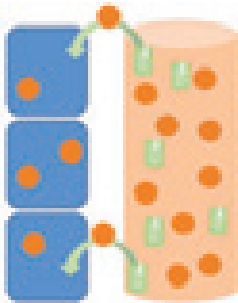
Diabetes is a common condition in which the body's cells are unable to effectively obtain glucose from the bloodstream. Glucose is required to provide the body with energy for day-to-day activities. The hormone insulin moves glucose from the blood into the body's cells, where it can be used for energy.

When the movement of glucose into the cells is delayed the blood glucose levels rise, causing diabetes to develop.

## Glucose and insulin changes in gestational diabetes

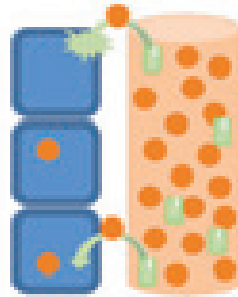
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Insulin moves glucose from the blood into your cells



### Gestational Diabetes:

Insulin resistance and inadequate insulin leads to less glucose entering the cells so blood glucose levels become higher



Glucose



Insulin



Body's Cells



Blood Vessel

Being diagnosed with gestational diabetes can be a shock and upsetting. You may be worried about the health of your baby or that there will be problems with the birth. This booklet explains how you can have a healthy baby with effective diabetes management and support from your health care team.

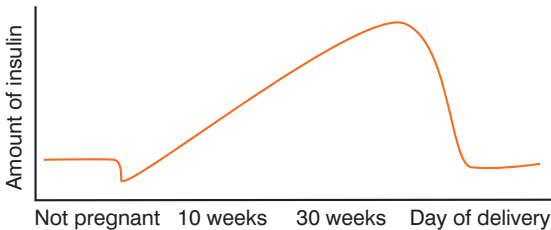
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# What causes gestational diabetes?

In pregnancy, the placenta (the blood source for the baby) produces hormones that help the baby grow and develop. Some of these hormones block the action of the mother's insulin which is called insulin resistance. During pregnancy, to keep the blood glucose levels normal, mothers need to make 2 to 3 times the normal amount of insulin due to this insulin resistance.

If the body is unable to produce the extra insulin or becomes more resistant, gestational diabetes develops. When the baby is born and the insulin requirements fall, glucose levels return to normal and diabetes usually disappears.



# Who is at increased risk of gestational diabetes?

- Older mothers, especially over the age of 30 years of age
- Women with a family history of type 2 diabetes
- Women who are overweight
- Indigenous Australians
- Women from certain ethnic backgrounds including:
  - South Asian
  - Vietnamese
  - Chinese
  - Middle Eastern
  - Polynesian/Melanesian
- Women who have had gestational diabetes
- Women who have had large babies or obstetric complications
- Woman who have had polycystic ovarian syndrome

# How is gestational diabetes diagnosed?

The oral Glucose Tolerance Test (GTT) is used to assess how your body responds to a glucose load. After fasting 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. If the blood glucose is above the normal level, you have gestational diabetes.

# Why does gestational diabetes need to be treated?

If a mother's blood glucose levels are high, glucose passes through the placenta to the baby. This may lead to the baby growing larger than the average baby. Giving birth to larger babies can potentially cause more problems for both the mother and child during and following birth. However, the baby's blood glucose level may be too low (**hypoglycaemia**) at birth.



Untreated gestational diabetes can also lead to a greater likelihood of developing high blood pressure during the pregnancy.

For many women, being diagnosed with gestational diabetes may be upsetting. However, by working closely with your doctor and health care team you can keep your blood glucose levels within the target range to provide the best outcome for both you and your baby.

# How is gestational diabetes managed?

Eat Well

Play Well

Stay Well



- Healthy eating
- Physical activity
- Monitoring your blood glucose levels
- Medication (if needed)

# Healthy eating

## What foods should I eat?

Following a healthy eating plan is an important part of diabetes management and will help to:

- keep your blood glucose levels within the target range advised by your doctor or diabetes educator
- provide adequate nutrition for you and your growing baby
- achieve appropriate weight changes during your pregnancy

**Women with gestational diabetes are encouraged to:**

- eat regular meals
- eat small amounts often
- satisfy their hunger and maintain a healthy weight
- include some carbohydrate in every meal and snack

**Choose foods that:**

- are varied and enjoyable
- are low in fat, particularly saturated fat and high in fibre
- are a good source of carbohydrate (grains, cereals, fruit, pasta, rice)
- provide the nutrients you need during pregnancy

**Nutrients required in higher amounts for pregnancy include:**

- calcium (milk, cheese, nuts, tahini)
- iron (red meat, chicken, fish, chickpeas, tofu)
- folic acid (dark green leafy vegetables)

If it is possible, it is helpful to see a dietitian who will advise you on getting the proper nutrients for you and your baby, while helping you to make healthy food choices for managing 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 help manage your blood glucose levels, it is important to spread your carbohydrate foods over 3 small meals and 2-3 snacks each day.

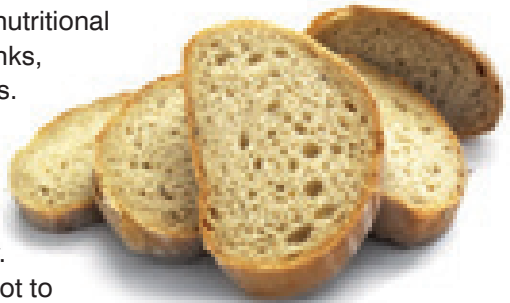


### Foods containing carbohydrate include:

- multigrain or wholegrain breads and breakfast cereals
- pasta, noodles and rice (preferably Doongara or Basmati rice as they have a lower glycaemic index and will help you to stay fuller longer)
- potato, sweet potato and corn in moderation
- legumes such as baked beans, red kidney beans and lentils
- fruits
- milks, yoghurts

Carbohydrate foods that contain little nutritional value include sucrose (sugar), soft drinks, cordials, fruit juices, cakes and biscuits. It is wise to avoid these foods.

In some women, blood glucose levels continue to be high, even with healthy eating and regular activity. If this happens to you, it is important not to cut back on carbohydrates as the baby requires carbohydrate as its main energy source. Some women's bodies require help to manage blood glucose levels and insulin injections may be needed.



## Glycaemic Index (GI)

The GI is a measure of how quickly the carbohydrate in a food will affect the level of glucose in the blood. Foods that have a high GI will raise the blood glucose levels quickly, while those with a low GI will raise the blood glucose levels more slowly. Foods with a low or medium GI may be better choices when trying to manage blood glucose levels. The GI of foods does not change the serving sizes.

Lower GI foods can:

- prevent large fluctuations in blood glucose levels
- make you feel satisfied for longer
- help manage your weight

**Low GI**=less than 55, **Medium GI**=56-69, **High GI**=over 70

For more information go to the GI website: [glycemicindex.com](http://glycemicindex.com)

## Fat

Use healthier fats like canola and olive oils, unsaturated oils, margarines, avocados and unsalted nuts. Limit the amount of fat you eat, particularly saturated fats by selecting lean meats, skinless chicken and low-fat dairy foods.

Avoid takeaway and processed foods. If eaten in large amounts, all fats can cause extra weight gain which can further increase insulin resistance.



## Protein

Include two to three small serves of protein each day as protein is important for the maintenance of the body and growth of your baby. Protein can also help you feel full for longer. Protein foods include lean meat, skinless chicken, fish, eggs and reduced fat cheese. Milk, yoghurts, custards and legumes (beans, lentils, chickpeas) are also important sources of protein.



## The plate model below shows a healthy meal

Half your plate should include vegetables or salad. A quarter of the plate is protein food and another quarter is carbohydrate foods.

1/4 plate:  
Carbohydrate food

1/2 plate:  
Free vegetables



1/4 plate:  
Protein food

## Other dietary considerations

### Can I use artificial sweeteners?

The following sweeteners may be used in small amounts:

- Aspartame (951)\*
- Sucralose (955)\*
- Acesulphame Potassium (950)\*

\*look for these numbers on the food label ingredients list



### What can I drink?

Drinks such as cordial, juice and soft drink are high in energy and sugar so a better choice is to drink water, plain mineral water or soda water – try it with a fresh lemon or lime for something different.

### Alcohol

The Australian guidelines recommend that for women who are pregnant, planning a pregnancy or breastfeeding, avoiding alcohol is the safest option. There is strong evidence that heavy alcohol intake harms the baby, though the effects of low to moderate intake are less clear.

**Talk to your dietitian regarding healthy food choices both for your diabetes management and general good health during pregnancy, including:**

- Iodine deficiency
- Vitamin D deficiency
- Calcium
- Iron
- Foods susceptible to listeria



## Sample food plan

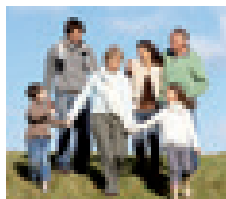
Meal	Choose from		Plus
	Option 1	Option 2	
<b>Breakfast</b>	½ cup untoasted muesli/All Bran®/rolled oats (raw) OR 1 cup Guardian®/Special K®	1-2 slices of toast multigrain, soy & linseed, wholemeal, white, heavy fruit bread OR 1 slice of toast with ½ cup baked beans	250ml low fat milk OR 100g low-fat fruit yoghurt OR 200g artificially sweetened yoghurt
<b>Morning tea</b>	4 Vitaweats® with a small amount of reduced fat cheese	½ English muffin OR 1 slice toast with a small amount of reduced fat cheese	1 serve of fruit 1 apple, 1 pear, 1 small banana, 2 kiwi fruits, 4 apricots, ½ cup tinned fruit, 2 tablespoons sultanas
<b>Lunch</b>	2 slices of bread OR 1 medium bread roll with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	2/3 cup cooked rice (Basmati/Doongara) OR 1 cup pasta/noodles with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	Plenty of salad or cooked vegetables (other than potato or corn) PLUS 1 serve of fruit
<b>Afternoon Tea</b>	250mls low fat milk	100g Low fat yoghurt OR 200g artificially sweetened yoghurt	1 slice heavy fruit loaf OR 1 crumpet OR ½ English muffin
<b>Dinner</b>	2/3 cup cooked rice (Basmati/Doongara) OR 1 cup pasta/noodles	1 medium potato and a small corn cob	A small serve of lean meat, fish, chicken or tofu, with plenty of salad OR cooked vegetables PLUS 1 serve of fruit
<b>Supper</b>	½ cup low fat custard OR 2 small scoops of low-fat ice cream	100g low-fat yoghurt OR 200g artificially sweetened yoghurt	1 serve of fruit

## Physical activity

It is never too late to start being more active and there are many ways that you can ‘do exercise’ as part of your everyday routine. Anything that gets you moving is generally good for your diabetes. Walking is a great way to be physically active, without even noticing you are ‘exercising’.

Here are some tips on how you can incorporate more walking into your life:

- start a walking group with family or friends
- walk instead of driving to the local shops
- take the stairs instead of the lift
- stand and move while on the phone
- gardening



**For women with gestational diabetes, moderate intensity physical activity can help to manage blood glucose levels.**

‘Moderate’ means a slight but noticeable increase in breathing and heart rate. If there are no specific obstetric or medical conditions, you should be able to safely exercise during pregnancy. However, it is best to discuss this with your doctor.

**Regular activities such as walking or swimming help to:**

- reduce insulin resistance
- keep you fit
- prepare for the birth of your baby
- manage your blood glucose levels

If you are feeling tired and are less active, your blood glucose levels will be higher. Remember, before starting or continuing any form of physical activity, always check with your doctor.

Consider buying a pedometer. This is a small device that counts your daily steps. It will measure just how much walking you’re doing. Aim to walk 10,000 steps each day.

Gaining too much weight during pregnancy will make it harder to manage your diabetes and the birth. Talk to your healthcare team if you feel you are gaining too much weight.

## Monitoring your blood glucose levels

Regularly testing your **Blood Glucose Level** (BGL) enables treatment to be assessed and changed as necessary.

During pregnancy the expected blood glucose range is lower than for people with diabetes who are not pregnant.

Testing your own blood glucose levels will help you to:

- better understand the effect of food and lifestyle on blood glucose levels
- know when to seek advice from your health professionals
- develop confidence in managing your diabetes

Generally targets are 4.0 to 7mmol/L depending on when the test is done. Your doctor or diabetes educator will advise you what blood glucose levels to aim for.

My target BGLs are \_\_\_\_\_ to \_\_\_\_\_ fasting/before meals  
\_\_\_\_\_ to \_\_\_\_\_ after meals

The most common times to test blood glucose levels are when you wake up in the morning (fasting) and 2 hours after each meal. Other testing times may include 1 hour after meals and/or before meals.

**Blood Glucose Meters** (the equipment used to test your blood glucose levels) are available from your local National Diabetes Service Scheme Agents (listed on page 25), pharmacies or your diabetes educator. Training on how to use your blood glucose meter will be provided.

Self blood glucose testing involves a finger prick using a finger pricking device to obtain a small drop of blood to test in your blood glucose meter. Recording your blood glucose levels in a record book or sheet is important so you can discuss the results with your diabetes team at each appointment.

Ask your diabetes team how to safely dispose of your equipment.

## Medication (if needed)

### What if blood glucose levels are too high?

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

Insulin treatment may be needed to bring the blood glucose levels into the target range. Tablets are not widely used in the treatment of gestational diabetes as their effectiveness and safety are still being assessed.

Insulin is given by injection using an insulin device. This device can deliver the insulin at a push of a button. If insulin is required, your diabetes educator or doctor will demonstrate how to use the insulin device and where to inject the insulin. The injected insulin will help to lower your blood glucose level to within a range that is best for your baby's growth and development. The insulin does not cross the placenta or affect your baby.



## What if blood glucose levels are too high? (cont.)

While many women are initially reluctant to give an injection, most find it less uncomfortable than doing the blood glucose tests. The injection of insulin will not harm your baby.

The diabetes team will advise you of the appropriate starting dose of insulin. It is common for the insulin dose to be increased regularly as the insulin resistance from the placental hormones increases until close to the birth.

Your diabetes team will regularly review your blood glucose levels and advise you of the correct insulin doses to take.

If you are having insulin injections, it is possible for blood glucose levels to go a little low, although this is not common. You may feel weak, shaky or sweaty. A low blood glucose level is called **hypoglycaemia** or a '**hypo**' and is treated by having a drink or food containing quick acting glucose. Within a few minutes of having something sugary, your blood glucose level should return to normal. You should perform an extra blood test to check that your blood glucose levels have returned to normal.

Discuss taking control of 'hypos' with your diabetes team.

## The birth

Your diabetes and pregnancy teams will continue to monitor you and your baby throughout the pregnancy. Tests may include an ultrasound, blood glucose and blood pressure. If diabetes has been well managed and there are no other problems, most women go to ‘full term’ and give birth naturally.

If baby grows too large (macrosomic) or any other concerns about the pregnancy arise, your pregnancy team may suggest ‘inducing’ the baby one or two weeks early. If an earlier birth is required the labour is usually induced after using a medication that prepares the cervix for delivery. During labour your baby’s heartbeat may be monitored using a cardiotocograph (CTG) machine strapped to your abdomen.

### Caesarean section

As with all pregnant women, there is a possibility that you may need a caesarean birth. Sometimes a caesarean may be required if the baby is too large or if there are other obstetric concerns such as low placenta, breech presentation or previous caesarean delivery. It’s a good idea to be informed about caesarean births so that if the need arises you are well prepared.

### Insulin/Glucose infusion (drip)

Women may need an insulin infusion to control the blood glucose levels during labour, or when having a caesarean. This is more likely in women who have needed treatment with high doses of insulin during the pregnancy.

You can discuss your birth plan with your doctor or midwife.



# After the birth

**Gestational Diabetes will not lead to your baby being born with diabetes**

Your baby will be monitored carefully for the first 24-48 hours (heart rate, colour, breathing, blood glucose levels). The midwives will perform blood glucose tests (using heel pricks) on your baby to make sure its blood glucose levels are not too low. These will be monitored until they are satisfactory.

## Benefits of breastfeeding

Breastfeeding soon after the birth, then every four hours, helps to maintain your baby's glucose levels. This helps to avoid low blood glucose levels for your baby. Breastfeeding has also been shown to pass on the mother's immunity to the baby and help your weight control.

## For women who required insulin

Insulin will usually be stopped after your baby is born.

Your health team will advise you how often to monitor your blood glucose to see whether the levels have returned to normal (generally 4.0 to 8 mmol/L).

## 6-12 weeks after the birth

An oral Glucose Tolerance Test (GTT) is very important to check that the diabetes has gone. In some women the diabetes does not resolve.

**Remember to tell your doctor that you had gestational diabetes.**



## Future risks

Once you have had gestational diabetes, you are at a higher risk of developing diabetes later in life. Approximately 50% of women who have had gestational diabetes will develop type 2 diabetes within 10-20 years. If you have another pregnancy, there is a very high chance of developing gestational diabetes again.

The healthy lifestyle information gained during pregnancy is valid for all Australians. Continue your healthy eating and activity routine and ask your doctor for a blood glucose test every 2 years.

### To help lower the risks of developing diabetes you should:

- **Eat Well**  
Follow a healthy eating plan
- **Play Well**  
Have regular physical activity
- **Stay Well**  
Ask your doctor for a diabetes test every 2 years  
Before your next pregnancy have tests for diabetes  
Control your weight



**You will be sent more information after the birth of your baby including a booklet 'Life After Gestational Diabetes'**



# The diabetes team

The team members vary, depending on where you live or attend for your antenatal care, but may include:

- a diabetes doctor – a specialist in diabetes (endocrinologist)
- a diabetes educator – a specialist nurse/midwife who will educate you and your family on how to monitor and manage your blood glucose levels
- a dietitian – who will help you with a healthy food plan for your pregnancy
- Your General Practitioner (GP)

The diabetes team works closely with your pregnancy team that may include:

- an obstetrician – a specialist in pregnancy and birth
- a midwife – will care and educate you in preparation for the birth and parenting
- a physiotherapist – who may educate you and your partner on the birth process

The diabetes team is supported by the National Diabetes Services Scheme (NDSS) Agents in each State and Territory listed on Page 24.

## Contact details:

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# Notes

Ruled area for taking notes, consisting of 25 horizontal dotted lines.

# National Diabetes Services Scheme

The National Diabetes Services Scheme (NDSS) is an initiative of the Australian Government administered by Diabetes Australia. The NDSS is delivered locally through State and Territory based Agents and Sub-Agents such as diabetes centres, pharmacies and health centres. The scheme provides diabetes-related products at subsidised prices, information and select services to people with diabetes. Registration is free and open to all Australians diagnosed with diabetes.

## Products

**People who are registered with the NDSS can access a range of approved products including:**

- subsidised blood and urine testing strips. A wide range of blood glucose testing strips are available at a lower cost than a Pharmacy Prescription
- insulin syringes and pen needles. These are available free of charge to all people using insulin
- insulin pump consumables
- diabetes self-management information and services

## How to order products

**There are a number of ways you can order products:**

- **Over the counter** from your State or Territory Agent or Sub-Agent
- **Telephone:** 1300 136 588
- **Website:**

Diabetes ACT	<a href="http://diabetes-act.com.au">diabetes-act.com.au</a>
Diabetes Australia NSW	<a href="http://diabetesnsw.com.au">diabetesnsw.com.au</a>
Diabetes Australia Queensland	<a href="http://diabetesqld.org.au">diabetesqld.org.au</a>
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Diabetes WA	<a href="http://diabeteswa.com.au">diabeteswa.com.au</a>
Healthy Living NT	<a href="http://healthylivingnt.org.au">healthylivingnt.org.au</a>
- **Post** your order to Diabetes Australia, GPO Box 9824 in your capital city. Order forms can be downloaded from the web, posted to you by ringing the above number or collected from Agents or Sub-Agents.

## Concession card holders

Concession card holders may receive a further discount on NDSS products. For more information contact your local service Agent as noted above or refer to the NDSS website [ndss.com.au](http://ndss.com.au).

More information about the NDSS can be found on the website:  
[ndss.com.au](http://ndss.com.au) or by calling 1300 136 588

## Diabetes Australia

Diabetes Australia is a national organisation and draws its membership from State and Territory based consumer organisations, health professional organisations and research bodies who work together to provide a collective and powerful voice for people living with diabetes, their families and carers.

Refer to [diabetesaustralia.com.au](http://diabetesaustralia.com.au) for further contact details.

Diabetes Australia is turning diabetes around through awareness, prevention, detection, management and finding a cure.

**Acknowledgments:**

The Australian Government and Diabetes Australia wishes to acknowledge the valuable contributions and support of the National Diabetes Services Scheme Agents who through the NDSS Diabetes in Pregnancy, Gestational Diabetes Mellitus Working Group developed this publication with consumer input and assistance from The Australasian Diabetes In Pregnancy Society (ADIPS).

For further information regarding this publication, its development or availability contact Diabetes Australia Ltd:

**Email** [admin@diabetesaustralia.com.au](mailto:admin@diabetesaustralia.com.au)

**Phone** 02 6232 3800

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# Introduction

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Gestational diabetes is associated with an increased risk of complications in pregnancy and birth, as well as a greater likelihood of mother and child developing type 2 diabetes later in life. The good news is that with good management of gestational diabetes, these risks are significantly reduced.

There have been huge advances in the knowledge about the management and treatment of gestational diabetes and the importance of a healthy lifestyle in keeping gestational diabetes and its complications under control. This booklet aims to provide you with information about gestational diabetes, how to look after your gestational diabetes and where to get assistance if you need it.

The booklet is not designed to take the place of the valuable advice you will receive from your diabetes team. It is designed to help you learn as much as you can about gestational diabetes and the importance of managing your gestational diabetes and continuing to enjoy a healthy lifestyle after you have had your baby.

# What is gestational diabetes?

Gestational diabetes is a form of diabetes that occurs during pregnancy and usually goes away after the baby is born. Between 5% to 8% of pregnant women will develop gestational diabetes and this usually occurs around the 24th to 28th week of pregnancy.

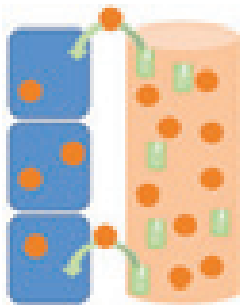
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When the movement of glucose into the cells is delayed the blood glucose levels rise, causing diabetes to develop.

## Glucose and insulin changes in gestational diabetes

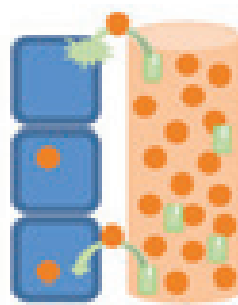
### Normal:

Insulin moves glucose from the blood into your cells



### Gestational Diabetes:

Insulin resistance and inadequate insulin leads to less glucose entering the cells so blood glucose levels become higher



Glucose



Insulin



Body's Cells



Blood Vessel

Being diagnosed with gestational diabetes can be a shock and upsetting. You may be worried about the health of your baby or that there will be problems with the birth. This booklet explains how you can have a healthy baby with effective diabetes management and support from your health care team.

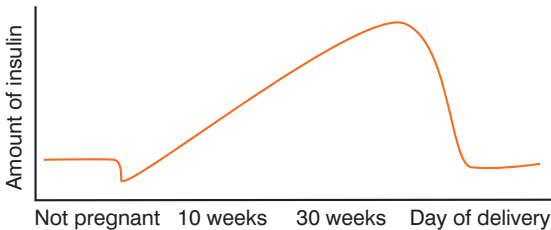
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# What causes gestational diabetes?

In pregnancy, the placenta (the blood source for the baby) produces hormones that help the baby grow and develop. Some of these hormones block the action of the mother's insulin which is called insulin resistance. During pregnancy, to keep the blood glucose levels normal, mothers need to make 2 to 3 times the normal amount of insulin due to this insulin resistance.

If the body is unable to produce the extra insulin or becomes more resistant, gestational diabetes develops. When the baby is born and the insulin requirements fall, glucose levels return to normal and diabetes usually disappears.



# Who is at increased risk of gestational diabetes?

- Older mothers, especially over the age of 30 years of age
- Women with a family history of type 2 diabetes
- Women who are overweight
- Indigenous Australians
- Women from certain ethnic backgrounds including:
  - South Asian
  - Vietnamese
  - Chinese
  - Middle Eastern
  - Polynesian/Melanesian
- Women who have had gestational diabetes
- Women who have had large babies or obstetric complications
- Woman who have had polycystic ovarian syndrome

# How is gestational diabetes diagnosed?

The oral Glucose Tolerance Test (GTT) is used to assess how your body responds to a glucose load. After fasting 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. If the blood glucose is above the normal level, you have gestational diabetes.

# Why does gestational diabetes need to be treated?

If a mother's blood glucose levels are high, glucose passes through the placenta to the baby. This may lead to the baby growing larger than the average baby. Giving birth to larger babies can potentially cause more problems for both the mother and child during and following birth. However, the baby's blood glucose level may be too low (**hypoglycaemia**) at birth.



Untreated gestational diabetes can also lead to a greater likelihood of developing high blood pressure during the pregnancy.

For many women, being diagnosed with gestational diabetes may be upsetting. However, by working closely with your doctor and health care team you can keep your blood glucose levels within the target range to provide the best outcome for both you and your baby.

# Healthy eating

## What foods should I eat?

Following a healthy eating plan is an important part of diabetes management and will help to:

- keep your blood glucose levels within the target range advised by your doctor or diabetes educator
- provide adequate nutrition for you and your growing baby
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**Women with gestational diabetes are encouraged to:**

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- are varied and enjoyable
- are low in fat, particularly saturated fat and high in fibre
- are a good source of carbohydrate (grains, cereals, fruit, pasta, rice)
- provide the nutrients you need during pregnancy

**Nutrients required in higher amounts for pregnancy include:**

- calcium (milk, cheese, nuts, tahini)
- iron (red meat, chicken, fish, chickpeas, tofu)
- folic acid (dark green leafy vegetables)

If it is possible, it is helpful to see a dietitian who will advise you on getting the proper nutrients for you and your baby, while helping you to make healthy food choices for managing 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 help manage your blood glucose levels, it is important to spread your carbohydrate foods over 3 small meals and 2-3 snacks each day.

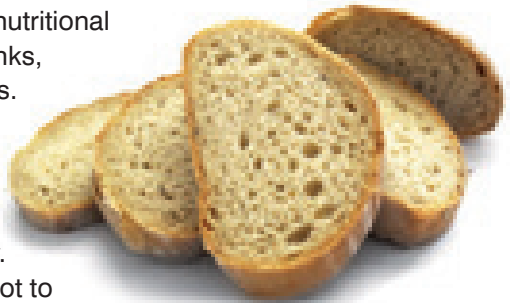


### Foods containing carbohydrate include:

- multigrain or wholegrain breads and breakfast cereals
- pasta, noodles and rice (preferably Doongara or Basmati rice as they have a lower glycaemic index and will help you to stay fuller longer)
- potato, sweet potato and corn in moderation
- legumes such as baked beans, red kidney beans and lentils
- fruits
- milks, yoghurts

Carbohydrate foods that contain little nutritional value include sucrose (sugar), soft drinks, cordials, fruit juices, cakes and biscuits. It is wise to avoid these foods.

In some women, blood glucose levels continue to be high, even with healthy eating and regular activity. If this happens to you, it is important not to cut back on carbohydrates as the baby requires carbohydrate as its main energy source. Some women's bodies require help to manage blood glucose levels and insulin injections may be needed.



## Glycaemic Index (GI)

The GI is a measure of how quickly the carbohydrate in a food will affect the level of glucose in the blood. Foods that have a high GI will raise the blood glucose levels quickly, while those with a low GI will raise the blood glucose levels more slowly. Foods with a low or medium GI may be better choices when trying to manage blood glucose levels. The GI of foods does not change the serving sizes.

Lower GI foods can:

- prevent large fluctuations in blood glucose levels
- make you feel satisfied for longer
- help manage your weight

**Low GI**=less than 55, **Medium GI**=56-69, **High GI**=over 70

For more information go to the GI website: [glycemicindex.com](http://glycemicindex.com)

## Fat

Use healthier fats like canola and olive oils, unsaturated oils, margarines, avocados and unsalted nuts. Limit the amount of fat you eat, particularly saturated fats by selecting lean meats, skinless chicken and low-fat dairy foods.

Avoid takeaway and processed foods. If eaten in large amounts, all fats can cause extra weight gain which can further increase insulin resistance.



## Protein

Include two to three small serves of protein each day as protein is important for the maintenance of the body and growth of your baby. Protein can also help you feel full for longer. Protein foods include lean meat, skinless chicken, fish, eggs and reduced fat cheese. Milk, yoghurts, custards and legumes (beans, lentils, chickpeas) are also important sources of protein.



## The plate model below shows a healthy meal

Half your plate should include vegetables or salad. A quarter of the plate is protein food and another quarter is carbohydrate foods.

1/4 plate:  
Carbohydrate food

1/2 plate:  
Free vegetables



1/4 plate:  
Protein food

## Other dietary considerations

### Can I use artificial sweeteners?

The following sweeteners may be used in small amounts:

- Aspartame (951)\*
- Sucralose (955)\*
- Acesulphame Potassium (950)\*

\*look for these numbers on the food label ingredients list



### What can I drink?

Drinks such as cordial, juice and soft drink are high in energy and sugar so a better choice is to drink water, plain mineral water or soda water – try it with a fresh lemon or lime for something different.

### Alcohol

The Australian guidelines recommend that for women who are pregnant, planning a pregnancy or breastfeeding, avoiding alcohol is the safest option. There is strong evidence that heavy alcohol intake harms the baby, though the effects of low to moderate intake are less clear.

Talk to your dietitian regarding healthy food choices both for your diabetes management and general good health during pregnancy, including:

- Iodine deficiency
- Vitamin D deficiency
- Calcium
- Iron
- Foods susceptible to listeria

## Sample food plan

Meal	Choose from		Plus
	Option 1	Option 2	
<b>Breakfast</b>	½ cup untoasted muesli/All Bran®/rolled oats (raw) OR 1 cup Guardian®/Special K®	1-2 slices of toast multigrain, soy & linseed, wholemeal, white, heavy fruit bread OR 1 slice of toast with ½ cup baked beans	250ml low fat milk OR 100g low-fat fruit yoghurt OR 200g artificially sweetened yoghurt
<b>Morning tea</b>	4 Vitaweats® with a small amount of reduced fat cheese	½ English muffin OR 1 slice toast with a small amount of reduced fat cheese	1 serve of fruit 1 apple, 1 pear, 1 small banana, 2 kiwi fruits, 4 apricots, ½ cup tinned fruit, 2 tablespoons sultanas
<b>Lunch</b>	2 slices of bread OR 1 medium bread roll with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	2/3 cup cooked rice (Basmati/Doongara) OR 1 cup pasta/noodles with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	Plenty of salad or cooked vegetables (other than potato or corn) PLUS 1 serve of fruit
<b>Afternoon Tea</b>	250mls low fat milk	100g Low fat yoghurt OR 200g artificially sweetened yoghurt	1 slice heavy fruit loaf OR 1 crumpet OR ½ English muffin
<b>Dinner</b>	2/3 cup cooked rice (Basmati/Doongara) OR 1 cup pasta/noodles	1 medium potato and a small corn cob	A small serve of lean meat, fish, chicken or tofu, with plenty of salad OR cooked vegetables PLUS 1 serve of fruit
<b>Supper</b>	½ cup low fat custard OR 2 small scoops of low-fat ice cream	100g low-fat yoghurt OR 200g artificially sweetened yoghurt	1 serve of fruit



## Physical activity

It is never too late to start being more active and there are many ways that you can ‘do exercise’ as part of your everyday routine. Anything that gets you moving is generally good for your diabetes. Walking is a great way to be physically active, without even noticing you are ‘exercising’.

Here are some tips on how you can incorporate more walking into your life:

- start a walking group with family or friends
- walk instead of driving to the local shops
- take the stairs instead of the lift
- stand and move while on the phone
- gardening



**For women with gestational diabetes, moderate intensity physical activity can help to manage blood glucose levels.**

‘Moderate’ means a slight but noticeable increase in breathing and heart rate. If there are no specific obstetric or medical conditions, you should be able to safely exercise during pregnancy. However, it is best to discuss this with your doctor.

**Regular activities such as walking or swimming help to:**

- reduce insulin resistance
- keep you fit
- prepare for the birth of your baby
- manage your blood glucose levels

If you are feeling tired and are less active, your blood glucose levels will be higher. Remember, before starting or continuing any form of physical activity, always check with your doctor.

Consider buying a pedometer. This is a small device that counts your daily steps. It will measure just how much walking you’re doing. Aim to walk 10,000 steps each day.

Gaining too much weight during pregnancy will make it harder to manage your diabetes and the birth. Talk to your healthcare team if you feel you are gaining too much weight.

## Monitoring your blood glucose levels

Regularly testing your **Blood Glucose Level** (BGL) enables treatment to be assessed and changed as necessary.

During pregnancy the expected blood glucose range is lower than for people with diabetes who are not pregnant.

Testing your own blood glucose levels will help you to:

- better understand the effect of food and lifestyle on blood glucose levels
- know when to seek advice from your health professionals
- develop confidence in managing your diabetes

Generally targets are 4.0 to 7mmol/L depending on when the test is done. Your doctor or diabetes educator will advise you what blood glucose levels to aim for.

My target BGLs are \_\_\_\_\_ to \_\_\_\_\_ fasting/before meals  
\_\_\_\_\_ to \_\_\_\_\_ after meals

The most common times to test blood glucose levels are when you wake up in the morning (fasting) and 2 hours after each meal. Other testing times may include 1 hour after meals and/or before meals.

**Blood Glucose Meters** (the equipment used to test your blood glucose levels) are available from your local National Diabetes Service Scheme Agents (listed on page 25), pharmacies or your diabetes educator. Training on how to use your blood glucose meter will be provided.

Self blood glucose testing involves a finger prick using a finger pricking device to obtain a small drop of blood to test in your blood glucose meter. Recording your blood glucose levels in a record book or sheet is important so you can discuss the results with your diabetes team at each appointment.

Ask your diabetes team how to safely dispose of your equipment.

## Medication (if needed)

### What if blood glucose levels are too high?

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

Insulin treatment may be needed to bring the blood glucose levels into the target range. Tablets are not widely used in the treatment of gestational diabetes as their effectiveness and safety are still being assessed.

Insulin is given by injection using an insulin device. This device can deliver the insulin at a push of a button. If insulin is required, your diabetes educator or doctor will demonstrate how to use the insulin device and where to inject the insulin. The injected insulin will help to lower your blood glucose level to within a range that is best for your baby's growth and development. The insulin does not cross the placenta or affect your baby.



## What if blood glucose levels are too high? (cont.)

While many women are initially reluctant to give an injection, most find it less uncomfortable than doing the blood glucose tests. The injection of insulin will not harm your baby.

The diabetes team will advise you of the appropriate starting dose of insulin. It is common for the insulin dose to be increased regularly as the insulin resistance from the placental hormones increases until close to the birth.

Your diabetes team will regularly review your blood glucose levels and advise you of the correct insulin doses to take.

If you are having insulin injections, it is possible for blood glucose levels to go a little low, although this is not common. You may feel weak, shaky or sweaty. A low blood glucose level is called **hypoglycaemia** or a '**hypo**' and is treated by having a drink or food containing quick acting glucose. Within a few minutes of having something sugary, your blood glucose level should return to normal. You should perform an extra blood test to check that your blood glucose levels have returned to normal.

Discuss taking control of 'hypos' with your diabetes team.

## The birth

Your diabetes and pregnancy teams will continue to monitor you and your baby throughout the pregnancy. Tests may include an ultrasound, blood glucose and blood pressure. If diabetes has been well managed and there are no other problems, most women go to ‘full term’ and give birth naturally.

If baby grows too large (macrosomic) or any other concerns about the pregnancy arise, your pregnancy team may suggest ‘inducing’ the baby one or two weeks early. If an earlier birth is required the labour is usually induced after using a medication that prepares the cervix for delivery. During labour your baby’s heartbeat may be monitored using a cardiotocograph (CTG) machine strapped to your abdomen.

### Caesarean section

As with all pregnant women, there is a possibility that you may need a caesarean birth. Sometimes a caesarean may be required if the baby is too large or if there are other obstetric concerns such as low placenta, breech presentation or previous caesarean delivery. It’s a good idea to be informed about caesarean births so that if the need arises you are well prepared.

### Insulin/Glucose infusion (drip)

Women may need an insulin infusion to control the blood glucose levels during labour, or when having a caesarean. This is more likely in women who have needed treatment with high doses of insulin during the pregnancy.

You can discuss your birth plan with your doctor or midwife.



# After the birth

**Gestational Diabetes will not lead to your baby being born with diabetes**

Your baby will be monitored carefully for the first 24-48 hours (heart rate, colour, breathing, blood glucose levels). The midwives will perform blood glucose tests (using heel pricks) on your baby to make sure its blood glucose levels are not too low. These will be monitored until they are satisfactory.

## Benefits of breastfeeding

Breastfeeding soon after the birth, then every four hours, helps to maintain your baby's glucose levels. This helps to avoid low blood glucose levels for your baby. Breastfeeding has also been shown to pass on the mother's immunity to the baby and help your weight control.

## For women who required insulin

Insulin will usually be stopped after your baby is born.

Your health team will advise you how often to monitor your blood glucose to see whether the levels have returned to normal (generally 4.0 to 8 mmol/L).

## 6-12 weeks after the birth

An oral Glucose Tolerance Test (GTT) is very important to check that the diabetes has gone. In some women the diabetes does not resolve.

**Remember to tell your doctor that you had gestational diabetes.**



## Future risks

Once you have had gestational diabetes, you are at a higher risk of developing diabetes later in life. Approximately 50% of women who have had gestational diabetes will develop type 2 diabetes within 10-20 years. If you have another pregnancy, there is a very high chance of developing gestational diabetes again.

The healthy lifestyle information gained during pregnancy is valid for all Australians. Continue your healthy eating and activity routine and ask your doctor for a blood glucose test every 2 years.

### To help lower the risks of developing diabetes you should:

- **Eat Well**  
Follow a healthy eating plan
- **Play Well**  
Have regular physical activity
- **Stay Well**  
Ask your doctor for a diabetes test every 2 years  
Before your next pregnancy have tests for diabetes  
Control your weight



**You will be sent more information after the birth of your baby including a booklet 'Life After Gestational Diabetes'**

# The diabetes team

The team members vary, depending on where you live or attend for your antenatal care, but may include:

- a diabetes doctor – a specialist in diabetes (endocrinologist)
- a diabetes educator – a specialist nurse/midwife who will educate you and your family on how to monitor and manage your blood glucose levels
- a dietitian – who will help you with a healthy food plan for your pregnancy
- Your General Practitioner (GP)

The diabetes team works closely with your pregnancy team that may include:

- an obstetrician – a specialist in pregnancy and birth
- a midwife – will care and educate you in preparation for the birth and parenting
- a physiotherapist – who may educate you and your partner on the birth process

The diabetes team is supported by the National Diabetes Services Scheme (NDSS) Agents in each State and Territory listed on Page 24.

## Contact details:

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# National Diabetes Services Scheme

The National Diabetes Services Scheme (NDSS) is an initiative of the Australian Government administered by Diabetes Australia. The NDSS is delivered locally through State and Territory based Agents and Sub-Agents such as diabetes centres, pharmacies and health centres. The scheme provides diabetes-related products at subsidised prices, information and select services to people with diabetes. Registration is free and open to all Australians diagnosed with diabetes.

## Products

**People who are registered with the NDSS can access a range of approved products including:**

- subsidised blood and urine testing strips. A wide range of blood glucose testing strips are available at a lower cost than a Pharmacy Prescription
- insulin syringes and pen needles. These are available free of charge to all people using insulin
- insulin pump consumables
- diabetes self-management information and services

## How to order products

**There are a number of ways you can order products:**

- **Over the counter** from your State or Territory Agent or Sub-Agent
- **Telephone:** 1300 136 588
- **Website:**

Diabetes ACT	<a href="http://diabetes-act.com.au">diabetes-act.com.au</a>
Diabetes Australia NSW	<a href="http://diabetesnsw.com.au">diabetesnsw.com.au</a>
Diabetes Australia Queensland	<a href="http://diabetesqld.org.au">diabetesqld.org.au</a>
Diabetes Australia - Vic	<a href="http://diabetesvic.org.au">diabetesvic.org.au</a>
Diabetes SA	<a href="http://diabetessa.com.au">diabetessa.com.au</a>
Diabetes Tasmania	<a href="http://diabetestas.com.au">diabetestas.com.au</a>
Diabetes WA	<a href="http://diabeteswa.com.au">diabeteswa.com.au</a>
Healthy Living NT	<a href="http://healthylivingnt.org.au">healthylivingnt.org.au</a>
- **Post** your order to Diabetes Australia, GPO Box 9824 in your capital city. Order forms can be downloaded from the web, posted to you by ringing the above number or collected from Agents or Sub-Agents.

## Concession card holders

Concession card holders may receive a further discount on NDSS products. For more information contact your local service Agent as noted above or refer to the NDSS website [ndss.com.au](http://ndss.com.au).

More information about the NDSS can be found on the website:  
[ndss.com.au](http://ndss.com.au) or by calling 1300 136 588

## Diabetes Australia

Diabetes Australia is a national organisation and draws its membership from State and Territory based consumer organisations, health professional organisations and research bodies who work together to provide a collective and powerful voice for people living with diabetes, their families and carers.

Refer to [diabetesaustralia.com.au](http://diabetesaustralia.com.au) for further contact details.

Diabetes Australia is turning diabetes around through awareness, prevention, detection, management and finding a cure.

**Disclaimer:**

This information booklet is intended as a guide only. It should not replace individual medical advice and if you have any concerns about your health or further questions you should raise them with your doctor.

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# Introduction

In Australia, at least 17,000 women develop gestational diabetes every year – you are not alone! The number of women developing gestational diabetes is expected to grow significantly over the next few decades.

Gestational diabetes is associated with an increased risk of complications in pregnancy and birth, as well as a greater likelihood of mother and child developing type 2 diabetes later in life. The good news is that with good management of gestational diabetes, these risks are significantly reduced.

There have been huge advances in the knowledge about the management and treatment of gestational diabetes and the importance of a healthy lifestyle in keeping gestational diabetes and its complications under control. This booklet aims to provide you with information about gestational diabetes, how to look after your gestational diabetes and where to get assistance if you need it.

The booklet is not designed to take the place of the valuable advice you will receive from your diabetes team. It is designed to help you learn as much as you can about gestational diabetes and the importance of managing your gestational diabetes and continuing to enjoy a healthy lifestyle after you have had your baby.

# What is gestational diabetes?

Gestational diabetes is a form of diabetes that occurs during pregnancy and usually goes away after the baby is born. Between 5% to 8% of pregnant women will develop gestational diabetes and this usually occurs around the 24th to 28th week of pregnancy.

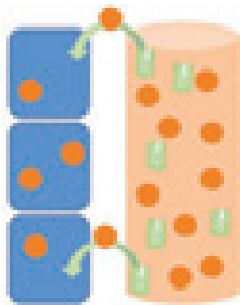
Diabetes is a common condition in which the body's cells are unable to effectively obtain glucose from the bloodstream. Glucose is required to provide the body with energy for day-to-day activities. The hormone insulin moves glucose from the blood into the body's cells, where it can be used for energy.

When the movement of glucose into the cells is delayed the blood glucose levels rise, causing diabetes to develop.

## Glucose and insulin changes in gestational diabetes

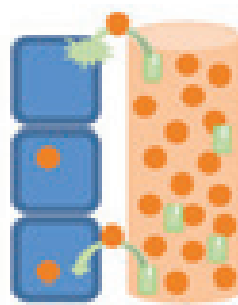
### Normal:

Insulin moves glucose from the blood into your cells



### Gestational Diabetes:

Insulin resistance and inadequate insulin leads to less glucose entering the cells so blood glucose levels become higher



Glucose



Insulin



Body's Cells



Blood Vessel

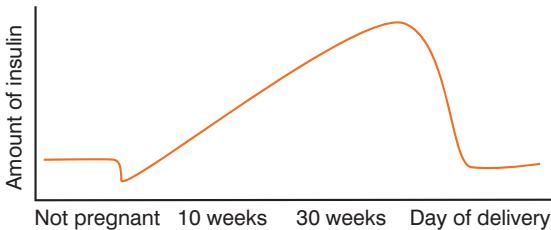
Being diagnosed with gestational diabetes can be a shock and upsetting. You may be worried about the health of your baby or that there will be problems with the birth. This booklet explains how you can have a healthy baby with effective diabetes management and support from your health care team.

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

# What causes gestational diabetes?

In pregnancy, the placenta (the blood source for the baby) produces hormones that help the baby grow and develop. Some of these hormones block the action of the mother's insulin which is called insulin resistance. During pregnancy, to keep the blood glucose levels normal, mothers need to make 2 to 3 times the normal amount of insulin due to this insulin resistance.

If the body is unable to produce the extra insulin or becomes more resistant, gestational diabetes develops. When the baby is born and the insulin requirements fall, glucose levels return to normal and diabetes usually disappears.



# Who is at increased risk of gestational diabetes?

- Older mothers, especially over the age of 30 years of age
- Women with a family history of type 2 diabetes
- Women who are overweight
- Indigenous Australians
- Women from certain ethnic backgrounds including:
  - South Asian
  - Vietnamese
  - Chinese
  - Middle Eastern
  - Polynesian/Melanesian
- Women who have had gestational diabetes
- Women who have had large babies or obstetric complications
- Woman who have had polycystic ovarian syndrome

# How is gestational diabetes diagnosed?

The oral Glucose Tolerance Test (GTT) is used to assess how your body responds to a glucose load. After fasting 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. If the blood glucose is above the normal level, you have gestational diabetes.

# Why does gestational diabetes need to be treated?

If a mother's blood glucose levels are high, glucose passes through the placenta to the baby. This may lead to the baby growing larger than the average baby. Giving birth to larger babies can potentially cause more problems for both the mother and child during and following birth. However, the baby's blood glucose level may be too low (**hypoglycaemia**) at birth.



Untreated gestational diabetes can also lead to a greater likelihood of developing high blood pressure during the pregnancy.

For many women, being diagnosed with gestational diabetes may be upsetting. However, by working closely with your doctor and health care team you can keep your blood glucose levels within the target range to provide the best outcome for both you and your baby.



# Healthy eating

## What foods should I eat?

Following a healthy eating plan is an important part of diabetes management and will help to:

- keep your blood glucose levels within the target range advised by your doctor or diabetes educator
- provide adequate nutrition for you and your growing baby
- achieve appropriate weight changes during your pregnancy

**Women with gestational diabetes are encouraged to:**

- eat regular meals
- eat small amounts often
- satisfy their hunger and maintain a healthy weight
- include some carbohydrate in every meal and snack

**Choose foods that:**

- are varied and enjoyable
- are low in fat, particularly saturated fat and high in fibre
- are a good source of carbohydrate (grains, cereals, fruit, pasta, rice)
- provide the nutrients you need during pregnancy

**Nutrients required in higher amounts for pregnancy include:**

- calcium (milk, cheese, nuts, tahini)
- iron (red meat, chicken, fish, chickpeas, tofu)
- folic acid (dark green leafy vegetables)

If it is possible, it is helpful to see a dietitian who will advise you on getting the proper nutrients for you and your baby, while helping you to make healthy food choices for managing 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 help manage your blood glucose levels, it is important to spread your carbohydrate foods over 3 small meals and 2-3 snacks each day.

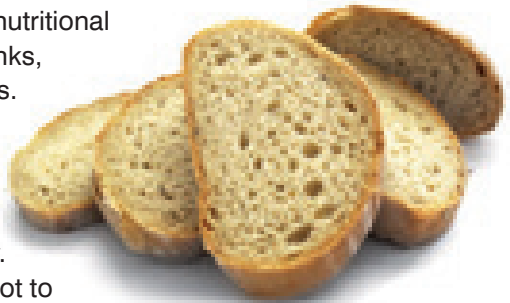


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In some women, blood glucose levels continue to be high, even with healthy eating and regular activity. If this happens to you, it is important not to cut back on carbohydrates as the baby requires carbohydrate as its main energy source. Some women's bodies require help to manage blood glucose levels and insulin injections may be needed.



## Glycaemic Index (GI)

The GI is a measure of how quickly the carbohydrate in a food will affect the level of glucose in the blood. Foods that have a high GI will raise the blood glucose levels quickly, while those with a low GI will raise the blood glucose levels more slowly. Foods with a low or medium GI may be better choices when trying to manage blood glucose levels. The GI of foods does not change the serving sizes.

Lower GI foods can:

- prevent large fluctuations in blood glucose levels
- make you feel satisfied for longer
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## Fat

Use healthier fats like canola and olive oils, unsaturated oils, margarines, avocados and unsalted nuts. Limit the amount of fat you eat, particularly saturated fats by selecting lean meats, skinless chicken and low-fat dairy foods.

Avoid takeaway and processed foods. If eaten in large amounts, all fats can cause extra weight gain which can further increase insulin resistance.



## Protein

Include two to three small serves of protein each day as protein is important for the maintenance of the body and growth of your baby. Protein can also help you feel full for longer. Protein foods include lean meat, skinless chicken, fish, eggs and reduced fat cheese. Milk, yoghurts, custards and legumes (beans, lentils, chickpeas) are also important sources of protein.



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The Australian guidelines recommend that for women who are pregnant, planning a pregnancy or breastfeeding, avoiding alcohol is the safest option. There is strong evidence that heavy alcohol intake harms the baby, though the effects of low to moderate intake are less clear.

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- Vitamin D deficiency
- Calcium
- Iron
- Foods susceptible to listeria

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	Option 1	Option 2	
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<b>Morning tea</b>	4 Vitaweats® with a small amount of reduced fat cheese	½ English muffin OR 1 slice toast with a small amount of reduced fat cheese	1 serve of fruit 1 apple, 1 pear, 1 small banana, 2 kiwi fruits, 4 apricots, ½ cup tinned fruit, 2 tablespoons sultanas
<b>Lunch</b>	2 slices of bread OR 1 medium bread roll with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	2/3 cup cooked rice (Basmati/Doongara) OR 1 cup pasta/noodles with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	Plenty of salad or cooked vegetables (other than potato or corn) PLUS 1 serve of fruit
<b>Afternoon Tea</b>	250mls low fat milk	100g Low fat yoghurt OR 200g artificially sweetened yoghurt	1 slice heavy fruit loaf OR 1 crumpet OR ½ English muffin
<b>Dinner</b>	2/3 cup cooked rice (Basmati/Doongara) OR 1 cup pasta/noodles	1 medium potato and a small corn cob	A small serve of lean meat, fish, chicken or tofu, with plenty of salad OR cooked vegetables PLUS 1 serve of fruit
<b>Supper</b>	½ cup low fat custard OR 2 small scoops of low-fat ice cream	100g low-fat yoghurt OR 200g artificially sweetened yoghurt	1 serve of fruit

## Physical activity

It is never too late to start being more active and there are many ways that you can ‘do exercise’ as part of your everyday routine. Anything that gets you moving is generally good for your diabetes. Walking is a great way to be physically active, without even noticing you are ‘exercising’.

Here are some tips on how you can incorporate more walking into your life:

- start a walking group with family or friends
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If you are feeling tired and are less active, your blood glucose levels will be higher. Remember, before starting or continuing any form of physical activity, always check with your doctor.

Consider buying a pedometer. This is a small device that counts your daily steps. It will measure just how much walking you’re doing. Aim to walk 10,000 steps each day.

Gaining too much weight during pregnancy will make it harder to manage your diabetes and the birth. Talk to your healthcare team if you feel you are gaining too much weight.

## Monitoring your blood glucose levels

Regularly testing your **Blood Glucose Level** (BGL) enables treatment to be assessed and changed as necessary.

During pregnancy the expected blood glucose range is lower than for people with diabetes who are not pregnant.

Testing your own blood glucose levels will help you to:

- better understand the effect of food and lifestyle on blood glucose levels
- know when to seek advice from your health professionals
- develop confidence in managing your diabetes

Generally targets are 4.0 to 7mmol/L depending on when the test is done. Your doctor or diabetes educator will advise you what blood glucose levels to aim for.

My target BGLs are \_\_\_\_\_ to \_\_\_\_\_ fasting/before meals  
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The most common times to test blood glucose levels are when you wake up in the morning (fasting) and 2 hours after each meal. Other testing times may include 1 hour after meals and/or before meals.

**Blood Glucose Meters** (the equipment used to test your blood glucose levels) are available from your local National Diabetes Service Scheme Agents (listed on page 25), pharmacies or your diabetes educator. Training on how to use your blood glucose meter will be provided.

Self blood glucose testing involves a finger prick using a finger pricking device to obtain a small drop of blood to test in your blood glucose meter. Recording your blood glucose levels in a record book or sheet is important so you can discuss the results with your diabetes team at each appointment.

Ask your diabetes team how to safely dispose of your equipment.



## Medication (if needed)

### What if blood glucose levels are too high?

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

Insulin treatment may be needed to bring the blood glucose levels into the target range. Tablets are not widely used in the treatment of gestational diabetes as their effectiveness and safety are still being assessed.

Insulin is given by injection using an insulin device. This device can deliver the insulin at a push of a button. If insulin is required, your diabetes educator or doctor will demonstrate how to use the insulin device and where to inject the insulin. The injected insulin will help to lower your blood glucose level to within a range that is best for your baby's growth and development. The insulin does not cross the placenta or affect your baby.



## What if blood glucose levels are too high? (cont.)

While many women are initially reluctant to give an injection, most find it less uncomfortable than doing the blood glucose tests. The injection of insulin will not harm your baby.

The diabetes team will advise you of the appropriate starting dose of insulin. It is common for the insulin dose to be increased regularly as the insulin resistance from the placental hormones increases until close to the birth.

**Your diabetes team will regularly review your blood glucose levels and advise you of the correct insulin doses to take.**

If you are having insulin injections, it is possible for blood glucose levels to go a little low, although this is not common. You may feel weak, shaky or sweaty. A low blood glucose level is called **hypoglycaemia** or a **'hypo'** and is treated by having a drink or food containing quick acting glucose. Within a few minutes of having something sugary, your blood glucose level should return to normal. You should perform an extra blood test to check that your blood glucose levels have returned to normal.

**Discuss taking control of 'hypos' with your diabetes team.**

## The birth

Your diabetes and pregnancy teams will continue to monitor you and your baby throughout the pregnancy. Tests may include an ultrasound, blood glucose and blood pressure. If diabetes has been well managed and there are no other problems, most women go to ‘full term’ and give birth naturally.

If baby grows too large (macrosomic) or any other concerns about the pregnancy arise, your pregnancy team may suggest ‘inducing’ the baby one or two weeks early. If an earlier birth is required the labour is usually induced after using a medication that prepares the cervix for delivery. During labour your baby’s heartbeat may be monitored using a cardiotocograph (CTG) machine strapped to your abdomen.

### Caesarean section

As with all pregnant women, there is a possibility that you may need a caesarean birth. Sometimes a caesarean may be required if the baby is too large or if there are other obstetric concerns such as low placenta, breech presentation or previous caesarean delivery. It’s a good idea to be informed about caesarean births so that if the need arises you are well prepared.

### Insulin/Glucose infusion (drip)

Women may need an insulin infusion to control the blood glucose levels during labour, or when having a caesarean. This is more likely in women who have needed treatment with high doses of insulin during the pregnancy.

You can discuss your birth plan with your doctor or midwife.



# After the birth

**Gestational Diabetes will not lead to your baby being born with diabetes**

Your baby will be monitored carefully for the first 24-48 hours (heart rate, colour, breathing, blood glucose levels). The midwives will perform blood glucose tests (using heel pricks) on your baby to make sure its blood glucose levels are not too low. These will be monitored until they are satisfactory.

## Benefits of breastfeeding

Breastfeeding soon after the birth, then every four hours, helps to maintain your baby's glucose levels. This helps to avoid low blood glucose levels for your baby. Breastfeeding has also been shown to pass on the mother's immunity to the baby and help your weight control.

## For women who required insulin

Insulin will usually be stopped after your baby is born.

Your health team will advise you how often to monitor your blood glucose to see whether the levels have returned to normal (generally 4.0 to 8 mmol/L).

## 6-12 weeks after the birth

An oral Glucose Tolerance Test (GTT) is very important to check that the diabetes has gone. In some women the diabetes does not resolve.

**Remember to tell your doctor that you had gestational diabetes.**



## Future risks

Once you have had gestational diabetes, you are at a higher risk of developing diabetes later in life. Approximately 50% of women who have had gestational diabetes will develop type 2 diabetes within 10-20 years. If you have another pregnancy, there is a very high chance of developing gestational diabetes again.

The healthy lifestyle information gained during pregnancy is valid for all Australians. Continue your healthy eating and activity routine and ask your doctor for a blood glucose test every 2 years.

### To help lower the risks of developing diabetes you should:

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Follow a healthy eating plan
- **Play Well**  
Have regular physical activity
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Ask your doctor for a diabetes test every 2 years  
Before your next pregnancy have tests for diabetes  
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The team members vary, depending on where you live or attend for your antenatal care, but may include:

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## Products

**People who are registered with the NDSS can access a range of approved products including:**

- subsidised blood and urine testing strips. A wide range of blood glucose testing strips are available at a lower cost than a Pharmacy Prescription
- insulin syringes and pen needles. These are available free of charge to all people using insulin
- insulin pump consumables
- diabetes self-management information and services

## How to order products

**There are a number of ways you can order products:**

- **Over the counter** from your State or Territory Agent or Sub-Agent
- **Telephone:** 1300 136 588
- **Website:**

Diabetes ACT	<a href="http://diabetes-act.com.au">diabetes-act.com.au</a>
Diabetes Australia NSW	<a href="http://diabetesnsw.com.au">diabetesnsw.com.au</a>
Diabetes Australia Queensland	<a href="http://diabetesqld.org.au">diabetesqld.org.au</a>
Diabetes Australia - Vic	<a href="http://diabetesvic.org.au">diabetesvic.org.au</a>
Diabetes SA	<a href="http://diabetessa.com.au">diabetessa.com.au</a>
Diabetes Tasmania	<a href="http://diabetestas.com.au">diabetestas.com.au</a>
Diabetes WA	<a href="http://diabeteswa.com.au">diabeteswa.com.au</a>
Healthy Living NT	<a href="http://healthylivingnt.org.au">healthylivingnt.org.au</a>
- **Post** your order to Diabetes Australia, GPO Box 9824 in your capital city. Order forms can be downloaded from the web, posted to you by ringing the above number or collected from Agents or Sub-Agents.

## Concession card holders

Concession card holders may receive a further discount on NDSS products. For more information contact your local service Agent as noted above or refer to the NDSS website [ndss.com.au](http://ndss.com.au).

More information about the NDSS can be found on the website:  
[ndss.com.au](http://ndss.com.au) or by calling 1300 136 588

## Diabetes Australia

Diabetes Australia is a national organisation and draws its membership from State and Territory based consumer organisations, health professional organisations and research bodies who work together to provide a collective and powerful voice for people living with diabetes, their families and carers.

Refer to [diabetesaustralia.com.au](http://diabetesaustralia.com.au) for further contact details.

Diabetes Australia is turning diabetes around through awareness, prevention, detection, management and finding a cure.



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# Introduction

In Australia, at least 17,000 women develop gestational diabetes every year – you are not alone! The number of women developing gestational diabetes is expected to grow significantly over the next few decades.

Gestational diabetes is associated with an increased risk of complications in pregnancy and birth, as well as a greater likelihood of mother and child developing type 2 diabetes later in life. The good news is that with good management of gestational diabetes, these risks are significantly reduced.

There have been huge advances in the knowledge about the management and treatment of gestational diabetes and the importance of a healthy lifestyle in keeping gestational diabetes and its complications under control. This booklet aims to provide you with information about gestational diabetes, how to look after your gestational diabetes and where to get assistance if you need it.

The booklet is not designed to take the place of the valuable advice you will receive from your diabetes team. It is designed to help you learn as much as you can about gestational diabetes and the importance of managing your gestational diabetes and continuing to enjoy a healthy lifestyle after you have had your baby.

# What is gestational diabetes?

Gestational diabetes is a form of diabetes that occurs during pregnancy and usually goes away after the baby is born. Between 5% to 8% of pregnant women will develop gestational diabetes and this usually occurs around the 24th to 28th week of pregnancy.

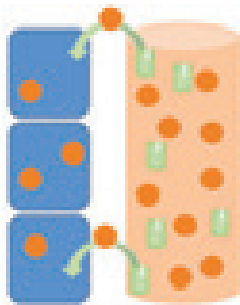
Diabetes is a common condition in which the body's cells are unable to effectively obtain glucose from the bloodstream. Glucose is required to provide the body with energy for day-to-day activities. The hormone insulin moves glucose from the blood into the body's cells, where it can be used for energy.

When the movement of glucose into the cells is delayed the blood glucose levels rise, causing diabetes to develop.

## Glucose and insulin changes in gestational diabetes

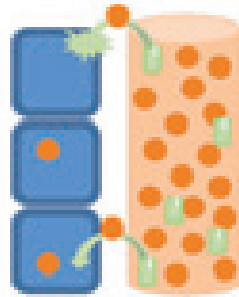
### Normal:

Insulin moves glucose from the blood into your cells



### Gestational Diabetes:

Insulin resistance and inadequate insulin leads to less glucose entering the cells so blood glucose levels become higher



Glucose



Insulin



Body's Cells



Blood Vessel

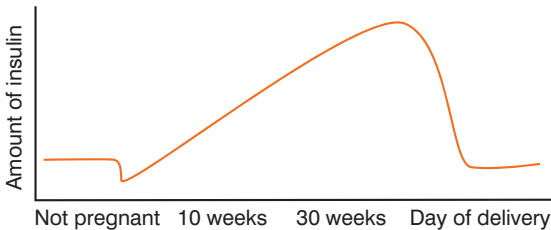
Being diagnosed with gestational diabetes can be a shock and upsetting. You may be worried about the health of your baby or that there will be problems with the birth. This booklet explains how you can have a healthy baby with effective diabetes management and support from your health care team.

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

# What causes gestational diabetes?

In pregnancy, the placenta (the blood source for the baby) produces hormones that help the baby grow and develop. Some of these hormones block the action of the mother's insulin which is called insulin resistance. During pregnancy, to keep the blood glucose levels normal, mothers need to make 2 to 3 times the normal amount of insulin due to this insulin resistance.

If the body is unable to produce the extra insulin or becomes more resistant, gestational diabetes develops. When the baby is born and the insulin requirements fall, glucose levels return to normal and diabetes usually disappears.



# Who is at increased risk of gestational diabetes?

- Older mothers, especially over the age of 30 years of age
- Women with a family history of type 2 diabetes
- Women who are overweight
- Indigenous Australians
- Women from certain ethnic backgrounds including:
  - South Asian
  - Vietnamese
  - Chinese
  - Middle Eastern
  - Polynesian/Melanesian
- Women who have had gestational diabetes
- Women who have had large babies or obstetric complications
- Woman who have had polycystic ovarian syndrome

# How is gestational diabetes diagnosed?

The oral Glucose Tolerance Test (GTT) is used to assess how your body responds to a glucose load. After fasting 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. If the blood glucose is above the normal level, you have gestational diabetes.

# Why does gestational diabetes need to be treated?

If a mother's blood glucose levels are high, glucose passes through the placenta to the baby. This may lead to the baby growing larger than the average baby. Giving birth to larger babies can potentially cause more problems for both the mother and child during and following birth. However, the baby's blood glucose level may be too low (**hypoglycaemia**) at birth.



Untreated gestational diabetes can also lead to a greater likelihood of developing high blood pressure during the pregnancy.

For many women, being diagnosed with gestational diabetes may be upsetting. However, by working closely with your doctor and health care team you can keep your blood glucose levels within the target range to provide the best outcome for both you and your baby.

# Healthy eating

## What foods should I eat?

Following a healthy eating plan is an important part of diabetes management and will help to:

- keep your blood glucose levels within the target range advised by your doctor or diabetes educator
- provide adequate nutrition for you and your growing baby
- achieve appropriate weight changes during your pregnancy

**Women with gestational diabetes are encouraged to:**

- eat regular meals
- eat small amounts often
- satisfy their hunger and maintain a healthy weight
- include some carbohydrate in every meal and snack

**Choose foods that:**

- are varied and enjoyable
- are low in fat, particularly saturated fat and high in fibre
- are a good source of carbohydrate (grains, cereals, fruit, pasta, rice)
- provide the nutrients you need during pregnancy

**Nutrients required in higher amounts for pregnancy include:**

- calcium (milk, cheese, nuts, tahini)
- iron (red meat, chicken, fish, chickpeas, tofu)
- folic acid (dark green leafy vegetables)

If it is possible, it is helpful to see a dietitian who will advise you on getting the proper nutrients for you and your baby, while helping you to make healthy food choices for managing 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 help manage your blood glucose levels, it is important to spread your carbohydrate foods over 3 small meals and 2-3 snacks each day.

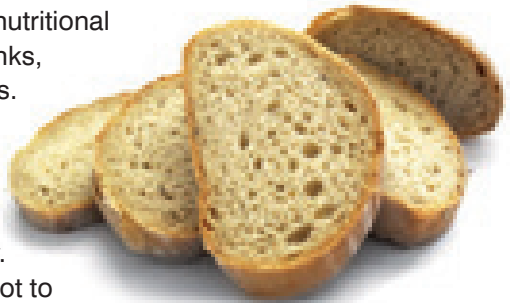


### Foods containing carbohydrate include:

- multigrain or wholegrain breads and breakfast cereals
- pasta, noodles and rice (preferably Doongara or Basmati rice as they have a lower glycaemic index and will help you to stay fuller longer)
- potato, sweet potato and corn in moderation
- legumes such as baked beans, red kidney beans and lentils
- fruits
- milks, yoghurts

Carbohydrate foods that contain little nutritional value include sucrose (sugar), soft drinks, cordials, fruit juices, cakes and biscuits. It is wise to avoid these foods.

In some women, blood glucose levels continue to be high, even with healthy eating and regular activity. If this happens to you, it is important not to cut back on carbohydrates as the baby requires carbohydrate as its main energy source. Some women's bodies require help to manage blood glucose levels and insulin injections may be needed.



## Glycaemic Index (GI)

The GI is a measure of how quickly the carbohydrate in a food will affect the level of glucose in the blood. Foods that have a high GI will raise the blood glucose levels quickly, while those with a low GI will raise the blood glucose levels more slowly. Foods with a low or medium GI may be better choices when trying to manage blood glucose levels. The GI of foods does not change the serving sizes.

Lower GI foods can:

- prevent large fluctuations in blood glucose levels
- make you feel satisfied for longer
- help manage your weight

**Low GI**=less than 55, **Medium GI**=56-69, **High GI**=over 70

For more information go to the GI website: [glycemicindex.com](http://glycemicindex.com)

## Fat

Use healthier fats like canola and olive oils, unsaturated oils, margarines, avocados and unsalted nuts. Limit the amount of fat you eat, particularly saturated fats by selecting lean meats, skinless chicken and low-fat dairy foods.

Avoid takeaway and processed foods. If eaten in large amounts, all fats can cause extra weight gain which can further increase insulin resistance.



## Protein

Include two to three small serves of protein each day as protein is important for the maintenance of the body and growth of your baby. Protein can also help you feel full for longer. Protein foods include lean meat, skinless chicken, fish, eggs and reduced fat cheese. Milk, yoghurts, custards and legumes (beans, lentils, chickpeas) are also important sources of protein.





## The plate model below shows a healthy meal

Half your plate should include vegetables or salad. A quarter of the plate is protein food and another quarter is carbohydrate foods.

1/4 plate:  
Carbohydrate food

1/2 plate:  
Free vegetables



1/4 plate:  
Protein food

## Other dietary considerations

### Can I use artificial sweeteners?

The following sweeteners may be used in small amounts:

- Aspartame (951)\*
- Sucralose (955)\*
- Acesulphame Potassium (950)\*

\*look for these numbers on the food label ingredients list



### What can I drink?

Drinks such as cordial, juice and soft drink are high in energy and sugar so a better choice is to drink water, plain mineral water or soda water – try it with a fresh lemon or lime for something different.

### Alcohol

The Australian guidelines recommend that for women who are pregnant, planning a pregnancy or breastfeeding, avoiding alcohol is the safest option. There is strong evidence that heavy alcohol intake harms the baby, though the effects of low to moderate intake are less clear.

Talk to your dietitian regarding healthy food choices both for your diabetes management and general good health during pregnancy, including:

- Iodine deficiency
- Vitamin D deficiency
- Calcium
- Iron
- Foods susceptible to listeria

## Sample food plan

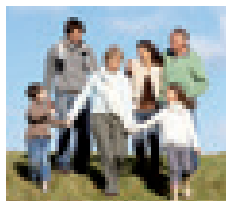
Meal	Choose from		Plus
	Option 1	Option 2	
<b>Breakfast</b>	½ cup untoasted muesli/All Bran®/rolled oats (raw) OR 1 cup Guardian®/Special K®	1-2 slices of toast multigrain, soy & linseed, wholemeal, white, heavy fruit bread OR 1 slice of toast with ½ cup baked beans	250ml low fat milk OR 100g low-fat fruit yoghurt OR 200g artificially sweetened yoghurt
<b>Morning tea</b>	4 Vitaweats® with a small amount of reduced fat cheese	½ English muffin OR 1 slice toast with a small amount of reduced fat cheese	1 serve of fruit 1 apple, 1 pear, 1 small banana, 2 kiwi fruits, 4 apricots, ½ cup tinned fruit, 2 tablespoons sultanas
<b>Lunch</b>	2 slices of bread OR 1 medium bread roll with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	2/3 cup cooked rice (Basmati/Doongara) OR 1 cup pasta/noodles with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	Plenty of salad or cooked vegetables (other than potato or corn) PLUS 1 serve of fruit
<b>Afternoon Tea</b>	250mls low fat milk	100g Low fat yoghurt OR 200g artificially sweetened yoghurt	1 slice heavy fruit loaf OR 1 crumpet OR ½ English muffin
<b>Dinner</b>	2/3 cup cooked rice (Basmati/Doongara) OR 1 cup pasta/noodles	1 medium potato and a small corn cob	A small serve of lean meat, fish, chicken or tofu, with plenty of salad OR cooked vegetables PLUS 1 serve of fruit
<b>Supper</b>	½ cup low fat custard OR 2 small scoops of low-fat ice cream	100g low-fat yoghurt OR 200g artificially sweetened yoghurt	1 serve of fruit

## Physical activity

It is never too late to start being more active and there are many ways that you can ‘do exercise’ as part of your everyday routine. Anything that gets you moving is generally good for your diabetes. Walking is a great way to be physically active, without even noticing you are ‘exercising’.

Here are some tips on how you can incorporate more walking into your life:

- start a walking group with family or friends
- walk instead of driving to the local shops
- take the stairs instead of the lift
- stand and move while on the phone
- gardening



**For women with gestational diabetes, moderate intensity physical activity can help to manage blood glucose levels.**

‘Moderate’ means a slight but noticeable increase in breathing and heart rate. If there are no specific obstetric or medical conditions, you should be able to safely exercise during pregnancy. However, it is best to discuss this with your doctor.

**Regular activities such as walking or swimming help to:**

- reduce insulin resistance
- keep you fit
- prepare for the birth of your baby
- manage your blood glucose levels

If you are feeling tired and are less active, your blood glucose levels will be higher. Remember, before starting or continuing any form of physical activity, always check with your doctor.

Consider buying a pedometer. This is a small device that counts your daily steps. It will measure just how much walking you’re doing. Aim to walk 10,000 steps each day.

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Your baby will be monitored carefully for the first 24-48 hours (heart rate, colour, breathing, blood glucose levels). The midwives will perform blood glucose tests (using heel pricks) on your baby to make sure its blood glucose levels are not too low. These will be monitored until they are satisfactory.

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- subsidised blood and urine testing strips. A wide range of blood glucose testing strips are available at a lower cost than a Pharmacy Prescription
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- insulin pump consumables
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- **Telephone:** 1300 136 588
- **Website:**

Diabetes ACT	<a href="http://diabetes-act.com.au">diabetes-act.com.au</a>
Diabetes Australia NSW	<a href="http://diabetesnsw.com.au">diabetesnsw.com.au</a>
Diabetes Australia Queensland	<a href="http://diabetesqld.org.au">diabetesqld.org.au</a>
Diabetes Australia - Vic	<a href="http://diabetesvic.org.au">diabetesvic.org.au</a>
Diabetes SA	<a href="http://diabetessa.com.au">diabetessa.com.au</a>
Diabetes Tasmania	<a href="http://diabetestas.com.au">diabetestas.com.au</a>
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This information booklet is intended as a guide only. It should not replace individual medical advice and if you have any concerns about your health or further questions you should raise them with your doctor.

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# Introduction

In Australia, at least 17,000 women develop gestational diabetes every year – you are not alone! The number of women developing gestational diabetes is expected to grow significantly over the next few decades.

Gestational diabetes is associated with an increased risk of complications in pregnancy and birth, as well as a greater likelihood of mother and child developing type 2 diabetes later in life. The good news is that with good management of gestational diabetes, these risks are significantly reduced.

There have been huge advances in the knowledge about the management and treatment of gestational diabetes and the importance of a healthy lifestyle in keeping gestational diabetes and its complications under control. This booklet aims to provide you with information about gestational diabetes, how to look after your gestational diabetes and where to get assistance if you need it.

The booklet is not designed to take the place of the valuable advice you will receive from your diabetes team. It is designed to help you learn as much as you can about gestational diabetes and the importance of managing your gestational diabetes and continuing to enjoy a healthy lifestyle after you have had your baby.

# What is gestational diabetes?

Gestational diabetes is a form of diabetes that occurs during pregnancy and usually goes away after the baby is born. Between 5% to 8% of pregnant women will develop gestational diabetes and this usually occurs around the 24th to 28th week of pregnancy.

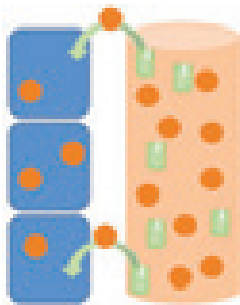
Diabetes is a common condition in which the body's cells are unable to effectively obtain glucose from the bloodstream. Glucose is required to provide the body with energy for day-to-day activities. The hormone insulin moves glucose from the blood into the body's cells, where it can be used for energy.

When the movement of glucose into the cells is delayed the blood glucose levels rise, causing diabetes to develop.

## Glucose and insulin changes in gestational diabetes

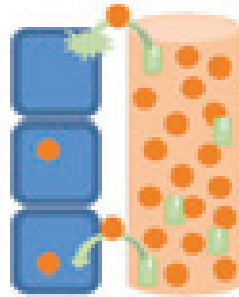
### Normal:

Insulin moves glucose from the blood into your cells



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Glucose



Insulin



Body's Cells



Blood Vessel

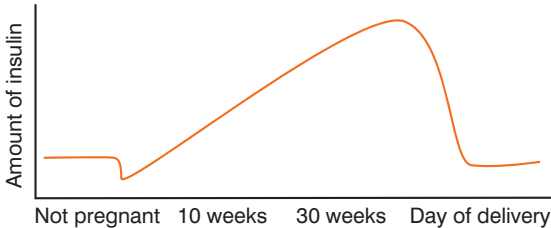
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Gestational diabetes will not lead to your baby being born with diabetes

# What causes gestational diabetes?

In pregnancy, the placenta (the blood source for the baby) produces hormones that help the baby grow and develop. Some of these hormones block the action of the mother's insulin which is called insulin resistance. During pregnancy, to keep the blood glucose levels normal, mothers need to make 2 to 3 times the normal amount of insulin due to this insulin resistance.

If the body is unable to produce the extra insulin or becomes more resistant, gestational diabetes develops. When the baby is born and the insulin requirements fall, glucose levels return to normal and diabetes usually disappears.



# Who is at increased risk of gestational diabetes?

- Older mothers, especially over the age of 30 years of age
- Women with a family history of type 2 diabetes
- Women who are overweight
- Indigenous Australians
- Women from certain ethnic backgrounds including:
  - South Asian
  - Vietnamese
  - Chinese
  - Middle Eastern
  - Polynesian/Melanesian
- Women who have had gestational diabetes
- Women who have had large babies or obstetric complications
- Woman who have had polycystic ovarian syndrome

# How is gestational diabetes diagnosed?

The oral Glucose Tolerance Test (GTT) is used to assess how your body responds to a glucose load. After fasting 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. If the blood glucose is above the normal level, you have gestational diabetes.

# Why does gestational diabetes need to be treated?

If a mother's blood glucose levels are high, glucose passes through the placenta to the baby. This may lead to the baby growing larger than the average baby. Giving birth to larger babies can potentially cause more problems for both the mother and child during and following birth. However, the baby's blood glucose level may be too low (**hypoglycaemia**) at birth.



Untreated gestational diabetes can also lead to a greater likelihood of developing high blood pressure during the pregnancy.

For many women, being diagnosed with gestational diabetes may be upsetting. However, by working closely with your doctor and health care team you can keep your blood glucose levels within the target range to provide the best outcome for both you and your baby.

# Healthy eating

## What foods should I eat?

Following a healthy eating plan is an important part of diabetes management and will help to:

- keep your blood glucose levels within the target range advised by your doctor or diabetes educator
- provide adequate nutrition for you and your growing baby
- achieve appropriate weight changes during your pregnancy

**Women with gestational diabetes are encouraged to:**

- eat regular meals
- eat small amounts often
- satisfy their hunger and maintain a healthy weight
- include some carbohydrate in every meal and snack

**Choose foods that:**

- are varied and enjoyable
- are low in fat, particularly saturated fat and high in fibre
- are a good source of carbohydrate (grains, cereals, fruit, pasta, rice)
- provide the nutrients you need during pregnancy

**Nutrients required in higher amounts for pregnancy include:**

- calcium (milk, cheese, nuts, tahini)
- iron (red meat, chicken, fish, chickpeas, tofu)
- folic acid (dark green leafy vegetables)

If it is possible, it is helpful to see a dietitian who will advise you on getting the proper nutrients for you and your baby, while helping you to make healthy food choices for managing 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 help manage your blood glucose levels, it is important to spread your carbohydrate foods over 3 small meals and 2-3 snacks each day.

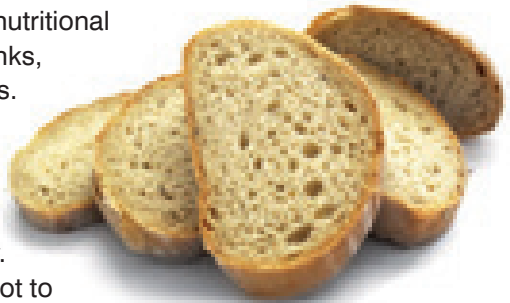


### Foods containing carbohydrate include:

- multigrain or wholegrain breads and breakfast cereals
- pasta, noodles and rice (preferably Doongara or Basmati rice as they have a lower glycaemic index and will help you to stay fuller longer)
- potato, sweet potato and corn in moderation
- legumes such as baked beans, red kidney beans and lentils
- fruits
- milks, yoghurts

Carbohydrate foods that contain little nutritional value include sucrose (sugar), soft drinks, cordials, fruit juices, cakes and biscuits. It is wise to avoid these foods.

In some women, blood glucose levels continue to be high, even with healthy eating and regular activity. If this happens to you, it is important not to cut back on carbohydrates as the baby requires carbohydrate as its main energy source. Some women's bodies require help to manage blood glucose levels and insulin injections may be needed.



## Glycaemic Index (GI)

The GI is a measure of how quickly the carbohydrate in a food will affect the level of glucose in the blood. Foods that have a high GI will raise the blood glucose levels quickly, while those with a low GI will raise the blood glucose levels more slowly. Foods with a low or medium GI may be better choices when trying to manage blood glucose levels. The GI of foods does not change the serving sizes.

Lower GI foods can:

- prevent large fluctuations in blood glucose levels
- make you feel satisfied for longer
- help manage your weight

**Low** GI=less than 55, **Medium** GI=56-69, **High** GI=over 70

For more information go to the GI website: [glycemicindex.com](http://glycemicindex.com)

## Fat

Use healthier fats like canola and olive oils, unsaturated oils, margarines, avocados and unsalted nuts. Limit the amount of fat you eat, particularly saturated fats by selecting lean meats, skinless chicken and low-fat dairy foods.

Avoid takeaway and processed foods. If eaten in large amounts, all fats can cause extra weight gain which can further increase insulin resistance.



## Protein

Include two to three small serves of protein each day as protein is important for the maintenance of the body and growth of your baby. Protein can also help you feel full for longer. Protein foods include lean meat, skinless chicken, fish, eggs and reduced fat cheese. Milk, yoghurts, custards and legumes (beans, lentils, chickpeas) are also important sources of protein.



## The plate model below shows a healthy meal

Half your plate should include vegetables or salad. A quarter of the plate is protein food and another quarter is carbohydrate foods.

1/4 plate:  
Carbohydrate food

1/2 plate:  
Free vegetables



1/4 plate:  
Protein food



## Other dietary considerations

### Can I use artificial sweeteners?

The following sweeteners may be used in small amounts:

- Aspartame (951)\*
- Sucralose (955)\*
- Acesulphame Potassium (950)\*

\*look for these numbers on the food label ingredients list



### What can I drink?

Drinks such as cordial, juice and soft drink are high in energy and sugar so a better choice is to drink water, plain mineral water or soda water – try it with a fresh lemon or lime for something different.

### Alcohol

The Australian guidelines recommend that for women who are pregnant, planning a pregnancy or breastfeeding, avoiding alcohol is the safest option. There is strong evidence that heavy alcohol intake harms the baby, though the effects of low to moderate intake are less clear.

Talk to your dietitian regarding healthy food choices both for your diabetes management and general good health during pregnancy, including:

- Iodine deficiency
- Vitamin D deficiency
- Calcium
- Iron
- Foods susceptible to listeria

## Sample food plan

Meal	Choose from		Plus
	Option 1	Option 2	
<b>Breakfast</b>	½ cup untoasted muesli/All Bran®/rolled oats (raw) OR 1 cup Guardian®/Special K®	1-2 slices of toast multigrain, soy & linseed, wholemeal, white, heavy fruit bread OR 1 slice of toast with ½ cup baked beans	250ml low fat milk OR 100g low-fat fruit yoghurt OR 200g artificially sweetened yoghurt
<b>Morning tea</b>	4 Vitaweats® with a small amount of reduced fat cheese	½ English muffin OR 1 slice toast with a small amount of reduced fat cheese	1 serve of fruit 1 apple, 1 pear, 1 small banana, 2 kiwi fruits, 4 apricots, ½ cup tinned fruit, 2 tablespoons sultanas
<b>Lunch</b>	2 slices of bread OR 1 medium bread roll with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	2/3 cup cooked rice (Basmati/Doongara) OR 1 cup pasta/noodles with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	Plenty of salad or cooked vegetables (other than potato or corn) PLUS 1 serve of fruit
<b>Afternoon Tea</b>	250mls low fat milk	100g Low fat yoghurt OR 200g artificially sweetened yoghurt	1 slice heavy fruit loaf OR 1 crumpet OR ½ English muffin
<b>Dinner</b>	2/3 cup cooked rice (Basmati/Doongara) OR 1 cup pasta/noodles	1 medium potato and a small corn cob	A small serve of lean meat, fish, chicken or tofu, with plenty of salad OR cooked vegetables PLUS 1 serve of fruit
<b>Supper</b>	½ cup low fat custard OR 2 small scoops of low-fat ice cream	100g low-fat yoghurt OR 200g artificially sweetened yoghurt	1 serve of fruit

## Physical activity

It is never too late to start being more active and there are many ways that you can ‘do exercise’ as part of your everyday routine. Anything that gets you moving is generally good for your diabetes. Walking is a great way to be physically active, without even noticing you are ‘exercising’.

Here are some tips on how you can incorporate more walking into your life:

- start a walking group with family or friends
- walk instead of driving to the local shops
- take the stairs instead of the lift
- stand and move while on the phone
- gardening



**For women with gestational diabetes, moderate intensity physical activity can help to manage blood glucose levels.**

‘Moderate’ means a slight but noticeable increase in breathing and heart rate. If there are no specific obstetric or medical conditions, you should be able to safely exercise during pregnancy. However, it is best to discuss this with your doctor.

**Regular activities such as walking or swimming help to:**

- reduce insulin resistance
- keep you fit
- prepare for the birth of your baby
- manage your blood glucose levels

If you are feeling tired and are less active, your blood glucose levels will be higher. Remember, before starting or continuing any form of physical activity, always check with your doctor.

Consider buying a pedometer. This is a small device that counts your daily steps. It will measure just how much walking you’re doing. Aim to walk 10,000 steps each day.

Gaining too much weight during pregnancy will make it harder to manage your diabetes and the birth. Talk to your healthcare team if you feel you are gaining too much weight.

## Monitoring your blood glucose levels

Regularly testing your **Blood Glucose Level** (BGL) enables treatment to be assessed and changed as necessary.

During pregnancy the expected blood glucose range is lower than for people with diabetes who are not pregnant.

Testing your own blood glucose levels will help you to:

- better understand the effect of food and lifestyle on blood glucose levels
- know when to seek advice from your health professionals
- develop confidence in managing your diabetes

Generally targets are 4.0 to 7mmol/L depending on when the test is done. Your doctor or diabetes educator will advise you what blood glucose levels to aim for.

My target BGLs are \_\_\_\_\_ to \_\_\_\_\_ fasting/before meals  
\_\_\_\_\_ to \_\_\_\_\_ after meals

The most common times to test blood glucose levels are when you wake up in the morning (fasting) and 2 hours after each meal. Other testing times may include 1 hour after meals and/or before meals.

**Blood Glucose Meters** (the equipment used to test your blood glucose levels) are available from your local National Diabetes Service Scheme Agents (listed on page 25), pharmacies or your diabetes educator. Training on how to use your blood glucose meter will be provided.

Self blood glucose testing involves a finger prick using a finger pricking device to obtain a small drop of blood to test in your blood glucose meter. Recording your blood glucose levels in a record book or sheet is important so you can discuss the results with your diabetes team at each appointment.

Ask your diabetes team how to safely dispose of your equipment.

## Medication (if needed)

### What if blood glucose levels are too high?

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

Insulin treatment may be needed to bring the blood glucose levels into the target range. Tablets are not widely used in the treatment of gestational diabetes as their effectiveness and safety are still being assessed.

Insulin is given by injection using an insulin device. This device can deliver the insulin at a push of a button. If insulin is required, your diabetes educator or doctor will demonstrate how to use the insulin device and where to inject the insulin. The injected insulin will help to lower your blood glucose level to within a range that is best for your baby's growth and development. The insulin does not cross the placenta or affect your baby.



## What if blood glucose levels are too high? (cont.)

While many women are initially reluctant to give an injection, most find it less uncomfortable than doing the blood glucose tests. The injection of insulin will not harm your baby.

The diabetes team will advise you of the appropriate starting dose of insulin. It is common for the insulin dose to be increased regularly as the insulin resistance from the placental hormones increases until close to the birth.

Your diabetes team will regularly review your blood glucose levels and advise you of the correct insulin doses to take.

If you are having insulin injections, it is possible for blood glucose levels to go a little low, although this is not common. You may feel weak, shaky or sweaty. A low blood glucose level is called **hypoglycaemia** or a '**hypo**' and is treated by having a drink or food containing quick acting glucose. Within a few minutes of having something sugary, your blood glucose level should return to normal. You should perform an extra blood test to check that your blood glucose levels have returned to normal.

Discuss taking control of 'hypos' with your diabetes team.

## The birth

Your diabetes and pregnancy teams will continue to monitor you and your baby throughout the pregnancy. Tests may include an ultrasound, blood glucose and blood pressure. If diabetes has been well managed and there are no other problems, most women go to 'full term' and give birth naturally.

If baby grows too large (macrosomic) or any other concerns about the pregnancy arise, your pregnancy team may suggest 'inducing' the baby one or two weeks early. If an earlier birth is required the labour is usually induced after using a medication that prepares the cervix for delivery. During labour your baby's heartbeat may be monitored using a cardiotocograph (CTG) machine strapped to your abdomen.

### Caesarean section

As with all pregnant women, there is a possibility that you may need a caesarean birth. Sometimes a caesarean may be required if the baby is too large or if there are other obstetric concerns such as low placenta, breech presentation or previous caesarean delivery. It's a good idea to be informed about caesarean births so that if the need arises you are well prepared.

### Insulin/Glucose infusion (drip)

Women may need an insulin infusion to control the blood glucose levels during labour, or when having a caesarean. This is more likely in women who have needed treatment with high doses of insulin during the pregnancy.

You can discuss your birth plan with your doctor or midwife.



# After the birth

**Gestational Diabetes will not lead to your baby being born with diabetes**

Your baby will be monitored carefully for the first 24-48 hours (heart rate, colour, breathing, blood glucose levels). The midwives will perform blood glucose tests (using heel pricks) on your baby to make sure its blood glucose levels are not too low. These will be monitored until they are satisfactory.

## Benefits of breastfeeding

Breastfeeding soon after the birth, then every four hours, helps to maintain your baby's glucose levels. This helps to avoid low blood glucose levels for your baby. Breastfeeding has also been shown to pass on the mother's immunity to the baby and help your weight control.

## For women who required insulin

Insulin will usually be stopped after your baby is born.

Your health team will advise you how often to monitor your blood glucose to see whether the levels have returned to normal (generally 4.0 to 8 mmol/L).

## 6-12 weeks after the birth

An oral Glucose Tolerance Test (GTT) is very important to check that the diabetes has gone. In some women the diabetes does not resolve.

**Remember to tell your doctor that you had gestational diabetes.**





## Future risks

Once you have had gestational diabetes, you are at a higher risk of developing diabetes later in life. Approximately 50% of women who have had gestational diabetes will develop type 2 diabetes within 10-20 years. If you have another pregnancy, there is a very high chance of developing gestational diabetes again.

The healthy lifestyle information gained during pregnancy is valid for all Australians. Continue your healthy eating and activity routine and ask your doctor for a blood glucose test every 2 years.

### To help lower the risks of developing diabetes you should:

- **Eat Well**  
Follow a healthy eating plan
- **Play Well**  
Have regular physical activity
- **Stay Well**  
Ask your doctor for a diabetes test every 2 years  
Before your next pregnancy have tests for diabetes  
Control your weight



**You will be sent more information after the birth of your baby including a booklet 'Life After Gestational Diabetes'**

# The diabetes team

The team members vary, depending on where you live or attend for your antenatal care, but may include:

- a diabetes doctor – a specialist in diabetes (endocrinologist)
- a diabetes educator – a specialist nurse/midwife who will educate you and your family on how to monitor and manage your blood glucose levels
- a dietitian – who will help you with a healthy food plan for your pregnancy
- Your General Practitioner (GP)

The diabetes team works closely with your pregnancy team that may include:

- an obstetrician – a specialist in pregnancy and birth
- a midwife – will care and educate you in preparation for the birth and parenting
- a physiotherapist – who may educate you and your partner on the birth process

The diabetes team is supported by the National Diabetes Services Scheme (NDSS) Agents in each State and Territory listed on Page 24.

## Contact details:

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# National Diabetes Services Scheme

The National Diabetes Services Scheme (NDSS) is an initiative of the Australian Government administered by Diabetes Australia. The NDSS is delivered locally through State and Territory based Agents and Sub-Agents such as diabetes centres, pharmacies and health centres. The scheme provides diabetes-related products at subsidised prices, information and select services to people with diabetes. Registration is free and open to all Australians diagnosed with diabetes.

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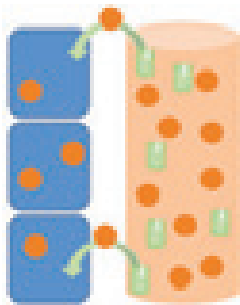
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## Glucose and insulin changes in gestational diabetes

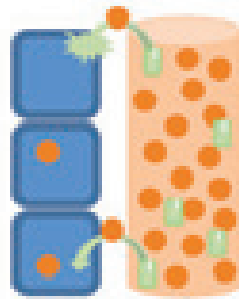
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Insulin resistance and inadequate insulin leads to less glucose entering the cells so blood glucose levels become higher



Glucose



Insulin



Body's Cells



Blood Vessel

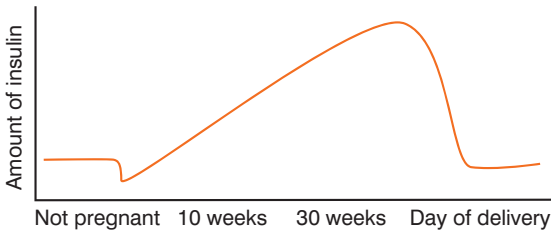
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- Women who have had gestational diabetes
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# How is gestational diabetes diagnosed?

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If a mother's blood glucose levels are high, glucose passes through the placenta to the baby. This may lead to the baby growing larger than the average baby. Giving birth to larger babies can potentially cause more problems for both the mother and child during and following birth. However, the baby's blood glucose level may be too low (**hypoglycaemia**) at birth.



Untreated gestational diabetes can also lead to a greater likelihood of developing high blood pressure during the pregnancy.

For many women, being diagnosed with gestational diabetes may be upsetting. However, by working closely with your doctor and health care team you can keep your blood glucose levels within the target range to provide the best outcome for both you and your baby.

# Healthy eating

## What foods should I eat?

Following a healthy eating plan is an important part of diabetes management and will help to:

- keep your blood glucose levels within the target range advised by your doctor or diabetes educator
- provide adequate nutrition for you and your growing baby
- achieve appropriate weight changes during your pregnancy

**Women with gestational diabetes are encouraged to:**

- eat regular meals
- eat small amounts often
- satisfy their hunger and maintain a healthy weight
- include some carbohydrate in every meal and snack

**Choose foods that:**

- are varied and enjoyable
- are low in fat, particularly saturated fat and high in fibre
- are a good source of carbohydrate (grains, cereals, fruit, pasta, rice)
- provide the nutrients you need during pregnancy

**Nutrients required in higher amounts for pregnancy include:**

- calcium (milk, cheese, nuts, tahini)
- iron (red meat, chicken, fish, chickpeas, tofu)
- folic acid (dark green leafy vegetables)

If it is possible, it is helpful to see a dietitian who will advise you on getting the proper nutrients for you and your baby, while helping you to make healthy food choices for managing 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 help manage your blood glucose levels, it is important to spread your carbohydrate foods over 3 small meals and 2-3 snacks each day.

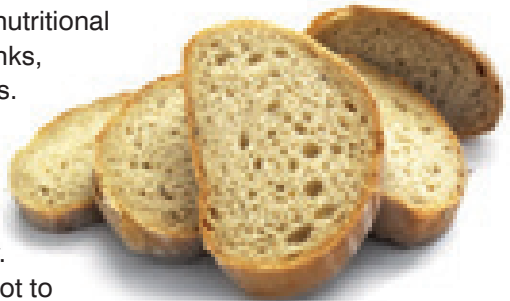


### Foods containing carbohydrate include:

- multigrain or wholegrain breads and breakfast cereals
- pasta, noodles and rice (preferably Doongara or Basmati rice as they have a lower glycaemic index and will help you to stay fuller longer)
- potato, sweet potato and corn in moderation
- legumes such as baked beans, red kidney beans and lentils
- fruits
- milks, yoghurts

Carbohydrate foods that contain little nutritional value include sucrose (sugar), soft drinks, cordials, fruit juices, cakes and biscuits. It is wise to avoid these foods.

In some women, blood glucose levels continue to be high, even with healthy eating and regular activity. If this happens to you, it is important not to cut back on carbohydrates as the baby requires carbohydrate as its main energy source. Some women's bodies require help to manage blood glucose levels and insulin injections may be needed.



## Glycaemic Index (GI)

The GI is a measure of how quickly the carbohydrate in a food will affect the level of glucose in the blood. Foods that have a high GI will raise the blood glucose levels quickly, while those with a low GI will raise the blood glucose levels more slowly. Foods with a low or medium GI may be better choices when trying to manage blood glucose levels. The GI of foods does not change the serving sizes.

Lower GI foods can:

- prevent large fluctuations in blood glucose levels
- make you feel satisfied for longer
- help manage your weight

**Low** GI=less than 55, **Medium** GI=56-69, **High** GI=over 70

For more information go to the GI website: [glycemicindex.com](http://glycemicindex.com)

## Fat

Use healthier fats like canola and olive oils, unsaturated oils, margarines, avocados and unsalted nuts. Limit the amount of fat you eat, particularly saturated fats by selecting lean meats, skinless chicken and low-fat dairy foods.

Avoid takeaway and processed foods. If eaten in large amounts, all fats can cause extra weight gain which can further increase insulin resistance.



## Protein

Include two to three small serves of protein each day as protein is important for the maintenance of the body and growth of your baby. Protein can also help you feel full for longer. Protein foods include lean meat, skinless chicken, fish, eggs and reduced fat cheese. Milk, yoghurts, custards and legumes (beans, lentils, chickpeas) are also important sources of protein.



## The plate model below shows a healthy meal

Half your plate should include vegetables or salad. A quarter of the plate is protein food and another quarter is carbohydrate foods.

1/4 plate:  
Carbohydrate food

1/2 plate:  
Free vegetables



1/4 plate:  
Protein food

## Other dietary considerations

### Can I use artificial sweeteners?

The following sweeteners may be used in small amounts:

- Aspartame (951)\*
- Sucralose (955)\*
- Acesulphame Potassium (950)\*

\*look for these numbers on the food label ingredients list



### What can I drink?

Drinks such as cordial, juice and soft drink are high in energy and sugar so a better choice is to drink water, plain mineral water or soda water – try it with a fresh lemon or lime for something different.

### Alcohol

The Australian guidelines recommend that for women who are pregnant, planning a pregnancy or breastfeeding, avoiding alcohol is the safest option. There is strong evidence that heavy alcohol intake harms the baby, though the effects of low to moderate intake are less clear.

Talk to your dietitian regarding healthy food choices both for your diabetes management and general good health during pregnancy, including:

- Iodine deficiency
- Vitamin D deficiency
- Calcium
- Iron
- Foods susceptible to listeria

## Sample food plan

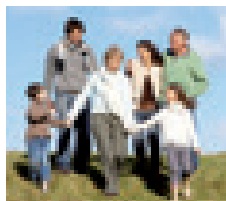
Meal	Choose from		Plus
	Option 1	Option 2	
<b>Breakfast</b>	½ cup untoasted muesli/All Bran®/rolled oats (raw) OR 1 cup Guardian®/Special K®	1-2 slices of toast multigrain, soy & linseed, wholemeal, white, heavy fruit bread OR 1 slice of toast with ½ cup baked beans	250ml low fat milk OR 100g low-fat fruit yoghurt OR 200g artificially sweetened yoghurt
<b>Morning tea</b>	4 Vitaweats® with a small amount of reduced fat cheese	½ English muffin OR 1 slice toast with a small amount of reduced fat cheese	1 serve of fruit 1 apple, 1 pear, 1 small banana, 2 kiwi fruits, 4 apricots, ½ cup tinned fruit, 2 tablespoons sultanas
<b>Lunch</b>	2 slices of bread OR 1 medium bread roll with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	2/3 cup cooked rice (Basmati/Doongara) OR 1 cup pasta/noodles with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	Plenty of salad or cooked vegetables (other than potato or corn) PLUS 1 serve of fruit
<b>Afternoon Tea</b>	250mls low fat milk	100g Low fat yoghurt OR 200g artificially sweetened yoghurt	1 slice heavy fruit loaf OR 1 crumpet OR ½ English muffin
<b>Dinner</b>	2/3 cup cooked rice (Basmati/Doongara) OR 1 cup pasta/noodles	1 medium potato and a small corn cob	A small serve of lean meat, fish, chicken or tofu, with plenty of salad OR cooked vegetables PLUS 1 serve of fruit
<b>Supper</b>	½ cup low fat custard OR 2 small scoops of low-fat ice cream	100g low-fat yoghurt OR 200g artificially sweetened yoghurt	1 serve of fruit

## Physical activity

It is never too late to start being more active and there are many ways that you can ‘do exercise’ as part of your everyday routine. Anything that gets you moving is generally good for your diabetes. Walking is a great way to be physically active, without even noticing you are ‘exercising’.

Here are some tips on how you can incorporate more walking into your life:

- start a walking group with family or friends
- walk instead of driving to the local shops
- take the stairs instead of the lift
- stand and move while on the phone
- gardening



**For women with gestational diabetes, moderate intensity physical activity can help to manage blood glucose levels.**

‘Moderate’ means a slight but noticeable increase in breathing and heart rate. If there are no specific obstetric or medical conditions, you should be able to safely exercise during pregnancy. However, it is best to discuss this with your doctor.

**Regular activities such as walking or swimming help to:**

- reduce insulin resistance
- keep you fit
- prepare for the birth of your baby
- manage your blood glucose levels

If you are feeling tired and are less active, your blood glucose levels will be higher. Remember, before starting or continuing any form of physical activity, always check with your doctor.

Consider buying a pedometer. This is a small device that counts your daily steps. It will measure just how much walking you’re doing. Aim to walk 10,000 steps each day.

Gaining too much weight during pregnancy will make it harder to manage your diabetes and the birth. Talk to your healthcare team if you feel you are gaining too much weight.



## Monitoring your blood glucose levels

Regularly testing your **Blood Glucose Level** (BGL) enables treatment to be assessed and changed as necessary.

During pregnancy the expected blood glucose range is lower than for people with diabetes who are not pregnant.

Testing your own blood glucose levels will help you to:

- better understand the effect of food and lifestyle on blood glucose levels
- know when to seek advice from your health professionals
- develop confidence in managing your diabetes

Generally targets are 4.0 to 7mmol/L depending on when the test is done. Your doctor or diabetes educator will advise you what blood glucose levels to aim for.

My target BGLs are \_\_\_\_\_ to \_\_\_\_\_ fasting/before meals  
\_\_\_\_\_ to \_\_\_\_\_ after meals

The most common times to test blood glucose levels are when you wake up in the morning (fasting) and 2 hours after each meal. Other testing times may include 1 hour after meals and/or before meals.

**Blood Glucose Meters** (the equipment used to test your blood glucose levels) are available from your local National Diabetes Service Scheme Agents (listed on page 25), pharmacies or your diabetes educator. Training on how to use your blood glucose meter will be provided.

Self blood glucose testing involves a finger prick using a finger pricking device to obtain a small drop of blood to test in your blood glucose meter. Recording your blood glucose levels in a record book or sheet is important so you can discuss the results with your diabetes team at each appointment.

Ask your diabetes team how to safely dispose of your equipment.

## Medication (if needed)

### What if blood glucose levels are too high?

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

Insulin treatment may be needed to bring the blood glucose levels into the target range. Tablets are not widely used in the treatment of gestational diabetes as their effectiveness and safety are still being assessed.

Insulin is given by injection using an insulin device. This device can deliver the insulin at a push of a button. If insulin is required, your diabetes educator or doctor will demonstrate how to use the insulin device and where to inject the insulin. The injected insulin will help to lower your blood glucose level to within a range that is best for your baby's growth and development. The insulin does not cross the placenta or affect your baby.



## What if blood glucose levels are too high? (cont.)

While many women are initially reluctant to give an injection, most find it less uncomfortable than doing the blood glucose tests. The injection of insulin will not harm your baby.

The diabetes team will advise you of the appropriate starting dose of insulin. It is common for the insulin dose to be increased regularly as the insulin resistance from the placental hormones increases until close to the birth.

Your diabetes team will regularly review your blood glucose levels and advise you of the correct insulin doses to take.

If you are having insulin injections, it is possible for blood glucose levels to go a little low, although this is not common. You may feel weak, shaky or sweaty. A low blood glucose level is called **hypoglycaemia** or a '**hypo**' and is treated by having a drink or food containing quick acting glucose. Within a few minutes of having something sugary, your blood glucose level should return to normal. You should perform an extra blood test to check that your blood glucose levels have returned to normal.

Discuss taking control of 'hypos' with your diabetes team.

## The birth

Your diabetes and pregnancy teams will continue to monitor you and your baby throughout the pregnancy. Tests may include an ultrasound, blood glucose and blood pressure. If diabetes has been well managed and there are no other problems, most women go to 'full term' and give birth naturally.

If baby grows too large (macrosomic) or any other concerns about the pregnancy arise, your pregnancy team may suggest 'inducing' the baby one or two weeks early. If an earlier birth is required the labour is usually induced after using a medication that prepares the cervix for delivery. During labour your baby's heartbeat may be monitored using a cardiotocograph (CTG) machine strapped to your abdomen.

### Caesarean section

As with all pregnant women, there is a possibility that you may need a caesarean birth. Sometimes a caesarean may be required if the baby is too large or if there are other obstetric concerns such as low placenta, breech presentation or previous caesarean delivery. It's a good idea to be informed about caesarean births so that if the need arises you are well prepared.

### Insulin/Glucose infusion (drip)

Women may need an insulin infusion to control the blood glucose levels during labour, or when having a caesarean. This is more likely in women who have needed treatment with high doses of insulin during the pregnancy.

You can discuss your birth plan with your doctor or midwife.



# After the birth

**Gestational Diabetes will not lead to your baby being born with diabetes**

Your baby will be monitored carefully for the first 24-48 hours (heart rate, colour, breathing, blood glucose levels). The midwives will perform blood glucose tests (using heel pricks) on your baby to make sure its blood glucose levels are not too low. These will be monitored until they are satisfactory.

## Benefits of breastfeeding

Breastfeeding soon after the birth, then every four hours, helps to maintain your baby's glucose levels. This helps to avoid low blood glucose levels for your baby. Breastfeeding has also been shown to pass on the mother's immunity to the baby and help your weight control.

## For women who required insulin

Insulin will usually be stopped after your baby is born.

Your health team will advise you how often to monitor your blood glucose to see whether the levels have returned to normal (generally 4.0 to 8 mmol/L).

## 6-12 weeks after the birth

An oral Glucose Tolerance Test (GTT) is very important to check that the diabetes has gone. In some women the diabetes does not resolve.

**Remember to tell your doctor that you had gestational diabetes.**



## Future risks

Once you have had gestational diabetes, you are at a higher risk of developing diabetes later in life. Approximately 50% of women who have had gestational diabetes will develop type 2 diabetes within 10-20 years. If you have another pregnancy, there is a very high chance of developing gestational diabetes again.

The healthy lifestyle information gained during pregnancy is valid for all Australians. Continue your healthy eating and activity routine and ask your doctor for a blood glucose test every 2 years.

### To help lower the risks of developing diabetes you should:

- **Eat Well**  
Follow a healthy eating plan
- **Play Well**  
Have regular physical activity
- **Stay Well**  
Ask your doctor for a diabetes test every 2 years  
Before your next pregnancy have tests for diabetes  
Control your weight



**You will be sent more information after the birth of your baby including a booklet 'Life After Gestational Diabetes'**

# The diabetes team

The team members vary, depending on where you live or attend for your antenatal care, but may include:

- a diabetes doctor – a specialist in diabetes (endocrinologist)
- a diabetes educator – a specialist nurse/midwife who will educate you and your family on how to monitor and manage your blood glucose levels
- a dietitian – who will help you with a healthy food plan for your pregnancy
- Your General Practitioner (GP)

The diabetes team works closely with your pregnancy team that may include:

- an obstetrician – a specialist in pregnancy and birth
- a midwife – will care and educate you in preparation for the birth and parenting
- a physiotherapist – who may educate you and your partner on the birth process

The diabetes team is supported by the National Diabetes Services Scheme (NDSS) Agents in each State and Territory listed on Page 24.

## Contact details:

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# National Diabetes Services Scheme

The National Diabetes Services Scheme (NDSS) is an initiative of the Australian Government administered by Diabetes Australia. The NDSS is delivered locally through State and Territory based Agents and Sub-Agents such as diabetes centres, pharmacies and health centres. The scheme provides diabetes-related products at subsidised prices, information and select services to people with diabetes. Registration is free and open to all Australians diagnosed with diabetes.

## Products

**People who are registered with the NDSS can access a range of approved products including:**

- subsidised blood and urine testing strips. A wide range of blood glucose testing strips are available at a lower cost than a Pharmacy Prescription
- insulin syringes and pen needles. These are available free of charge to all people using insulin
- insulin pump consumables
- diabetes self-management information and services

## How to order products

**There are a number of ways you can order products:**

- **Over the counter** from your State or Territory Agent or Sub-Agent
- **Telephone:** 1300 136 588
- **Website:**

Diabetes ACT	<a href="http://diabetes-act.com.au">diabetes-act.com.au</a>
Diabetes Australia NSW	<a href="http://diabetesnsw.com.au">diabetesnsw.com.au</a>
Diabetes Australia Queensland	<a href="http://diabetesqld.org.au">diabetesqld.org.au</a>
Diabetes Australia - Vic	<a href="http://diabetesvic.org.au">diabetesvic.org.au</a>
Diabetes SA	<a href="http://diabetessa.com.au">diabetessa.com.au</a>
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Diabetes WA	<a href="http://diabeteswa.com.au">diabeteswa.com.au</a>
Healthy Living NT	<a href="http://healthylivingnt.org.au">healthylivingnt.org.au</a>
- **Post** your order to Diabetes Australia, GPO Box 9824 in your capital city. Order forms can be downloaded from the web, posted to you by ringing the above number or collected from Agents or Sub-Agents.



## Concession card holders

Concession card holders may receive a further discount on NDSS products. For more information contact your local service Agent as noted above or refer to the NDSS website [ndss.com.au](http://ndss.com.au).

More information about the NDSS can be found on the website:  
[ndss.com.au](http://ndss.com.au) or by calling 1300 136 588

## Diabetes Australia

Diabetes Australia is a national organisation and draws its membership from State and Territory based consumer organisations, health professional organisations and research bodies who work together to provide a collective and powerful voice for people living with diabetes, their families and carers.

Refer to [diabetesaustralia.com.au](http://diabetesaustralia.com.au) for further contact details.

Diabetes Australia is turning diabetes around through awareness, prevention, detection, management and finding a cure.

**Disclaimer:**

This information booklet is intended as a guide only. It should not replace individual medical advice and if you have any concerns about your health or further questions you should raise them with your doctor.

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# Introduction

In Australia, at least 17,000 women develop gestational diabetes every year – you are not alone! The number of women developing gestational diabetes is expected to grow significantly over the next few decades.

Gestational diabetes is associated with an increased risk of complications in pregnancy and birth, as well as a greater likelihood of mother and child developing type 2 diabetes later in life. The good news is that with good management of gestational diabetes, these risks are significantly reduced.

There have been huge advances in the knowledge about the management and treatment of gestational diabetes and the importance of a healthy lifestyle in keeping gestational diabetes and its complications under control. This booklet aims to provide you with information about gestational diabetes, how to look after your gestational diabetes and where to get assistance if you need it.

The booklet is not designed to take the place of the valuable advice you will receive from your diabetes team. It is designed to help you learn as much as you can about gestational diabetes and the importance of managing your gestational diabetes and continuing to enjoy a healthy lifestyle after you have had your baby.

# What is gestational diabetes?

Gestational diabetes is a form of diabetes that occurs during pregnancy and usually goes away after the baby is born. Between 5% to 8% of pregnant women will develop gestational diabetes and this usually occurs around the 24th to 28th week of pregnancy.

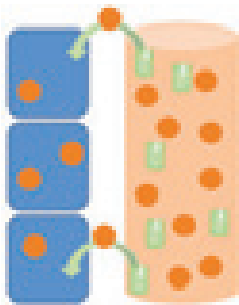
Diabetes is a common condition in which the body's cells are unable to effectively obtain glucose from the bloodstream. Glucose is required to provide the body with energy for day-to-day activities. The hormone insulin moves glucose from the blood into the body's cells, where it can be used for energy.

When the movement of glucose into the cells is delayed the blood glucose levels rise, causing diabetes to develop.

## Glucose and insulin changes in gestational diabetes

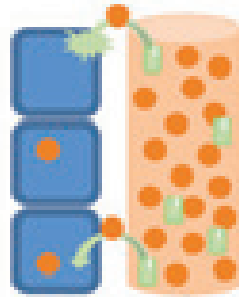
### Normal:

Insulin moves glucose from the blood into your cells



### Gestational Diabetes:

Insulin resistance and inadequate insulin leads to less glucose entering the cells so blood glucose levels become higher



Glucose



Insulin



Body's Cells



Blood Vessel

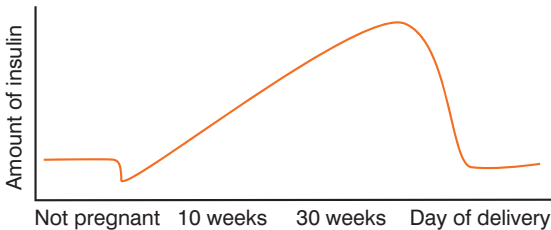
Being diagnosed with gestational diabetes can be a shock and upsetting. You may be worried about the health of your baby or that there will be problems with the birth. This booklet explains how you can have a healthy baby with effective diabetes management and support from your health care team.

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

# What causes gestational diabetes?

In pregnancy, the placenta (the blood source for the baby) produces hormones that help the baby grow and develop. Some of these hormones block the action of the mother's insulin which is called insulin resistance. During pregnancy, to keep the blood glucose levels normal, mothers need to make 2 to 3 times the normal amount of insulin due to this insulin resistance.

If the body is unable to produce the extra insulin or becomes more resistant, gestational diabetes develops. When the baby is born and the insulin requirements fall, glucose levels return to normal and diabetes usually disappears.



# Who is at increased risk of gestational diabetes?

- Older mothers, especially over the age of 30 years of age
- Women with a family history of type 2 diabetes
- Women who are overweight
- Indigenous Australians
- Women from certain ethnic backgrounds including:
  - South Asian
  - Vietnamese
  - Chinese
  - Middle Eastern
  - Polynesian/Melanesian
- Women who have had gestational diabetes
- Women who have had large babies or obstetric complications
- Woman who have had polycystic ovarian syndrome

# How is gestational diabetes diagnosed?

The oral Glucose Tolerance Test (GTT) is used to assess how your body responds to a glucose load. After fasting 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. If the blood glucose is above the normal level, you have gestational diabetes.

# Why does gestational diabetes need to be treated?

If a mother's blood glucose levels are high, glucose passes through the placenta to the baby. This may lead to the baby growing larger than the average baby. Giving birth to larger babies can potentially cause more problems for both the mother and child during and following birth. However, the baby's blood glucose level may be too low (**hypoglycaemia**) at birth.



Untreated gestational diabetes can also lead to a greater likelihood of developing high blood pressure during the pregnancy.

For many women, being diagnosed with gestational diabetes may be upsetting. However, by working closely with your doctor and health care team you can keep your blood glucose levels within the target range to provide the best outcome for both you and your baby.

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Following a healthy eating plan is an important part of diabetes management and will help to:

- keep your blood glucose levels within the target range advised by your doctor or diabetes educator
- provide adequate nutrition for you and your growing baby
- achieve appropriate weight changes during your pregnancy

**Women with gestational diabetes are encouraged to:**

- eat regular meals
- eat small amounts often
- satisfy their hunger and maintain a healthy weight
- include some carbohydrate in every meal and snack

**Choose foods that:**

- are varied and enjoyable
- are low in fat, particularly saturated fat and high in fibre
- are a good source of carbohydrate (grains, cereals, fruit, pasta, rice)
- provide the nutrients you need during pregnancy

**Nutrients required in higher amounts for pregnancy include:**

- calcium (milk, cheese, nuts, tahini)
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If it is possible, it is helpful to see a dietitian who will advise you on getting the proper nutrients for you and your baby, while helping you to make healthy food choices for managing your blood glucose levels.



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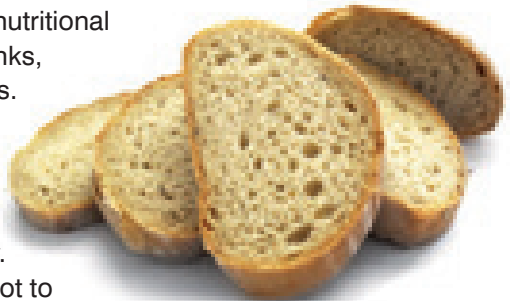


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In some women, blood glucose levels continue to be high, even with healthy eating and regular activity. If this happens to you, it is important not to cut back on carbohydrates as the baby requires carbohydrate as its main energy source. Some women's bodies require help to manage blood glucose levels and insulin injections may be needed.



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The GI is a measure of how quickly the carbohydrate in a food will affect the level of glucose in the blood. Foods that have a high GI will raise the blood glucose levels quickly, while those with a low GI will raise the blood glucose levels more slowly. Foods with a low or medium GI may be better choices when trying to manage blood glucose levels. The GI of foods does not change the serving sizes.

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- prevent large fluctuations in blood glucose levels
- make you feel satisfied for longer
- help manage your weight

**Low GI**=less than 55, **Medium GI**=56-69, **High GI**=over 70

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Use healthier fats like canola and olive oils, unsaturated oils, margarines, avocados and unsalted nuts. Limit the amount of fat you eat, particularly saturated fats by selecting lean meats, skinless chicken and low-fat dairy foods.

Avoid takeaway and processed foods. If eaten in large amounts, all fats can cause extra weight gain which can further increase insulin resistance.



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Include two to three small serves of protein each day as protein is important for the maintenance of the body and growth of your baby. Protein can also help you feel full for longer. Protein foods include lean meat, skinless chicken, fish, eggs and reduced fat cheese. Milk, yoghurts, custards and legumes (beans, lentils, chickpeas) are also important sources of protein.



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### What can I drink?

Drinks such as cordial, juice and soft drink are high in energy and sugar so a better choice is to drink water, plain mineral water or soda water – try it with a fresh lemon or lime for something different.

### Alcohol

The Australian guidelines recommend that for women who are pregnant, planning a pregnancy or breastfeeding, avoiding alcohol is the safest option. There is strong evidence that heavy alcohol intake harms the baby, though the effects of low to moderate intake are less clear.

Talk to your dietitian regarding healthy food choices both for your diabetes management and general good health during pregnancy, including:

- Iodine deficiency
- Vitamin D deficiency
- Calcium
- Iron
- Foods susceptible to listeria

## Sample food plan

Meal	Choose from		Plus
	Option 1	Option 2	
<b>Breakfast</b>	½ cup untoasted muesli/All Bran®/rolled oats (raw) OR 1 cup Guardian®/Special K®	1-2 slices of toast multigrain, soy & linseed, wholemeal, white, heavy fruit bread OR 1 slice of toast with ½ cup baked beans	250ml low fat milk OR 100g low-fat fruit yoghurt OR 200g artificially sweetened yoghurt
<b>Morning tea</b>	4 Vitaweats® with a small amount of reduced fat cheese	½ English muffin OR 1 slice toast with a small amount of reduced fat cheese	1 serve of fruit 1 apple, 1 pear, 1 small banana, 2 kiwi fruits, 4 apricots, ½ cup tinned fruit, 2 tablespoons sultanas
<b>Lunch</b>	2 slices of bread OR 1 medium bread roll with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	2/3 cup cooked rice (Basmati/Doongara) OR 1 cup pasta/noodles with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	Plenty of salad or cooked vegetables (other than potato or corn) PLUS 1 serve of fruit
<b>Afternoon Tea</b>	250mls low fat milk	100g Low fat yoghurt OR 200g artificially sweetened yoghurt	1 slice heavy fruit loaf OR 1 crumpet OR ½ English muffin
<b>Dinner</b>	2/3 cup cooked rice (Basmati/Doongara) OR 1 cup pasta/noodles	1 medium potato and a small corn cob	A small serve of lean meat, fish, chicken or tofu, with plenty of salad OR cooked vegetables PLUS 1 serve of fruit
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## Physical activity

It is never too late to start being more active and there are many ways that you can ‘do exercise’ as part of your everyday routine. Anything that gets you moving is generally good for your diabetes. Walking is a great way to be physically active, without even noticing you are ‘exercising’.

Here are some tips on how you can incorporate more walking into your life:

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- walk instead of driving to the local shops
- take the stairs instead of the lift
- stand and move while on the phone
- gardening



**For women with gestational diabetes, moderate intensity physical activity can help to manage blood glucose levels.**

‘Moderate’ means a slight but noticeable increase in breathing and heart rate. If there are no specific obstetric or medical conditions, you should be able to safely exercise during pregnancy. However, it is best to discuss this with your doctor.

**Regular activities such as walking or swimming help to:**

- reduce insulin resistance
- keep you fit
- prepare for the birth of your baby
- manage your blood glucose levels

If you are feeling tired and are less active, your blood glucose levels will be higher. Remember, before starting or continuing any form of physical activity, always check with your doctor.

Consider buying a pedometer. This is a small device that counts your daily steps. It will measure just how much walking you’re doing. Aim to walk 10,000 steps each day.

Gaining too much weight during pregnancy will make it harder to manage your diabetes and the birth. Talk to your healthcare team if you feel you are gaining too much weight.

## Monitoring your blood glucose levels

Regularly testing your **Blood Glucose Level** (BGL) enables treatment to be assessed and changed as necessary.

During pregnancy the expected blood glucose range is lower than for people with diabetes who are not pregnant.

Testing your own blood glucose levels will help you to:

- better understand the effect of food and lifestyle on blood glucose levels
- know when to seek advice from your health professionals
- develop confidence in managing your diabetes

Generally targets are 4.0 to 7mmol/L depending on when the test is done. Your doctor or diabetes educator will advise you what blood glucose levels to aim for.

My target BGLs are \_\_\_\_\_ to \_\_\_\_\_ fasting/before meals  
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The most common times to test blood glucose levels are when you wake up in the morning (fasting) and 2 hours after each meal. Other testing times may include 1 hour after meals and/or before meals.

**Blood Glucose Meters** (the equipment used to test your blood glucose levels) are available from your local National Diabetes Service Scheme Agents (listed on page 25), pharmacies or your diabetes educator. Training on how to use your blood glucose meter will be provided.

Self blood glucose testing involves a finger prick using a finger pricking device to obtain a small drop of blood to test in your blood glucose meter. Recording your blood glucose levels in a record book or sheet is important so you can discuss the results with your diabetes team at each appointment.

Ask your diabetes team how to safely dispose of your equipment.

## Medication (if needed)

### What if blood glucose levels are too high?

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

Insulin treatment may be needed to bring the blood glucose levels into the target range. Tablets are not widely used in the treatment of gestational diabetes as their effectiveness and safety are still being assessed.

Insulin is given by injection using an insulin device. This device can deliver the insulin at a push of a button. If insulin is required, your diabetes educator or doctor will demonstrate how to use the insulin device and where to inject the insulin. The injected insulin will help to lower your blood glucose level to within a range that is best for your baby's growth and development. The insulin does not cross the placenta or affect your baby.





## What if blood glucose levels are too high? (cont.)

While many women are initially reluctant to give an injection, most find it less uncomfortable than doing the blood glucose tests. The injection of insulin will not harm your baby.

The diabetes team will advise you of the appropriate starting dose of insulin. It is common for the insulin dose to be increased regularly as the insulin resistance from the placental hormones increases until close to the birth.

Your diabetes team will regularly review your blood glucose levels and advise you of the correct insulin doses to take.

If you are having insulin injections, it is possible for blood glucose levels to go a little low, although this is not common. You may feel weak, shaky or sweaty. A low blood glucose level is called **hypoglycaemia** or a '**hypo**' and is treated by having a drink or food containing quick acting glucose. Within a few minutes of having something sugary, your blood glucose level should return to normal. You should perform an extra blood test to check that your blood glucose levels have returned to normal.

Discuss taking control of 'hypos' with your diabetes team.

## The birth

Your diabetes and pregnancy teams will continue to monitor you and your baby throughout the pregnancy. Tests may include an ultrasound, blood glucose and blood pressure. If diabetes has been well managed and there are no other problems, most women go to ‘full term’ and give birth naturally.

If baby grows too large (macrosomic) or any other concerns about the pregnancy arise, your pregnancy team may suggest ‘inducing’ the baby one or two weeks early. If an earlier birth is required the labour is usually induced after using a medication that prepares the cervix for delivery. During labour your baby’s heartbeat may be monitored using a cardiotocograph (CTG) machine strapped to your abdomen.

### Caesarean section

As with all pregnant women, there is a possibility that you may need a caesarean birth. Sometimes a caesarean may be required if the baby is too large or if there are other obstetric concerns such as low placenta, breech presentation or previous caesarean delivery. It’s a good idea to be informed about caesarean births so that if the need arises you are well prepared.

### Insulin/Glucose infusion (drip)

Women may need an insulin infusion to control the blood glucose levels during labour, or when having a caesarean. This is more likely in women who have needed treatment with high doses of insulin during the pregnancy.

You can discuss your birth plan with your doctor or midwife.



# After the birth

**Gestational Diabetes will not lead to your baby being born with diabetes**

Your baby will be monitored carefully for the first 24-48 hours (heart rate, colour, breathing, blood glucose levels). The midwives will perform blood glucose tests (using heel pricks) on your baby to make sure its blood glucose levels are not too low. These will be monitored until they are satisfactory.

## Benefits of breastfeeding

Breastfeeding soon after the birth, then every four hours, helps to maintain your baby's glucose levels. This helps to avoid low blood glucose levels for your baby. Breastfeeding has also been shown to pass on the mother's immunity to the baby and help your weight control.

## For women who required insulin

Insulin will usually be stopped after your baby is born.

Your health team will advise you how often to monitor your blood glucose to see whether the levels have returned to normal (generally 4.0 to 8 mmol/L).

## 6-12 weeks after the birth

An oral Glucose Tolerance Test (GTT) is very important to check that the diabetes has gone. In some women the diabetes does not resolve.

**Remember to tell your doctor that you had gestational diabetes.**



## Future risks

Once you have had gestational diabetes, you are at a higher risk of developing diabetes later in life. Approximately 50% of women who have had gestational diabetes will develop type 2 diabetes within 10-20 years. If you have another pregnancy, there is a very high chance of developing gestational diabetes again.

The healthy lifestyle information gained during pregnancy is valid for all Australians. Continue your healthy eating and activity routine and ask your doctor for a blood glucose test every 2 years.

### To help lower the risks of developing diabetes you should:

- **Eat Well**  
Follow a healthy eating plan
- **Play Well**  
Have regular physical activity
- **Stay Well**  
Ask your doctor for a diabetes test every 2 years  
Before your next pregnancy have tests for diabetes  
Control your weight



**You will be sent more information after the birth of your baby including a booklet 'Life After Gestational Diabetes'**

# The diabetes team

The team members vary, depending on where you live or attend for your antenatal care, but may include:

- a diabetes doctor – a specialist in diabetes (endocrinologist)
- a diabetes educator – a specialist nurse/midwife who will educate you and your family on how to monitor and manage your blood glucose levels
- a dietitian – who will help you with a healthy food plan for your pregnancy
- Your General Practitioner (GP)

The diabetes team works closely with your pregnancy team that may include:

- an obstetrician – a specialist in pregnancy and birth
- a midwife – will care and educate you in preparation for the birth and parenting
- a physiotherapist – who may educate you and your partner on the birth process

The diabetes team is supported by the National Diabetes Services Scheme (NDSS) Agents in each State and Territory listed on Page 24.

## Contact details:

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# National Diabetes Services Scheme

The National Diabetes Services Scheme (NDSS) is an initiative of the Australian Government administered by Diabetes Australia. The NDSS is delivered locally through State and Territory based Agents and Sub-Agents such as diabetes centres, pharmacies and health centres. The scheme provides diabetes-related products at subsidised prices, information and select services to people with diabetes. Registration is free and open to all Australians diagnosed with diabetes.

## Products

**People who are registered with the NDSS can access a range of approved products including:**

- subsidised blood and urine testing strips. A wide range of blood glucose testing strips are available at a lower cost than a Pharmacy Prescription
- insulin syringes and pen needles. These are available free of charge to all people using insulin
- insulin pump consumables
- diabetes self-management information and services

## How to order products

**There are a number of ways you can order products:**

- **Over the counter** from your State or Territory Agent or Sub-Agent
- **Telephone:** 1300 136 588
- **Website:**

Diabetes ACT	<a href="http://diabetes-act.com.au">diabetes-act.com.au</a>
Diabetes Australia NSW	<a href="http://diabetesnsw.com.au">diabetesnsw.com.au</a>
Diabetes Australia Queensland	<a href="http://diabetesqld.org.au">diabetesqld.org.au</a>
Diabetes Australia - Vic	<a href="http://diabetesvic.org.au">diabetesvic.org.au</a>
Diabetes SA	<a href="http://diabetessa.com.au">diabetessa.com.au</a>
Diabetes Tasmania	<a href="http://diabetestas.com.au">diabetestas.com.au</a>
Diabetes WA	<a href="http://diabeteswa.com.au">diabeteswa.com.au</a>
Healthy Living NT	<a href="http://healthylivingnt.org.au">healthylivingnt.org.au</a>
- **Post** your order to Diabetes Australia, GPO Box 9824 in your capital city. Order forms can be downloaded from the web, posted to you by ringing the above number or collected from Agents or Sub-Agents.

## Concession card holders

Concession card holders may receive a further discount on NDSS products. For more information contact your local service Agent as noted above or refer to the NDSS website [ndss.com.au](http://ndss.com.au).

More information about the NDSS can be found on the website:  
[ndss.com.au](http://ndss.com.au) or by calling 1300 136 588

## Diabetes Australia

Diabetes Australia is a national organisation and draws its membership from State and Territory based consumer organisations, health professional organisations and research bodies who work together to provide a collective and powerful voice for people living with diabetes, their families and carers.

Refer to [diabetesaustralia.com.au](http://diabetesaustralia.com.au) for further contact details.

Diabetes Australia is turning diabetes around through awareness, prevention, detection, management and finding a cure.

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# Introduction

In Australia, at least 17,000 women develop gestational diabetes every year – you are not alone! The number of women developing gestational diabetes is expected to grow significantly over the next few decades.

Gestational diabetes is associated with an increased risk of complications in pregnancy and birth, as well as a greater likelihood of mother and child developing type 2 diabetes later in life. The good news is that with good management of gestational diabetes, these risks are significantly reduced.

There have been huge advances in the knowledge about the management and treatment of gestational diabetes and the importance of a healthy lifestyle in keeping gestational diabetes and its complications under control. This booklet aims to provide you with information about gestational diabetes, how to look after your gestational diabetes and where to get assistance if you need it.

The booklet is not designed to take the place of the valuable advice you will receive from your diabetes team. It is designed to help you learn as much as you can about gestational diabetes and the importance of managing your gestational diabetes and continuing to enjoy a healthy lifestyle after you have had your baby.

# What is gestational diabetes?

Gestational diabetes is a form of diabetes that occurs during pregnancy and usually goes away after the baby is born. Between 5% to 8% of pregnant women will develop gestational diabetes and this usually occurs around the 24th to 28th week of pregnancy.

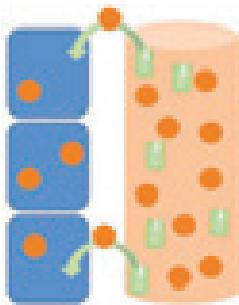
Diabetes is a common condition in which the body's cells are unable to effectively obtain glucose from the bloodstream. Glucose is required to provide the body with energy for day-to-day activities. The hormone insulin moves glucose from the blood into the body's cells, where it can be used for energy.

When the movement of glucose into the cells is delayed the blood glucose levels rise, causing diabetes to develop.

## Glucose and insulin changes in gestational diabetes

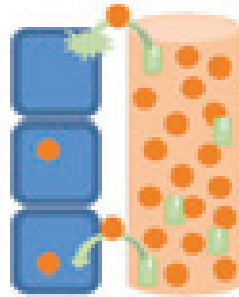
### Normal:

Insulin moves glucose from the blood into your cells



### Gestational Diabetes:

Insulin resistance and inadequate insulin leads to less glucose entering the cells so blood glucose levels become higher



Glucose



Insulin



Body's Cells



Blood Vessel

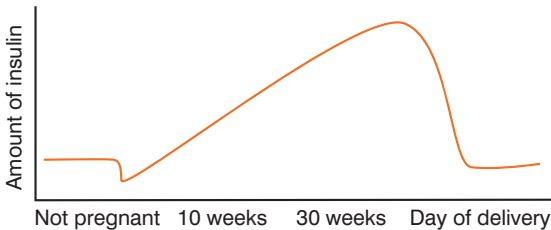
Being diagnosed with gestational diabetes can be a shock and upsetting. You may be worried about the health of your baby or that there will be problems with the birth. This booklet explains how you can have a healthy baby with effective diabetes management and support from your health care team.

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

# What causes gestational diabetes?

In pregnancy, the placenta (the blood source for the baby) produces hormones that help the baby grow and develop. Some of these hormones block the action of the mother's insulin which is called insulin resistance. During pregnancy, to keep the blood glucose levels normal, mothers need to make 2 to 3 times the normal amount of insulin due to this insulin resistance.

If the body is unable to produce the extra insulin or becomes more resistant, gestational diabetes develops. When the baby is born and the insulin requirements fall, glucose levels return to normal and diabetes usually disappears.



# Who is at increased risk of gestational diabetes?

- Older mothers, especially over the age of 30 years of age
- Women with a family history of type 2 diabetes
- Women who are overweight
- Indigenous Australians
- Women from certain ethnic backgrounds including:
  - South Asian
  - Vietnamese
  - Chinese
  - Middle Eastern
  - Polynesian/Melanesian
- Women who have had gestational diabetes
- Women who have had large babies or obstetric complications
- Woman who have had polycystic ovarian syndrome

# How is gestational diabetes diagnosed?

The oral Glucose Tolerance Test (GTT) is used to assess how your body responds to a glucose load. After fasting 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. If the blood glucose is above the normal level, you have gestational diabetes.

# Why does gestational diabetes need to be treated?

If a mother's blood glucose levels are high, glucose passes through the placenta to the baby. This may lead to the baby growing larger than the average baby. Giving birth to larger babies can potentially cause more problems for both the mother and child during and following birth. However, the baby's blood glucose level may be too low (**hypoglycaemia**) at birth.



Untreated gestational diabetes can also lead to a greater likelihood of developing high blood pressure during the pregnancy.

For many women, being diagnosed with gestational diabetes may be upsetting. However, by working closely with your doctor and health care team you can keep your blood glucose levels within the target range to provide the best outcome for both you and your baby.

# Healthy eating

## What foods should I eat?

Following a healthy eating plan is an important part of diabetes management and will help to:

- keep your blood glucose levels within the target range advised by your doctor or diabetes educator
- provide adequate nutrition for you and your growing baby
- achieve appropriate weight changes during your pregnancy

**Women with gestational diabetes are encouraged to:**

- eat regular meals
- eat small amounts often
- satisfy their hunger and maintain a healthy weight
- include some carbohydrate in every meal and snack

**Choose foods that:**

- are varied and enjoyable
- are low in fat, particularly saturated fat and high in fibre
- are a good source of carbohydrate (grains, cereals, fruit, pasta, rice)
- provide the nutrients you need during pregnancy

**Nutrients required in higher amounts for pregnancy include:**

- calcium (milk, cheese, nuts, tahini)
- iron (red meat, chicken, fish, chickpeas, tofu)
- folic acid (dark green leafy vegetables)

If it is possible, it is helpful to see a dietitian who will advise you on getting the proper nutrients for you and your baby, while helping you to make healthy food choices for managing 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 help manage your blood glucose levels, it is important to spread your carbohydrate foods over 3 small meals and 2-3 snacks each day.

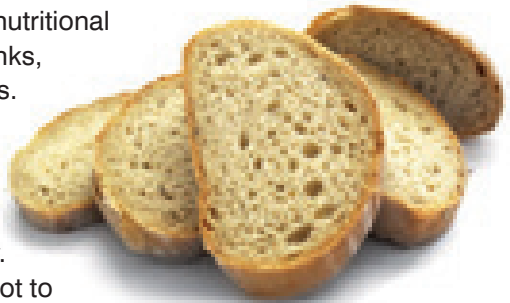


### Foods containing carbohydrate include:

- multigrain or wholegrain breads and breakfast cereals
- pasta, noodles and rice (preferably Doongara or Basmati rice as they have a lower glycaemic index and will help you to stay fuller longer)
- potato, sweet potato and corn in moderation
- legumes such as baked beans, red kidney beans and lentils
- fruits
- milks, yoghurts

Carbohydrate foods that contain little nutritional value include sucrose (sugar), soft drinks, cordials, fruit juices, cakes and biscuits. It is wise to avoid these foods.

In some women, blood glucose levels continue to be high, even with healthy eating and regular activity. If this happens to you, it is important not to cut back on carbohydrates as the baby requires carbohydrate as its main energy source. Some women's bodies require help to manage blood glucose levels and insulin injections may be needed.



## Glycaemic Index (GI)

The GI is a measure of how quickly the carbohydrate in a food will affect the level of glucose in the blood. Foods that have a high GI will raise the blood glucose levels quickly, while those with a low GI will raise the blood glucose levels more slowly. Foods with a low or medium GI may be better choices when trying to manage blood glucose levels. The GI of foods does not change the serving sizes.

Lower GI foods can:

- prevent large fluctuations in blood glucose levels
- make you feel satisfied for longer
- help manage your weight

**Low** GI=less than 55, **Medium** GI=56-69, **High** GI=over 70

For more information go to the GI website: [glycemicindex.com](http://glycemicindex.com)

## Fat

Use healthier fats like canola and olive oils, unsaturated oils, margarines, avocados and unsalted nuts. Limit the amount of fat you eat, particularly saturated fats by selecting lean meats, skinless chicken and low-fat dairy foods.

Avoid takeaway and processed foods. If eaten in large amounts, all fats can cause extra weight gain which can further increase insulin resistance.



## Protein

Include two to three small serves of protein each day as protein is important for the maintenance of the body and growth of your baby. Protein can also help you feel full for longer. Protein foods include lean meat, skinless chicken, fish, eggs and reduced fat cheese. Milk, yoghurts, custards and legumes (beans, lentils, chickpeas) are also important sources of protein.



## The plate model below shows a healthy meal

Half your plate should include vegetables or salad. A quarter of the plate is protein food and another quarter is carbohydrate foods.

1/4 plate:  
Carbohydrate food

1/2 plate:  
Free vegetables



1/4 plate:  
Protein food



## Other dietary considerations

### Can I use artificial sweeteners?

The following sweeteners may be used in small amounts:

- Aspartame (951)\*
- Sucralose (955)\*
- Acesulphame Potassium (950)\*

\*look for these numbers on the food label ingredients list



### What can I drink?

Drinks such as cordial, juice and soft drink are high in energy and sugar so a better choice is to drink water, plain mineral water or soda water – try it with a fresh lemon or lime for something different.

### Alcohol

The Australian guidelines recommend that for women who are pregnant, planning a pregnancy or breastfeeding, avoiding alcohol is the safest option. There is strong evidence that heavy alcohol intake harms the baby, though the effects of low to moderate intake are less clear.

Talk to your dietitian regarding healthy food choices both for your diabetes management and general good health during pregnancy, including:

- Iodine deficiency
- Vitamin D deficiency
- Calcium
- Iron
- Foods susceptible to listeria

## Sample food plan

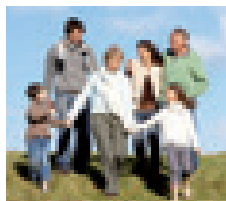
Meal	Choose from		Plus
	Option 1	Option 2	
<b>Breakfast</b>	½ cup untoasted muesli/All Bran®/rolled oats (raw) OR 1 cup Guardian®/Special K®	1-2 slices of toast multigrain, soy & linseed, wholemeal, white, heavy fruit bread OR 1 slice of toast with ½ cup baked beans	250ml low fat milk OR 100g low-fat fruit yoghurt OR 200g artificially sweetened yoghurt
<b>Morning tea</b>	4 Vitaweats® with a small amount of reduced fat cheese	½ English muffin OR 1 slice toast with a small amount of reduced fat cheese	1 serve of fruit 1 apple, 1 pear, 1 small banana, 2 kiwi fruits, 4 apricots, ½ cup tinned fruit, 2 tablespoons sultanas
<b>Lunch</b>	2 slices of bread OR 1 medium bread roll with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	2/3 cup cooked rice (Basmati/Doongara) OR 1 cup pasta/noodles with tuna, salmon, fresh chicken, egg, roast beef or reduced fat cheese	Plenty of salad or cooked vegetables (other than potato or corn) PLUS 1 serve of fruit
<b>Afternoon Tea</b>	250mls low fat milk	100g Low fat yoghurt OR 200g artificially sweetened yoghurt	1 slice heavy fruit loaf OR 1 crumpet OR ½ English muffin
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<b>Supper</b>	½ cup low fat custard OR 2 small scoops of low-fat ice cream	100g low-fat yoghurt OR 200g artificially sweetened yoghurt	1 serve of fruit

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It is never too late to start being more active and there are many ways that you can ‘do exercise’ as part of your everyday routine. Anything that gets you moving is generally good for your diabetes. Walking is a great way to be physically active, without even noticing you are ‘exercising’.

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- keep you fit
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Generally targets are 4.0 to 7mmol/L depending on when the test is done. Your doctor or diabetes educator will advise you what blood glucose levels to aim for.

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While many women are initially reluctant to give an injection, most find it less uncomfortable than doing the blood glucose tests. The injection of insulin will not harm your baby.

The diabetes team will advise you of the appropriate starting dose of insulin. It is common for the insulin dose to be increased regularly as the insulin resistance from the placental hormones increases until close to the birth.

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Your diabetes and pregnancy teams will continue to monitor you and your baby throughout the pregnancy. Tests may include an ultrasound, blood glucose and blood pressure. If diabetes has been well managed and there are no other problems, most women go to ‘full term’ and give birth naturally.

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As with all pregnant women, there is a possibility that you may need a caesarean birth. Sometimes a caesarean may be required if the baby is too large or if there are other obstetric concerns such as low placenta, breech presentation or previous caesarean delivery. It’s a good idea to be informed about caesarean births so that if the need arises you are well prepared.

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You can discuss your birth plan with your doctor or midwife.



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Your baby will be monitored carefully for the first 24-48 hours (heart rate, colour, breathing, blood glucose levels). The midwives will perform blood glucose tests (using heel pricks) on your baby to make sure its blood glucose levels are not too low. These will be monitored until they are satisfactory.

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## 6-12 weeks after the birth

An oral Glucose Tolerance Test (GTT) is very important to check that the diabetes has gone. In some women the diabetes does not resolve.

**Remember to tell your doctor that you had gestational diabetes.**





## Future risks

Once you have had gestational diabetes, you are at a higher risk of developing diabetes later in life. Approximately 50% of women who have had gestational diabetes will develop type 2 diabetes within 10-20 years. If you have another pregnancy, there is a very high chance of developing gestational diabetes again.

The healthy lifestyle information gained during pregnancy is valid for all Australians. Continue your healthy eating and activity routine and ask your doctor for a blood glucose test every 2 years.

### To help lower the risks of developing diabetes you should:

- **Eat Well**  
Follow a healthy eating plan
- **Play Well**  
Have regular physical activity
- **Stay Well**  
Ask your doctor for a diabetes test every 2 years  
Before your next pregnancy have tests for diabetes  
Control your weight



**You will be sent more information after the birth of your baby including a booklet 'Life After Gestational Diabetes'**

# The diabetes team

The team members vary, depending on where you live or attend for your antenatal care, but may include:

- a diabetes doctor – a specialist in diabetes (endocrinologist)
- a diabetes educator – a specialist nurse/midwife who will educate you and your family on how to monitor and manage your blood glucose levels
- a dietitian – who will help you with a healthy food plan for your pregnancy
- Your General Practitioner (GP)

The diabetes team works closely with your pregnancy team that may include:

- an obstetrician – a specialist in pregnancy and birth
- a midwife – will care and educate you in preparation for the birth and parenting
- a physiotherapist – who may educate you and your partner on the birth process

The diabetes team is supported by the National Diabetes Services Scheme (NDSS) Agents in each State and Territory listed on Page 24.

## Contact details:

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# National Diabetes Services Scheme

The National Diabetes Services Scheme (NDSS) is an initiative of the Australian Government administered by Diabetes Australia. The NDSS is delivered locally through State and Territory based Agents and Sub-Agents such as diabetes centres, pharmacies and health centres. The scheme provides diabetes-related products at subsidised prices, information and select services to people with diabetes. Registration is free and open to all Australians diagnosed with diabetes.

## Products

**People who are registered with the NDSS can access a range of approved products including:**

- subsidised blood and urine testing strips. A wide range of blood glucose testing strips are available at a lower cost than a Pharmacy Prescription
- insulin syringes and pen needles. These are available free of charge to all people using insulin
- insulin pump consumables
- diabetes self-management information and services

## How to order products

**There are a number of ways you can order products:**

- **Over the counter** from your State or Territory Agent or Sub-Agent
- **Telephone:** 1300 136 588
- **Website:**

Diabetes ACT	<a href="http://diabetes-act.com.au">diabetes-act.com.au</a>
Diabetes Australia NSW	<a href="http://diabetesnsw.com.au">diabetesnsw.com.au</a>
Diabetes Australia Queensland	<a href="http://diabetesqld.org.au">diabetesqld.org.au</a>
Diabetes Australia - Vic	<a href="http://diabetesvic.org.au">diabetesvic.org.au</a>
Diabetes SA	<a href="http://diabetessa.com.au">diabetessa.com.au</a>
Diabetes Tasmania	<a href="http://diabetestas.com.au">diabetestas.com.au</a>
Diabetes WA	<a href="http://diabeteswa.com.au">diabeteswa.com.au</a>
Healthy Living NT	<a href="http://healthylivingnt.org.au">healthylivingnt.org.au</a>
- **Post** your order to Diabetes Australia, GPO Box 9824 in your capital city. Order forms can be downloaded from the web, posted to you by ringing the above number or collected from Agents or Sub-Agents.

## Concession card holders

Concession card holders may receive a further discount on NDSS products. For more information contact your local service Agent as noted above or refer to the NDSS website [ndss.com.au](http://ndss.com.au).

More information about the NDSS can be found on the website:  
[ndss.com.au](http://ndss.com.au) or by calling 1300 136 588

## Diabetes Australia

Diabetes Australia is a national organisation and draws its membership from State and Territory based consumer organisations, health professional organisations and research bodies who work together to provide a collective and powerful voice for people living with diabetes, their families and carers.

Refer to [diabetesaustralia.com.au](http://diabetesaustralia.com.au) for further contact details.

Diabetes Australia is turning diabetes around through awareness, prevention, detection, management and finding a cure.