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ATLANTIC-DIP
Atlantic Diabetes
in Pregnancy

Pregnancy & Diabetes

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An Information Booklet for
Mothers with Diabetes



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Welcome to the Combined Antenatal and Diabetes Clinic. You have been referred to this clinic for your pregnancy care because you have existing diabetes and are pregnant, or because you have developed diabetes during this pregnancy.

This booklet outlines the extra care you will now need during pregnancy. This care will be provided by the combined diabetes and obstetric team. There is a section about delivery of your baby, but remember that each person is different and there may be some special points for

you. There is also a section to record your daily blood sugar readings. This is an important part of your diabetes care and you will be shown how to test your own sugar levels by the diabetes team.

Please feel free to ask the doctor, midwife or nurse at the clinic if you have any questions about your care.

Please bring this booklet with you to each clinic visit.



Antenatal Care

Good control of diabetes during pregnancy will reduce any risk to you and your baby.

Your Clinic Visits

The clinic is run by a specialist team of staff which includes a diabetes doctor, obstetrician, ultrasonographer, midwife, diabetes specialist nurse and dietitian.

You can expect to see these staff at your visits as required.

Parentcraft classes are also available to give you more information about your delivery and postnatal care. Each clinic visit may last 1 – 2 hours but your booking or first visit usually takes a little longer.

A sample of blood may be taken from you at your visit to find out the level of glucose (sugar) in your blood and your average glucose (HbA1c test) level. Your Diabetes Doctor will discuss these results and make changes to your treatment as required. You will be seen by an Obstetrician who will check that all is well with both you and your baby. You will have ultrasound scans to check the baby's wellbeing.

If you are on insulin or tablet treatment you will be seen at the clinic every two weeks. If you are treated with diet and exercise you will be seen every four weeks.

Regular attendance is very important so that we can closely monitor your diabetes and pregnancy. You will also have regular phone contact from your Diabetes Nurse Specialist between clinic visits.

Diabetes Explained

Diabetes mellitus is a condition where the amount of sugar in the blood becomes too high.

Type 1 Diabetes

This type of diabetes develops when the body is unable to produce insulin, which is a hormone that helps sugar enter the cells. It usually appears before the age of 40 and is treated by insulin injections, diet and exercise.

Type 2 Diabetes

This type of diabetes develops when the body still produces some insulin but not enough, or when the insulin that is produced does not work properly (insulin resistance). It may be treated in a number of ways including diet, exercise, tablets and insulin injections.

Gestational Diabetes Mellitus (GDM)

GDM is a type of diabetes diagnosed during pregnancy. It occurs when the body cannot produce enough insulin to meet the extra needs of pregnancy.

Reasons why you might develop GDM in your Pregnancy

- » You previously delivered a large baby (over 4.5kg).
- » Your body mass index (BMI) is $\geq 25\text{kg/m}^2$.
- » You had a previous unexplained stillbirth.
- » You belong to an ethnic minority – for example: South Asian, Afro Caribbean, African.
- » You have polycystic ovarian syndrome.
- » You are on long-term steroids.
- » You have increased fluid around the baby (polyhydramnios).
- » You have a history of thyroid disease or other endocrine disorder.
- » You are on fertility treatment.
- » You are over 30 years of age.



Trimester One (weeks 0 – 12)

Your baby's development

Major organs are formed; nervous system begins to develop; eyes, ears and nose take shape.

Monitoring Needed

- » Ultrasound scan to measure baby's growth and confirm expected date of birth.
- » HbA1c (blood test to check long term sugar control).
- » Urine and blood tests to check for kidney function
- » Eye examinations to check for retinopathy (changes in the eyes caused by diabetes)
 - if there is any evidence of retinopathy you may be referred to the Eye Clinic.



- » Blood pressure examinations.
- » Examinations by your obstetrician.

Insulin Needs

- » If you have Type 1 diabetes, your insulin needs may go up and down during this time.
- » Regular monitoring of blood glucose is vital to avoid low blood sugars.
- » You will be shown how to monitor your blood glucose if you do not do so already.
- » If you have Type 2 diabetes you may have to start taking insulin injections during this period.

Your Goals

- » Check blood glucose 4-7 times per day: fasting, then one hour after each meal and at bedtime.
- » Aim for a fasting blood glucose of about 5mmol/L and an after meals blood glucose of about 7mmol/L
- » Follow diet and exercise guidelines; stop smoking and do not take alcohol.
- » Contact your diabetes nurse specialist, midwife or doctor if you have particular problems with nausea and vomiting or any concerns.
- » Make sure that you have a glucagon kit and that someone in your household knows how to use it.

- » Attend all antenatal clinic appointments.
- » Take folic acid 5mgs for at least 12 weeks before pregnancy and during the first 12 weeks of pregnancy.

Trimester Two (weeks 13 – 24)

Your baby's development

Body growth begins to catch up with head growth. Baby begins to hold head erect and begins to move. Heartbeat becomes regular and brain becomes more complex. Your baby cannot yet breathe on its own.

Monitoring Needed

- » Ultrasound at 20-22 weeks, to check for fetal wellbeing.
- » Listening to the baby's heart.
- » Measurement of fetal head and abdomen – ideally every four weeks, to monitor growth of the baby.
- » HbA1c every 2-4 weeks to monitor glucose control.
- » Blood pressure, kidneys and eyes are checked regularly to monitor any problems.

Insulin Needs

As the baby grows, your insulin dosage may increase.

Your Goals

- » Check blood glucose fasting and 1 hour after meals.
- » Aim for a fasting blood glucose of about 5mmol/L and an after meals blood glucose of about 7mmol/L.
- » Follow diet and exercise guidelines.
- » Attend all clinic appointments.
- » Record baby's movements and inform your doctor of any changes or concerns.

Trimester Three (weeks 25 – 40)

Your baby's development

Brain grows rapidly during this stage. As the baby continues to grow it places more demands on your body.

Monitoring Needed

Regular ultrasound examinations for fetal growth. More frequent scans may be necessary if there are problems, such as the baby growing too large, if the baby is too small, or if you have high blood pressure.

Insulin Needs

These may continue to increase and may reach up to twice the dose you needed before you became pregnant.

Your Goals

- » Check blood glucose fasting and 1 hour after meals.
- » Aim for a fasting blood glucose of about 5mmol/L and an after meals blood glucose of about 7mmol/L.
- » Follow diet and exercise guidelines.
- » Attend all clinic appointments and contact your doctor if you have any concerns.
- » Check that your baby moves at least 10 times each day. If you have less movements or a change in your baby's movements pattern, or are concerned contact the hospital.

Risks to the unborn baby

According to current studies, the risk of pregnancy complications are greater in babies of women who have diabetes, so it is most important that

your diabetes control is good both before becoming pregnant and in the early stages of pregnancy. If HbA1c is less than 6.5% (48mmol/mol) before pregnancy, risk is decreased considerably.

Increased size of the baby

In the later stages of pregnancy, if your blood glucose levels are too high, the baby may grow larger than average. This is caused by too much glucose and other nutrients crossing from the mother to the baby, and may lead to difficulties at delivery. If your blood glucose is within the normal range your baby is more likely to be of normal size, and to be born at the normal time and in the normal way.

Delivery

Your obstetrician will discuss with you the options for delivery. This will



depend not only on the size of the baby, but on factors such as blood glucose, blood pressure and previous deliveries.

Increased risk of stillbirth/ increased risk to the newborn baby

According to studies, the risk of infant death from 28 weeks into your pregnancy to 27 days after birth (the perinatal period) is greater for women with diabetes than for the general population. With good blood glucose control, this rate decreases dramatically.

Achieving Good Blood Glucose Control

There are three main ways to improve your blood glucose control:

- » Careful attention to your diet.
- » Adjusting your insulin dose as necessary.
- » Taking exercise.

Targets to aim for

Home blood glucose target

Fasting and before meals of about 5mmol/L

1 hour after meals of about 7mmol/L

**IF YOU ARE NOT REACHING YOUR
GLUCOSE TARGETS YOU MUST
CONTACT YOUR DIABETES NURSE**

Glucose Monitoring

Blood glucose self monitoring puts you in control. If you have not done this before we will teach you how to do it. You will be asked to measure your blood glucose levels every day fasting and 1 hour after meals.

Long Term Glucose Average (HbA1c)

Haemoglobin A1c (HbA1c) is a measure of the average blood glucose over the previous month. It is measured at each clinic visit and the result will be discussed with you. The aim is to keep it as close as possible to the range found in normal non-pregnant people (less than 6.0%)

Insulin Administration

During pregnancy your insulin dose will change often. In the early months, some women find that their need for insulin decreases. On the other hand, from about week 20 onwards there is usually a need to increase the dose of insulin, it could even double by the end of the pregnancy. You will be encouraged to be involved with the changing of the insulin dose as pregnancy proceeds. Your diabetes doctor and diabetes nurse specialist will discuss the insulin type and dose with you to achieve the best possible blood glucose control. The most usual way is to take three injections of rapid acting insulin given by a pen before breakfast, lunch and the evening

meal, combined with an injection of long acting insulin taken at bedtime.

Illness and Diabetes

When you are ill, particularly if you have a temperature, your blood glucose will rise even if you do not eat.

If you are ill, contact your doctor or diabetes nurse as soon as possible for help. Controlling your blood glucose is more difficult when you are ill and the staff will be able to advise you.

If you are unable to eat, replace the

carbohydrates you are missing by sipping slowly on a still sweet drink such as fruit juice. Other sources of carbohydrate include dry cereal, crackers and ice-cream.

- » Check your blood glucose frequently.
- » Never stop taking your insulin.
- » If you have Type 1 diabetes, check for ketones frequently and seek medical advice if you have any concerns.

Useful contact numbers are listed near the start of this booklet.

If you have repeated vomiting and/or a 'large' level of ketones, go to hospital as soon as possible.



Hypoglycaemia and Pregnancy

You may find that you have more low blood sugars during pregnancy. A low blood sugar is called “hypoglycaemia” or “hypo”. They are more common in the early weeks of pregnancy. Some women may also lose awareness of ‘hypos’. There are several steps you can take to try and avoid ‘hypos’.

- » Eat regularly – missed or late meals are the most common cause of ‘hypos’, so don’t get caught out.
- » Test your blood glucose – at least 7 times a day and adjust your food intake or insulin levels, as advised by your doctor.
- » Tell those close to you – friends, relatives and your children need to know how to recognise a ‘hypo’ and how to help you.
- » Carry your dextro-energy tablets with you at all times. In addition, just in case you have a severe ‘hypo’ and lose consciousness, you will be given a glucagon kit. The diabetes nurse specialist will teach your partner or relative how to inject you with glucagon to raise your blood glucose. This is the opposite of insulin and brings blood glucose up within a few minutes. It may be of great help in the middle of the night.

- » Take care when you drive – if you need to drive, check your blood glucose before you set off, carry extra glucose and try not to make a journey before a meal.

Fortunately, unborn babies do not appear to be harmed by hypos.

Possible Problems During Pregnancy

Morning sickness

You may suffer from morning sickness (although it is called morning sickness it may happen at any time of the day). Some women find that eating a dry biscuit or drinking a glass of milk before getting up in the morning can help to prevent nausea. Other suggestions include identifying and avoiding foods which upset you and trying not to become overtired.

Even if you cannot eat properly or are frequently sick, you still need to eat and take your insulin and test your urine for ketones. If your morning sickness is particularly severe and you really cannot keep anything down or if you have ketones in your urine, you may need to come into hospital for a short period. Symptoms of morning sickness usually improve from around 16 weeks.

High Glucose

High blood glucose levels can lead to the formation of poisonous chemicals (ketones) in the blood. Ketones can develop for example from a urinary tract infection or gastroenteritis. If this is not treated (with extra insulin) the blood will progressively become too acidic, a state that is known as ketoacidosis. Ketoacidosis poses a very serious threat to the baby. However unlike hypos, ketoacidosis does not come on in minutes – it takes several hours or days and is preventable.

Pregnant women with diabetes should test for ketones if:

- » If you are on insulin therapy and blood glucose levels are high
- » you are ill for any reason
- » you are vomiting for any reason

If the test shows more than a 'small' amount of ketones, please phone for advice and come to hospital early. Take plenty of fluids to drink and never stop taking your insulin.

Eye or Kidney Problems

For women with Type 1 or 2 diabetes, if you already have retinopathy (eye disease) or kidney disease due to diabetes, the extra physical demands of pregnancy could make these conditions worse. Sometimes the damage is permanent but usually things return to pre-pregnancy state after the pregnancy.

Your eyes will be checked approximately once in each trimester and more frequently if required.

Pre-eclampsia

Pre-eclampsia is a condition in which the mother develops very high blood pressure, protein in the urine and fluid retention. It usually occurs in the last trimester of pregnancy. This condition may harm the mother and baby and is often solved by delivering the baby early. If it is too early to deliver the baby, then you may be admitted to hospital and given drugs to control your blood pressure.

Premature labour

This term describes the onset of labour before the baby is fully developed and ready to deliver. The earlier the baby is delivered (before 37-38 weeks) the more likely he or she is to be admitted to the special care baby unit (SCBU) for monitoring.

Polyhydramnios

This is a condition in which you have more amniotic fluid (the liquid in which your baby 'floats' throughout pregnancy) than normal. It may cause premature labour. The condition can be improved by tighter blood glucose control in the mother.

Exercise

Exercise (30 minutes per day) is an important way to keep healthy during your pregnancy. If you have diabetes, exercise plays a vital role in keeping your blood glucose under control before pregnancy. Pregnancy puts extra stress on your heart and lungs, so it is best not to begin a hard exercise programme during your pregnancy; gentle exercises, such as walking and swimming are best.

Your doctor will show you the type of exercise plan that best suits you.

Be as active as your fitness allows. Aim to meet adult guidelines of at least 30 minutes of moderate-intensity activity on 5 days a week (or 150 minutes a week). Moderate activity = increased breathing and heart rate, but still able to carry on a conversation. Warm or sweating slightly at a comfortable pace.

Remember:

- » Some is better than none.
- » Short bouts count, you can reach your 30 minutes 10 times at a time.
- » Choose activities appropriate to your ability.
- » Spread your activities throughout the week.
- » Add activities which increase muscular strength and endurance on 2 – 3 days per week.

Research has shown that if you go above and beyond these guidelines, it will provide you with additional health gains. For those of us who are currently inactive, doing some physical activity, even if it is less than these guidelines, will provide some health benefits.

Muscle strengthening should be done 2 or 3 days per week.

- » All major muscle groups should be worked. These are the legs, hips, back, chest, shoulders, and arms.
- » Exercises for each muscle group should be repeated 8 to 12 times per set.

Exercises using exercise bands, hand-held weights, yoga, tai chi and pilates are good for strengthening your muscle groups.

For more information, visit the Get Ireland Active website
<http://www.getirelandwalking.ie/>



Getting the Dietary Balance for You and Your Baby

Why should I think about my diet at this time?

Your diet can help towards keeping your blood sugar level healthy and stable. Making positive changes to your diet while pregnant will also help you to manage your weight and stay healthy after you have had your baby.

Making it easier for all to eat healthily

The good news is that healthy eating takes less time and effort than you may think. We hope the information in this booklet makes it easier to get started. First, spend a little time organising and planning your shopping and cooking. This will help you to get started with good eating habits. The healthy eating information provided in this booklet is suitable for the whole family too.



How to use this booklet

There is a range of dietary information included in this booklet.

If you just want to work on getting the balance right for you and your baby, then the simple straight forward table of food groups will help you.

Or if you feel you want to know more about carbohydrates, their effect on your blood glucose and how this relates to dietary choices then you can dip into that section too.

We have included simple meal ideas, links to great websites and sources of information that will help you find out more about breastfeeding for example, or if you just want to browse for recipes.

Weight Gain During Pregnancy

(Institute of Medicine guidelines)

What should I expect?

Average weight gain during pregnancy is between 8–14 kg (equivalent to 17.5–30lbs).

A guide is

- » Obese pregnant women should gain 5.0-9kg(11-20lbs).
- » Overweight pregnant women should gain 7-11.0kg (15-25lbs).
- » Healthy weight women should gain 11.5-16.0 kg (25-35lbs).

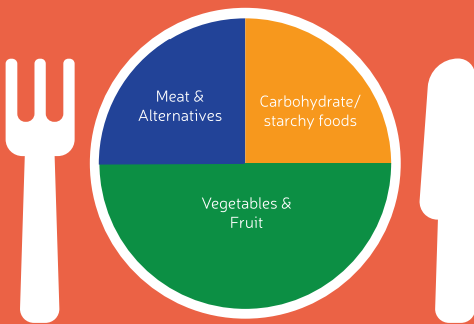
» Underweight pregnant women should gain 12.5-18.0 kg. (28-40lbs)

It is important that you do not feel under pressure to lose weight while you are pregnant as your baby is growing and developing.

For those diagnosed with gestational diabetes it is important to avoid too much weight gain as a higher weight is linked to an increased risk of developing Type 2 diabetes in the future.

Simple tips for eating well

The following will help you get a balance and manage symptoms such as nausea, reflux and constipation better.



1. Make sure your meal includes a source of protein, vegetables, salad or fruit and a starchy carbohydrate.
2. Ensure that you eat regularly every 2 and a half to 3hrs.

Don't skip meals or leave long gaps between meals. Some people find that if they skip meals they end up eating more overall.

3. Aim to have 3 main meals and 2 small healthy snacks between meals (see snack page for options). Now that you might have less space in your stomach because your baby is growing, you might find that you are hungry frequently but not able to eat large meals.
4. Avoid eating on the go – make sure that you sit down to enjoy all your meals and snacks.
5. Fruit is a handy snack and also a good source of vitamins and minerals and fibre. Spread portions out over the day – (see guide to portions) but roughly a portion is what fits in your hand. Include plenty of varied vegetables or salad at lunch time and with your evening meal.
6. Include your whole grains 3 times per day.
7. Calcium - have at least 3 portions per day; use our handy tables on (page 19-20) to ensure you are getting enough.
8. Eat plenty of fish including oily fish too.
9. To help with constipation: drink plenty, eat regularly, and include your whole grains, nuts and seeds. Flax seeds can be very helpful in managing constipation.

A Guide To Your Daily Portions

Fruit and vegetables – you can include all kinds of fresh, frozen, dried, and canned (check no sugar added)

What is a portion?

Aim for at least 5 to 7 portions of fruit and vegetables every day.

A portion is 80g or the following:

What counts as a portion of fruit? Aim for 2 to 3 portions per day of these	What counts as a portion of vegetables? Aim for 3 or more portions per day
1 medium apple, orange, peach, pear or similar size fruit	4 dessertspoons of cooked vegetables – fresh or frozen
2 small fruits – plums, kiwis or similar size fruit	1 small corn on the cob or 4 heaped dessertspoons of sweetcorn
10-12 berries, e.g. strawberries.	a bowl of homemade vegetable soup
4 dessertspoons of cooked fresh fruit, fruit tinned in own juice or cooked frozen fruit	4 dessertspoons of cooked vegetables – fresh or frozen
½ a grapefruit	4 dessertspoons of cooked spinach or kale or cabbage
2 slices of pineapple	Half a red, green, or yellow pepper.
1 medium banana	4 dessert spoons of cooked broccoli or cauliflower
1 slice of melon	4 dessertspoons of cooked peas

A little bit more about fruit and vegetables

- » Fruit is a great snack between meals, but note that juice and smoothies only count towards 1 portion per day (so only have them once) and no more than 150ml per day. We encourage people to limit these as they can have the effect of rapidly raising your blood glucose levels.
- » No fruit is banned so ensure you have a good variety. Fruit and vegetables should make up at least a third of the food we eat everyday.
- » Don't forget to include courgettes, butternut squash, sweet potatoes, aubergines, mange tout, sugar snaps, olives, tomatoes. Lettuce of all kinds also count.

Dairy Products For Healthy Bone Development And Muscle Function.

Milk, cheese & yogurt - These foods are rich in calcium

Calcium how much do I need	Milligrams per day	Portions per day
Female older than 18 years old	800mg/day	3 portions per day
Age 15 - 18 years	1200mg/day	5 portions per day
Pregnant with twins	1200mg/day	5 portions per day
Breastfeeding mother	1250mg/day	5-6 portions per day

Easy Calcium Portions

Target: 3-5 portions per day

What is a portion	Which ones to choose
1 matchbox size of cheese	Choose reduced fat or half fat cheeses
One 125 g pot of dairy or soya yoghurt	Diet or natural flavoured yoghurts
300ml of milk	Try 1% fat milk or reduced fat + fortified milks*
300ml soya milk	Choose milks that are fortified with calcium and B12

*Fortified milk: can include extra calcium, folic acid, iodine and vitamin D and can be a good choice as these are also important nutrients.

Below is a list of non-dairy calcium sources

Use these to add variety and also if do not have dairy included in your diet.

Non-dairy sources of calcium	Quantity	Calcium in milligrams
Almonds	200g	60
Broccoli boiled	2 spears or 85g	60
Chickpeas(boiled)	200g	100
Tofu (Calcium fortified)	120 g	126
Oranges	1 medium	75
Sardines	60g (half tin)	240
Tinned salmon with bones	Half a tin 52 g	47
Calcium-fortified instant oat cereal	1 tablespoon/15 g of dried cereal	200
Calcium-fortified soy yoghurt/ dessert/custard	125 g	150
Calcium-enriched milk example soya/oat/almond/coconut	200 ml	240



Protein foods support the growth and development of your baby.

Protein foods come from two main sources: plant -based and animal -based. Animal sources are beef, pork, lamb, poultry, fish, eggs and dairy foods. Plant-based sources of protein are beans, nuts and seeds, peas and lentils (which are also called pulses). Tofu or bean curd and mycoproteins are also widely available and can be really useful to vary your protein intake.

Protein: target 2 - 3 portions per day

Sources of protein	How often	How much
Red meat, beef, pork, lamb.	2 to 3 times per week	50-75g/2-3oz cooked. This is about 100g/4oz of raw meat and is about the size of a pack of cards
Poultry	2 to 3 times per week	50-75g/2-3oz cooked. This is about 100g/4oz of raw meat or poultry and is about the size of a pack of cards
Fish	Twice a week or more	140 g
Oily fish If you dislike oily fish, ensure that you include the omega 3 fortified milk, eggs or flaxseeds regularly in your diet	Up to twice a week. Salmon, mackerel (avoid king mackerel) and sardines	140 g See food safety section (page 32) on oily fish to avoid
Beans and lentils	Include up to three portions per week even if you are not vegetarian	125g Hummus 6 dessertspoons of peas, beans (includes baked beans) or lentils
Eggs Cook eggs until the yolk is solid	2 per day	up to 7 per week
Tofu Remember to vary your protein sources if you are vegetarian	No Limit but 2-3 times per week can be helpful as a source of calcium	100g/4oz soya or tofu
Nuts	Snacks between meals or on stir fries	40g/1.5oz unsalted nuts or nut butter or seeds

A little bit more about protein foods

- » If you are vegetarian you still need to ensure that you have 2-3 portions of protein included in your diet daily. Choosing ones fortified with calcium and Vitamin B₁₂ can be very helpful.
- » Keep it lean: choose lean cuts of meat e.g. lean mince. Ensure that you remove any visible fat or skin. Grill your meat and fish instead of frying it and have a boiled or poached egg instead of fried.
- » Limit processed meats such as sausages, bacon, cured meats and reformed meat products as they can be particularly high in fat and salt.
- » Iron: Aim to have three portions of red meat per week as it is a good source of iron and Vitamin B¹² to help support the formation of healthy blood cells and to treat and prevent anaemia in pregnancy.

Oils and spreads

Choose unsaturated oils and use in small amounts in cooking. Low calorie spray oils can be handy.

Examples of unsaturated oils

- » Olive oil, hemp seed oil, rapeseed oil and their spreads.
- » Avocados.
- » Nuts, such as almonds, Brazils and peanuts.



Foods High In Fat

Avoid having high fat crisps and snacks. Avoid battered or breaded foods, puff pastry e.g. sausage rolls and pork pies or deep fried foods. Have takeaways in a small portion and not more than once per week.

Hydration

Important for overall health, kidneys, energy and managing constipation. Drink 6-8 cups of fluid per day. This can include water, tea, coffee, de-caff tea or coffee, herbal teas, water and diet drinks.

Avoid sugary drinks or adding sugar to drinks. Drink no more than 150ml per day of fruit juice or smoothies.

Carbohydrates

Carbohydrates are an essential source of fuel and fibre for you and your growing baby. You should include a source of starchy carbohydrate at each of your daily 3 main meals.

How do carbohydrates affect our blood glucose levels?

When we eat a carbohydrate-containing food it enters our stomach and digestive system where it is broken down and released into our bloodstream in the form of glucose. This is what you are measuring when you are testing your blood glucose levels. Insulin from your pancreas helps to move the glucose into the cells in your body where it is used as a main source of fuel and energy.

Carbohydrate can be classified in lots of different ways but simply can be known as starchy foods and sugars.

Starchy carbohydrate foods include: bread, pasta, rice, potatoes, plantain, cornmeal, cassava, grains and cereals. They are one of our brain and body's main sources of energy and fibre. It is important that you continue to eat carbohydrates regularly with all of your main meals. Take note of the recommended portion sizes on page 24.

Sugary foods include:

Table sugar (sucrose) and the sugars that we use in baking. They are present in many foods, sweets, chocolate, biscuits, full sugar fizzy drinks, cakes and desserts. These should be avoided as much as possible as there is very little nutritional benefit to having them.

A guide to your daily carbohydrate portions

- » Have 3 to 5 portions per day.
- » Choose wholegrain bread, pasta, rice and grains.
- » Try to eat a consistent amount of carbohydrates each day at your three main meals.

If you are very active you may need more than this. It is important that you speak to your Diabetes team or dietitian to make sure you are getting enough.



So what's a portion?

These are examples of the quantity of a food that count as one portion

Food	Weight
2 thin slices of bread or 1 ½ slices of soda bread or 1 pitta pocket	
Porridge Oats	⅓ cup
Cereals	½ cup
Potatoes: 4 small potatoes the size of an egg or two medium potatoes	
4 oatcakes	50g
Plantain and yam cooked	1 cup
Sweet potatoes cooked	1 cup
Cooked rice , pasta or noodles	1 cup

Foods that count as two portions

Food
1 bagel
1 bread roll
1 demi baguette
1 large wrap
3 wheat biscuits
2 thick cut slices of bread

1 cup = a 200ml plastic measuring cup.



Easy Ways To Include Whole Grains In Your Diet

Have a wholegrain breakfast cereal such as oats, or have brown rice or brown pasta with your main meal.

Fresh or frozen sweetcorn or corn on the cob (check tinned has no added sugar) is a wholegrain and you can eat this on its own or add it to salads, spaghetti bolognese and chilli con carne.

Choose oatcakes or wholegrain crackers rather than plain crackers.

Always use wholemeal bread instead of white bread.

Although we are focusing on the overall carbohydrate content in your diet, it is helpful to limit the intake of sugary foods as they give you very little in the way of vitamins, minerals or fibre. Here are some ways you can do this:

1. If you do have a treat – keep it small and not more than 2-3 times per week.
2. Drink low sugar or sugar free drinks and squashes.
3. Avoid adding sugar to hot drinks
4. If you are having snacks and cakes choose plain ones or ones containing fruit or wholemeal flour or wholegrains.
5. Spread jam and marmalades sparingly.
6. Skip the icing on the muffin or cake.
7. Have a scoop of ice-cream rather than a full cone.

8. Have a few squares of good quality dark chocolate rather than a full bar.

Carbohydrate counting for those with Type 1 diabetes.

If you have been previously educated on counting your carbohydrates and adjusting your insulin dose accordingly, then we recommend that you continue to do this and follow the advice of your diabetes team on insulin and ratio adjustments. If your carbohydrate counting skills are a little rusty then highlight this to your diabetes team. We have included a link to a useful resource if you want to do some revision. If you are using apps to help you calculate carbohydrates, ensure that they are based on UK and Irish nutritional values as those from other countries differ.

Snacks: Aim for Variety

Healthy snacks contribute to your overall healthy balanced diet. As a guide have one snack between main meals. Snacking can be helpful in managing times during your pregnancy where you experience an increased appetite, are struggling to eat your main meal portions or have nausea. Focus on having fruit and vegetables, nuts and seeds.

Examples:

Snack – each of these is 1 portion	Calories	Carbohydrate (g)
One handful of almonds 25g	157	1.70
One handful of plain unsalted peanuts 25g	145	4.7
1 small banana 63g with skin	60	15
2 kiwis	48	10
1 large orange 170g	45	10
1 medium apple	62	13
9 to 10 strawberries	68	15
Raspberries 210g	26	10
1 mini blueberry muffin 25g	86	12
Diet yoghurt 125g average	58	9
Low fat natural yoghurt 100g	60	9
Small pot of raw vegetable sticks e.g. cucumbers, peppers, celery , carrot with low-fat hummus 50g	100	10
2 rice cakes	60	12
One slice of reduced fat cheese with one apple or pear	112	15
Raspberries 210g	26	10



Reading Food Labels

Learning how to navigate food labels can be really helpful in the long term as it helps you to choose high fibre, low-fat, low salt, low sugar foods for you and your family.

Food labels will give you some basic information about the weight and the ingredients. They may also give you traffic light labelling on the front of the package.

With gestational diabetes remember that you are not just looking at the sugar content but the total amount of carbohydrate contained in a product because it is the total amount of carbohydrate that has an effect on your blood glucose levels.

Food labels contain a lot of information. You can compare your food label to the easy guide below. As much as possible you should choose products that contain nutritional values in the green zone as shown in the easy guide below.

Easy guide

Per 100g	Sugar	Fat	Saturates	Salt
High Eat occasionally	Over 15 g	Over 20 g	Over 5 g	Over 1.5 g
Medium In moderation	5 – 15 g	3 – 20 g	1.5 – 5 g	0.3 – 1.5 g
Low Healthy choice	5 g or less	3 g or less	1.5 g or less	0.3 g or less



A little bit more on labels

- » To convert sodium value to salt, multiply by 2.5.
- » Ensure you choose high fibre foods, 6g or more per 100g.
- » Choose carbohydrate-based foods which are higher in fibre or have a lower glycaemic index (GI). This can help your blood sugar to rise more slowly.
- » There is no need to eat foods labelled as “diabetic” as they may have a reduction in their sugar content but their carbohydrate, fats and salt content may not be healthy.
- » “No added sugar” does not always mean that the food is sugar free or low in sugar. It may still be high in natural sugars such as those found in fruit, honey, fruit juice and high fruit content jams.
- » “Reduced fat” – this can apply to a food such as cheese that is high in fat. It means that the fat has been reduced, but not by a set amount from the regular product. The difference may only be a matter of grams.

Structuring Your Daily Healthy Intake

Keep it simple; 3 balanced meals and 2 healthy snacks help keep you and your baby nourished and developing.

An example of how 3 main meals and 2 snacks a day should look is given below.

Use your guide to daily portions (pages 18 to 24) to add variety and choice.

Example of a daily meal plan

Breakfast	Wholegrain or high fibre cereal or porridge Or 1-2 slices of wholemeal or granary bread Or an egg (well cooked) with 1-2 slices of toast If you like, add mushrooms, spinach and tomatoes to your cooked breakfast
Mid Morning	Portion of fruit
Lunch Time	Protein: Lean meat, chicken, vegetarian protein or fish Or low fat cheese Carbohydrate 1-2 slices of wholemeal bread, or 1 pitta or 1 medium tortilla wrap Vegetables: 4 dessert spoons or one small bowl of salad Diet yoghurt or natural yoghurt + cinnamon and berries
Mid Afternoon	Fruit + nuts or seeds
Evening Meal	Protein: Meat, fish, chicken or tofu/beans/lentils Carbohydrate: 2-4 new potatoes or 1 cup of rice, pasta or noodles Vegetables: 4 dessert spoons of vegetables or one small bowl of salad
Bedtime	Small snack, fruit, nuts, seeds or berries

Balancing It All Up

For lunch and your evening meal plan to ensure that you include your essential food groups.

Carbohydrate: bread, pasta, rice, potatoes, wraps, rice cakes, corn cakes, oatcakes, kumar, polenta, rice

noodles.

Protein: meat, fish, chicken, well-cooked eggs, cold meat, quorn, tofu, beans.

Vegetables: one small bowl of salad or four dessert spoons of cooked vegetables.

Breakfast ideas

Start the day well. Breakfast is a good opportunity for calcium and fibre to be in focus;

- » Cereal to go: In a container add 30-40g of cereal you like e.g. (porridge, muesli, Wholegrain cereal, and add 2 tablespoons of dried skimmed milk powder. When you are ready to eat just add water or a pot of yoghurt.
- » Low fat natural or diet yoghurt and porridge with seeds and berries.
- » Poached egg well cooked with wholegrain toast and low-fat spread with wilted spinach and cherry tomatoes.
- » Mini blueberry pancakes.
- » Weetabix or Oatibix with mixed seeds and chopped apricots and skimmed milk.
- » Mushroom omelette (made with skimmed milk) and oatcakes.
- » Mixed beans on wholemeal toast with mushrooms and tomatoes.
- » Scrambled tofu with cherry tomatoes on wholemeal toast.
- » Rye bread or pumpernickel bread with chicken, extra light mayonnaise and lettuce with a bowl of salad on the side.
- » Whole-wheat tortilla wrap with apple and grated carrot and cottage cheese with a sprinkle of cinnamon to taste OR two thin slices of turkey and thinly sliced red pepper with mixed lettuce leaves.
- » Jacket potato with tinned sardines in tomatoes mixed with chopped cherry tomatoes cucumbers peppers and mixed leaves.
- » Oatcakes with fresh or tinned salmon, mixed with 1 dessertspoon cottage cheese or low fat natural yoghurt + chopped lettuce and any other salad you like.
- » Oatcakes with chickpeas mixed with two dessert spoons of sweetcorn and two dessert spoons of low-fat cottage cheese and salad.

Lunchtime ideas

TIP: have a piece of fruit or diet yoghurt with your lunch and fill out your lunchbox with extra carrot sticks, cucumber chunks, and plenty of mixed leaves and tomatoes.

- » Pitta bread: two mini ones or one oval with low-fat hummus, turkey, cherry tomatoes and cucumber with carrot sticks to munch on.
- » Fish, steak, chicken, or chops with potatoes and salad or vegetables.
- » Spaghetti Bolognese with salad

Dinner ideas

Top off your main nutrients for the day and mix variety for taste and nutrition. Dinner time is another opportunity to get fibre, vitamins, minerals and protein;

Dinner ideas continued

- » Taco shells with beef mince , smashed avocados, low fat crème fraîche and mixed salad.
- » Fish pie with carrots and peas.
- » Chicken and spinach burritos.
- » Nut roast with brown rice and salad.
- » Baked salmon, vegetables and new potatoes.
- » Home-made lasagne with broccoli and carrots.

Supplements During Pregnancy

During pregnancy you must ensure that you only take a multivitamin and mineral supplement that is especially for use in pregnancy. It should include Folic Acid and Vitamin D in the correct doses (as below).

Standard multivitamin and mineral supplements will include Vitamin A but at a level which is too high for you to take during pregnancy.

Folic Acid:

Folic acid helps to prevent neural tube defects (NTDs) helping to develop the baby's spinal cord and brain. Below are the recommended doses;

Every day preferably prior to stopping contraception and for the first 12 weeks of pregnancy	400 µg (also written as mcg or micrograms)
If you have diabetes	5 mg per day
Previous pregnancy with neural tube defects	5 mg per day
Taking medication for epilepsy	5 mg per day

Dietary sources of foods rich in folate

Fortified breads and cereals, green vegetables e.g. asparagus, broccoli, and spinach.

Other sources are cooked lentils and eggs (remember to ensure that these are well cooked) and cantaloupe melon.

Vitamin D

Vitamin D helps keep your bones and teeth healthy and also helps in the development of your baby's bones and teeth.

Dose: take a supplement that includes 10 µg (also written as mcg or micrograms) throughout your

pregnancy. You may also find that some common foods are fortified with vitamin D such as, vitamin D fortified milk, some yoghurts and cereals.

Vitamin A

Avoid taking supplements that include vitamin A during your pregnancy. Also avoid eating liver and foods made from liver such as pate and do not take fish liver oils.

Food Safety During Pregnancy

During pregnancy you are more vulnerable to suffering from food poisoning which can affect your baby. Take extra care with food hygiene practices.

Avoid	Examples	Making it safer to eat
Possible environmental contaminants (for example mercury and dioxins)	Avoid shark, swordfish, marlin. Tuna limit to 2 small tins per week or 1 fresh tuna steak.	
Raw food: Raw or partially cooked eggs. For example home-made mayonnaise or mousse. Avoid raw shellfish raw or undercooked or rare cooked meat for example parma ham or smoked salmon	Avoid <u>home-made</u> versions of egg-based foods e.g. mayonnaise, mousse, tiramisu or any food including runny egg.	Ensure that all eggs are well cooked and that the yolk and white are solid and opaque. Shop bought portions of the foods above have used pasteurised eggs and are suitable to eat.
Alcohol	It is recommended that pregnant women should not drink at all as there is no safe level.	If you are concerned about your alcohol consumption in early pregnancy please discuss this with your medical team or midwife.

Food Safety During Pregnancy continued

Avoid	Examples	Making it safer to eat
Unpasteurised milk, dairy foods.	Soft ripened cheese including blue veined cheeses, some goat cheeses camembert and brie. Avoid soft serve ice cream from vans and kiosks. Avoid home-made ice cream that includes raw eggs.	Cheeses made from pasteurised milk are fine. And also hard cheeses such as cheddar and soft processed cheeses such as cottage cheese or cream cheese. It is safe to eat Ice cream in tubs from the supermarket. Ensure they are correctly transported and stored at home and made with pasteurised milk.
Pate	This includes all types made from meat poultry and vegetables	
Caffeine	Drinks containing caffeine such as coffee, hot chocolate, tea, and high-energy drinks.	No more than two mugs of coffee or 3 cups of tea per day. Limit herbal teas to 2 cups per day.

Food hygiene tips

- » Always wash your hands before and after handling meat and poultry.
- » Store raw food and cooked food separately.
- » Wash fruit and vegetables in fresh water before peeling.
- » If you are having a takeaway ensure that it is well cooked and piping hot.
- » Take care to ensure that your food is not eaten after its use by date.
- » Do not reheat food more than once. When reheating food ensure that you follow the instructions and that it is piping hot before eating.
- » Ensure that food is stored at the correct temperature.
- » Use clean chopping boards. Have two separate chopping boards, one for preparing raw meat or seafood and the other for chopping vegetables.

Sources of supporting information

Atlantic DIP: Professional and Patient information

<http://atlanticdipireland.com/>

HSE antenatal hub

www.whatsupmum.ie

www.whatsupmum.ie/diabetes

Food labels and healthy eating with diabetes

Diabetes Ireland

<https://www.diabetes.ie/downloads/patient-booklets/>

- » A supermarket shopping guide for people with diabetes – your questions answered – including recipes and meal planning ideas.
- » So you have Diabetes – what do you need to know when it comes to food labels

Croi Understanding food labels

www.croi.ie/heart-health/dietary-tips-advice/understandingfoodlabels

Breast feeding

HSE breast feeding hub

www.breastfeeding.ie

Association of breast feeding mothers UK: Antenatal colostrum expression of your milk before your baby arrives.

<http://abm.me.uk/wp-content/uploads/2012/10/Antenatal-hand-expression.pdf>

Irish Nutrition and dietetic Institute – written by Registered Dietitians

<https://www.indi.ie/fact-sheets/fact-sheets>

INDI food safety and hygiene in pregnancy factsheet

INDI planning a Pregnancy factsheet

INDI frequently asked questions about food in pregnancy fact sheet.

Recipes: including nutrient values and carbohydrate content

<https://www.diabetes.org.uk/Settings/Search/?q=recipes>

Food Safety in pregnancy

<https://www.indi.ie/fact-sheets/fact-sheets-on-women-s-health/536-food-safety-and-hygiene-during-pregnancy.html>

Carbohydrate counting, useful for refreshing existing skills for those with Type 1 diabetes.

Diabetes UK

www.diabetes.org.uk

Lots of useful information, including a workbook, to help you refresh your carbohydrate counting skills.

DAFNE: If you are a DAFNE graduate www.dafneonline.co.uk and the DAFNE carbohydrate counting app

Safefood. (2016). Food Pyramid -leaflet. Available: <http://www.safefood.eu/SafeFood/media/SafeFoodLibrary/Documents/Healthy%20Eating/Food-Pyramid-leaflet.pdf>. Last accessed 6th Dec 2016

Labour and Delivery

Because you have diabetes your labour and delivery will be closely monitored. Although normal delivery at full term (40 weeks) is possible, and is our aim, some women have their baby one or two weeks early. About 50% of mothers with diabetes have a caesarean section.

The best time and the best way to deliver the baby will be discussed with you close to the time. The decision will be based on a number of aspects such as the baby's health, your diabetes control, blood pressure and previous deliveries. Most women are admitted to hospital the day before or very near the day the baby is born.

Once labour is established, a glucose and insulin infusion (drip) will be started and your blood glucose will be measured frequently.

If you are having a caesarean section you will be asked to fast from the night before delivery. A glucose and insulin drip will be started before you go to theatre.

Following The Delivery

Generally, your experience will be the same as other mothers. You will be able to hold your baby, begin breast feeding if you choose to, and

enjoy the happy moments of first being together. But because you have diabetes, doctors will take some extra steps to make sure that you and your baby are off to a healthy start.

You

After delivery of your placenta (after birth), your insulin needs will drop dramatically. You may be kept on an insulin/glucose drip for a few hours after delivery and your insulin dose will be adjusted as needed. Your blood glucose will be checked regularly after delivery until your levels stabilise. When you resume your normal diet, you should also return to approximately your pre-pregnancy insulin dose.

Your Baby

Babies born to mothers with well controlled diabetes before and during pregnancy should have no more problems than those born to mothers without diabetes. However some babies need to be admitted to the special care baby unit. This is usually for help with breathing and blood sugar control because babies can develop low sugars in the first few hours of life. If possible this is simply managed by increasing the feeds the baby receives, but sometimes a glucose drip is needed.

If your baby is well, he/she will stay with you in the ward. Early feeding of your baby is encouraged (within 1 hour of birth). The baby's blood

glucose will be checked prior to the second feed (at approximately 4-6 hours of age).

Within the first 24 hours after birth, doctors will check that your baby is healthy. Some babies develop jaundice after birth, so your baby, may require treatment. Phototherapy (light treatment) is usually enough depending on the condition of your baby.

Infant Feeding

Can I breast feed? YES. Breast feeding provides the best nutrition for your baby, gives extra protection against infection (through your antibodies) and helps you to develop a deep bond with your baby. Breastfeeding is recommended in women with diabetes.

Research shows that breastfed babies are less likely to develop diabetes and obesity in the future and breastfeeding also helps to keep the mother's glucose levels under control. It allows your body to use up some extra calories that were stored during pregnancy.

Losing weight after delivery enhances overall health and is one way to reduce your chances of developing diabetes in later life.

Key points to remember when breastfeeding

- » Early breast feeding is recommended within the first hour after delivery as this helps to prevent low blood sugar levels in the baby.
- » Your diet may need to be altered as your energy requirements will increase when breastfeeding. Insulin requirements may drop by up to 25%.
- » You should take food prior to breastfeeding. This is to avoid becoming hypoglycaemic. It is helpful to keep a snack nearby in case the feeding is prolonged.
- » Drink according to your thirst.
- » If your baby is found to have low blood sugars, it may be necessary to supplement breast feeds with expressed breast milk and formula milk should a paediatrician recommend this but remember this may only be for a short time and there is no reason why you should not continue to breastfeed your baby.

Risk Of Diabetes In Your Baby

The chance of your baby developing diabetes in the future is relatively low. It is important to remember that inheritance of diabetes involves both genetic and environmental factors. Type 2 diabetes has a much stronger family history than Type 1 but even this does not mean that your child will definitely develop diabetes.

A simple figure to remember is that the chance of any baby developing diabetes before the age of 20 years is around 1 in 1000. If either parent has Type 1 diabetes the risk of one of their children developing diabetes is 3-9/100 and increases further if both parents have Type 1 diabetes. If either parent has Type 2 diabetes the risk of Type 2 diabetes in their children over their lifetime is 15/100. This risk increases further if both parents have Type 2 diabetes.

Vitamin D

Vitamin D is essential for good bone health. There is evidence that children and adults in Ireland have low levels of Vitamin D.

All babies are advised to take a vitamin D3 supplement, but it is particularly important for babies who have dark skin or who are breastfed. Babies should be given a vitamin D3 only supplement. The supplement should not have any other vitamins added (unless

specifically recommended by your baby's doctor).

The recommended dose is 5 micrograms once a day from birth to 12 months. You can buy vitamin D3 supplements from your pharmacist. You do not need a prescription.

Postnatal Diabetes Care

While it is not necessary for you to have quite so perfect glucose levels after pregnancy, good control is still very important.

The aim is to keep you healthy in the long term and regular home glucose monitoring (aiming for pre meal sugars between 4-7mmol/l) is still a good idea.

If you have Type 2 diabetes, you should be able to return to your tablets soon after delivery or after you have stopped breastfeeding. If you have gestational diabetes, arrangements will be made for you to have an oral glucose tolerance test at about 6-12 weeks after pregnancy to determine whether you do or do not have diabetes outside of pregnancy.

Healthy postnatal check-up

Contraceptive advice can be provided prior to discharge. The combined oral contraceptive pill or long-acting progestogen injection are unlikely to be used in the first postnatal weeks.

The progestogen only oral contraceptive pill can be used safely in the first postnatal 6 weeks.

The IUD (Coil) can be inserted after resumption of menstruation.

At your postnatal visit we will discuss your future plans and help you make arrangements for whatever form of family planning you decide to use.

Make sure your cervical screen is up to date.

Planning A Future Pregnancy

Because of the importance of having good blood glucose levels at the very early stages of the baby's development, particularly around the time you actually become pregnant, it is advisable to plan your pregnancy carefully. This often means that some form of contraception is necessary while the insulin dose is being adjusted to achieve the best control of blood glucose levels. Contraceptive methods will be discussed with you and your individual needs considered.

Pre-Pregnancy Care (PPC)

Clinical research undertaken as part of the Atlantic Diabetes in Pregnancy Programme shows that having diabetes (Type 1 or Type 2) increases

the risk of complications for mother and baby. But this research has also shown that planning and preparing for a pregnancy with your diabetes team can greatly reduce that risk.

For women who have diabetes, pre-pregnancy care (PPC) is just as important as antenatal care.

- » Please think in advance and make sure that your blood sugar levels are normal before you stop your family planning method.
- » You should also ensure that you take folic acid daily for at least 12 weeks before you become pregnant as this has been shown to reduce the risk of having a baby with spina bifida. Folic Acid 5mg is only available on prescription.
- » If your pregnancy is not planned, ask your family doctor to refer you urgently to the antenatal outpatient clinic.

Pre-pregnancy care allows for a period of time for good blood glucose control to be achieved before the pregnancy starts. It also allows time to deal with hypoglycaemia, start folic acid and review medications that may not be safe during pregnancy.

This time is also used to screen for and treat complications of diabetes mellitus and to emphasise the importance of a healthy diet and

moderate exercise in pregnancy. An appointment can be made for pre-pregnancy care by calling your local diabetes centre.

Checklist For Planning A Pregnancy

- » Use regular contraception.
- » Seek the advice of your doctor before you become pregnant
- » Have your eyes checked before pregnancy.
- » Check that any medications you take are suitable during pregnancy.
- » Start taking folic acid at least 12 weeks before conception
- » Monitor your sugar levels 7 times daily.
- » Aim for normal blood sugar levels between.
- » HbA1c should be as near normal as possible <6.5% or 48mmol/mol.
- » Stop smoking.
- » Stop drinking alcohol.



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