Healthy Eating with Gestational Diabetes

NHS
Berkshire Healthcare
NHS Foundation Trust

What is Gestational Diabetes?

Gestational diabetes is a type of diabetes that develops during pregnancy, usually during the second or third trimester.

Gestational Diabetes occurs when the body is unable to control blood glucose levels due to pregnancy. This happens because the body is not able to produce enough insulin to meet the extra needs of pregnancy. Insulin is needed to control the amount of glucose in your blood.

An Oral Glucose Tolerance Test (OGTT) is used to diagnose gestational diabetes. A fasting blood test is taken, a specific amount of a glucose drink is taken and then the blood test is repeated two hours later. The Oral Glucose Tolerance Test shows how your body responds to a specific amount of glucose over 2 hours.

You are diagnosed with having Gestational Diabetes if your blood glucose level after the Oral Glucose Tolerance Test is either:

- **Fasting is above 5.6mmol/l**
- **At 2 hours is above 7.8mmol/l**

You are more at risk of developing gestational diabetes if:

- you are overweight
- you have a family history of type 2 diabetes
- you have had an unexplained stillbirth or neonatal death in a previous pregnancy
- you have had a very large infant in a previous pregnancy (4.5kg/10lbs or over)
- you have had gestational diabetes before
- your family origin is South Asian, Black Caribbean, Middle Eastern or Hispanic
- you have Polycystic Ovarian Syndrome.

How will Gestational Diabetes affect my baby?

It is important to control the level of glucose in the blood during pregnancy. If there is too much glucose in your blood, your baby's body can start to make extra insulin to use the glucose. This extra insulin can make the baby grow larger, making delivery difficult and potentially causing injury to both mother and baby.

Also, if your blood glucose levels are too high during pregnancy, the baby's blood glucose level may drop too low after delivery. This is due to extra insulin that the baby has been producing during the pregnancy. If your blood glucose levels are too high during pregnancy, this can inhibit lung maturity and increase the chance of jaundice in the baby. Please ask your midwife if you would like further information.

What can I do to manage Gestational Diabetes?

Blood glucose levels can be controlled by diet and exercise. During the education session, a Diabetes Specialist Dietitian will discuss **dietary and physical activity changes** that can be made.

Increasing your **physical activity levels** will help lower your blood glucose levels, help during labour, relieve stress and keep you fit. Following activity, your muscles use more glucose and remain more sensitive to insulin (reducing insulin resistance).

The following tips may be helpful:

- Be as active as you can throughout the day
- After meals, increase activity e.g. house chores, take stairs, go for a 30 minutes brisk walk or 3 x 10 minute brisk walks per day.
- If you are NEW to exercise start with 15 minutes, 3 times per week and gradually increase to 30 minutes.
- Try gentle pregnancy yoga and stretching.
- Eat your evening meal earlier so activity can be taken following this, rather than just going to bed

There may be limitations to your activity levels whilst pregnant and/or you may have other health problems, so do not put yourself at risk of injury. You should be able to hold a conversation while exercising.

If your blood glucose cannot be controlled by diet and physical activity alone, you may also need **tablets of metformin and/or insulin injections** to manage your diabetes.

Blood Glucose Testing

Testing your blood glucose regularly will help you to understand how your levels are affected by different types of foods and food portion sizes. Your dietary intake and treatment will be guided by your blood glucose testing and therefore it is important that you monitor your blood glucose levels **at least 4 times a day** throughout your pregnancy:

- First thing in the morning, before you eat (fasting)
- 1 hour after breakfast
- 1 hour after lunch
- 1 hour after evening meal

Even though your blood glucose levels change during the day, there is a healthy range for these levels.

Time of blood glucose test	Target Levels (mmol/l)
Fasting	Less than 5.3
1 hour after eating	Less than 7.8

The following chart shows the target range for each time you test. Please note your diabetes nurse or midwife may set different targets for you.

Record all blood glucose level tests in your blood glucose monitoring diary or on the diabetes app.

If your blood glucose levels are above target, request a call back from the midwifes through the diabetes app.

Arrange ongoing supplies of equipment for testing:

- It is your responsibility to arrange ongoing supplies of equipment for testing and medication from your GP.
- Take the letter provided to your GP surgery receptionist to arrange prescription of test strips, needles and a sharps bin.
- You may be required to give 48 hours notice before collecting your prescription.
- If you have less than 4-5 days of medications or equipment, contact your GP for a repeat prescription.

Will I always have Gestational Diabetes?

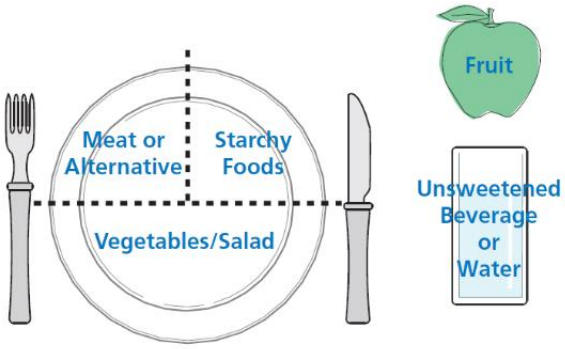
Gestational diabetes usually goes away after the baby is born. However, women with gestational diabetes have a 50% risk of developing type 2 diabetes within 5 years. We know that breastfeeding, keeping active and eating healthy all reduce your risk of developing type 2 diabetes.

You should ask your GP for a **fasting blood test 6 weeks after your baby is born** to make sure your glucose levels have returned to normal, and then a **HbA1c blood test every year**. If you started metformin and/or insulin during your pregnancy, you can stop these after your baby is born.

You are more likely to develop gestational diabetes again in future pregnancies, so should have an Oral Glucose Tolerance Test as soon as you find out you are pregnant. But, if you achieve a **healthy weight after pregnancy**, you will reduce your risk of having gestational diabetes again and type 2 diabetes in future.

Healthy Eating and Gestational Diabetes

Try to follow the healthy portion plate to get the right balance at mealtimes. Start by filling up half your plate with vegetables.



Your blood glucose levels are affected by what you eat. The key to controlling your blood glucose levels is to understand how and why different foods affect it. You can then make changes to your diet to keep your blood glucose levels within the target range.

Food consists of 3 main nutrients: carbohydrate, protein and fat. These nutrients are digested in the intestine and broken down to form their basic units.

Carbohydrates	→	**Glucose**
Protein	→	**Amino acids**
Fats	→	**Fatty acids + glycerol**

Since carbohydrate breaks down to form glucose, any food that contains carbohydrate will have an effect on blood glucose levels. You can still eat foods that contain **carbohydrate** as your body needs it for energy, but the **type, total amount and timing of when you eat carbohydrates** may need to change.

Your **energy requirements or calories** depend on your pre-pregnancy Body Mass Index (BMI). They do not change very much during your first trimester of pregnancy, slightly increase during your **second trimester** and **you need a extra 200kcal** (a small pot of yoghurt and 1 apple or 1 slice of wholegrain toast with peanut butter) **during your 3rd trimester** to achieve a healthy weight gain during pregnancy.

It is a myth that during pregnancy we need to eat for two. Instead, we need to achieve a healthy and steady weight gain which can be calculated by working out your BMI prior to pregnancy. This table provides a guide on what healthy weight gain looks like during pregnancy.

Pre pregnancy BMI	**Healthy weight gain during pregnancy**
18.5-24.9 (healthy)	11.5 to 16 kg
25-29.9 (overweight)	7 to 11.5kg
More than 30kg/m2 (obese)	5 to 9 kg

Carbohydrate Foods

Carbohydrate can be classified into two main groups:

- Starch
- Sugar

Both starch and sugar produce glucose and are found in the following foods:

Cereal Starch	Vegetable Starch	Fructose (fruit sugar)	Lactose (milk sugar)	Sucrose/ Glucose
Breads Cereals Chapattis Rice & Grains Pasta Pastry	Potatoes Potato Products Bean Lentils Peas Sweetcorn	Fruit Fruit Juice Smoothies	Milk Yoghurt	Cakes Biscuits Sweets Chocolate Desserts Sugary Drinks
 	 	 	 	 

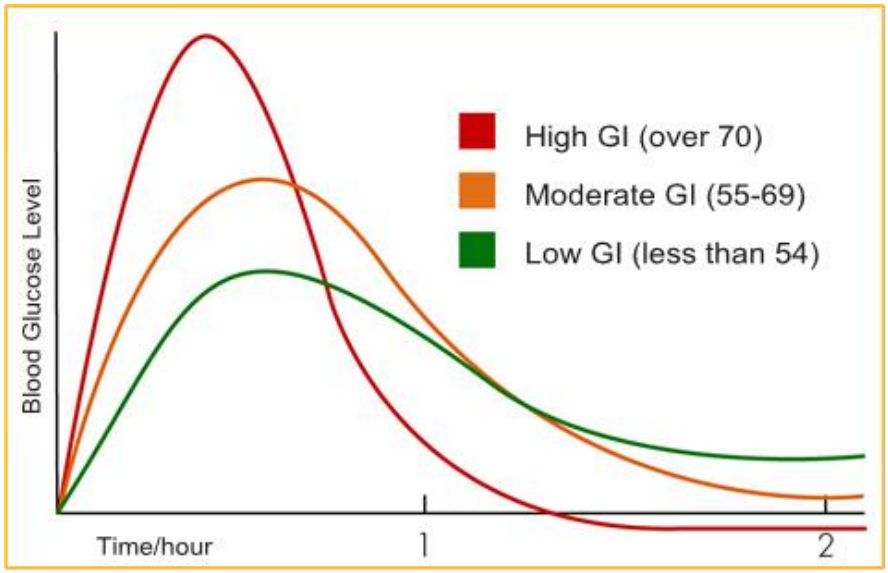
Foods that contain carbohydrate provide essential energy, however some carbohydrate foods release their glucose more quickly into the bloodstream than others (known as the glycaemic index). The foods that digest quickly when eaten will either need to be reduced in quantity or avoided.

Since high sugar foods cause the blood glucose to rise quickly, these foods are best avoided. If avoiding sweet foods is difficult, alternative choices such as artificial sweetened foods and drinks can be used instead

Food	High Sugar Foods	Lower Sugar Alternatives
	white sugar, brown sugar, gur, jaggery, honey, syrup	Stevia sweetener
	ordinary squash, fizzy drinks, energy drinks	water, sparkling water with lemon
	hot chocolate, malted milk drinks	cocoa powder
	most breakfast cereals, especially those containing chocolate or honey	porridge, wheat biscuit
	fruit pies, cakes, ice cream, sponge puddings, jelly, pavlova	fruit, natural yoghurt, sugar free jelly, sugar whips, low sugar custard
	cream filled, chocolate coated, shortbread, chocolate chip	rich tea, marie, oat cakes

The Glycaemic Index

The glycaemic index (GI) refers to how quickly the glucose enters the bloodstream. Foods that release glucose very quickly have a high glycaemic index (high GI) and foods that release glucose slowly have a low glycaemic index (low GI).



High Glycaemic Food

Low Glycaemic Food

This table shows carbohydrate foods by their glycaemic response:

	Low (GI less than 55)	**Medium** (GI between 56 – 69)	**High** (GI more than 70)
Fruit 	apple, banana, plum, berries, grapefruit, grapes, orange, peach	melon, papaya, pineapple, raisins, dried fruit	watermelon
Vegetables 	most vegetables	mashed vegetables	
Potatoes 	sweet potato	baked potato with skin, new potato	baked potato without skin, mashed/instant potato, chips, crisps
Cereals 	bran, muesli, oats	shredded wheat, wheat biscuit	cornflakes, puffed rice cereal
Bread 	pumpernickel, sourdough, soya & linseed, wholegrain	granary, pitta, rye, chapatti (wholewheat)	white, brown, bagel, bread muffin, baguette
Legumes 	baked beans, kidney beans, soya beans, chickpeas, lentils		
Grains 	barley, buckwheat, bulgar wheat, pasta, wild rice	basmati, brown, couscous, gnocchi	jasmine rice, white long grain, rice pasta
Dairy Foods 	milk, yoghurt		

Bread, Cereal, Grains and Starchy Vegetable Portions

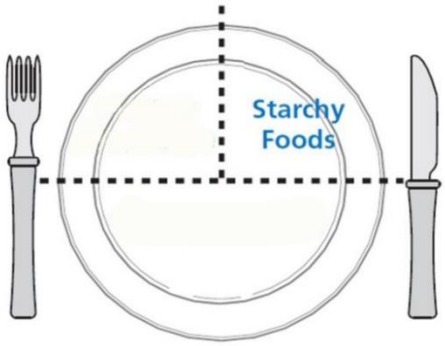
To control your blood glucose levels it is important that you have similar amounts of starchy food at each of your meals.

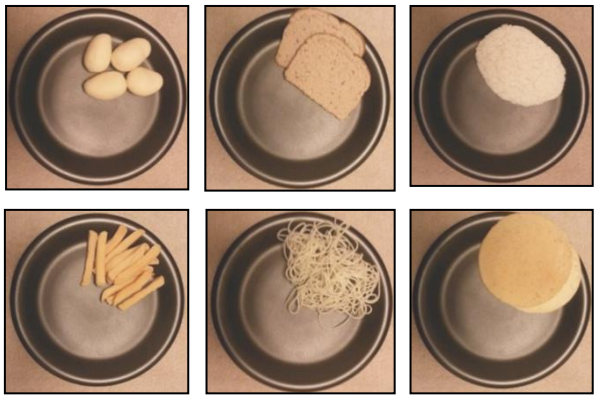
You should eat:
- **maximum 2 portions of a starchy food at each meal**
- **maximum 1 portion of starchy food for a snack (only if needed)**

What is a portion?

Each portion listed below is 1 portion (15 grams of carbohydrate)

1 wheat biscuit/wheat pillow	20g breakfast cereal (3 tablespoons)
20g oats (2 tablespoons)	20g muesli (2 tablespoons)
1 medium slice of bread (35 g)	½ roll or plain hamburger bun (35g)
1 small chapatti (35 g)	½ large pitta bread (35g)
1 crumpet (35g)	½ tortilla wrap (35g)
⅓ panini / ciabatta roll (35 g)	½ English muffin (35g)
3 crackers	2 oat cakes
3 rice cakes	4 breadsticks
20g uncooked pasta	45g cooked pasta (3 tablespoons)
20g uncooked rice	45g cooked rice (2 tablespoons)
20g uncooked egg noodles or rice noodles	45g cooked egg noodles or rice noodles
20g uncooked quinoa	80g cooked quinoa (2 tablespoons)
20g uncooked couscous	55g cooked couscous (2 tablespoons)
2 egg sized potatoes (100 g)	⅓ small baked potato (70 g)
2 small roast potatoes (60g)	1 scoop mash potato (95g)
10 oven chips (50g)	6 small potato wedges (50g)
1 potato waffle (50g)	1 medium hash brown (45g)
1 slice boiled yam (45g)	2 large cassava chips (30g)
5 tablespoons garden peas (150g)	3 tablespoons (90 g) cooked lentils/pulses
1 corn on the cob (250g) or sweetcorn (110g)	¼ tin of baked beans (100g)





Examples of 2 Portions of Starchy Carbohydrate (30g carbohydrate)

2 slices of bread

1 pitta bread

2 thin hand sized chapattis

1 tortilla wrap

Jacket potato

4 egg sized potatoes

14-20 chips

4 tablespoons of cooked rice

6 tablespoons of kidney beans

6 tablespoons of lentils

2 slices of boiled yam

$^{1}/_{2}$ a plantain

6 tablespoons of pasta

1 noodle nest

4 tablespoons of oats

6 tablespoons of chickpeas

Fruit and Vegetable Portions

Fruit and vegetables are good sources of vitamins, minerals and fibre and are therefore an important part of a healthy diet. They can be fresh, frozen or tinned.

You should eat 5 portions of fruit and vegetables a day:
- **2 portions of fruit**
- **minimum of 3 portions of vegetables**

What is a portion of fruit?

Each portion listed below is 1 portion (15 grams of carbohydrate)

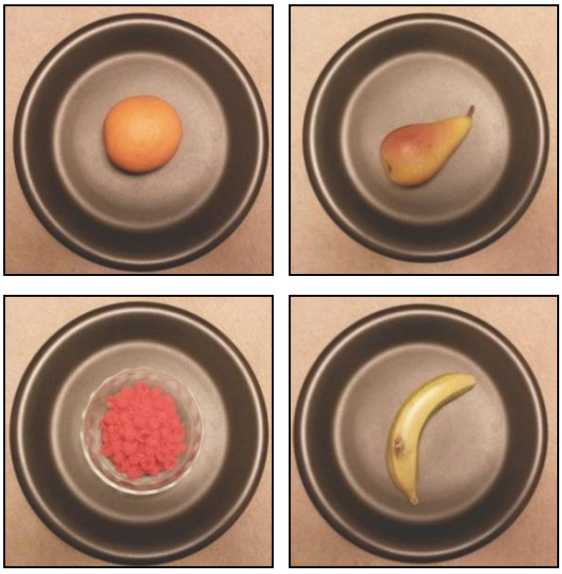
1 medium sized fruit, e.g. an apple, pear, orange	1 small banana or ½ large banana (100g)
1 slice of a large fruit (150g) e.g. melon, mango	2 small fruits, e.g. satsumas, plums
1 cup of berries (300g) e.g. strawberries, raspberries	1 handful of grapes (100g)
1 cup of berries (150g) e.g. blueberries, cherries	4 fresh or dried apricots, prunes

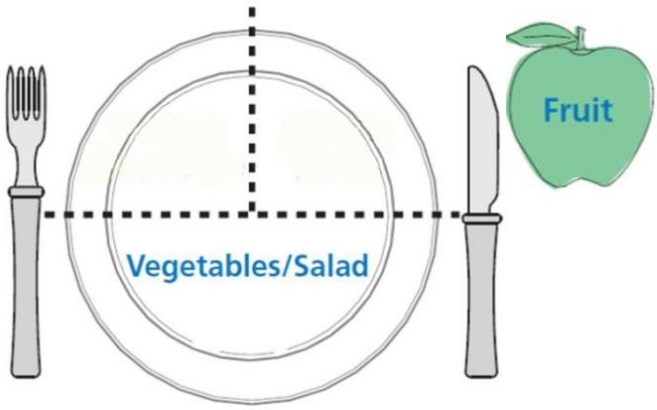
What is a portion of vegetables?

Each portion listed below is 1 portion

2-3 tablespoons of vegetables (100g)	1 small bowl of salad

Fruit contains natural sugars, so needs to be spread out in the day and not eaten in large quantities. Fruit juice should be avoided.





Protein Food Portions

Protein is important for your baby's growth. It is found in meat, poultry, fish, eggs, beans, dairy foods, soya products and nuts.

You should eat 2-3 portions of a protein food a day: • 1 portion per meal

What is a portion?

Each food listed below is 1 portion.

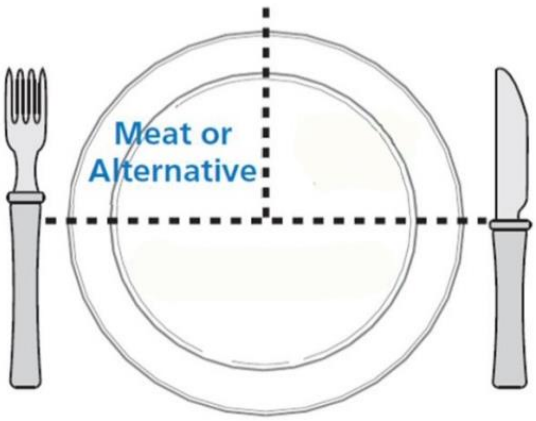
1 skinless chicken or turkey breast (125g before cooked)
1 palm sized lean meat portion (100g before cooked)
1 lean lamb chop (100g before cooked)
2 sausages (125g before cooked)
2 rashers of bacon (75g before cooked)
1 white fish fillet (175g before cooked)
½ oily fish fillet (80g before cooked)
1 tin of tuna in spring water (150g)
3 fish fingers / 1 fish cake
2 eggs
4 tablespoons of tinned beans, chickpeas or lentils (150g)
2 tablespoons of dried beans, chickpeas or lentils (50g)
Quorn pieces/mince (150g)
Tofu (200g before cooked)
Soya (100g before cooked)
1 tablespoon of nuts or seeds (25g)

Cook all meat, fish and eggs thoroughly to ensure that all the bacteria are killed.

There are certain protein foods you should avoid while you are pregnant as they can harm the baby:

- Liver and liver products (There are too high in vitamin A which can harm your baby)
- Raw shellfish
- Raw egg

To reduce your saturated fat intake, cut the excess fat from meats or choose lean meats, fish or poultry



Milk and Dairy Foods

These foods are a good source of calcium, which is needed for strong bones and teeth.

You should eat 3 portions a day

What is a portion?

Each portion listed below is 1 portion

300ml milk (15g carbohydrate)	100g cottage cheese (3g carbohydrate)
125g fruit / natural yoghurt (10g carbohydrate)	25g hard cheese / cream cheese (0-1g carb)

Choose the low fat versions, such as semi-skimmed or skimmed milk, reduced fat cheese and low fat yoghurts if you are worried about excessive weight gain during pregnancy.

There are some cheeses and milk you should avoid due to them potentially containing harmful bacteria. These are the mould-ripened soft cheeses such as Brie, Camembert and Chevre; the soft blue-veined cheeses such as Danish Blue, Gorgonzola and Roquefort; soft goats' cheese and unpasteurised milk.

Fats and High Fat Foods

Fat is found in oils, margarines, dairy foods, nuts, pastry and meat.

There are different kinds of fat:

- Saturated
- Monounsaturated
- Polyunsaturated

Some fat in the diet is important, but too much fat can lead to weight gain. A high saturated fat consumption can also contribute to a raised blood cholesterol. Reducing the amount of fat you eat can help to prevent excessive weight gain during pregnancy.

Eat no more than 3 portions a day

What is a portion?

Each portion listed below is 1 portion

2 teaspoon butter / margarine / oil / ghee	5 teaspoons low fat spread
2 teaspoons mayonnaise / peanut butter	5 teaspoons reduced fat mayonnaise
2 teaspoons double cream or crème fraiche	2 teaspoons single cream
4 teaspoons pesto	¼ avocado (35g)

Reading Food Labels

When shopping take a look at the nutrition information panel. Try to choose foods with:

- **less than 5g of sugar per 100g** for a low sugar option
- **more than 6g of fibre per 100g** for a high fibre option (these foods keep you full for longer)

The Food Standard Agency Traffic Light Labels

Some products have green, amber or red traffic light colours on the front of their packs. This is to help you see at a glance if the food has low, medium or high amounts of fat, saturated fat, salt and sugar.

Using the colours

Green indicates that the food is low in calories, fat, sugar or salt and is a healthier choice.

Amber indicates that the food has a medium amount of calories, fat, sugar or salt, so this is an 'ok' choice, but be careful with the quantity eaten.

Red indicates that the food is high calories, fat, sugar or salt, so these foods should only be eaten occasionally or in small amounts.

When you are choosing similar food products, try to choose the ones that have the lower fat, sugar and salt content.

	Low	Medium	High
Fat	Less than 3g per 100g	Between 3g – 17.5g per 100g	More than 17.5g per 100g More than 21.0g per portion
Saturated fat	Less than 1.5g per 100g	Between 1.5g – 5g per 100g	More than 5.0g per 100g More than 6g per portion
Sugars	Less than 5g per 100g	Between 5g - 22.5g per 100g	More than 22.5g per 100g More than 27.0g per portion
Salt	Less than 0.3g per 100g	Between 0.3g – 1.5g per 100g	More than 1.5g per 100g More than 1.8g per portion

Other Dietary Considerations

Drinks

Dehydration can cause problems including constipation. It is important to drink plenty of fluid every day.

You should drink 1500ml-2000ml (6-8 glasses) of fluid a day

Tea and coffee can be included (without sugar), but it is also a good idea to include plenty of water in your diet as well. It is advisable to **limit caffeine to 200mg a day** during pregnancy.

The amount of caffeine found in some foods and drinks	
1 mug of instant coffee	100 mg
1 mug of filter coffee	140 mg
1 mug of tea	75 mg
1 can diet cola	40 mg
1 can sugar free energy drink	Up to 80 mg

Nuts and Seeds

Nuts and seeds are good sources of protein, healthy fats and vitamins and minerals. Aim for **a handful of unsalted nuts and seeds each day** as a healthy snack in between meals, sprinkled on salads or breakfast cereal. Pregnant and breastfeeding women can eat nuts if they would like, regardless of any family history of allergies.

Salt

Too much salt in the diet may increase your blood pressure. It is easy to have too much, as it is present in many foods.

Limit salt to a maximum of 6g a day

To reduce your salt intake:

- Do not add salt to your food
- Using less or no salt in cooking (use alternative seasonings, e.g. pepper, herbs, spices, onion, garlic, mustard)
- Limit salty foods, e.g. Oxo, Bovril, sea salt, garlic salt, crisps, soy sauce

Vitamins and Minerals

During pregnancy some vitamins and minerals need to be increased and some decreased.

Folic Acid

400 micrograms of a folic acid supplement is required at preconception and for the first 12 weeks of pregnancy. This reduces the risk of neural tube defects (5 mg if you have diabetes before pregnancy).

Vitamin D

10 micrograms of a vitamin D supplement is recommended every day during pregnancy.

Vitamin A

Do not take any supplements containing vitamin A, including fish liver oil supplements, or multivitamin supplements containing vitamin A, as they can harm your baby.

Iron

Eat plenty of iron-rich foods during pregnancy, including lean cuts of red meat (maximum of 70g/day), pulses, and green leafy vegetables. Do not have liver or liver products.

Evidence suggests that there are no benefits to routinely taking iron supplements during pregnancy. If your iron level becomes too low, you may be advised to take iron tablets. If you take iron tablets, take them with a source of vitamin C to help your body use the iron (e.g. fruit).

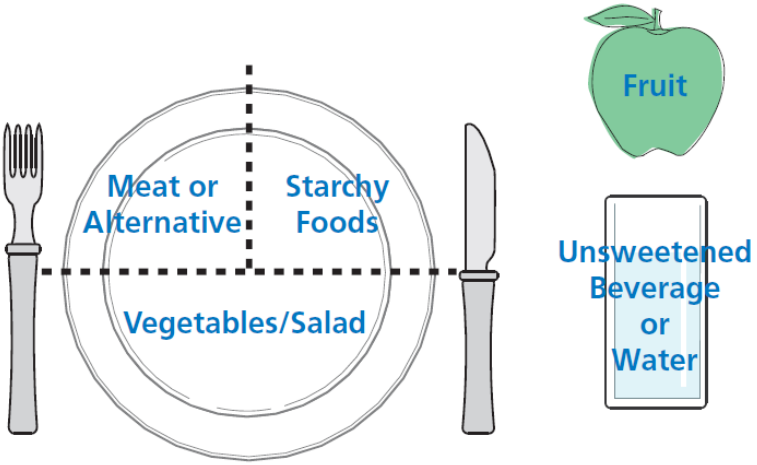
Vitamin B12

If you are vegetarian or vegan, a vitamin B12 supplement may be advisable. Check with your doctor, midwife or dietitian.

Meal Planning

A quick way to ensure that you are eating the correct proportions of a variety of healthy foods at each meal is to do the following:

- Draw an imaginary line through the centre of your plate. Draw a line to divide one of the sections into two equal halves
- One quarter of your plate should be filled with starchy carbohydrate foods such as rice, couscous, pasta, potatoes, chapatti or corn.
- One quarter of your plate should be filled with protein foods like meat, fish, poultry, eggs, pulses or tofu.
- Half of your plate, aim to fill it with non-starchy vegetables like broccoli, carrots, cauliflower, courgettes or salad.
- On the side you can add a piece of fruit, yoghurt, or a glass of milk.



Meal Ideas

Remember that your carbohydrate portions will be guided by your blood glucose testing

Breakfast	• Porridge made with 4 tablespoons of rolled oats (not instant) and a small handful of mixed nuts or seeds • High fibre cereal (6 tablespoons) with a handful of berries and skimmed/semi-skimmed milk • 1 to 2 slices toasted wholegrain bread with peanut butter, avocado, cheese or hummus • 2 eggs on 1 slice wholegrain seeded toast with mushrooms, tomato, spinach and 1/4 avocado
Light Meals	• Ham, tomato and salad sandwich, made with soya & linseed bread • Tuna, sweetcorn, avocado salsa salad wrap, made with a wholegrain tortilla • 1/4 tin of baked beans on 1 slice wholegrain toast with 2 eggs, tomato, mushrooms and spinach • Meat or bean and vegetable soup with granary bread **If two slices of bread cause your blood glucose to rise too high, try an open sandwich (made with one slice of bread)**
Main Meals	• Grilled fish/chicken, peas/carrots/beans/cauliflower and 3 to 4 egg sized boiled potatoes • Roasted meat, steamed mixed frozen vegetables and a small fist size of roasted sweet potato • Lean meat or vegetable curry with 4 tablespoons basmati rice • Chicken casserole, carrots and 4 tablespoons cous cous or barley • Spaghetti Bolognese with added vegetables made with 4-6 tablespoons of whole-wheat pasta and a side salad • Tuna pasta bake made with half pasta, half cauliflower served with a large green leaf and seed salad • 3 tablespoons of dhal curry with 1 medium chapatti made with wholegrain flour and a side of vegetables
Desserts	• Stewed fruit/drained tinned fruit (in juice) and 2 tablespoons Greek yoghurt • Banana and low sugar custard • Natural plain yoghurt with berries / fromage frais / Greek yoghurt
Snacks	• 1 portion of fresh fruit • Slice of wholegrain seeded toast with scraping of low fat spread and protein like cheese, peanut butter, hummus • 2 high fibre crisp breads / 2 wholemeal oatcakes • Low sugar or natural yoghurt • Carrot sticks with hummus • Small bowl of low GI cereal (3 tablespoons) with milk • 1 small handful mixed unsalted nuts and glass of milk

After Delivery - Breastfeeding

Breastfeeding exclusively for six months (and as long as possible) is recommended for all women. Breastfeeding has **protective effects** in reducing the risk of the baby developing chronic diseases such as Type 2 Diabetes.

It is recommended immediately after delivery to reduce neonatal hypoglycaemia and to increase babies insulin sensitivity longer term.

Breastfeeding is great as it uses a lot of energy (up to a extra 400 to 500 kcal per day). This can really help with weight loss post pregnancy.

Notes