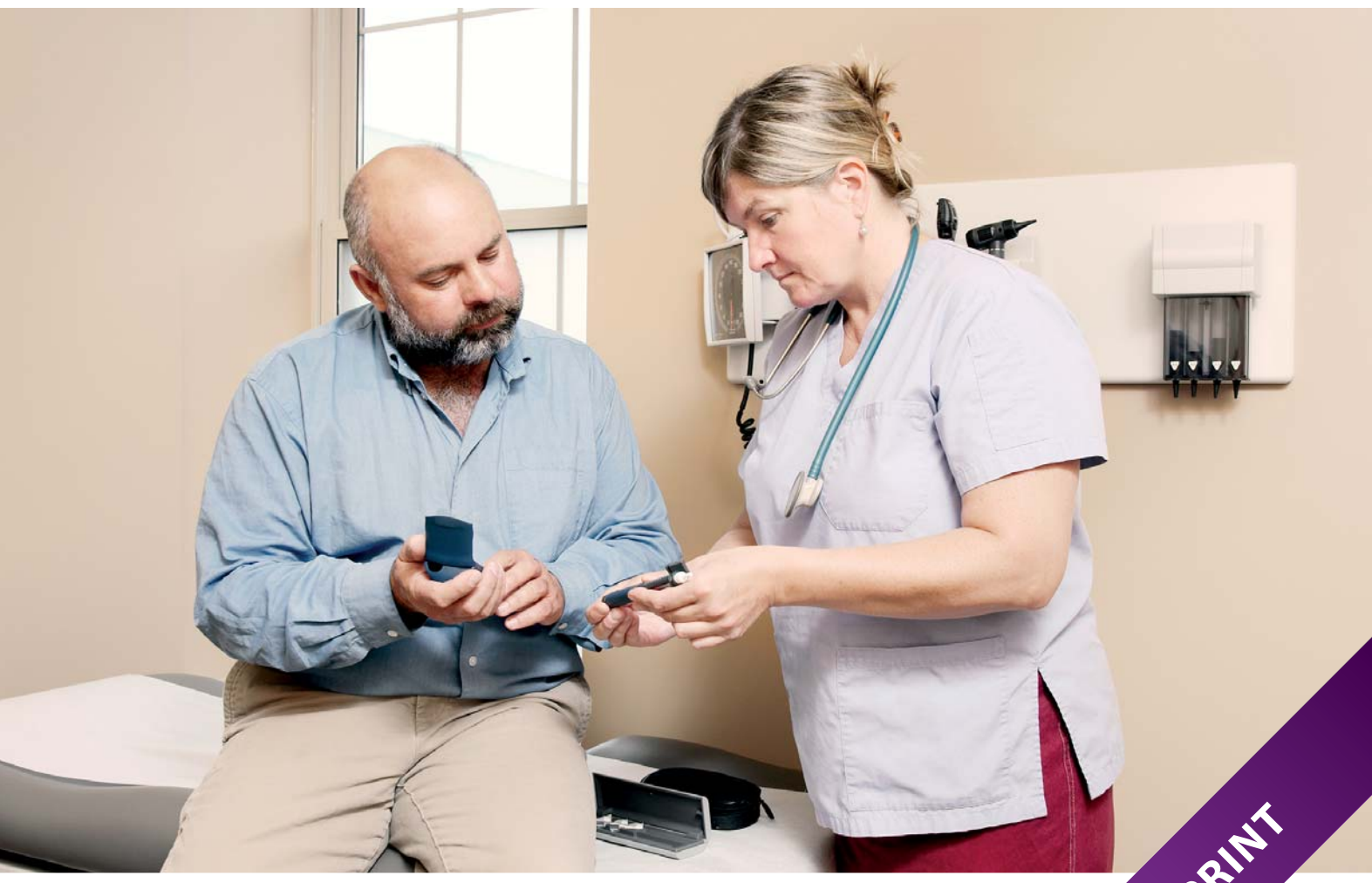
Healthcare Improvement Scotland

# Managing diabetes

Plain Language Commission — Clear English Standard — Winning Document

## A booklet for people with diabetes and their carers



SIGN
Scottish guidelines

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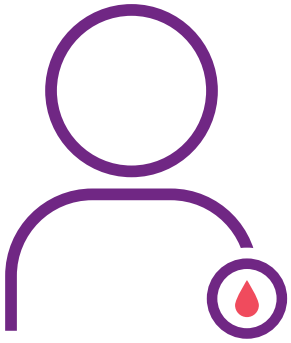
# Contents

# Who is this booklet for?

## This booklet is for you if:



**You have been diagnosed with diabetes**

**Or**

**You are a friend, relative or carer of someone who has diabetes**

## This booklet explains:

- what diabetes is
- how different types of diabetes are treated
- what you can do to help control your diabetes
- complications associated with diabetes, and
- where you can get more information and support.

# What is this booklet about?

**This booklet explains the recommendations produced by the Scottish Intercollegiate Guideline Network (SIGN) about two guidelines:**

- **Management of diabetes**
- **Pharmacological management of glycaemic control in people with type 2 diabetes.**

These guidelines are based on what we know from current medical research. They also give advice based on the opinion of healthcare professionals who are trained on how best to manage your care.

On pages 70–75, you will find details of support organisations and other places where you can get more information about diabetes and how you can help to manage your condition.

You can find out more about SIGN and how we produce guidelines on page 76.

## There are four different types of recommendations in this booklet.

**Strong recommendation**
based on good-quality research evidence

**Recommendation**
based on the research evidence

**Recommendation**
based on clinical experience

**Recommendation against** based on good-quality research evidence

If you would like to see the clinical guidelines, please visit **www.sign.ac.uk**

# What is diabetes?

Diabetes is a serious medical condition in which the body does not process sugary and starchy foods properly. This causes **glucose** to build up in the blood, causing serious damage to the body. Your body uses a hormone called **insulin** to move the glucose from your blood into your cells where it can be used as energy. Insulin is made by a gland called your **pancreas** and problems can begin when it cannot produce enough insulin. There are three main types of diabetes, which are explained in detail on pages 5–6.

People with diabetes may not have symptoms. So they may not know they have the condition until they have a blood-glucose test.

You can still lead an active, healthy life, and you can learn to manage your diabetes. This will reduce the chance of developing complications.

**Glucose** is a type of sugar your body makes from your food and drink. It is used by your body for energy.

**Insulin** is a hormone that regulates glucose levels in your blood.

The **pancreas** is the gland behind the stomach which produces insulin.

# What are the main types of diabetes?

There are three main types of diabetes. Each is managed in a different way:

**Type 1 diabetes**

Type 1 diabetes develops when the cells in the body that produce insulin are destroyed by the body's immune system. Without insulin you get high glucose levels in your blood. The main treatment for type 1 diabetes is regular insulin injections. You can read more about how you should manage type 1 diabetes on page 15.

**Type 2 diabetes**

Type 2 diabetes develops when your body does not make enough insulin to deal with glucose from your diet or your body is not properly using the insulin it makes. Type 2 diabetes usually develops in middle-aged or older adults, but it is becoming more common in young people. It is also more common in some ethnic-minority groups.

You usually manage type 2 diabetes with various treatments including changing your lifestyle. You can read more about the treatments for type 2 diabetes on page 23.

**Gestational diabetes mellitus (GDM)**

Some women develop a type of diabetes during pregnancy. This is known as gestational diabetes. This happens because their bodies don't make enough insulin to deal with the extra demands of pregnancy.

It usually disappears after the birth, but women with gestational diabetes will have to be monitored to make sure they don't develop type 2 diabetes later in life. You can read more about diabetes during pregnancy on pages 35–43.

**Information**

In addition to type 1, type 2 and gestational diabetes there are other types. Details about these can be found on the Diabetes Scotland website:

**https://www.diabetes.org.uk/diabetes-the-basics/other-types-of-diabetes**

"I wish I had known more about the symptoms of diabetes before I was diagnosed."

# What is the HbA1c blood test?

HbA1c (glycated haemoglobin) is a single blood test that measures the average glucose that your blood has been carrying for the past two to three months.

HbA1c test results are given either as a percentage or in millimoles per mole (mmol/mol).

The table below shows how the results compare.
Your healthcare professional can discuss these results with you and explain what they mean.

| HbA1c (%) | HbA1c (mmol/mol) |
|---|---|
| 6 | 42 |
| 6.5 | 48 |
| 7 | 53 |
| 7.5 | 59 |
| 8 | 64 |
| 9 | 75 |

HbA1c reflects the average glucose level measured by a blood-glucose meter, which is measured in millimoles per litre (mmol/l). You can read more about monitoring daily change in blood glucose on page 17.

# Do I need to tell the Driver and Vehicle Licensing Agency that I have diabetes?

**The Driver and Vehicle Licensing Agency (DVLA**) is responsible for maintaining the database of drivers and vehicles in the UK.

You can be fined up to £1,000 if you don't tell the DVLA about a medical condition that affects your driving. You may be prosecuted if you're involved in an accident as a result.

If your diabetes is treated by insulin and you have any of the following licences or are applying for one, you must tell the DVLA about your condition:

- car
- motorbike
- bus
- coach
- lorry

If your diabetes is treated by tablets or non-insulin injections, and you have or are applying for a car or motorbike licence, check with your healthcare professional. If in any doubt, check with the DVLA.

The rules for bus, coach and lorry licences are different. If your diabetes is treated by tablets or non-insulin injections, you must tell the DVLA.

If your diabetes is treated by diet, then you don't need to tell the DVLA about your condition for any driving licence.

**Information**

Full contact details for the DVLA are on page 74.

**A healthcare professional** is someone qualified to provide medical care, such as as doctor, nurse or health visitor.

# What can I do to help myself?

## Will I receive education about diabetes?

So you can make sure you know how to manage your diabetes properly, you need to understand diabetes and know how to treat it. This includes knowing about how your lifestyle – for example your diet and exercise – affects your condition. It may also include how you use insulin and other medicines.

**Strong recommendation based on good-quality research evidence**

Structured education programmes should be provided by trained healthcare professionals to help you learn about diabetes and manage it better.

These programmes can help prevent you having further diabetes-related problems. Ask the health professional in charge of your care about these programmes.

"Coping with diabetes is very difficult because there is so much to learn."

## How might I feel?

At times your diabetes may get you down and your mood may be low. This is common and you should talk to your healthcare professional about your feelings.

Your emotions and feelings can affect how well you manage your diabetes. So it's important that healthcare professionals assess you by asking questions about how you feel.

You can use this space to write down how you are feeling.

**Strong recommendation based on good-quality research evidence**

Children and adults with type 1 and 2 diabetes who are facing problems with their daily lifestyle or have emotional issues should be referred to suitable healthcare professionals for support. They should be offered approaches such as **motivational interviewing** and **cognitive behavioural therapy**, which can help control their blood glucose.

**Motivational interviewing** is an approach to help you cope with and stick to your treatment.

**Cognitive behavioural therapy** focuses on your thoughts and feelings and how they affect your behaviour.

# How can I change my lifestyle?

To avoid complications caused by a build-up of glucose in the body, it's very important that you take control of your diabetes and live a healthy life. So you need to think about your lifestyle.

"It was a while before I realised how serious having diabetes is."

If you can live more healthily, you will improve your quality of life and help yourself feel better. The table on page 13–14 shows the risk factors and advice.

Your healthcare professional will discuss your lifestyle with you including:

- how to stop smoking
- the importance of being physically active
- your diet, and
- how much alcohol you drink.

Healthcare professionals will work with you to help you make changes that will reduce the risk of complications later in life and help you set goals to make these changes.

**Circulatory disease** is a condition that affects your blood vessels.

Being classified as **obese** is when a person is 20% above the recommended weight for their height.

| Risk factor | Advice |
|---|---|
| Low level of physical activity | • Take regular exercise to help control your blood glucose and reduce the risk of heart and **circulatory disease**.  <br>• Adults (aged 18–64 years) should aim to take 30 minutes of exercise at least five days a week. Adults aged 65 and older should also aim for this but if they can't because of chronic conditions, they should be as physically active as their abilities allow. |
| Diet | • Your healthcare team will give you diet advice to help you control your blood glucose and, if you are overweight, advice on losing weight.<br>• Your healthcare team will discuss your diet with you individually and may refer you to a dietician.<br>• If you have type 2 diabetes and are **obese**, your healthcare team should offer you advice to change your behaviour, and medication or surgery to help you lose weight.  |

| Risk factor | Advice |
|---|---|
| Smoking | • If you smoke, you should give up.<br>• Medication and specialist support will be available if you want to stop smoking.  |
| Alcohol | • You can enjoy alcohol in moderation as part of a healthy lifestyle, but should keep within the recommended amount.  |

**Information**

The guideline from the Chief Medical Officer on drinking alcohol for both men and women as follows:

- To keep health risks from alcohol to a low level, it is safest not to drink more than 14 units a week on a regular basis.
- If you regularly drink as much as 14 units per week, it's best to spread your drinking evenly over three or more days. If you have one or two heavy drinking episodes a week, you increase your risk of death from long-term illness, accidents and injuries.
- The risk of developing a range of health problems increases the more you drink regularly.
- If you wish to cut down the amount you drink, a good way to do this is to have several drink-free days each week.

# What will happen if I have type 1 diabetes?

This section describes how adults and children with type 1 diabetes should manage their diabetes.

Some of the signs and symptoms of having diabetes are:

- being tired
- being thirsty
- frequently passing large amounts of urine
- needing to wake and pass urine during the night
- frequently getting infections such as genital itching and thrush, and
- blurred vision.

## How do I control my diabetes?

If you have type 1 diabetes, you will have to take insulin every day to control your blood-glucose levels. This will relieve the symptoms.

Managing your blood-glucose levels helps to prevent microvascular and macrovascular disease. You can read more about these complications on pages 48.

There are different types of insulin and different ways of taking it. Healthcare professionals will discuss them with you. It's important you work with them to find a type of insulin that best helps you control your blood glucose and manage your diabetes.

The types of insulin you may use include:

- rapid-acting insulin, which is used to cope with meals
- longer-acting insulin, which can last up to 24 hours, or
- a combination of these.

## Should I check my own blood-glucose levels?

**Strong recommendation based on good-quality research evidence**

Your healthcare professionals will teach you how to check your own blood-glucose levels to help you manage it. This is known as self-monitoring. They will also support you to act on your blood-glucose readings.

Once you are experienced in self-monitoring, and with the help of healthcare professionals, you can use the information to:

- adjust your insulin or other medication
- check that your glucose levels are normal, and
- help you to manage your diabetes better.

The disposable supplies you will need to carry out self-monitoring are available free on prescription if you have type 1 diabetes. As well as your own self-monitoring, your healthcare professionals will check your control over your blood glucose over two or three months using the HbA1c blood test.

On page 7 you can read about this test.

## Will I be considered for insulin pump therapy?

**Recommendation based on the research evidence**

You may be considered for **insulin pump** therapy and referred to a local diabetes specialist pump clinic if you are:

- struggling to keep your blood glucose at the correct level using multiple injection therapy and you have been to structured education courses to help you use multiple injections, or
- getting severe hypoglycaemia (low blood-glucose levels).

You can receive the insulin at a set rate throughout the day, which you can increase when you need it, for example at mealtimes. You will need to test your blood glucose a lot at home every day.

An **insulin pump** is a small device you wear outside your body. It continuously gives you insulin through a very fine tube or needle inserted under your skin.

## How should children and young people manage the illness?

If you are a child or young person with type 1 diabetes, it's important to understand what the illness is and how to manage it.

**Recommendation based on the research evidence**

To help you manage your diabetes, healthcare professionals may work with you at home instead of you having to go to hospital.

Healthcare professionals will work with you to find a type of insulin that suits your needs and gives you the best possible control over your blood glucose.

## What happens when moving from child to adult services?

**Recommendation based on clinical experience**

Young people with diabetes often move from child services to adult services at a time when controlling their diabetes is most difficult.

To make this change as easy as possible, your healthcare professionals will work together to make sure you have a smooth change-over.

## Are there any long-term problems?

Over time, poorly controlling your blood glucose will increase the risk of developing **microvascular disease**.

**Microvascular disease** is a disease of the finer blood vessels in the body, including capillaries, which are very small blood vessels.

"I want to live a long and healthy life, and I'm determined to do that. There's no reason you can't do that if you look after yourself and control your diabetes well by making sure you eat the right things, taking your medication, and having all your checks."

Read Rob's full story: www.diabetes.org.uk/your-stories/Rob-determined-long-healthy-life

**Strong recommendation based on good-quality research evidence**

Microvascular disease can affect your eyes, kidneys and feet, so healthcare professionals will help you to keep your blood-glucose level as normal as possible.

**Strong recommendation based on good-quality research evidence**

You should have the following checks every year, from the age of 12:

- An eye exam to detect **retinopathy.**
- Measuring the protein levels in your urine.
- Regularly measuring your blood pressure.

On pages 46–49 you can read more about how to manage complications.

**Retinopathy** is a disease that affects blood vessels supplying the eye.

**Recommendation based on the research evidence**

Young people with type 1 diabetes have a higher risk of **thyroid disease** and **coeliac disease**. It's important that you are screened for these diseases when your diabetes is first diagnosed and at different stages throughout your life.

**Thyroid disease** is where the thyroid produces too much or too little thyroid hormone.

**Coeliac disease** is where the intestine is unable to digest or absorb gluten.

# What will happen if I have type 2 diabetes?

If you have type 2 diabetes, you may notice some of the symptoms we have listed on page 15, but they may not be easy to spot. Some people with type 2 diabetes have no symptoms but if you have any concerns speak to your GP.

## How do I control my diabetes?

Many people with type 2 diabetes need medicines as well as good diet and regular physical activity to help control their blood glucose.

Managing your blood-glucose levels helps to prevent **microvascular** and **macrovascular disease**. On page 48 you can read more about these complications. If you do need medicines, your healthcare professional should discuss the treatment options with you so you can decide together which are the most likely to suit you. The table on pages 26–29 lists the medicines you may be offered.

**Macrovascular disease** is a disease of the large blood vessels in the body. Blood vessels are the structures that transport blood throughout your body.

**Microvascular disease** is a disease of the finer blood vessels in the body, including capillaries, which are very small blood vessels.

Your healthcare team measures the control you have over your blood-glucose levels using a blood test called HbA1c. You can read about this test on page 7.

**Strong recommendation based on good-quality research evidence**

- You should aim to have an HbA1c target of 7% (53 mmol/mol) to minimise your risk of microvascular and macrovascular disease.
- A target of 6.5% (48 mmol/mol) may be appropriate when your diabetes is first diagnosed.

Some medicines are more likely to make you put on weight and cause you to have **hypoglycaemia**. Your healthcare professional should help you set a target to balance the benefits with the risks of hypoglycaemia and putting on weight.

**Hypoglycaemia**, or 'hypo', is an abnormally low level of glucose in your blood (less than 4 mmol/l).

You can read more about what can happen if you have hypoglycaemia on page 46.

"Attending a support group where I can talk to others has helped me manage my diabetes."

# What medicines can I take if I have type 2 diabetes?

Several types of medicine are used to control your blood-glucose. They can be used alone, or in various combinations.

The table on pages 26–29 lists the different types of medicines and the things you should know about each one. Your healthcare team will discuss which one is best for you.

You can use this space to write down what medicines you are currently taking.

| Medicines to control your blood glucose for type 2 diabetes | |
|---|---|
| **Medicine** | **How suitable is this?** |
| Metformin | A glucose-lowering medicine used first to treat most people with type 2 diabetes.  |
| Sulphonylureas (gliclazide, glimepride, glibenclamide, glipizide) | This medicine is usually given if you cannot take metformin or it can be added to metformin and other glucose-lowering medicines.  <br>It can increase your risk of hypoglycaemia and weight gain.  |
| Thiazolidinediones (pioglitazone) | This medicine is normally used alongside other medicines for lowering blood-glucose levels – usually with with metformin, sulphonylureas, DPP-4 inhibitors or insulin.  <br>You should avoid pioglitazone if you have heart failure.  <br>Using pioglitazone increases your risk of peripheral oedema, heart failure, weight gain, bladder cancer and fractures.  |
| Dipeptidy peptidase-4 (DPP-4) inhibitors, (alogliptin, linagliptin, saxagliptin, sitagliptin and vildagliptin) | This type of glucose-lowering medicine is normally combined with other medicines, usually metformin or sulphonylureas.  |

| Medicines to control your blood glucose for type 2 diabetes | |
|---|---|
| **Medicine** | **How suitable is this?** |
| Sodium glucose co-transporter 2 (SGLT2i) inhibitors (canagliflozin, dapagliflozin and empagliflozin) | This type of glucose-lowering tablet is normally used as an add-on therapy to metformin. But it can also be added to sulphonylureas or other glucose-lowering medicines to control blood glucose.<br><br>If you have cardiovascular disease and type 2 diabetes, empagliflozin or canagliflozin should be considered for use.<br><br>There is a small risk of genital thrush-like infections with these tablets. If you get symptoms of genital thrush, such as itching, burning, or a rash, then please stop the medicine and see your own doctor. These infections can be easily treated. Once the infection has cleared, the SGLT2 inhibitor can often be restarted. |

| Medicines to control your blood glucose for type 2 diabetes | |
|---|---|
| **Medicine** | **How suitable is this?** |
| Glucagon-like peptide-1 (GLP-1) receptor agonists, dulaglutide, exenatide, liraglutide and lixisenatide) | This medicine is taken by injection, once or twice each day or once each week, depending on the specific drug.<br><br>It can be considered to help you control your blood glucose if you have type 2 diabetes, are overweight and are already taking medicines such as metformin, sulphonylureas or insulin.  <br><br>It can be considered as an alternative to insulin in people who have not responded well to treatment with combinations of oral glucose-lowering medicines.  <br><br>If you have cardiovascular disease and type 2 diabetes, your healthcare professional should consider offering liraglutide.  |

| Medicines to control your blood glucose for type 2 diabetes | |
|---|---|
| **Medicine** | **How suitable is this?** |
| Insulin | You may need injections of insulin to help manage your diabetes.<br><br>Different types of insulin are available. Your healthcare professional will discuss the type that will benefit you most and when and how to inject it.<br><br>When starting insulin, your healthcare professional will look at the other glucose-lowering medications you are taking to decide if they should be continued or the dose changed. ✓<br><br>Insulin increases your risk of hypoglycaemia and weight gain. ✓ |

Many people think that using insulin for type 2 diabetes means their diabetes has developed into type 1 diabetes. This is not true. Insulin is used to treat both type 1 and type 2 diabetes.

# What if I have diabetes and I'm planning a pregnancy?

**Recommendation based on clinical experience**

To make sure you have a healthy pregnancy, it's important to plan it. Your healthcare professional can offer you good advice and pre-pregnancy counselling.

**Strong recommendation based on good-quality research evidence**

Pre-pregnancy care is provided by a team of health professionals. They will help you have a healthy pregnancy.

## What type of diet should I follow?

When you are trying for a baby and when you become pregnant, it's important to eat a healthy and varied diet, and to balance your insulin to match what you eat.

"To be honest I didn't fully realise the risks involved with having a baby as a diabetic, although I did know that diabetics have a tendency to have larger babies." Read Sarah's story: www.diabetes.org.uk/your-stories/type-1/pregnancy-was-hard-but-worth-every-moment

**Recommendation based on clinical experience**

When you visit the antenatal clinic, they will encourage you to eat a balanced diet.

**Strong recommendation based on good-quality research evidence**

You will be prescribed a supplement of 5mg of **folic acid** each day when you are planning to become pregnant. You should continue to take folic acid until you are 12 weeks pregnant.

**Folic acid** is a vitamin that is recommended for all pregnant women for the first 12 weeks of pregnancy. It reduces the risk of problems in the development of your baby's spinal cord and brain.

## How should my blood-glucose levels be controlled?

**Strong recommendation based on good-quality research evidence**

Having diabetes means you and your baby are at increased risk of serious health problems. Healthcare professionals should discuss these risks with you and explain how they can work with you to reduce them.

**Strong recommendation based on good-quality research evidence**

You should aim to keep your blood glucose as near to the normal range as possible (4 to 7 mmol/l). Be very careful not to let your blood-glucose levels drop below this level.

Your healthcare team will monitor your blood-glucose levels very closely during pregnancy using the HbA1c test. You can read about this test on page 7.

**Recommendation based on clinical experience**

You should aim to have an HbA1c of less than 7% (53 mmol/mol) before becoming pregnant.

## What medicines can I use to control my blood glucose in type 2 diabetes if I'm planning a pregnancy?


If you're planning a pregnancy, it's important to discuss it with your doctor before you start any glucose-lowering medications. This is because not all the medications are safe for use in pregnancy.

The table below highlights the medications that can and cannot be used.

| Medicine | Can it be used in pregnancy? |
|---|---|
| Metformin | Yes |
| Sulphonylureas | Yes (but only glibenclamide) |
| Pioglitazone | No |
| DPP-4 inhibitors | No |
| SGLT2 inhibitors | No |
| GLP1 receptor agonists | No |
| Insulin | Yes (but your healthcare professional may want to change the frequency and type of insulin you take) |

## Other medicines

**Recommendation based on clinical experience**

If you are taking some medicines to control your **cholesterol**, your healthcare team will discuss with you the need to stop these when you become pregnant. This is because they may increase some health risks for your baby.

**Cholesterol** is a fatty substance known as a lipid. It's vital to help the body work normally. It's mainly made by the liver, but can also be found in some foods. Having a very high level of lipids in your blood can worsen your health.

# What will happen if I become pregnant?

## How can I manage my blood-glucose levels during pregnancy?

Good blood-glucose levels during your pregnancy will reduce the risks to you and your baby.

**Strong recommendation based on good-quality research evidence**

Whether you have gestational diabetes or type 1 or type 2 diabetes, you should test your blood-glucose level before and one hour after meals. You should work with your healthcare professional to agree an ideal blood-glucose level that you feel is manageable.

**Recommendation based on clinical experience**

Women with type 1 or type 2 diabetes should aim to achieve blood-glucose levels of:

- between 4 mmol/l and 6 mmol/l before a meal
- below 8 mmol/l one hour after a meal
- below 7 mmol/l two hours after a meal, and
- above 6 mmol/l before bed.

Some women develop a type of diabetes during pregnancy called **gestational diabetes**. Most women return to normal after the baby is born. But some may have type 1 or type 2 diabetes that has not been identified.

**Strong recommendation based on good-quality research evidence**

It's important that all women who are pregnant are checked for gestational diabetes.

Your healthcare professionals will assess your risk of developing gestational diabetes by checking if:

- you are obese
- you have previously given birth to a baby who weighed 4.5 kg or more
- you have had gestational diabetes before
- you have a family history of diabetes, or
- your ethnic background means you may have a high risk of diabetes.

If you have any of these, you should have a screening test for gestational diabetes.

**Strong recommendation based on good-quality research evidence**

Your healthcare professionals should also offer you dietary advice to help control your blood-glucose levels and to keep your baby healthy.

**Recommendation based on the research evidence**

If you are finding it difficult to achieve your target blood-glucose level and hypoglycaemia is a problem, your healthcare professional may consider giving you short-acting insulin to help control it.

## Do I need any other checks when I am pregnant?

Eye and kidney disease in people with diabetes can appear for the first time or get worse during pregnancy, so healthcare professionals should monitor you closely.

## Eye disease

**Strong recommendation based on good-quality research evidence**

You should be offered an eye examination before you get pregnant and during each trimester (each three months) of your pregnancy. If you have poor control over your blood glucose or you have high blood pressure, you might be tested more often.

**Recommendation based on the research evidence**

If you have an eye disease such as retinopathy, your healthcare professional should refer you to an eye specialist (ophthalmologist) early in your pregnancy.

If you have good control over your blood glucose during and immediately after your pregnancy, this will reduce the long-term risks of retinopathy. Details about retinopathy can be found on pages 56–63.

**Retinopathy** is a disease that affects the blood vessels supplying the eye. If the blood vessels are damaged, they can leak and affect your sight, even leading to blindness.

## Kidney disease

**Recommendation based on clinical experience**

If you have any kidney problems, your healthcare team will carry out blood tests and check your blood pressure regularly. Your healthcare professional may prescribe one of the following tablets to lower your blood pressure, which are safe during pregnancy:

- methyldopa
- labetalol
- nifedipine.

While you are pregnant you should avoid **ACE** inhibitors. This is because they are associated with an increased risk of problems in new-born babies.

**ACE (angiotensin converting enzyme)** inhibitors are drugs that lower your blood pressure and reduce the work your heart has to do to pump blood around the body.

## How will I know my baby is developing as it should?

**Recommendation based on clinical experience**

You will have a scan when 11–13 weeks pregnant to confirm the age of your baby. You should also have screening tests to check for any problems.

**Strong recommendation based on good-quality research evidence**

When you are 20–22 weeks pregnant, you should have a detailed scan to check that your baby's heart and other organs are developing normally.

If you have diabetes, the baby can be at risk of not growing at the normal rate inside the womb.

**Strong recommendation based on good-quality research evidence**

Your healthcare team will carry out regular growth and **ultrasound scans** if they think it is needed.

The **ultrasound scan** is a painless test. It shows the blood flow between your placenta and your baby through the umbilical cord.

## How will my baby be delivered if I have diabetes?

**Recommendation based on clinical experience**

Your baby should be born in a hospital maternity unit so you can receive the appropriate care. The following healthcare professionals may also be involved in caring for you and your baby:

- a doctor with an interest in diabetes
- an **obstetrician**, and
- a **neonatologist**.

An **obstetrician** is a doctor who specialises in caring for women who are pregnant.

A **neonatologist** is a doctor who specialises in caring for new-born babies.

**Recommendation based on clinical experience**

If you are taking insulin to manage your diabetes, your healthcare team should assess you at 38 weeks to make sure you deliver your baby by 40 weeks. They will also agree a plan with you about any changes in your insulin doses and the times you take it.

**Recommendation based on clinical experience**

When you are in labour, healthcare professionals will closely measure your progress.

They will also monitor your baby's heart rate throughout labour. This is known as continuous electronic fetal monitoring. It tracks and displays your baby's heart rate with the rise and fall of your contractions.

**Recommendation based on clinical experience**

Your blood-glucose levels must be well controlled during labour and birth to help prevent your baby's blood-glucose level getting too low after they are born.

If your healthcare team cannot keep your blood-glucose level satisfactory during labour, you may need insulin and glucose through a drip to help you achieve a blood-glucose level of between 4 and 7 mmol/l.

**Recommendation based on clinical experience**

After your baby is born, you should start breastfeeding as soon as possible to avoid your baby having low blood-glucose levels. This also stimulates the production of breast milk.

**Strong recommendation based on good-quality research evidence**

Breastfeeding is recommended. But if you choose to bottle feed, your healthcare professionals will support your choice.

# What will happen after I have had my baby?

**Recommendation based on clinical experience**

After the birth, your healthcare team will ask you to go to a postnatal follow-up appointment. Your healthcare professional will discuss the following with you:

- contraception
- pre-pregnancy care for future pregnancies, and
- controlling your blood glucose.

**Strong recommendation based on good-quality research evidence**

If you had gestational diabetes, you are at increased risk of type 2 diabetes. Healthcare professionals will give you advice on the following to reduce this risk:

- diet
- controlling your weight, and
- exercise.

**Recommendation based on clinical experience**

At your six-week postnatal check-up, you should have a test that checks your blood-glucose level after you have fasted overnight, to check that your gestational diabetes has gone away. After this, you should have your blood glucose tested every year to check for diabetes.

# What complications are associated with diabetes?

## What are the short-term complications?

When your blood-glucose levels drop too low, you get **hypoglycaemia**, sometimes referred to as a hypo. Some of the symptoms of hypos are listed below.

| | | |
|---|---|---|
| Feeling anxious | Feeling sick | Difficulty concentrating |
| Sweating | Being irritable | Feeling tearful |
| Feeling shaky | Tiredness | Pins and needles around the mouth |
| Going pale | Blurred vision | Being stubborn |
| Increased heart rate | Headaches | Feeling stroppy |

**Hypoglycaemia**, or 'hypo', is an abnormally low level of glucose in your blood (less than 4 mmol/l).

When your glucose level is too low, your body doesn't have enough energy to carry out its activities.

**Information**

Diabetes Scotland has an information page on what to do if you are having a hypo. **www.diabetes.org.uk/guide-to-diabetes/teens/me-and-my-diabetes/getting-my-glucose-right/hypos/hypos---what-to-do**

If you think you are having a hypo, immediately eat some fast-acting carbohydrate, such as a sugary drink or some glucose tablets. When your blood-glucose level has returned to normal, have some longer-acting carbohydrate, such as a sandwich, a piece of fruit or your next meal if it is due.

If you don't treat your hypo, you might eventually become unconscious and need help from emergency services.

When your blood-glucose levels are too high, you get hyperglycaemia. **Hyperglycaemia** is a potentially life-threatening condition. Some of the symptoms of hyperglycaemia are:

- drinking more
- urinating more
- headaches
- lack of energy, and
- stomach pains.

**Hyperglycaemia** is when the glucose levels in the blood are too high.

With the help of your healthcare professional, you should try to keep hypoglycaemia and hyperglycaemia to a minimum by having good control over your blood glucose.

## What are the longer-term complications?

Having poor control over your blood glucose will, over time, increase the risk of developing microvascular disease and macrovascular disease. Some of these are listed below.

| Microvascular problems | Macrovascular problems |
|---|---|
| Kidney disease | **Peripheral arterial disease** |
| Eye disease (retinopathy) | Heart disease |
| Foot disease | Stroke |

**Peripheral arterial disease** is a disease of the arteries that supply blood to the limbs. It usually causes pain in the legs when you walk.

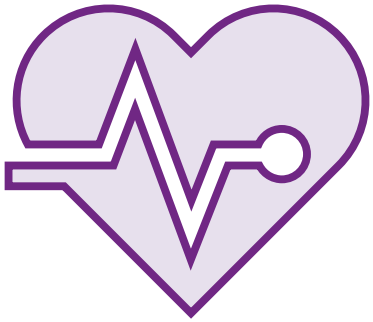
Several risks can make you more likely to develop some of the above complications. Your healthcare professional will work with you to help you manage them. Your healthcare team will discuss all the treatments with you.

The table on page 49 outlines some of the treatments to help control these risks.

| Risk | How you can control this risk |
|---|---|
| Smoking | You will get support to help you stop smoking. |
| Abnormal cholesterol levels in your blood | If you are older than 40, you should receive medicines called statins to help reduce your cholesterol level. |
| High blood pressure | Lifestyle changes, such as eating a healthy diet and being more active.<br><br>Medicines to lower your blood pressure, such as:<br><br>• thiazide diuretic which is a water tablet<br>• calcium channel blocker, and<br>• ACE inhibitor. |
| Too much glucose in your blood | • Keep good control over your blood glucose (ideally around 7% or 53 mmol/mol). This will help prevent:<br>• eye disease<br>• kidney disease, and<br>• damage to nerves and circulation. |
| Protein in your urine | You should be screened for diabetic kidney disease once a year from the age of 12. |

# What will happen if I have a heart problem?

People with diabetes are more likely to have heart disease. Below are some of the treatments for people with diabetes who have different heart conditions.



This booklet does not explain the heart conditions and treatments in detail. It provides a summary of the possible treatments you may be offered if you have been diagnosed with a heart problem. You can read more about them and how they are managed in our booklets on coronary heart disease. Details about SIGN patient booklets are listed on page 71.

## Acute coronary syndrome

**Strong recommendation based on good-quality research evidence**

If you have some kinds of acute coronary syndrome, you should take aspirin every day to prevent blood clots, and another medicine called clopidogrel for up to three months. Your doctor will tell you when to stop taking clopidogrel.

**Strong recommendation based on good-quality research evidence**

If you have **acute coronary syndrome**, you may need to have an angioplasty procedure, to widen your arteries.

**Acute coronary syndrome** is a pattern of symptoms of chest pain, including angina and heart attack.

During an angioplasty, a doctor passes a thin hollow tube with a small inflatable balloon into an artery in your groin or arm until it reaches a blocked section.

The balloon is then gently inflated and squashes the fatty tissue that is causing the artery to narrow. This widens the artery so the blood can flow more easily. Inside the catheter tube is another short tube of stainless-steel mesh, called a stent, which is left in place to hold open the artery.

**Strong recommendation based on good-quality research evidence**

If you have a heart attack, you:

- will get intensive insulin treatment for at least 24 hours
- need to start taking an ACE inhibitor within 36 hours of the attack, and
- may need to start taking eplerenone.

## Chronic heart failure

Chronic heart failure is a condition where the heart cannot pump blood around the body.

**Strong recommendation based on good-quality research evidence**

As soon as your condition is stable, you should take long-term **beta blockers** and an ACE inhibitor.

**Beta blockers** are drugs that block the action of hormones called noradrenaline and adrenaline, which make your heart beat faster. They slow down your heart rate and lower your blood pressure.

## Stable angina

**Angina**
is severe chest pain due to ischemia. Ischemia occurs when there is a lack of blood and oxygen getting to the heart.

**Strong recommendation based on good-quality research evidence**

- You should take beta blockers to relieve the symptoms of your angina.
- You should take aspirin every day.
- You may be offered a statin to lower your cholesterol.
- You may start taking a long-term ACE inhibitor.

**Recommendation based on the research evidence**

You may be considered for a procedure called **coronary revascularisation**.

## Coronary revascularisation

Patients with diabetes are at increased risk of complications during revascularisation. Revascularisation to improve blood supply to the heart can be done in two ways:

- **coronary artery bypass grafting**, and
- angioplasty.

You can read more about angioplasty on page 51.

**Coronary artery bypass grafting** is an operation to widen a narrowed section or sections of coronary arteries, which improves the blood supply to the heart.

**Revascularisation** is any procedure that restores the blood flow to any part of the body that has been deprived of blood.

**Strong recommendation based on good-quality research evidence**

If you and your healthcare professional decide that angioplasty is the best option for you, you should be treated with stents and suitable medicines afterwards to improve your results.

# What will happen if I have kidney disease?

The table below explains some of the kidney problems associated with diabetes and how you can manage them.

| Complication in kidney disease | Treatment |
|---|---|
| Microalbuminuria or proteinuria (protein leaking from the blood into your urine) | If you have type 1 diabetes, you will be treated with an ACE inhibitor, no matter what your blood pressure is.  <br>If you have type 2 diabetes, you will be treated with an ACE inhibitor or an angiotensin receptor blocker, no matter what your blood pressure is.  <br>If you have type 2 diabetes, it's important that you improve your blood-glucose levels, lower your blood pressure and cholesterol, and make lifestyle changes. |
| Anaemia (This is when you have low levels of haemoglobin in your blood. Haemoglobin is a protein that carries oxygen in the blood.) | If you have advanced chronic kidney disease, you must have your haemoglobin levels checked at least once a year.  <br>You may get medication to help your body make red blood cells.  |

# Can I get eye disease?

One of the microvascular complications linked with having diabetes is called **retinopathy.**

Once you have diabetes, you should have your eyes checked regularly.

**Retinopathy** is a disease that affects the blood vessels supplying the eye. If the blood vessels are damaged, they can leak and affect your sight, even leading to blindness.

**Strong recommendation based on good-quality research evidence**

If you have type 1 diabetes, you will have your eyes checked from the age of 12.

If you have type 2 diabetes, you will have your eyes checked from the time diabetes was diagnosed.

**Strong recommendation based on good-quality research evidence**

If the backs of your eyes are completely healthy, you should have your eyes checked every two years.

If your eyes show signs of damage, you should have your eyes checked at least every year.

As well as checks for retinopathy, it's important to visit your optician to have a full check of your vision.

**Strong recommendation based on good-quality research evidence**

As part of your eye check, trained staff will examine your eyes using either:

- digital photography, or
- **slit lamp biomicroscopy.**

**Slit lamp biomicroscopy** uses a low-power microscope with a high-intensity light that can be focused to shine in a thin beam.

**Strong recommendation based on good-quality research evidence**

Sometimes, photographs of your eyes are not clear and your eyes may have to be checked using a procedure called **indirect ophthalmoscopy.**

**Indirect ophthalmoscopy** is when a healthcare professional will shine a bright light into your eyes and inspect them using a handheld lens. During this procedure you will need eye drops to make your pupils bigger.

## What are the treatments for eye disease?

**Recommendation based on clinical experience**

If your eyes show a certain level of damage, you should be referred to an eye specialist. You should be seen by the specialist within 12 weeks and have your eyes treated within 18 weeks.

**Strong recommendation based on good-quality research evidence**

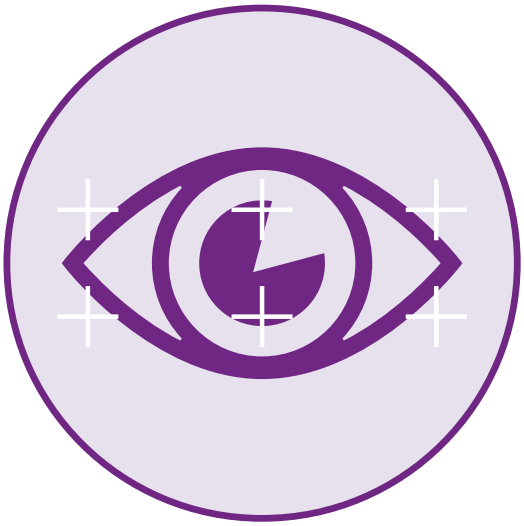
If you have a condition called **proliferative retinopathy**, you will be treated by firing a tiny laser beam into your eye, which stops new blood vessels from forming. This is usually painless and should prevent you losing any more of your sight.

**Proliferative retinopathy** is a condition where small blood vessels grow from the surface of the retina.

**Recommendation based on the research evidence**

If you have any of the following conditions, you may have a procedure called **vitrectomy.**

- Type 1 diabetes and persistent **vitreous haemorrhage**
- **Retinal detachment**
- **Diabetic macular oedema**
- Type 2 diabetes and vitreous haemorrhage that is too severe for laser treatment



**Vitrectomy** is a surgical procedure to remove the jelly-like substance called vitreous fluid from the inside of your eye.

**Vitreous haemorrhage** is when tiny blood vessels burst and leak into the vitreous fluid.

**Retinal detachment** is when your retina is weakened by a hole or tear. This allows fluid to seep underneath, weakening the attachment so that the retina becomes detached.

**Diabetic macular oedema** is a build-up of fluid in the retina at the macula, which is the area of the retina that is responsible for seeing fine detail.

**Strong recommendation based on good-quality research evidence**

If you have **cataracts,** your specialist will advise you to have them removed before any treatment for retinopathy.

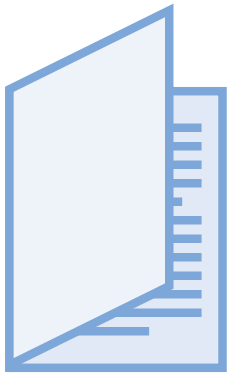
**Cataracts** are cloudy parts in the lens of your eyes that can make your vision blurry.

**Information**

When you receive your appointment letter for eye screening, you should receive a copy of a national information leaflet on screening. It contains information about:

- the screening procedure
- the difference between screening and treatment, and
- the importance of identifying retinopathy early.

This leaflet gives you important information about your screening. Please keep it in case you need it in future.



For your appointment at the specialist eye clinic you should:

- bring dark glasses, as daylight may seem strong after your pupils have been dilated
- make arrangements for transport, as you won't be able to drive for around two hours, sometimes longer, and
- know that your eyes may be sore from the eye drops and examination, but the soreness should pass after a few minutes.

At the end of your appointment, your healthcare professionals will discuss with you:

- the result of your examination and any medicines or treatments you may need
- advice about controlling your blood glucose, diet and blood pressure
- whether you need a follow-up appointment
- where you can get support if you have problems with your sight, and
- how to contact the DVLA and your motor insurance company to tell them about changes in your sight.

**Recommendation based on clinical experience**

Your healthcare team will tell you whether you need to register as blind or partially sighted.

They will tell you about local support services, such as the Royal National Institute for the Blind (RNIB), The Guide Dogs for the Blind Association, Citizens Advice, local council social work offices and support organisations for carers.

# Can I get foot disease?

Diabetes can lead to problems with your feet, such as ulcers or joint pain. This can happen because the nerves supplying your feet are damaged, which affects the feeling. This is called peripheral neuropathy.

The blood vessels can become narrow, affecting the circulation in your feet. These changes can be very gradual and you may not notice them. This is why it's very important to get your feet checked every year by your healthcare team.

As well as checking for signs of foot disease, your healthcare team will ask you about some other things that are linked with developing foot problems in the future.

## What increases my risk of developing foot disease?

- Smoking
- Having a joint deformity
- High blood pressure
- Sight or movement problems
- High cholesterol
- Being male
- Previously having a limb amputated
- Having previous ulcers
- Poor circulation
- Lack of feeling in your limbs
- Having calluses which are hard areas of the skin.

If you are at low risk, you will get advice on how to keep looking after your feet. A member of your healthcare team will look at your feet once a year to check they are healthy.

If you are at moderate or high risk of getting ulcers or of amputation, you and your healthcare team will decide on a management plan to keep your feet as healthy as possible. You will see a foot specialist if and when you need to.

## How will foot disease be treated?

If you have foot disease such as ulcers, spreading infection or hot, swollen red feet for no obvious reason, your healthcare team will look after you. Your team may include a:

- **podiatrist**
- diabetes physician
- **orthotist**
- diabetes nurse specialist
- **vascular surgeon**
- **orthopaedic surgeon**, and
- **radiologist.**

**A podiatrist** is a healthcare professional who specialises in assessing, diagnosing and treating your legs, ankles and feet.

**An orthotist** is a specialist in designing shoes for people with foot problems.

**A vascular surgeon** is a surgeon who specialises in treating problems with veins or arteries.

**An orthopaedic surgeon** is a surgeon who specialises in conditions of the muscles and bones.

**A radiologist** is a healthcare professional who specialises in interpreting medical images such as MRIs, X-rays, CT scans and ultrasounds.

The healthcare team should consider treating your feet using:

- wound dressings
- antibiotics, if an ulcer has become infected
- special footwear, and
- ways of reducing the pressure on your feet.

Your healthcare team will:

- teach you about caring for your feet and how to look out for problems
- give you advice on suitable footwear
- tell you about dressings and antibiotics
- give you contact details for an emergency foot-care team, and
- give you information leaflets.

## What is charcot neuroarthropathy of the foot?

Charcot neuroarthropathy of the foot ('charcot foot') is a complication of diabetes that people who suffer from nerve damage can develop. If nerves are damaged, the bones in the foot weaken and can fracture easily, even without there being any obvious injury. Because the nerves are damaged, people don't notice the pain and may continue to walk on the foot.

This can cause serious problems with the foot, so it is very important that this is diagnosed and treated early.

It's important to rest the affected foot so it can start to heal.

**Recommendation based on the research evidence**

People with charcot foot may need to wear a cast or special boots to help make the joint stable. Those recovering from charcot foot may benefit from specialist footwear.

## How will I manage my pain?

Sometimes damage to the nerves in your feet can cause a kind of pain called neuropathic pain.

### Recommendation based on the research evidence

Healthcare professional will treat your neuropathic pain using medicines such as the following.

- Antidepressants, including tricyclics, duloxetine and venlafaxine. It's worth noting that you don't need to be depressed for these antidepressants to relieve your pain.
- **Anticonvulsants**, including pregabalin and gabapentin.
- Combination therapy, which means you might be given an opioid painkiller, such as codeine with gabapentin if your pain is not controlled with one medicine alone.

**Anticonvulsants** are the group of medicines used to treat epilepsy but can also help ease pain that people with diabetes get.

# Where can I find out more?

**NHS inform**

NHS inform is the national health information service for Scotland.

Phone: 0800 22 44 88

Website: **www.nhsinform.scot**

**NHS 24**

NHS 24 can answer questions on any health matter and give you advice.

Phone: 111

Website: **www.nhs24.com**

**Breathing Space**

Breathing Space is a free and confidential service that helps if you are feeling down or experiencing depression and need someone to talk to. Breathing Space also offers a free and confidential British Sign Language (BSL) service you can access using its website.

Phone: 0800 83 85 87

Website: **www.breathingspace.scot**

**Scottish Intercollegiate Guideline Network (SIGN)**

Details of all SIGN patient booklets of guidelines can be found on the website and they can be downloaded or posted out to you.

Phone: 0131 623 4720

Website: **www.sign.ac.uk/patient-publications.html**

**Diabetes in Scotland**

The Scottish Diabetes Group is a national Steering Group which co-ordinates and evaluates the implementation of the Scottish Diabetes Framework and Action Plan.

Website: **www.diabetesinscotland.org.uk**

**Diabetes Scotland**

Diabetes Scotland provides a range of information on diabetes including leaflets, fact sheets, details of support groups and advice on all aspects of diabetes.

Careline: 0141 212 8710

Website: **www.diabetes.org.uk**

**My Diabetes My Way**

NHSScotland's interactive diabetes website helps to support people who have diabetes and their family and friends.

Website: **www.mydiabetesmyway.scot.nhs.uk**

**Insulin Dependent Diabetes Trust**

The Insulin Dependent Diabetes Trust is run by people living with diabetes to raise awareness of important issues for people with diabetes and provides information in non-medical language.

Phone: 01604 622 837

Website: **www.iddt.org**

**The Juvenile Diabetes Research Foundation**

The Juvenile Diabetes Research Foundation provides a range of information and support to families and individuals affected by type 1 diabetes.

Phone: 01224 248677

Website: **www.jdrf.org.uk**

**British Heart Foundation**

The British Heart Foundation provides a telephone information service for people looking for information on health issues to do with the heart, as well as providing a range of information on its website.

Phone: 0300 330 3311

Website: **www.bhf.org.uk**

**Carers Trust**

Carers Trust offers specialist services for carers of people of all ages and conditions and a range of individually tailored support and group activities.

Phone: 0300 123 2008

Website: **www.carers.org**

**Chest, Heart and Stroke Scotland (CHSS)**

Chest, Heart and Stroke Scotland aims to improve the quality of life of people affected by chest, heart and stroke illnesses by offering information, advice and support in the community. It produces leaflets on the links between diabetes, heart disease and stroke.

Phone: 0131 225 6963

Website: **www.chss.org.uk**

**Citizens Advice Scotland**

Citizens advice bureaux are local independent charities that provide free, confidential and impartial advice to people who need it.

Website: **www.cas.org.uk**

**Deafblind Scotland**

Deafblind Scotland campaigns for the rights of the deafblind community and provides a range of services, support, training and information.

Phone: 0141 777 6111

Website: **www.deafblindscotland.org.uk**

**Driver and Vehicle Licensing Agency (DVLA)**

The DVLA is the UK government agency that issues driving licences and maintains a database of drivers and vehicles.

Phone: 0300 790 6806

Website: **www.gov.uk/diabetes-driving**

**The Guide Dogs for the Blind Association**

Guide Dogs for the Blind gives people who are blind and partially sighted help getting around. It also campaigns for the rights of people with sight problems, educates the public about eye care and funds research into eye disease.

Phone: 0800 953 0113

Website: **www.guidedogs.org.uk**

**Healthtalk**

Healthtalk provides free reliable information about health issues by sharing people's real-life experiences.

Website: **www.healthtalk.org**

**Royal National Institute for the Blind (RNIB)**

The RNIB supports blind and partially sighted people by offering practical and emotional support to help people continue living life to the full.

Phone: 0131 652 3140

Website: **www.rnib.org.uk**

**Sense Scotland**

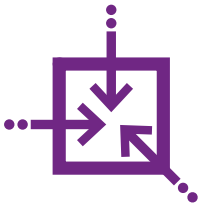
Sense Scotland works with children and adults who have communication needs because they are deaf, blind, have a sight or hearing problem, or a learning or physical disability.

Phone: 0300 330 9292

Website: **www.sensescotland.org.uk**

# How are SIGN guidelines produced?

Our guidelines are based on the most up-to-date scientific evidence. We read research papers to find evidence for the best way to diagnose, treat and care for patients. If we cannot find this out from the research evidence, we ask healthcare professionals to use their clinical experience and judgment to suggest treatments.



1
**Gather lived experience**

2
**Identify the questions**

3
**Search for the evidence**

4
**Look at the evidence**

5
**Make judgements and recommendations**

6
**Ask people for feedback**

7
**Publish**

8
**Let everybody know about our guidelines**

You can read more about us by visiting **www.sign.ac.uk** or you can phone **0131 623 4720** and ask for a copy of our booklet 'SIGN guidelines: information for patients, carers and the public'.

**The Scottish Intercollegiate Guidelines Network (SIGN) writes guidelines which give advice for healthcare professionals, patients and carers about the best treatments that are available.** We write these guidelines by working with healthcare professionals, other NHS staff, patients, carers and members of the public.

We are happy to consider requests for other languages or formats. Please phone **0131 623 4720** or email **sign@sign.ac.uk**

## Notes

**www.sign.ac.uk**

Healthcare Improvement Scotland

**www.healthcareimprovementscotland.org**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Telephone 0131 623 4300

**Glasgow Office**
Delta House | 50 West Nile Street | Glasgow | G1 2NP
Telephone 0141 225 6999


The Healthcare Environment Inspectorate, the Scottish Health Council, the Scottish Health Technologies Group, the Scottish Intercollegiate Guidelines Network (SIGN) and the Scottish Medicines Consortium are key components of our organisation.

HEI Healthcare Environment Inspectorate
Ensuring your hospital is safe and clean

scottish health council
making sure your voice counts

SIGN

Scottish Health Technologies Group