

## **Understanding diabetes**

Your key to better health

### **How this booklet can help you**

#### **This booklet aims to help you if you:**

- have just been diagnosed with diabetes
- are already living with diabetes and want to find out more about it
- are a parent, carer or friend of someone who has diabetes, or
- are interested in diabetes and would like to find out more.

#### **The booklet will tell you about:**

- diabetes, its symptoms and associated health problems (diabetes complications)
- what causes diabetes and who is most at risk
- how diabetes can be treated, and
- how you can help yourself to stay healthy.

It also explains how Diabetes UK can give you up-to-date information and support, on all aspects of living with diabetes.

The good news about diabetes is that treatments are very effective and the more you know about your condition, the more you can do...

- to help yourself stay healthy
- to lead the sort of life you want to live, and
- to avoid the health problems associated with diabetes in later life.

#### **Important**

The information in this booklet should be used together with the personal advice you have received from your doctor or diabetes nurse. You will be encouraged to learn to make changes to treatment yourself, but if you are not sure what to do, talk to your doctor or diabetes nurse.

## **What is diabetes?**

Diabetes describes a condition in which the body cannot make proper use of carbohydrate in food because the pancreas does not make enough insulin, or the insulin produced is ineffective, or a combination of both.

Insulin is the hormone that helps glucose (sugar) from the digestion of carbohydrate in food, move into the body's cells where it is used for energy. When insulin is not present or is ineffective, glucose builds up in the blood.

This is because insulin is the key, which unlocks the door to the body's cells. Once the door is unlocked glucose can enter where it is used as fuel for energy so we can work, play and generally live our lives.

If there is no insulin present in the body, as in Type 1 diabetes, then there is no key to unlock the door and the glucose stays in the blood.

When there is not enough insulin, the cell doors are only partially unlocked, or when there is lots of insulin but the lock doesn't work properly (sometimes referred to as insulin resistance), this is Type 2 diabetes.

Because the excess glucose stays in the blood and isn't being used as fuel for energy, people with untreated diabetes often feel very tired, pass large amounts of urine and are extremely thirsty.

As people with diabetes have problems with their insulin, it is necessary for them to take steps to either create insulin or to help the insulin they are making, work better. This can be done through a healthy lifestyle and treatment.

By following a treatment plan, which includes healthy diet and regular physical activity, people with diabetes can control the amount of glucose in the blood and lead a healthy life.

## **What are the symptoms of diabetes?**

**The main symptoms of diabetes are:**

- **increased thirst**
- **going to the loo all the time – especially at night**
- **extreme tiredness**
- **unexplained weight loss**
- **genital itching or regular episodes of thrush**
- **blurred vision**
- **slow healing of cuts and wounds.**

Type 2 diabetes develops slowly over a period of years. Some people may not notice any symptoms at all and their diabetes is only picked up in a routine medical check up. Some people may put the symptoms down to 'getting older' or 'overwork'.

Type 1 diabetes develops much more quickly, usually over a few weeks. In both types of diabetes, the symptoms are quickly relieved once it treated. Early treatment will also reduce the chances of developing the serious diabetes complications.

## Who gets diabetes and what causes it?

**Diabetes is a common health condition. About 1.4 million people in the UK are known to have diabetes. And for every person who knows that they have the condition, there is probably another person with diabetes who does not yet know. Over three-quarters of people with diabetes have Type 2 diabetes.**

Although the condition can occur at any age, it is rare in infants and becomes more common as people get older.

### **Type 1 diabetes**

Type 1 diabetes develops when the insulin-producing cells in the pancreas have been destroyed. Nobody knows for sure why these cells have been damaged but the most likely cause is the body having an abnormal reaction to the cells. This may be triggered by a viral or other infection. Type 1 diabetes used to be known as insulin dependent diabetes (IDD).

People who develop diabetes under the age of 40 and especially in childhood, usually have this type of diabetes, however it can happen at any age.

### **Type 2 diabetes**

Type 2 diabetes usually appears in middle-aged or older people, although more frequently it is being diagnosed in younger overweight people and is known to affect African-Caribbean and South Asian people at a younger age. The main cause is that the insulin that the body produces doesn't work properly (insulin resistance).

Some people wrongly describe Type 2 diabetes as 'mild' diabetes. There is no such thing as mild diabetes. All diabetes should be taken seriously and treated properly .

Type 2 diabetes used to be known as non insulin dependent diabetes (NIDD).

### **The people most at risk of Type 2 diabetes:**

- are white people aged over 40 years and people from African-Caribbean, Asian and minority ethnic groups aged over 25 who
  - have a family history of diabetes
  - are overweight
  - have high blood pressure, heart disease or have had a heart attack
- have had a borderline high blood glucose test
- are women with polycystic ovary syndrome who are overweight
- are women who have had high blood glucose levels during pregnancy (gestational diabetes).

## **Other causes of diabetes**

There are some other causes of diabetes, including certain diseases of the pancreas, but they are all very rare.

### **... and some things that do not cause diabetes:**

- eating sweets or sugar does not cause diabetes
- stress does not cause diabetes although it may make the symptoms worse in people who already have the condition
- sometimes an accident or an illness may reveal diabetes if it is already there, but they do not cause it.

**You cannot catch diabetes from somebody, nor can you give it to anyone.**

## **Help yourself to stay healthy**

**If you have diabetes, you may need to make some changes to your way of life. However, by sticking to your management plan, monitoring your condition and following a healthy lifestyle, you should be able to continue your normal, day-to-day life and take part in the activities you have always enjoyed.**

The long-term benefits of healthy eating and regular physical activity outweigh the excuses we can all make not to follow a healthy lifestyle. A positive attitude, careful planning and support from your family, friends and diabetes team all help.

### **Healthy eating**

What you eat directly affects your blood glucose levels. It can also affect the amount of fat, such as cholesterol in your blood. By choosing healthy foods and being active you will help manage your blood glucose levels and your weight. The diet for people with diabetes is not a special diet. It is the normal healthy diet recommended for everybody – low in fat, sugar and salt, with plenty of fruit, vegetables and starchy foods. Healthy eating is good for everybody, so there is no need to prepare separate meals for you and your family. You do not need to buy special foods either, so relax, and learn how to enjoy a varied balanced diet.

When you are first diagnosed with diabetes, your doctor should arrange for you to see a state registered dietitian who will give you individual dietary advice and discuss, if necessary, how to adapt your meals to make them healthier. In the meantime here is some information to get you started.

- 1.** Eat regular meals based on starchy foods such as bread, pasta, chapatis, potatoes, rice and cereals. This will help to control your blood glucose levels. All varieties are fine, but try to include more of the wholegrain ones.
- 2.** Try to cut down on the fat you eat as this will help you to lose weight, which will help you to control your diabetes. Eat less saturated (animal) fats in particular as this type of fat is linked to heart disease.

### **Tips to reduce your saturated fat intake:**

- Choose low-fat dairy foods such as skimmed or semi-skimmed milk, low-fat yoghurt, ice cream and custard.
- Choose lean meat/mince and skinless chicken/poultry and trim all visible fat before cooking.
- Use low-fat cooking methods such as grilling, microwaving, steaming, dry roasting, poaching or barbecuing.
- Skim the fat off the top of casseroles, stews and curries.
- Choose monounsaturated oils and spreads like olive, rapeseed and ground nut oils.

**3.** Eat more fruit and vegetables – aim for at least five portions a day. People with diabetes can have any fruit and vegetables they like. All fruit and vegetables are low in fat and calories and are a good source of vitamins and minerals. Fruit makes an ideal snack.

**4.** Cut down on sugar and sugary foods. This does not mean you need to have a completely sugar-free diet. Choose diet, low sugar or sugar-free squashes and fizzy drinks as sugary drinks can cause blood glucose levels to rise quickly.

**5.** Use less salt. Avoid putting salt on the table and reduce or leave out salt in cooking. Try flavouring foods with herbs and spices instead of salt. Choose salt reduced versions of processed foods.

**6.** You don't need to give up alcohol just because you have diabetes. Drink alcohol in moderation – that's two units of alcohol a day for a woman and three units a day for a man.

**1 unit = 1 glass of wine or 1/2 pint of beer or 1 measure (25mls) of spirits**

**7.** If you are overweight, losing weight will help control your diabetes and will also reduce your risk of heart disease, high blood pressure and stroke. Aim to lose weight slowly over time (1-2lbs or 0.5-1kg per week) rather than crash dieting. Even if you don't manage to get to your ideal weight, losing a small amount and keeping it off will help with your blood glucose control and improve your overall health.

**8.** Don't be tempted by foods or drinks labelled as being 'diabetic'. They are expensive, unnecessary and have no added benefit for people with diabetes.

## **Starting out**

Starting to eat healthily can be challenging, especially if you are not sure what foods to buy. This list below is to give you an idea of the sorts of foods to keep stocked up with so you and your family always have healthy alternatives to choose from.

### **Starchy carbohydrates – include with each meal**

**Breakfast cereals** low fat, high fibre varieties.

**Bread and crumpets** white, wholemeal or wholegrain, English muffins, pitta bread.

**Crackers, crispbread or cracker bread** low fat, high fibre varieties.

**Pasta and noodles** all types.

**Rice white or brown.** Try basmati.

**Potatoes** white and other varieties such as cassava, sweet potato and plantain.

### **Fruit & veg – eat in large amounts**

**Fruit** fresh, tinned in natural juice, frozen or dried.

**Vegetables** fresh, frozen or canned (salt reduced is best).

### **Meat & alternatives – eat moderate amounts**

**Meat** lean red meat, skinless chicken, turkey.

**Fish** especially oily fish such as mackerel, sardines, pilchards, salmon – fresh, frozen fillets or tinned in water, brine or tomato sauce.

**Beans and lentils** dried or tinned, baked beans, kidney beans, chick peas, soy beans.

**Tofu, TVP, soy substitutes and Quorn.**

**Dairy – eat moderate amounts**

**Milk or alternatives** semi-skimmed/skimmed milk/soy drink (calcium fortified), fresh or powdered.

**Yogurt and fromage frais** low-fat flavoured or natural.

**Cheese** low-fat soft cheese, reduced fat hard/sliced cheese.

**Fats & oil – eat small amounts**

**Margarine** monounsaturated such as rapeseed, olive or groundnut based spreads.

**Oil** monounsaturated such as olive and rapeseed.

**Sugar**

Sugar does not need to be excluded completely from your diet if you have diabetes. Although sugar should be limited as part of healthy eating, good blood glucose control can still be achieved when sugar, and sugar-containing foods are eaten.

Dietary management of diabetes depends more on eating regularly, basing meals on starchy carbohydrate foods like pasta and including more fruit, vegetables and pulses. The main thing to consider is the overall balance of what you're eating – with the emphasis on long-term health and weight control.

Sugary drinks and sweets cause blood glucose levels to rise quickly. For sweet foods like cakes and biscuits, it is more important to choose low fat varieties like scones, tea cakes, fruit loaf, ginger nuts and garibaldi biscuits.

**Intense sweeteners (artificial sweeteners)**

Intense sweeteners can be used, if preferred, to sweeten drinks and foods. They are virtually carbohydrate and fat free and do not affect blood glucose levels.

When using intense sweeteners or products sweetened with them, it is recommended that you use a variety so you don't consume too much of any type.

## **Physical activity**

As well as healthy eating and medication, physical activity is an important part of diabetes management. Even small changes in activity can help you lead a healthier lifestyle. Remember to discuss any activity plans with your doctor or diabetes team before you start.

### **Physical activity helps to:**

- regulate blood glucose levels
- make insulin work more effectively
- reduce weight
- improve blood cholesterol and blood pressure
- prevent coronary heart disease.

The more active you are, you will also find the more energy you have and the less stressed you feel.

Planning is very important when starting to increase your activity levels. With good planning it can be fun, safe and very rewarding. The key is to set short-term achievable goals and build up gradually. To prevent injury and muscle soreness, which can make you lose motivation, it is important to warm up, cool down and stretch.

### **How much should you be doing?**

Build up to at least 30 minutes of physical activity that makes you feel a bit out of puff on most, preferably all, days of the week, but remember even if you can't manage 30 minutes a day every bit counts.

### **Which activity?**

Do something that you enjoy, such as gardening or going for a walk. You are more likely to stick at it and make it a habit. Also think of movement as an activity opportunity, so take the stairs instead of the lift, get off the bus one stop earlier and walk the rest of the way, or do housework to music.

For most people, walking is the easiest and most convenient form of physical activity. Some other activities you might like to try are swimming, bowling, golf, tennis, dancing and cycling.

### **Special considerations**

#### **Insulin and tablets**

If your diabetes is treated with insulin or sulphonylurea tablets there are precautions you need to take when being physically active. You should monitor your blood glucose level before and after activity, as activity lowers blood glucose levels. If your blood glucose level is less than 4mmol/l before you start, you

should have a sugary drink, glucose tablets or sweets, and follow it up with some starchy carbohydrate, like a sandwich.

Remember to always keep a sugary drink, glucose tablets or sweets handy whenever you are being active.

If your diabetes is treated with insulin, your injection site should be away from areas used during your activity. For example, if you are going cycling, it is better not to inject into your legs.

### **Carbohydrates**

The amount of extra carbohydrate you will need and the adjustments you need to make to your diabetes treatment (insulin or tablets) will depend upon a number of things.

- how often you are physically active
- when you are physically active
- the intensity and duration of the activity.

However, with frequent blood glucose monitoring before, during and after physical activity you will get to know how your body responds to doing a particular activity and adjust your medication or treatment accordingly. For more information please speak to your diabetes team.

## **How is diabetes managed?**

**Although diabetes cannot yet be cured, it can be managed very successfully.**

The aim of diabetes management is to keep blood glucose levels as near to normal as possible (4–7mmol/l before meals and up to 10 mmol/l two hours after a meal).

### **Type 1 diabetes**

People with Type 1 diabetes need injections of insulin and also need to eat healthily, having meals that contain the right balance of foods. In addition, regular physical activity is recommended.

#### **Insulin and Type 1 diabetes**

Insulin cannot be swallowed because it is destroyed by the digestive juices in the stomach. People with this type of diabetes commonly take either two or more injections of insulin each day.

If you or someone close to you needs insulin injections, your doctor or diabetes nurse will talk to you, show you how to do them and give you support and help. They will also show you how you can do a simple blood or urine test at home to measure your glucose levels.

This will enable you to adjust your insulin, food and activity according to your daily routine. Your doctor or diabetes nurse will advise you what to do if your glucose level is too low.

If you have Type 1 diabetes, your insulin injections are vital to keep you alive and you must have them every day.

### **Type 2 diabetes**

People with Type 2 diabetes need to eat a healthy diet that contains the right balance of foods and take regular physical activity (see page 14). If you are overweight, it will help your diabetes if you lose some weight and keep it off.

If your doctor or diabetes nurse finds that this alone is not enough to keep your blood glucose levels normal, you may also need to take tablets.

#### **Tablets and Type 2 diabetes**

There are several types of tablets for people with Type 2 diabetes. Some types help you to produce more insulin. Other types help your body to make better use of the insulin that you do produce. Another type of tablet slows down the speed at which the body absorbs glucose from the intestine.

Your doctor will decide which kinds of tablets are going to work best for you and may prescribe more than one kind. Your doctor or diabetes nurse will tell you all about the tablets, when to take them, and how to monitor your blood or urine glucose levels.

Eventually even several types of tablet may not be enough to keep your blood glucose levels normal and your doctor may advise you to take insulin as well as, or instead of, your tablets.

If you do need to take tablets or insulin, a healthy diet and physical activity remain an important part of managing your diabetes.

### **Staying healthy**

People with diabetes have a higher risk of developing diabetes complications, including heart disease, stroke, high blood pressure, circulation problems, nerve damage and damage to the kidneys and eyes.

Finding out as much as you can about diabetes will better help you to manage the condition. Ask your diabetes team what diabetes education courses there are in your area. Additionally there are many emotions associated with having diabetes and you might benefit from talking to your diabetes team about how you are feeling or talking to others with diabetes for support.

### **Blood glucose levels**

By keeping good blood glucose levels you significantly reduce the risk of developing long-term complications.

Blood glucose levels are measured in millimols per litre of blood or mmol/l. You should aim for a level of 4–6mmol/l before meals and up to 10mmol/l two hours after meals. Your doctor or diabetes nurse will advise you on the range of blood glucose monitors available to measure your blood glucose levels and what to do with the results. You may also wish to monitor your glucose levels by testing your urine. Speak to your doctor or diabetes nurse about which method of testing is best for you.

### **HbA1c levels**

Your long-term blood glucose levels (HbA1c) should be checked every three or four months, especially after a change in your treatment, but if not then at least once a year. This level is measured as a percentage and should ideally be 6.5 per cent or below.

### **Blood pressure levels**

Good blood pressure levels are important in reducing your risk of heart disease and stroke. Your blood pressure should be measured regularly when you visit your doctor.

Ideal blood pressure is below 130/80mmHg. Ways to help reduce your blood pressure include reducing your weight by eating a diet low in fat, reducing salt intake, alcohol and stress levels, being regularly physically active and giving up smoking.

If your blood pressure is still high after trying these things, your doctor will prescribe tablets to help bring it down.

### **Blood fats (lipids)**

Having too much fat in the blood can contribute towards heart disease and stroke. Blood fats include cholesterol and triglycerides. Ideally your triglyceride level should be less than 1.7mmol/l and your total cholesterol level less than 4mmol/l.

You can help to reduce your blood fat by reducing your weight, following a low-fat diet, and being regularly physically active.

If your levels are high, your doctor may prescribe tablets to lower them.

### **Weight**

Maintaining a healthy body weight is important for managing your diabetes. It helps reduce your blood glucose levels and benefits your overall health. Carrying excess fat around the middle increases your risk of heart disease.

Speak to your doctor or diabetes nurse for ways to lose weight.

For ideal waist circumference measurements, see below.

### **Smoking**

Giving up smoking is one of the most positive things you can do to improve your health and reduce your risks of diabetes complications.

Speak to your doctor or call Quitline on 0800 169 0169.

**Ideal levels**

Blood glucose	4–6mmol/l before meals and up to 10mmol/l two hours after meals
Blood pressure	Below 130/80mmHg
Blood fats	Triglyceride level less than 1.7mmol/l Total cholesterol less than 4mmol/l
HbA1c	6.5% or below (but 7.5% or below for those at risk of severe hypoglycaemia)
Waist circumference	Men: less than 94cm South Asian men: less than 90 cm Women: less than 80cm South Asian women: less than 80cm

## About Diabetes UK

Diabetes UK is the charity for people with diabetes, their family, friends and carers. Our mission is to improve the lives of people with the condition and work towards a future without diabetes. Diabetes UK is one of the largest patient organisation in Europe. We stand up for the interests of people with diabetes by campaigning for better standards of care. We are the largest funder in the UK of research into better treatments for diabetes and the search for a cure. We provide practical support and information and safety-net services to help people manage their diabetes.

### Did you know?

There are over two million people in the UK diagnosed with diabetes and an estimated million have the condition but don't know it.

- Our website [www.diabetes.org.uk](http://www.diabetes.org.uk) has over 4,000 visitors a day.
- We have a network of offices throughout the UK – see page 21.
- We have over 170,000 members.
- Diabetes UK Careline staff answer over 200 enquiries a day.
- We spend £5 million a year on diabetes research.
- We produce a wide range of magazines, books and leaflets covering all aspect of diabetes.

### How can you help?

You can be actively involved in the work Diabetes UK does.

- Become a member – call free on 0800 138 5605
- Diabetes Campaigners Network – for details call 020 7424 1000
- Email [dcn@diabetes.org.uk](mailto:dcn@diabetes.org.uk) [www.diabetes.org.uk/campaigns/](http://www.diabetes.org.uk/campaigns/)
- Fundraising ideas and events – call 020 7424 1000
- Email [community@diabetes.org.uk](mailto:community@diabetes.org.uk) [www.diabetes.org.uk/fundraise/](http://www.diabetes.org.uk/fundraise/)
- Make a donation – call 020 7424 1010 [www.diabetes.org.uk/donate/](http://www.diabetes.org.uk/donate/)

## **Become a member of Diabetes UK**

Diabetes UK offers a membership scheme to help people attain good management of their diabetes.

Membership of Diabetes UK keeps you up to date with diabetes developments and connects you with a network of people who understand the condition.

### **As a member of Diabetes UK you can benefit from:**

- Our bi-monthly members' magazine, Balance.
- Confidential support and information from trained counsellors on Diabetes UK Careline, open during office hours.
- A wide range of publications.
- Diabetes UK's website [www.diabetes.org.uk](http://www.diabetes.org.uk).
- Details of voluntary groups.
- Educational and support events.
- The opportunity to add your voice to that of Diabetes UK to campaign for better diabetes care across the UK.

**To become a member of Diabetes UK, call free on 0800 138 5605 or visit [www.diabetes.org.uk/jointoday](http://www.diabetes.org.uk/jointoday)**

**For further information please call our Supporter Services on 0845 123 2399.**

## Diabetes UK

### National and regional offices:

<b>Central Office</b>	Telephone <b>020 7424 1000</b>
<b>Diabetes UK Cymru</b>	Telephone <b>029 2066 8276</b>
<b>Diabetes UK Northern Ireland</b>	Telephone <b>028 9066 6646</b>
<b>Diabetes UK Scotland</b>	Telephone <b>0141 332 2700</b>
<b>Diabetes UK Eastern</b>	Telephone <b>020 7424 1000</b>
<b>Diabetes UK East Midlands</b>	Telephone <b>0115 950 7147</b>
<b>Diabetes UK London</b>	Telephone <b>020 7424 1116</b>
<b>Diabetes UK Northern &amp; Yorkshire</b>	Telephone <b>01325 488606</b>
<b>Diabetes UK North West</b>	Telephone <b>01925 653281</b>
<b>Diabetes UK South East</b>	Telephone <b>020 7424 1000</b>
<b>Diabetes UK South West</b>	Telephone <b>01823 324007</b>
<b>Diabetes UK West Midlands</b>	Telephone <b>01922 614500</b>

Visit [www.diabetes.org.uk/in\\_your\\_area/](http://www.diabetes.org.uk/in_your_area/) for email addresses

### Useful contacts:

<b>Become a member</b>	Telephone <b>0800 138 5605</b>
<b>Supporter Services</b>	Telephone <b>0845 123 2399</b>
<b>Diabetes UK Careline</b>	Telephone <b>0845 120 2960*</b>
(or if hearing impaired)	Textphone <b>020 7424 1031</b>
<b>Publications orderline</b>	Telephone <b>0800 585 088</b>

Visit [www.diabetes.org.uk](http://www.diabetes.org.uk) for further information

**\*Diabetes UK Careline** is here to help. Call 0845 120 2960 for support and information (although unable to provide individual medical advice). Calls cost no more than 4p per minute. Calls from mobiles usually cost more.

**Diabetes UK**  
**The charity for people with diabetes**  
Macleod House, 10 Parkway, London NW1 7AA  
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