

Understanding Type 1 diabetes

This guide aims to answer some of the most common questions asked about Type 1 diabetes. It is intended to support the advice you have received from your doctor or nurse. If you have any concerns or worries about your diabetes, please let them know and they will be able to help you.

What is diabetes?

Diabetes mellitus is a condition where the level of sugar (glucose) in your blood is too high because the body cannot use it properly.

After eating starchy foods, e.g. bread, fruit, rice and potatoes, the digestive process releases glucose into the bloodstream, which is then carried all over the body where it's converted into energy to help keep us active.

Normally, the amount of glucose in our blood is carefully regulated by a hormone called insulin, which is made in the pancreas. Insulin helps the cells in the body absorb glucose where it is used as fuel.

There are two types of diabetes

In **Type 1 diabetes**, the pancreas is no longer able to make the insulin needed to transport glucose to the cells that need it. This means you will need to take insulin every day to help manage your blood glucose levels. Type 1 diabetes generally occurs in people under 40 and is most common in children and teenagers.

Type 2 diabetes occurs when the pancreas does not make enough insulin, or the body is unable to use insulin properly (insulin resistance). Type 2 diabetes is often linked to being overweight and is usually diagnosed later in life. However, there has recently been an increase in Type 2 diabetes in teenagers and young adults.

Who gets Type 1 diabetes?

Although Type 1 diabetes can affect anyone, at any age, it typically starts when people are young. Indeed, Type 1 diabetes is the most common type of diabetes found in children.

No one really knows what causes Type 1 diabetes. In some people, it is thought that the pancreas may have been damaged, perhaps by a virus or other infection. Or it may simply be related to your genes.

There are over 3 million people with confirmed diabetes in the UK of which Type 1 accounts for between 5–15%.

Type 1 diabetes often starts when you are quite young.

Why do people with Type 1 diabetes need to take insulin?

If you have Type 1 diabetes, your pancreas does not produce insulin. Without insulin, glucose cannot be stored, so you need to take insulin in the form of injections. Unfortunately, insulin can't be taken as tablets because it would be broken down in the stomach and so wouldn't work. That's why you need to have insulin injections.

If you have Type 1 diabetes, you need to take insulin as injections.

Treatments for Type 1 diabetes

In a person who does not have diabetes, the body produces a 'background' amount of insulin that circulates in the blood to keep glucose levels in order – or just 'ticking over'. At mealtimes, extra insulin is produced to deal with the extra glucose that comes from the food.

If you have Type 1 diabetes, however, your pancreas is not making these automatic adjustments for you. So, in order to manage your blood glucose properly, you will need to have insulin injections daily.

Your doctor or nurse will speak to you about the right treatment for you.

If you have any questions or concerns about your treatment, please speak to your doctor or nurse.

Blood glucose control

How do I control my blood glucose level?

Taking control of your diabetes means taking control of your blood glucose level. Good blood glucose control is achieved by finding a balance between your insulin dose, what you eat and how active you are. It is important to learn how your insulin affects this balance.

By measuring your blood glucose regularly – i.e. before and after meals – you'll be able to tell how good your blood glucose control is and whether and when you need to alter your insulin dose.

Recent scientific evidence shows that good blood glucose control can help to reduce medical problems later in life, such as those associated with the eyes, feet, heart or kidneys.

Good blood glucose control comes from balancing your food and activity with your insulin dose.

Remember, when you have Type 1 diabetes, you control your own blood glucose level. Keeping your blood glucose well-controlled is good for your health, both now and in the future.

How do I measure my blood glucose level?

Your doctor or nurse will have shown you how to measure your blood glucose level.

What is 'good' blood glucose control?

The concentration of glucose in your blood is measured in millimoles per litre (mmol/L).

'Good' control means a blood glucose level in the 'normal' or 'target' range. There are slightly different opinions as to the ideal range to aim for, as this range tends to be individual to each person. So it's best to be guided by your own doctor or nurse.

However, the following is a general guide of the target ranges for people with Type 1 diabetes.

Adults

Before meals: 4–7 mmol/L
Two hours after meals: less than 9 mmol/L

Children

Before meals: 4–8 mmol/L
Two hours after meals: less than 10 mmol/L

A level *below* 4 mmol/L may cause hypoglycaemia or a 'hypo'. A level above 7 or 8 mmol/L before a meal can cause hyperglycaemia.

Good blood glucose control: Between 4 and 7 mmol/L

Low blood glucose: Risk of a 'hypo' below 4 mmol/L

High blood glucose: Risk of hyperglycaemia above 8.5 mmol/L two hours after a meal

Why does monitoring matter?

A special blood test called haemoglobin A1c (HbA_{1c}) is used to measure your average blood glucose level over a period of 2–3 months. Every 3 months or so, you will need to go back and see your doctor or nurse. You will usually be asked to have a blood test beforehand, so that the results are ready when you go for your appointment.

You and your doctor or nurse will also look at the readings in your diary to see whether your blood glucose control has been good.

If it has, you will continue your insulin dose as normal. If it has not, you may need to alter your insulin dose.

Hypoglycaemia and hyperglycaemia

Hypoglycaemia

If you take too much insulin, your blood glucose level may be lowered too much. This situation can cause hypoglycaemia (sometimes referred to as a 'hypo') and can make you feel unwell.

A 'hypo' can occur for different reasons, but generally it happens when the balance between your food intake and activity level has been upset.

Sometimes, a 'hypo' may occur because you've been more active than you were expecting – such as running for the bus. Other times, you may have a 'hypo' because you have not had enough to eat – or because you have eaten later than you intended. If you experience a 'hypo', you'll need to eat some sugar immediately to bring your blood glucose level back up to normal. Your doctor or nurse will be able to give you more advice on what to do in this situation.

Hyperglycaemia

If there is more glucose in your blood than your body needs, some of it can be stored in your muscles and liver until it is needed. Too much glucose in the blood is known as 'hyperglycaemia'. Hyperglycaemia can cause health problems in the long term, such as problems with the eyes, feet, heart or kidneys. Taking insulin can help to lower your blood glucose level and help avoid hyperglycaemia.

Remember...

Hypoglycaemia – low blood glucose

Hyperglycaemia – high blood glucose

What affects my blood glucose level?

Your body does not always use exactly the same amount of glucose every day. The more active you are, the more glucose you will use.

If you do more exercise, for example, you may need to eat more, or reduce the amount of insulin you inject to maintain good blood glucose control.

On the other hand, if you eat more than usual, especially if the food has carbohydrate in it, your body will make more glucose, so you may have to increase your insulin dose to maintain good glucose control.

This may sound complicated at first, but you will soon learn how to adapt. Remember, what works for one person is not necessarily the same for everyone else, so you will need to find the right balance for your own activity levels and eating patterns.

Your doctor or nurse will talk to you about how to change your dose, or the amount you eat, to compensate for different activities.

The more active you are, the more glucose your body uses up.

The more carbohydrate you eat, the more glucose your body makes.

Your questions answered

There is a lot of new information to take in when you are first diagnosed with diabetes. It is important to understand what is happening in your body, and how to control your blood glucose.

Don't be afraid to ask questions – even if they seem small, or you think you already know the answer.

Your doctor or nurse are there to help you. They will be happy to answer questions so that you understand what affects your blood glucose level. This will help you to keep it well-controlled.

Diabetes doesn't mean you have to stop doing the things you enjoy – you may just need to plan ahead for them.

The more you understand about your diabetes, the better you'll be able to control it.

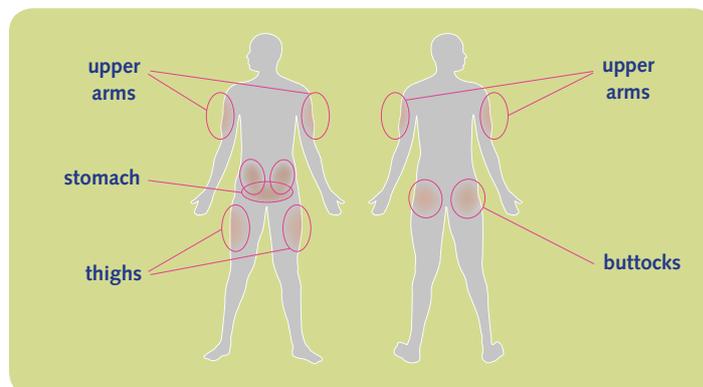
Planning a pregnancy

If you are thinking of having a baby, you should ask your doctor or nurse for advice. It is especially important that your blood glucose is well-controlled both before and during pregnancy to help your baby develop properly.

Where to inject

Insulin injections are an important part of controlling your blood glucose level. Your doctor or nurse will have given you information about where and how to inject your insulin.

You can inject your insulin in various places on your body. These include your upper arms, the tops of your thighs, and your stomach. It's a good idea to inject your insulin in a different place each time. This will not only help ensure that your insulin is absorbed properly, but can also prevent your skin from becoming damaged.



Healthy eating

Being diagnosed with diabetes will mean that you need to make some changes in your life – often to what you eat. You should start to eat a more healthy, balanced diet – for example, by cutting down on fat and eating more fresh fruit and vegetables. It doesn't mean you can never again have chocolate or a cream cake – but you will need to watch what you eat.

Eating properly and maintaining a good diet is an essential part of staying healthy when you have diabetes in order to keep glucose levels well-controlled. It's also important to keep to a healthy weight. Even when you are taking insulin to control your diabetes, being overweight and not keeping to a good eating plan makes it almost impossible to keep to the correct glucose levels.

Tips for healthy eating

- More high-fibre foods, such as bread, pasta, potatoes, wholemeal chapati
- Less fatty food – try to avoid butter, cakes and fried food
- More fruit and vegetables – at least five helpings a day
- Avoid sugary foods and drinks
- Use less salt – try herbs and spices to add flavour instead
- Avoid 'diabetic' foods – they are expensive, high in fat and you don't need them

Healthy eating is good for everyone – whether you have diabetes or not.

You may find that it helps if other people in your household follow the same advice about food – and you all change your eating habits together. If you would like more advice about healthy eating, your doctor or nurse can arrange for you to see a dietician, a specialist in foods and eating.

A dietician will be able to give you advice about meals and suggest recipes.

Eating out

If you are going out for a meal, try to book for about half an hour or so before you need to eat. This should allow enough time for you to have a drink and a chat before your first course is served.

Bear in mind that you will probably eat more than you would at home – so you may need to increase your insulin dose. Have some bread if you are drinking alcohol or if the restaurant is busy, in case your food takes longer to arrive than you had planned.

Choose dishes you enjoy, but don't be afraid to try something different. If you are unsure, check to see if you can order a side serving of a starchy food such as potatoes or poppadoms.

Finally, check your blood glucose level when you get home.

Your doctor or nurse will be able to give you advice on changing your insulin dose according to different sizes of meals.

Bear in mind that you might eat more than usual if you go out for a meal - so you may need to increase your insulin dose to allow for this.

Cooking tips

You don't need a new set of cookery books now that you have diabetes. Your favorite recipes can easily be adapted by following a few simple suggestions.

Adapting your own recipes

- Use olive oil instead of butter
- Use low-fat dairy products, such as fromage frais or crème fraîche, instead of cream; replace full-fat milk with semi-skimmed milk
- Flavour with lemon juice, mustard or herbs as a healthy alternative to salt
- Reduce the amount of sugar. You may find that low-sugar dishes don't keep for as long, because sugar acts as a natural preservative
- Grill or bake instead of frying, whenever you can

Dried fruit can be used to sweeten desserts, instead of sugar, while pulses (such as lentils) and beans can be used to thicken casseroles and stews.

Eating a healthy, balanced diet and keeping your weight under control helps you to look after your diabetes.

Looking after yourself

Keeping active and playing sport

Try to keep fit. If you have diabetes, it's especially important to take regular exercise, either by playing sports or just keeping active.

Regular exercise has two essential benefits:

- It helps to control weight
- It is good for the heart and reduces the risk of heart disease, especially in later life

For younger people, playing football or swimming are good forms of exercise, but older people should try to keep active as well. Even simple things such as walking to the shops rather than using public transport, gardening, or regularly taking your dog for a walk, are all beneficial. Regular, everyday activity of this sort, in fact, brings more long-term benefits than joining a gym or health club.

Looking after your eyes

If your blood glucose level is too high, you may find that your vision becomes blurred. If this is not corrected, it could eventually damage your eyes and affect your eyesight.

Permanent damage can be avoided if changes are picked up and treated at an early stage. It is, therefore, very important that you have an eye check-up every year.

Your doctor or nurse will be able to tell you more about eye testing in your area. Eye checks are free if you use insulin to control your diabetes.

Taking care of your eyes can help prevent damage to your sight in the future.

Looking after your feet

Diabetes can affect your nerves and circulation.

If the nerves from your feet are not working properly, you may not realise that you have a sore place on your foot. And, if the blood circulation to your feet is also poor, a simple cut or blister could get badly infected.

To avoid such problems, it is important to look after your feet very carefully.

Looking after your feet

- Check your feet every day for redness, irritation or broken skin
- Before you put on your shoes or slippers, check that there are no loose stones inside
- Make sure your shoes are comfortable and fit well – that they don't pinch or rub
- If your feet get cold, don't put them on anything hot to warm them up, like radiators, hot water bottles or hot foot baths
- Don't walk about in bare feet – even at home – and especially on the beach
- Have regular check-ups with a chiropodist (foot specialist)

If you find it difficult to check your feet yourself, you could use a small mirror to examine your soles or ask a family member to look at them for you.

Problems with the circulation in your feet can cause ulcers and, in some cases, permanent damage which can affect your ability to walk.

You need to have regular check-ups with a foot specialist who will be able to pick up any problems early and treat them. Your doctor or nurse will be able to tell you more about the foot care services available in your area.

Can I still drink alcohol?

Provided you only drink in moderation, there's no reason why you should have to give up alcohol just because you have diabetes.

Try to drink less than 2 units a day if you're a woman or 3 units a day if you're a man and avoid drinking every day.

One unit is approximately
½ pint of ordinary strength beer, lager or cider
1 pub measure (125 ml) of wine
1 pub measure (25 ml) of spirit

Be careful though – the strength of many drinks has crept up over the years; some premium lagers are the equivalent of three units a pint and a small glass of table wine can be two units. You should also be aware that measures at home or at someone else's house may be much larger than in a pub or restaurant.

Drinking responsibly

- Never drink alcohol on an empty stomach
- Combine spirits (such as gin, vodka or whisky) with sugar-free mixers
- Bear in mind that alcohol is high in calories
- Remember that alcohol can lower your blood glucose level

Alcoholic drinks also contain quite a lot of calories, so if you need to watch your weight, keep your drinking to a minimum and make sure that mixer drinks are of the 'diet' or sugar-free variety.

Can I still smoke?

Giving up smoking is good advice for anybody.

But if you have diabetes, remember that smoking substantially increases the long-term risks associated with the condition – so it's even more important to quit.

Smoking encourages the build-up of deposits in arteries making them narrower in places, which can reduce the blood supply to the organs of your body or encourage the formation of clots, which could break off and travel to the heart or brain causing a heart attack or stroke. It also increases your blood pressure.

All in all, smoking is bad for your health, but especially so for people with diabetes.

Smokers quit in different ways. What helps one person to stop smoking successfully may not work for another, because the psychological and physical reasons for addiction vary.

These methods include everything from prescription medicines and nicotine replacement therapy to hypnotherapy and simple will-power or determination.

Your doctor or nurse will be able to tell you more about other ways to help you give up smoking.

For more information

Contact the free NHS Smoking Helpline on: 0800 022 4332 or visit the website at: www.smokefree.nhs.uk

Driving and diabetes

Just because you have diabetes doesn't mean that you won't be allowed to drive a car.

If you haven't applied for a driving licence yet, you will be asked on the application form whether you have certain medical conditions – including diabetes.

If you already have a driving licence but have just been diagnosed with diabetes and need medication to help control your diabetes, you should check with your doctor or nurse, or check on the website below.

www.gov.uk/diabetes-driving

You should not drive if you have difficulty recognising a hypo, as this could be dangerous for you and for others.

Ask your doctor or nurse for further information or contact the DVLA directly:

Drivers Medical Enquiries

DVLA

Swansea

SA99 1TU

www.gov.uk/diabetes-driving

Phone 0300 790 6806 for car or motorcycle enquiries

0300 790 6807 for bus, coach or lorry enquiries

Helpfull words

Blood glucose level	The amount of sugar in your blood
Chiropodist	Member of the medical profession who looks after feet (sometimes known as a podiatrist)
Dietician	Someone who gives advice about foods and eating
Digestion	Process of breaking down food into sugar
Glucose	Sugar – form in which food can be used as fuel by the body
HbA_{1c}	Blood test to check your average blood glucose reading over the last three months
Hyperglycaemia	High level of glucose in the blood
Hypoglycaemia	Low level of glucose in the blood, commonly known as a 'hypo'
Insulin	Hormone produced during digestion, to lower blood glucose
Insulin resistance	When the body does not respond fully to the insulin which is produced (because it is 'resistant' to insulin)
Pancreas	Part of the digestive system that produces insulin

My contacts

Diabetes nurse

Name: _____

Tel: _____

Diabetes specialist doctor

Name: _____

Tel: _____

GP

Name: _____

Tel: _____

Dietician

Name: _____

Tel: _____

Chiropodist/Podiatrist

Name: _____

Tel: _____

Community nurse

Name: _____

Tel: _____

Pharmacist

Name: _____

Tel: _____

Other

Name: _____

Tel: _____

Some contacts you might find useful

Diabetes UK

www.diabetes.org.uk

Tel: 0845 120 2960

Driving with diabetes

DVLA

www.gov.uk/diabetes-driving

Tel: 0300 790 6806

Healthy living

NHS support in giving up smoking

www.smokefree.nhs.uk

Tel: 0800 022 4332

This fact sheet is part of a series that helps to provide information about diabetes. Each of these fact sheets can be downloaded from www.diabetesmatters.co.uk and pre-printed booklets may be ordered from the website, or your doctor or nurse might have copies to give to you.

www.diabetesmatters.co.uk

Freephone 24-hour Sanofi Diabetes care-line

08000 35 25 25

Sanofi, One Onslow Street, Guildford, Surrey GU1 4YS