

Type 2 diabetes in adults

Information for the public

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About this information

NICE guidelines provide advice on the care and support that should be offered to people who use health and care services.

This information explains the advice about type 2 diabetes in adults that is set out in NICE guideline NG28.

This is an update of advice on type 2 diabetes in adults that NICE produced in 2009, and replaces it.

Does this information apply to me?

Yes, if you are an adult (18 or over) with type 2 diabetes.

What is type 2 diabetes?

People with diabetes have too much glucose (sugar) in their blood. There are 2 main types of diabetes: type 1 and type 2. Type 2 diabetes is the most common: 9 out of 10 people who have diabetes have type 2 diabetes. It usually starts after the age of 40, but it can affect younger people as well. The body produces a hormone called insulin, which controls how much glucose is in the blood. In type 2 diabetes the body doesn't produce enough insulin, so blood glucose levels become too high.

People with type 2 diabetes have an increased risk of problems with their blood vessels and heart ([cardiovascular disease](#)). This means that they have an increased risk of having angina, a heart

attack or a stroke, especially if they have high blood pressure and high cholesterol. People with type 2 diabetes also have an increased risk of other long-term health problems. These include conditions affecting the eyes, feet, nerves and kidneys. If you have type 2 diabetes it is important to keep your blood glucose levels as close to normal as possible and to have a healthy lifestyle, to reduce this risk.

Your diabetes care team

Most appointments for people with type 2 diabetes will be with a doctor or nurse at your GP surgery or health centre. You may also be referred to a diabetes clinic (usually at a hospital).

What your diabetes care team will do

You will need to see your GP or nurse regularly, and they will help and support you to manage your diabetes.

You will also have a thorough check-up every year – your 'annual review'. This involves several checks that may happen at different times and in different places.

Your diabetes care team will work with you to agree a plan for your care that suits your needs and circumstances. They will ask about:

- your medical history and general health
- if you have any disabilities (for example if you have any sight problems)
- if you take any medicines regularly
- your lifestyle and home life
- any family history of diabetes or heart problems.

They should ask about your own needs about any cultural preferences, because this may affect the type of treatment you choose.

Your diabetes care team will work closely with you, and you can ask for help or advice at any time. What the team does will depend on how long you have had diabetes for and how well managed it is, but should include:

- giving you advice and support about type 2 diabetes, including details about support groups

- offering you a course that helps you understand more about type 2 diabetes and what you can do to manage it
- [diet and lifestyle advice](#)
- checking your [blood pressure](#) at least once a year
- checking your [blood glucose](#)
- [testing your HbA1c](#) levels (which reflect your average blood glucose level over the past 2 to 3 months) at least every 3 to 6 months, and agreeing targets with you
- discussing [medicines to control your blood glucose](#)
- explaining about [insulin](#) and showing you how to inject insulin if you need it
- explaining about the symptoms, risks and treatment of [hypos](#)
- looking at whether you have [cardiovascular disease](#) and your risk of getting it in future
- making sure you have regular [eye screening](#)
- making sure you have regular [foot checks](#) (as part of your annual review)
- checking for other [long-term complications](#) that can be caused by type 2 diabetes, such as problems with your kidneys or nerves.

If it is possible that you could get pregnant, you should be given information about contraception and family planning. NICE has produced guidance and information for the public about diabetes in pregnancy (see [other NICE guidance](#)).

Some treatments or care described in this information may not be suitable for you. If you think that your treatment does not match this advice, talk to your doctor or nurse.

Questions to ask about your care

- Please tell me more about living with type 2 diabetes
- How often will I need to see the doctor or nurse?
- Why would I need to go to the diabetes clinic at a hospital?

- What sorts of health problems are more common in people with type 2 diabetes? What can I do to help prevent these?
- Who should I contact if I have any questions or am worried about my diabetes?
- Can you give me written information? What websites are helpful?
- Can you point me towards local or national support groups?

Learning more about type 2 diabetes

By understanding your type 2 diabetes better, you will be more able to manage it successfully and reduce the risks of [long-term complications](#). Learning about your diabetes and how to look after yourself is an essential part of diabetes care.

At around the time you are diagnosed, your doctor or nurse should provide you with information about type 2 diabetes. At your annual review they should go over this information again with you, and talk with you about your needs.

You should be offered a course to help you improve your understanding of type 2 diabetes and how to manage it in your everyday life.

The course is usually done in a group because this lets people share their experiences. But if you don't feel comfortable with that you may be able to have training on your own.

Diet and lifestyle

There is a lot you can do to keep your diabetes under control and reduce your risk of other complications developing.

Lifestyle

If you have type 2 diabetes, having a healthy diet and lifestyle is one of the most important things you can do to manage your diabetes and minimise your risk of developing complications.

A healthy lifestyle involves being active, losing weight if you are overweight, getting enough exercise, having a healthy diet, not smoking and controlling your alcohol intake if you drink alcohol. Your doctor or nurse should give you more information about a healthy lifestyle and what you can

do to help keep type 2 diabetes under control (for example, having a healthy diet, taking more exercise and losing weight).

Diet

Having a healthy diet is an important part of living with type 2 diabetes. Eating healthily and losing weight if you are overweight will help you to manage your diabetes better.

An expert such as a dietitian should give you advice about your diet. This should be designed to suit your lifestyle, culture, beliefs and preferences.

If you are overweight, you will be encouraged to lose weight and agree on a target weight loss. Your starting weight-loss target should be to lose 5% to 10% of your weight. Any weight loss will help, although the nearer you get to a healthy body weight, the better it will be for your long-term health.

Advice about your diet should also cover the best times to eat, how much carbohydrate per meal you should eat and, if you drink alcohol, how much alcohol to drink.

General healthy eating is also important, and you should:

- eat carbohydrate from fruit, vegetables, whole grains and pulses
- eat low-fat dairy products and oily fish
- limit the amount of food that you eat that contains saturated fats and trans fatty acids.

There's no need to buy food sold specifically for people with diabetes because this tends to be expensive and is not necessarily any better for you. You can still enjoy some foods containing sugar as long as they form part of an overall healthy and balanced diet and lifestyle.

NICE has produced separate guidance and information for the public on a number of topics relating to diet and lifestyle – see [other NICE guidance](#) for more information.

Questions to ask about diet and lifestyle

- Please explain more about how what I eat and drink affects my diabetes
- What sorts of foods should I eat?

- Do I have to avoid sugary foods?
- Can I eat carbohydrates?
- What are the effects of alcohol on my diabetes?
- How will losing weight help?
- What sorts of exercise are best? Are there any types of exercise I shouldn't do?
- Where can I get advice and support about giving up smoking?
- Are there any support groups in my local area?
- What could happen if I don't change my lifestyle?
- What information and support is available to help me make changes to my lifestyle?

High blood pressure

Keeping your blood pressure as normal as possible is an important part of treatment for type 2 diabetes because this reduces your risk of [cardiovascular disease](#).

You should have a blood pressure check at least once a year, and more often if you have high blood pressure or any [long-term complications](#).

If you have high blood pressure you can make some lifestyle changes to help lower your blood pressure, such as eating healthy food, losing weight if you are overweight, quitting smoking if you smoke, doing more exercise, and controlling your alcohol intake if you drink alcohol. Your doctor or nurse should explain about changes to your lifestyle that can help.

If you have followed the advice about lifestyle changes but your blood pressure stays high, your doctor or nurse should talk with you about blood pressure medicines that may help, and they should check your blood pressure every 1 to 2 months.

Once your blood pressure has fallen to your target level and is stable, you should then have blood pressure checks every 4 to 6 months.

NICE has produced separate guidance and information for the public on hypertension, which is the medical name for high blood pressure – see [other NICE guidance](#) for more information.

Questions to ask about treatment for high blood pressure

- Why is it important to keep my blood pressure as normal as possible?
- What blood pressure levels should I aim for?
- How often will my blood pressure be tested?
- What can I do to lower my blood pressure? Will taking exercise help?
- What other lifestyle changes should I make to help reduce my blood pressure?
- Why are you offering this medicine for blood pressure? How will it help?
- What are the side effects of these medicines? What should I do if I get any side effects?

Cardiovascular disease

People with type 2 diabetes are more likely to have problems with their heart or blood vessels ([cardiovascular disease](#)). Your doctor or nurse should give you [diet and lifestyle advice](#) about how to reduce your risk of getting cardiovascular disease.

At your annual review your doctor or nurse should look out for things that may increase your risk of cardiovascular disease. If you smoke you should be given advice about quitting.

NICE has produced separate guidance and information for the public on a number of topics relating to cardiovascular disease – see [other NICE guidance](#) for more information.

Questions to ask about cardiovascular disease

- Why am I at risk of cardiovascular disease?

- What can I do to reduce my risk?
- What lifestyle changes should I make?
- How will I know if I've got cardiovascular disease?
- How important is my family history?

Blood glucose and target levels

Having high blood glucose makes you more likely to get other health problems, so keeping your blood glucose levels as close to normal as possible is very important. Your doctor or nurse will help you with this.

Having your blood glucose checked: HbA1c

The HbA1c blood test reflects your average blood glucose level over the past 2 to 3 months. Keeping your HbA1c levels as close to normal as possible is an important part of managing diabetes. Your doctor or nurse should discuss this with you, and together you should agree a personal HbA1c target to aim for. If you find that reaching or staying at the target level is affecting your day-to-day life and making things worse, you should discuss this with the doctor or nurse.

Your HbA1c should be tested every 3 to 6 months. It might be done more often if your blood glucose levels are changing quickly. When your HbA1c level is stable, you should then have an HbA1c blood test every 6 months.

The HbA1c result is given in a unit of measurement that is written as 'mmol/mol'. HbA1c used to be given as a percentage (%), so you may still see this.

The HbA1c target for most people with type 2 diabetes is 48 mmol/mol (or 6.5%), but your doctor might suggest a different target for you. You should be offered support, diet and lifestyle advice, and medicine if you need it, to help you reach and stay at your HbA1c target.

Questions to ask about HbA1c

- What does HbA1c show about my blood glucose?

- How, where and how often will it be tested?
- What HbA1c target should I aim for?
- What if I'm having problems meeting my target?

Testing your own blood glucose

Usually, blood glucose testing is done by your doctor or nurse. But some people, for example people using insulin, might be able to do this at home with a home-testing kit. This is called self-monitoring. If your doctor or nurse thinks self-monitoring would be suitable for you, you'll be given training on what to do, and your doctor or nurse should assess your self-monitoring at least once a year.

Self-monitoring isn't suitable for everyone with type 2 diabetes, and you should only self-monitor if your doctor or nurse advises it.

Medicines to control blood glucose

Most people with type 2 diabetes need medicines to help control their blood glucose. If you need to take medicine – or several medicines – to control your blood glucose, your doctor or nurse should discuss the different options so you can decide together which is best for you. Most people need more than 1 medicine for their diabetes and in time may also need insulin (which needs to be injected).

If your blood glucose level is very high

If your blood glucose level is high, the medical name for this is [hyperglycaemia](#). The symptoms of hyperglycaemia include feeling very thirsty, needing to pass urine a lot and feeling more tired than usual. If your blood glucose level is too high and you notice any or all of these symptoms, you'll be offered insulin or a medicine called a [sulfonylurea](#) to lower your blood glucose level.

When your blood glucose is under control your doctor will review your treatment.

Medicine to control blood glucose – tablets

Most people with type 2 diabetes who need medicine start off taking a medicine called [metformin](#). This isn't suitable for everyone so your doctor will discuss other options with you if needed.

If this first medicine doesn't help or your diabetes is getting worse over time, you may need to add in another type of medicine as well as the one you are already taking. If this still doesn't help or your diabetes is getting worse, you may be offered a third medicine to take, or your doctor may suggest you start on insulin.

Your doctor or nurse will review your HbA1c target with you if you need more than 1 medicine to control your blood glucose.

There are several different types of medicines that can be used to treat type 2 diabetes. Some medicines are used on their own and some can be used together with others. The medicine (or medicines) you are offered will depend on your diabetes, what diabetes medicines you have had before, any other health issues you have and your preferences. Your doctor should explain the different types of medicines and any possible side effects so you can decide together what will suit you best.

Remember – it's very important to take the medicine (or medicines) as your doctor or nurse prescribes (the correct dose and at the correct time), to help keep your diabetes under control.

Questions to ask about medicines

- Why have you decided to offer this medicine?
- What are the pros and cons of having this medicine?
- How should I take the medicine?
- How long will it take to have an effect?
- Is it likely to cause hypoglycaemia?
- How will the medicine help me? What effect will it have on my symptoms and everyday life? What sort of improvements might I expect?
- Are there any risks or side effects associated with this medicine?
- What if the medicine doesn't help?

- How long will I need the medicine for?
- What other medicine options are there?

Medicine to control blood glucose – insulin

As type 2 diabetes progresses over time, the blood sugar levels naturally tend to rise. This means many people with type 2 diabetes will need insulin at some point in order to feel better, simply because the tablets are no longer strong enough.

Insulin can't be taken as a tablet and has to be injected.

There are several different types of insulin treatment, which vary in both the insulins used and the number of injections. If you have type 2 diabetes and need insulin, you should usually be offered treatment with a 'long-acting' insulin that is injected once or twice a day. The insulin used will depend on which suits you best – your diabetes care team will talk with you about this.

If you have been taking metformin without any problems you should continue to take this, as well as insulin.

Injecting insulin

Insulin is commonly injected using a device called an 'insulin pen'. Your diabetes care team should help you choose the type of device and needles that suit you, and offer you different needles to try if your skin gets sore or irritated.

Your skin can get lumpy if you keep injecting in the same place, so you should use different areas of the body (stomach, thighs, bottom, upper arms) and different spots in these areas. Your diabetes care team will check your skin at your annual review, and more often if needed.

You should be given a special secure container (called a 'sharps bin') for used needles, lancets (from finger pricking) and any other sharps. You should also be told how to get rid of these containers when they are full and how to get new ones.

Information and support

If you start using insulin, you should be given:

- education about how to inject the insulin, how insulin works and how it affects the body
- advice about eating and drinking
- advice about driving
- information about hypoglycaemia, how best to avoid it and what to do if it happens
- advice about how to check your blood glucose levels, and what the results mean – for example, you should have information on what to do if there are unexpected changes in your blood glucose levels
- support (on the phone and face-to-face) from a member of the diabetes care team.

Questions to ask about insulin

- Why do I need to inject insulin?
- How often do I need to inject insulin? What are the best times to do this?
- Where should I inject?
- Please explain about the differences between the different insulins.
- What different types of insulin device and needles are available?

Long-term complications

Having type 2 diabetes means that you are more likely to get a number of other health problems. You can help to prevent or delay these by keeping your blood glucose levels, blood pressure and cholesterol levels as normal as possible.

Eye damage

Type 2 diabetes means you are more likely to have an eye problem called [retinopathy](#).

Your diabetes care team should talk with you about retinopathy, and explain the problems you might have if your eyes are affected. It is important to have regular eye screening checks for retinopathy. These are different from normal sight tests and specifically look for early signs of damage caused by diabetes.

Your eyes should be checked at or around the time you are diagnosed with type 2 diabetes and, if everything seems fine, at least once a year from then on. If there are signs that damage may be developing, you will be offered another check or may be referred to an eye specialist at a hospital.

Nerve problems

Nerve damage and pain

Type 2 diabetes means you are more likely to get nerve damage, or [neuropathy](#). Neuropathy can cause pain – this is called neuropathic pain.

NICE has produced separate guidance and information for the public on medicines for neuropathic pain – see [other NICE guidance](#) for more information.

Gastroparesis

Gastroparesis is a type of nerve problem that affects the stomach. It can make you feel full and bloated even after eating a small amount of food, and can cause vomiting.

Your doctor may also offer you medicines to help with vomiting – if so, they should explain about the possible risks and benefits of taking these medicines.

If these treatments don't help or aren't suitable for you, you may be referred to a specialist.

At the time of publication, some medicines for treating gastroparesis may be recommended for ['off-label'](#) use in this guideline. Your doctor should tell you this and explain what it means for you.

Questions to ask about gastroparesis

- What causes gastroparesis?
- What can I do to reduce or stop vomiting?
- What medicines can I try? How will they help?
- What are the side effects of these medicines? What should I do if I get any side effects?

Erection problems

Erection problems (also called erectile dysfunction) are quite common in men with type 2 diabetes. If you wish, your doctor or nurse should talk to you about this at your annual review. If you would like treatment you should be given medicine that can help, if this is suitable for you. If this doesn't work, your doctor can refer you to a specialist clinic.

Other nerve-related problems

Talk to your doctor or nurse if you have diarrhoea (particularly at night) or problems emptying your bladder fully. Also tell them if you are worried about other symptoms such as sweating a lot, or if you start to have [hypos](#) without the usual warning signs. These symptoms may be caused by nerve problems, and you might need further tests and treatment.

Foot problems

Type 2 diabetes increases your chances of having foot problems. NICE has produced separate guidance and information for the public on diabetic foot problems. See [other NICE guidance](#) for more information.

Kidney disease

Having type 2 diabetes means you are more likely to get kidney disease – this is called [nephropathy](#). NICE has produced separate guidance and information for the public on kidney disease. See [other NICE guidance](#) for more information.

Terms explained

Cardiovascular disease

A general term for disease of the heart and blood vessels. It is usually caused by a narrowing of the blood vessels that mean blood can't flow to the heart, brain, feet or other parts of the body properly. Heart disease and stroke are common forms of severe cardiovascular disease.

HbA1c test

A blood test that reflects the average blood glucose level over the previous 2 to 3 months. The result is usually given in mmol/mol (it used to be given as a percentage). In people without diabetes, it is usually below 42 mmol/mol (or 6%).

Hyperglycaemia

A higher than normal level of glucose in the blood. Symptoms include feeling thirsty and hungry, and increased urination. Over time, hyperglycaemia also increases the risk of eye, nerve, kidney and cardiovascular disease.

Hypo (hypoglycaemia)

A lower than normal level of glucose in the blood – usually less than 3.5 mmol/litre. The symptoms of a hypo include feeling dizzy (or even losing consciousness), feeling tired, feeling hungry, shaking and sweating. It is important to recognise the warning signs of a hypo.

Metformin

A medicine (tablet) that lowers blood glucose levels in people with type 2 diabetes through improving the action of insulin.

Nephropathy

Another name for kidney disease. Type 2 diabetes can cause the small blood vessels in the kidneys to be damaged so that they stop working properly. The earliest sign is having a protein called albumin in the urine.

Neuropathy

Damage or disease that affects the nerves. Type 2 diabetes can cause neuropathy as a result of damage to the small blood vessels that supply nerves. Because nerves affect all parts of the body, neuropathy can have a number of effects.

'Off-label' use

In the UK, medicines are licensed to show that they work well enough and are safe enough to be used for specific conditions and groups of people. Some medicines can also be helpful for conditions or people they do not have a licence for. This is called 'off-label' use. Off-label use might also mean the medicine is taken at a different dose or in a different way to the licence, such as using a cream or taking a tablet. There is more information about licensing medicines on [NHS Choices](#).

Retinopathy

An eye condition where the retina (the seeing part of the eye) is damaged. Type 2 diabetes can cause the small blood vessels around the retina to become blocked or leaky, or grow in the wrong way, so that light can't pass through properly.

Sulfonylureas

Diabetes medicines that help the body to make insulin.

Sources of advice and support

- Diabetes UK, 0345 123 2399
www.diabetes.org.uk
- Diabetes Research and Wellness Foundation
www.drwf.org.uk
- Black and Ethnic Minorities Diabetes Association (BEMDA)
www.bemda.org
- Weight Concern
www.weightconcern.org.uk

You can also go to [NHS Choices](#) for more information.

NICE is not responsible for the quality or accuracy of any information or advice provided by these organisations.

Other NICE guidance

- [Diabetic foot problems](#) (2015) NICE guideline NG19
- [Diabetes \(type 1 and type 2\) in children and young people](#) (2015) NICE guideline NG18
- [Type 1 diabetes in adults](#) (2015) NICE guideline NG17
- [Preventing excess weight gain](#) (2015) NICE guideline NG7
- [Diabetes in pregnancy](#) (2015) NICE guideline NG3
- [Obesity](#) (2014) NICE guideline CG189
- [Chronic kidney disease in adults](#) (2014) NICE guideline CG182
- [Cardiovascular disease](#) (2014) NICE guideline CG181
- [Weight management: lifestyle services for overweight or obese adults](#) (2014) NICE guideline PH53
- [Neuropathic pain in adults](#) (2013) NICE guideline CG173
- [Myocardial infarction](#) (2013) NICE guideline CG172
- [Smoking: harm reduction](#) (2013) NICE guideline PH45
- [Physical activity](#) (2013) NICE guideline PH44
- [Hypertension in adults](#) (2011) NICE guideline CG127
- [Stop smoking services](#) (2008) NICE guideline PH10
- [Smoking: brief interventions and referrals](#) (2006) NICE guideline PH1

You may also like to read NICE's information for the public on [patient experience in adult NHS services](#). This sets out what adults should be able to expect when they use the NHS. We also have more information on the NICE website about using health and social care services.

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Accreditation

