

Patient information from the BMJ Group

Heart and circulation problems in diabetes

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Heart and circulation problems in diabetes

If you have diabetes, you have a greater chance of having a heart attack or a stroke. You may also get poor circulation (blood flow) in your legs. But there are treatments that can reduce the chances of this happening.

We've brought together the best research about preventing heart attacks, strokes, and poor circulation if you have diabetes, and weighed up the evidence about what works. You can use our information to talk to your doctor and decide which treatments are best for you.

What heart and circulation problems can you get with diabetes?

If you have diabetes, you have too much glucose in your blood. Glucose is a kind of sugar your body uses for energy. It can build up in your blood and make you ill. Normally, the amount of glucose in your blood is controlled by a hormone called insulin.

There are two main types of diabetes: type 1 and type 2.

- If you have **type 1 diabetes**, your body doesn't make a hormone called insulin. You need to have regular injections of insulin to keep your blood sugar under control. To read more, see [Type 1 diabetes](#).
- If you have **type 2 diabetes**, your body may not make enough insulin, and the insulin it does make doesn't work well enough. You may be treated with a diet, tablets, or insulin injections to keep your blood sugar under control. To read more, see [Type 2 diabetes](#).

About 9 in 10 people with diabetes have type 2 diabetes.

Over time, too much glucose in your blood can damage the big blood vessels that carry blood around your body. This can lead to serious health problems such as a heart attack, a stroke, or poor circulation in your legs.

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Too much glucose can also damage the small blood vessels in your eyes, **kidneys**, and nerves. These are called **microvascular complications**. But the information here is about how to prevent damage to the big blood vessels (**macrovascular complications**).

Heart attacks

You have a heart attack when blood can't get to your heart muscle. This happens when one of the vessels taking blood to your heart muscle suddenly gets blocked. If your heart muscle doesn't get the blood it needs, part of it dies. This means the heart may not be able to pump properly, to get blood and oxygen around the body.

Heart attacks are life threatening and **you need to get medical help quickly**.

Strokes

A stroke happens when the blood supply to part of your brain is cut off. This can cause brain damage. Strokes affect people in different ways, depending on which part of their brain is damaged. If you have a stroke, you may not be able to move one side of your body, or you may have difficulty speaking or swallowing. It can take a long time to recover from a stroke, and some people don't recover fully. To read more, see our information on [strokes](#).

Strokes are life threatening and **you need to get medical help quickly**.

Circulation problems

Some people with diabetes have poor circulation in their limbs, especially in their legs. Doctors call this **peripheral arterial disease**. If you have poor circulation, your legs may not get enough blood flow when you walk. This can be painful. Also, any cuts or broken skin on your feet or legs may take longer to heal up. They may turn into **ulcers**. To read more, see our information on [peripheral arterial disease](#).

Heart and circulation problems in diabetes: why me?

Many people with diabetes have other kinds of health problems that also increase the chance of having strokes, heart attacks, or circulation problems. These are called **risk factors**. Risk factors are things that make you more likely to get a health problem. Some of these risk factors are:

- High cholesterol
- High blood pressure
- Being overweight or **obese**, especially if you have a lot of fat around your waist
- Taking too little exercise. There is plenty of good research showing that regular exercise reduces the chances of heart problems and early death in people with diabetes. ^[1] ^[2] ^[3]

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Your chance of getting heart and circulation problems is also greater if: ^[4]

- You have had diabetes as an adult for a long time
- You have diabetes and the level of sugar in your blood is not well controlled
- You have higher than usual levels of protein in your urine. This is a sign that your kidneys have been damaged, perhaps from high blood pressure. ^{[4] [5] [6] [7]}

What are the symptoms of heart and circulation problems in diabetes?

If you've been diagnosed with diabetes, you need to know about the symptoms you might get if you have a heart attack, a stroke, or poor circulation in your legs. If you get symptoms of a heart attack or stroke, you need to get medical help immediately. If you have symptoms of poor circulation, you should tell your doctor, as you may need treatment.

Heart attack

Most people associate having a heart attack with chest pain. But if you have diabetes, you may not always get chest pain when you have a heart attack or other heart problems. ^[8]

These are some of the other symptoms of a heart attack that you may get instead or as well as chest pain: shortness of breath, stomach pain, dizziness, weakness, or trouble walking.

If you think you may be having a heart attack, **call an ambulance straight away**. It's important not to delay getting medical help, even if you're not sure about your symptoms. No one will blame you if it turns out to be a false alarm.

These are some of the other signs and symptoms you might get:

- Sweating, nausea, or vomiting
- An irregular heartbeat
- A blue tinge to your skin
- Blacking out (losing consciousness).

Strokes

Strokes affect people in different ways. But the symptoms usually come on suddenly. You may find you can't move one side of your body, or you have difficulty speaking or swallowing. You may black out (lose consciousness). Or your symptoms may be mild. You may simply feel dizzy.

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These are some of the other symptoms you might get:

- Numbness
- Weakness, especially on one side of your body
- Confusion
- Eyesight problems
- Loss of balance or trouble walking
- A sudden, severe headache.

If you have these symptoms, **you should tell your doctor straight away**. The earlier you have treatment, the better your chances are of recovering.

Poor circulation in your legs

Poor circulation means your leg muscles may not get all the oxygen they need when you walk. This can mean you get pain or cramps in your legs when you walk or exercise. Doctors sometimes call this **claudication**.

Your feet may feel cold or numb if they are not getting enough blood. Poor circulation can also mean your skin is less able to heal itself if you get a cut or sore. So you may get sores or **ulcers** on your feet that don't heal up.

How common are heart and circulation problems in diabetes?

Heart and circulation problems are very common in people with diabetes.

In the UK about 3 in every 100 people have diabetes.^[9] That's more than 2 million people.

If you have diabetes, you are two to four times more likely to get problems with your heart and circulation than if you don't have diabetes.^[10] In the UK, about two-thirds of people with type 2 diabetes die from heart or circulation problems.^[11]

If you're a woman and have diabetes, your chance of getting heart and circulation problems is about the same as a man's.^[12] Usually, if you're a woman and haven't been through the menopause (haven't stopped menstruating), you have a lower chance of getting heart disease. But having diabetes removes this usual protection for women.^[11]

These figures sound quite alarming. But remember you are an individual. No one can say what will happen to you. And there are good treatments to help reduce your chance of getting these problems.

What treatments work to prevent heart and circulation problems in diabetes?

If you have diabetes, you have a greater chance than other people of getting heart and circulation problems. This can be worrying. There's no cure for diabetes. But there are good treatments that can help to lower your chance of getting these problems.

- Taking **medicines to lower your blood pressure** helps prevent heart attacks and strokes .
- Taking medicines called **statins** to lower the amount of cholesterol in your blood helps prevent heart attacks and strokes.
- If you have type 1 diabetes, **keeping your blood sugar levels close to normal** may help to prevent heart and circulation problems.
- If you are overweight and have type 2 diabetes, taking a drug called **metformin** may help to prevent heart attacks.
- **Aspirin** helps to thin your blood, and doctors recommend it for many people with diabetes. But it may increase the chance of bleeding problems.
- Doctors think **stopping smoking** helps reduce your chance of strokes and heart attacks, whether or not you have diabetes.

We've divided up our information here into different sections. Each of the sections looks at treatments for different [risk factors](#) . Risk factors are things that make you more likely to get a problem (for example, high blood pressure is a risk factor).

Studies show that the more help you have to reduce your risk factors, the better. ^[14] Some hospitals have intensive-treatment clinics for people with diabetes, where you can get help with reducing all your risk factors in one place. These clinics combine drug treatment with advice about diet and exercise. You could ask your doctor if there are any intensive-treatment clinics for people with diabetes in your local area.

To find out more, read our information on:

- [How to stop smoking](#)
- [Lowering your blood pressure](#)
- [Lowering your cholesterol](#)
- [Lowering the risk of blood clots](#)
- [Keeping your blood sugar under control](#) .

Treatment Group 1

Diabetes: how to stop smoking

There haven't been any good-quality studies about the effects of stopping smoking for people with diabetes. But we know that giving up smoking helps reduce the chance of heart attacks and **strokes** in people who don't have diabetes. So it's likely that if you have diabetes, stopping smoking will also help you to avoid a heart attack or a stroke.

You can get help to stop smoking. Cigarettes contain nicotine, which is very addictive. Even with help, stopping can be hard.

How to stop smoking

- [Treatments to help you stop smoking](#)

Treatment Group 2

Diabetes: lowering your blood pressure

There's good evidence that taking medicines to lower your blood pressure can cut your risk of having a heart attack or a **stroke** if you have diabetes.

And keeping the bottom number of your blood pressure (the diastolic blood pressure) at 80 or lower can cut your risk further.^[15] This number shows the lowest your blood pressure gets, when your heart is relaxing and not pushing blood into your arteries.

In the UK, guidelines for doctors recommend that you keep your blood pressure below 140/80 if you have type 2 diabetes.^[16]

To find out more about how doctors measure blood pressure, see [Measuring blood pressure](#) .

Several types of medicines are used to treat high blood pressure. We've listed some of the main types used, below. Many people with diabetes need more than one medicine to control their blood pressure.

There are other things you can do to lower your blood pressure, as well as taking drugs, such as taking more exercise and eating less salt. To find out more, see our information on [High blood pressure](#) .

Which treatments work best? We've looked at the best research and given a rating for each treatment according to how well it works.

Lowering your blood pressure

Treatments that work

- [Angiotensin converting enzyme \(ACE\) inhibitors](#)

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- [Diuretics](#)

Treatments that are likely to work

- [Angiotensin receptor blockers \(ARBs\)](#)
- [Calcium channel blockers](#)
- [Beta-blockers](#)

Treatment Group 3

Diabetes: lowering your cholesterol

There's good research to show that lowering the level of cholesterol in your blood by taking drugs can help reduce your risk of a heart attack or a **stroke** if you have diabetes.

Cholesterol is a fatty substance. If you have too much of it in your blood, it can build up in your blood vessels. This can make your blood vessels narrower and more likely to get blocked. There are two types of cholesterol. One type helps to clean your blood vessels. You may hear it called 'good' cholesterol. The medical name is HDL (high density lipoprotein) cholesterol. The other type is sometimes called 'bad' cholesterol. The medical name is LDL (low density lipoprotein) cholesterol.

In the UK, guidelines for doctors generally recommend that you keep the level of your 'bad' (LDL) cholesterol under 3 millimoles per litre (or mmol/L, for short) and your total cholesterol under 5 mmol/L if you have type 2 diabetes. ^[18]

Which treatments work best? We've looked at the best research and given a rating for each treatment according to how well it works.

Diabetes: lowering your cholesterol

Treatments that work

- [Statins](#)

Treatments that are likely to work

- [Fibrates](#)
- [Intensive treatment programmes to lower your cholesterol](#)

Treatments that work but whose harms may outweigh benefits

- [Fish oils](#)

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- [Niacin](#)

Treatments that need further study

- [Ezetimibe](#)

Treatment Group 4

Diabetes: lowering the risk of blood clots

If you have diabetes, you may be more likely to get blood clots blocking your blood vessels. This can cause a heart attack or a **stroke**. If you take medicine to thin your blood, your blood clots less easily. So you may be less likely to have a heart attack or a stroke.

Two blood-thinning drugs are mainly used for preventing heart attacks and strokes. They are aspirin and clopidogrel.

In the UK, guidelines for doctors recommend that people with type 2 diabetes with [a high risk of heart and circulation problems](#) take aspirin, once their blood pressure is under control.^[19]

If you can't take aspirin, your doctor may prescribe clopidogrel (brand name Plavix).

Which treatments work best? We've looked at the best research and given a rating for each treatment according to how well it works.

Lowering the risk of blood clots

Treatments that are likely to work

- [Clopidogrel](#)

Treatments that work but whose harm may outweigh benefits

- [Aspirin](#)

Treatment Group 5

Diabetes: keeping your blood sugar under control

Too much sugar (glucose) in your bloodstream can damage your blood vessels. This makes it more likely that you will have a heart attack, a **stroke**, or poor circulation in your legs.

There are several ways to keep your blood sugar under control. If you have type 2 diabetes, you may be able to keep it under control with a healthy diet and exercise. Research shows that taking exercise can reduce heart problems in people who have

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diabetes. Or you may need to take medicines. If you have type 1 diabetes, you'll need to take insulin injections.

Treatment to keep your blood sugar under control can help reduce your chances of getting heart attacks, strokes, or poor circulation in your legs.

Managing your blood sugar

- [Treatments for type 1 diabetes](#)
- [Treatments for type 2 diabetes](#)

What will happen to me?

People with diabetes have a bigger chance of having a heart attack, a stroke, or poor circulation in their legs. So if you are diagnosed with diabetes, your doctor will check to see whether you are developing any problems and if you need treatment.

Your doctor will ask if you've had any heart or circulation problems before, and do some tests to see if you have any signs of problems now. ^[13]

These are some tests you may need.

- Blood tests to check your blood sugar and cholesterol levels.
- Blood and urine tests to check that your kidneys are working properly.
- Blood pressure measurements. Your doctor puts a cuff around your arm to take a reading.
- An electrocardiogram. This is a test that can be done in the GP's surgery, or at the local hospital or clinic. It doesn't hurt. It checks the electrical activity in your heart.
- A stress test. During this test you exercise on a treadmill, while your doctor checks that your heart is working properly, with an electrocardiogram or other tests.

If these tests find any problems (for example, if they show your blood pressure is too high) you may need to have treatment.

You might also be referred to a heart specialist (cardiologist) or a doctor who specialises in the nervous system (neurologist) or blood vessels (vascular surgeon).

After you've been diagnosed, your doctor should ask you to go for a check-up at least once a year, to work out your chances of having a heart attack or getting heart problems. At the check-up, your doctor should check your blood pressure, cholesterol, blood sugar levels, and weight. You'll also be asked about your lifestyle: for example, how much exercise you take, whether you smoke, and what your diet's like. ^[13]

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Your doctor will use this information to estimate your risk of having a heart attack during the next 10 years, based on standard tables. They will use this to help them to decide which treatments you may need. If your risk is more than 15 percent, your doctor will say you are at high risk, and you will probably need to have treatment. ^[13]

If you are told you're at high risk of heart problems or circulation problems, you'll probably be worried. But remember that being at high risk of a heart attack doesn't mean you will definitely have one. There are lots of treatments that can work well to cut your risk.

Treatments:

Angiotensin converting enzyme (ACE) inhibitors

In this section

These are drugs that keep your blood vessels from narrowing and your heart from working as hard. Examples (with their brand names) are:

- captopril (Acepril, Capoten, Tensopril)
- enalapril (Enacard, Innovace)
- perindopril (Coversyl)
- ramipril (Tritace).

ACE inhibitors work well to lower your blood pressure. And there is some evidence that they reduce the chance of dying from heart and circulation problems if you have diabetes, or of getting kidney disease, heart attacks, or strokes. ^[20] ^[21]

ACE inhibitors have some side effects. The most common is a dry cough. Some people get low blood pressure (which can make you feel dizzy), kidney problems, or problems with their heart rhythm. Very rarely, you could get swelling in your face (called angioedema).

If you take an ACE inhibitor with some types of diabetes tablets or insulin, it could increase your chance of getting low blood sugar (hypoglycaemia). ^[22] Your doctor will want to keep an eye on your blood sugar levels and do other blood tests to make sure you don't get side effects.

Diuretics

In this section

These drugs help your body to get rid of excess salt and water. Examples (with their brand names) are:

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- bendroflumethiazide (Aprinox, Neo-NaClex)
- indapamide (NatriliX, NatriliX SR).

Your doctor may suggest you take a diuretic as well as other blood pressure drugs to help control your blood pressure.

In one study, people with type 2 diabetes who took the diuretic chlortalidone did at least as well as people who took an [ACE inhibitor](#) (lisinopril), and they had slightly less chance of getting heart and circulation problems after five years. ^[23]

Some side effects of diuretics are: ^[23]

- Feeling thirsty
- A rise in your blood sugar
- Needing to pass water (urinate) more often
- Losing a mineral called potassium from your body, or having too much potassium in your body
- Having problems getting an erection.

If you have a condition called **gout**, which causes painful joints, diuretics may make it worse.

Angiotensin receptor blockers (ARBs)

In this section

These are drugs that keep your blood vessels from narrowing. They work in a similar way to [ACE inhibitors](#). Examples of ARBs (and their brand names) are:

- candesartan (Amias)
- irbesartan (Aprovel)
- losartan (Cozaar).

If you can't take an ACE inhibitor, your doctor may prescribe an ARB.

In one study, people who had diabetes and early kidney damage took either an ARB (telmisartan) or an ACE inhibitor (enalapril). ^[24] The two drugs worked as well as each other. People in either group had the same chance of having a heart attack or a stroke,

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or of dying, after five years. But not all studies have found that ARBs lower the risk of heart attacks or strokes if you have diabetes. [\[25\]](#) [\[26\]](#)

Most people only get mild side effects from ARBs. The most common side effect is dizziness.

Calcium channel blockers

In this section

Calcium channel blockers work well to lower your blood pressure.

These drugs keep your blood vessels relaxed and open, making it easier for blood to flow through them. Examples (with their brand names) are:

- amlodipine (Istin)
- diltiazem (Calcicard, Dilzem, Optil)
- nifedipine (Adalat, Cardilate, Hypolar)
- verapamil (Cordilox, Securon SR, Univer, Verapress, Vertab, Zolvera).

Calcium channel blockers seem to work as well as beta blockers and diuretics to prevent you from heart and circulation problems. But they may not work as well as ACE inhibitors. [\[21\]](#) [\[27\]](#) [\[23\]](#)

Some side effects of calcium channel blockers are: headaches, dizziness, swollen ankles, flushing (going red in the face), constipation, and an abnormally fast, slow, or uneven heart beat.

Beta-blockers

In this section

Beta-blockers work well to reduce blood pressure.

These drugs work by slowing down your heartbeat and reducing the amount of blood that is pumped with each beat. Examples (with their brand names) are:

- bisoprolol (Cardicor)
- carvedilol (generic)
- metoprolol (Lopresor)
- propranolol (Angilol, Inderal).

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However, we're not sure if beta-blockers are as good as [ACE inhibitors](#) and [angiotensin receptor blockers \(ARBs\)](#). ^[28] ^[29] ^[21]

Beta-blockers have side effects. Taking a beta-blocker may:

- Make you feel tired
- Slow down your heart rate
- Make your hands and feet feel cold
- Make you feel sick
- Cause erection problems.

Statins

In this section

There's good evidence to show that taking drugs called statins can reduce your chance of a heart attack or a stroke if you have diabetes. Statins lower the amount of cholesterol in your blood.

Some examples of statins (and their brand names) are:

- atorvastatin (Lipitor)
- pravastatin (Lipostat)
- rosuvastatin (Crestor)
- simvastatin (Simzal, Zocor).

Most of these drugs need to be prescribed by a doctor. You can buy a low dose of 10 milligrams (or mg, for short) of simvastatin over the counter at a pharmacy. But this dose is likely to be too low for you if you have diabetes. You will need to have your doctor prescribe a higher dose.

One big summary of the research, and another two big studies, compared taking a statin with taking a dummy treatment (a [placebo](#)). The studies included more than 10,000 people with diabetes. ^[30] ^[31] ^[32]

People with diabetes who took a statin had a smaller chance of having a heart attack or a stroke, getting a heart condition called angina, or dying from heart or circulation problems. ^[30] ^[31] In the summary of the research, 10 in 100 people who took a dummy treatment had one of these things happen, compared with 8 in 100 people who took a

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statin. This was for people who had no heart or circulation problems at the start of the study.^[30]

The studies found that if you have diabetes, taking a statin is likely to lower your chance of heart or circulation problems:

- Whether or not your LDL cholesterol is high to begin with
- Whether or not you have heart problems to begin with.

Just taking a statin drug may be more important than exactly which dose you take or what LDL cholesterol level you aim for. One study found that it didn't make much difference whether people took a high or low dose.^[33]

Statins can cause damage to your muscles or liver, but this is rare.^[34] ^[35] It is more likely if you take a statin together with other drugs, such as [fibrates](#) or [niacin](#) .

The drug atorvastatin may be less suitable for people who are at risk of a stroke caused by bleeding in the brain (a **haemorrhagic stroke**).^[36] Make sure you tell your doctor if you've had a stroke before.

Fibrates

In this section

There's some evidence to show that taking drugs called fibrates can cut your risk of a heart attack or a stroke if you have diabetes. But not all studies show this. Fibrates are not used much any more.

Fibrates reduce the amount of simple fats (triglycerides) in your blood. They also lower cholesterol. Some examples (and their brand names) are:

- bezafibrate (Bezalip)
- fenofibrate (Lipantil)
- gemfibrozil (Lopid).

Drugs called [statins](#) are usually the first choice for lowering cholesterol. But if you can't take a statin, your doctor may suggest you take a fibrate. Or, if you are taking a statin, but your cholesterol is still too high, your doctor may suggest you take a fibrate as well. But this doesn't happen often, because you are more likely to get serious side effects if you take them together. You shouldn't take a type of fibrate called gemfibrozil together with a statin.^[37]

One big summary of the research compared taking a fibrate called gemfibrozil (Lopid) with taking a dummy ([placebo](#)) drug. The summary found that fibrates helped people

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who already had heart problems, but not people who hadn't had heart problems before. ^[30]

Another study looked at a fibrate called bezafibrate. It showed 19 in 100 people had a heart attack, had a stroke, or died from heart problems, if they took a dummy drug for three years. But only 6 in 100 people had these problems if they took bezafibrate. ^[38]

Research also shows that fenofibrate can cut the risk of a heart attack for people with type 2 diabetes. ^[39]

The studies did not find that taking fibrates caused more side effects than taking a dummy tablet. But fibrate drugs can sometimes cause:

- Nausea, diarrhoea, or weight gain
- Muscle pain and damage to your muscles (known as **myopathy**). This is unusual, but can happen more often if fibrates are taken along with statins.

Intensive treatment programmes to lower your cholesterol

In this section

An intensive treatment programme may help to lower the cholesterol levels in your blood, but we don't know if it helps to prevent a heart attack or a stroke.

In this programme, you go to a special clinic run by a doctor or a nurse. You get lots of help to reach a target cholesterol level, including adjustments to your medicine, advice about healthy diet and exercise, and education about the importance of treatment.

In one study, a nurse in this type of programme helped people with diabetes to try to reach a cholesterol level of less than 5 mmol/L. ^[40]

More people who went to the clinic reached this goal within 18 months than people who were cared for in the normal way by their doctors.

But we don't know whether the benefit was from attending the clinic, or from having their medicine adjusted more often.

The study didn't show whether the people who took part in the programme had fewer strokes or heart attacks. And it didn't say whether there were any harmful effects from taking part in the programme.

Fish oils

In this section

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We don't know whether taking fish oil supplements helps to lower your chance of having a heart attack or a stroke if you have diabetes. But they do lower levels of unhealthy fats called triglycerides. ^[41]

Oily fish, like anchovies, herring, mackerel, sardines, salmon, and trout, are rich in omega-3 polyunsaturated fatty acids. (Omega-3 fatty acids are also called n-3 fatty acids.) You can get more omega-3 fatty acids in your diet by eating oily fish or by taking fish oils in capsules. You can get high-strength fish oils in a prescription called Omacor.

One big review of the research looked at about 700 people with diabetes. It found that taking fish oil supplements helped to lower blood triglyceride levels over about three months. ^[41] But it raised levels of 'bad' cholesterol (LDL cholesterol).

Your doctor probably won't prescribe fish oils if you have diabetes and high cholesterol. Your doctor may discuss eating more fish in your diet. Women and children need to check with their doctor about how much fish to eat. That's because some kinds of fish contain a lot of mercury, which can be harmful.

Niacin

In this section

Niacin is one of the B vitamins. It is also called nicotinic acid. Niacin is one of the oldest treatments for high cholesterol, but it's not used much now, because it can cause side effects, such as itching, flushing (a red face), and diarrhoea.

But your doctor might suggest you take niacin if you are taking a newer treatment and your cholesterol is still high, or if you can't take other kinds of treatment. Niacin comes as tablets called Niacor.

Some research shows that niacin can lower cholesterol and also triglyceride levels. ^[42] But many of the people who took part in this research were also taking a [statin](#) to lower their cholesterol. We don't know whether taking niacin helps lower your risk of having a heart attack or a stroke.

The most common side effect of taking niacin is flushing. Taking niacin raised people's average blood sugar, but only very slightly.

Ezetimibe

In this section

Ezetimibe is a new type of tablet for lowering cholesterol. It works by stopping cholesterol getting from the food you eat into your body.

Its brand name is Ezetrol. Some people take ezetimibe along with other treatments for high cholesterol, such as [statins](#). There's also a tablet that contains ezetimibe and a statin (simvastatin). Its brand name is Inegy.

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Having ezetimibe and a statin together may lower the amount of 'bad' cholesterol in your blood, compared with just having a statin. ^[43] ^[44] ^[45] But we don't know whether that means you are less likely to have a heart attack or a stroke.

Clopidogrel

In this section

Your doctor may suggest that you take clopidogrel (brand name Plavix) if you can't take [aspirin](#) .

There hasn't been any good research that compares clopidogrel with having no treatment.

One large study found that clopidogrel worked about as well as aspirin but caused less bleeding. ^[46] The study looked at about 4,000 people who had diabetes and who'd had a recent stroke, a heart attack, or poor circulation in their legs. After a month, between 8 in 10 and 9 in 10 people taking either drug hadn't had a heart attack or a stroke.

Clopidogrel can cause bleeding problems: for example, bleeding from the back passage (rectum) or bleeding in the brain (a kind of stroke).

Fewer people who took clopidogrel had problems with bleeding that caused them to be admitted to hospital. About 2 in 100 people who took clopidogrel were admitted, while about 3 in 100 people who took aspirin were admitted.

Clopidogrel may not work as well with heartburn drugs called proton pump inhibitors (PPIs). These drugs reduce the amount of acid produced in the stomach and are used to protect against acid reflux ([GORD](#)) and stomach ulcers. Brand names include Nexium, Losec, and Proteum. But research shows these drugs may stop the body from breaking down clopidogrel properly, so it may not work as well. Doctors have been advised to avoid using PPIs along with clopidogrel. ^[47]

Aspirin

In this section

Some doctors think that aspirin is likely to reduce your chances of having a heart attack or a stroke. But there is a chance of bleeding problems if you take aspirin.

There have been many research papers looking at whether aspirin helps people with diabetes to avoid having a heart attack or stroke. But the results are not clear. ^[48] ^[49] ^[50] It's likely that if aspirin does protect you from having a heart attack or stroke, the effect is quite small.

It's important to note that these studies looked at people with diabetes who'd not had a heart attack or stroke before. If you have had a heart attack or stroke, aspirin is likely to be helpful and the benefits are likely to outweigh any harms.

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The main drawback with aspirin is that it can cause bleeding problems: for example, bleeding from the back passage (rectum), or bleeding into the brain. Bleeding into the brain is a kind of stroke and can cause brain damage.

To try to avoid this, doctors use a very low dose of aspirin to help prevent heart attacks and strokes. You only need about 75 milligrams (mg for short) to keep your blood thin. This is lower than the dose usually used for pain or arthritis. Most people take between 75 mg and 162 mg daily for blood thinning.

Higher doses don't work any better and they cause more bleeding problems. ^[48]

You can't take aspirin if you are: ^[51]

- Allergic to aspirin
- Have certain kinds of bleeding problems
- Are taking more powerful blood thinners (such as warfarin, brand name Coumadin)
- Have recently bled from your intestinal tract
- Have some kinds of liver problems.

Further informations:

Measuring blood pressure

When doctors take your blood pressure, they're measuring how hard your blood pushes against the walls of your arteries and veins as it moves around your body.

Your blood pressure may rise and fall slightly throughout the day and night. But when it stays high, it's called high blood pressure. High blood pressure can damage your blood vessels and make you more likely to have a heart attack or a stroke.

Heart and circulation problems in diabetes



The only way you can find out if your blood pressure is high is to have it checked.

The only way you can find out if your blood pressure is high is to have it checked. The doctor or nurse will usually do this by putting a cuff around your arm. The testing machine will then give you two numbers.

- Doctors call the first number the **systolic** pressure. It measures the pressure of the blood in the arteries when your heart is pumping blood into them. It's when your arteries are under the most pressure.
- Doctors call the second number the **diastolic** pressure. This is your 'relaxed' blood pressure, measured when your heart relaxes and fills up with blood. It's when your arteries are under the least pressure.

Your doctor may say, for instance, that your blood pressure is 120 over 80. In this example, 120 is the systolic pressure and 80 the diastolic pressure. This would be written as 120/80.

If your blood pressure is 140/90 or more, on more than one test, you have high blood pressure.^[17] Doctors sometimes call this **hypertension**.

Glossary:

hormones

Hormones are chemicals that are made in certain parts of the body. They travel through the bloodstream and have an effect on other parts of the body. For example, the female sex hormone oestrogen is made in a woman's ovaries. Oestrogen has many different effects on a woman's body. It makes the breasts grow at puberty and helps control periods. It is also needed to get pregnant.

insulin

Heart and circulation problems in diabetes

Insulin is a hormone that helps your body use glucose. Glucose is a type of sugar that gives you energy. Insulin keeps the levels of glucose in your body steady. Insulin also helps glucose to be carried in your blood, so that the glucose can get into your cells. People who have diabetes do not have enough insulin or do not react to insulin strongly enough. This means they can get too much glucose in their blood.

kidney

Your kidneys are organs that filter your blood to make urine. You have two kidneys, on either side of your body. They are underneath your ribcage, near your back.

ulcer

An ulcer is an open sore. Ulcers can happen in many parts of your body, such as in your stomach, and the skin of your legs, mouth, or genitals.

high cholesterol

If you've been told that you have high cholesterol it usually means that your total cholesterol level is 5mmol/l or higher. But doctors also look at the amount of good (HDL) and bad (LDL) cholesterol you have in your blood. Having high levels of bad cholesterol can make it more likely that you'll get certain diseases in your heart and arteries.

high blood pressure

Your blood pressure is considered to be high when it is above the accepted normal range. The usual limit for normal blood pressure is 140/90. If either the first (systolic) number is above 140 or the lower (diastolic) number is above 90, a person is considered to have high blood pressure. Doctors sometimes call high blood pressure 'hypertension'.

obesity

If your body stores more energy than you need, this can make you overweight. The excess energy is stored in your fat cells. If your weight goes above a certain level, doctors call this obesity. Obesity is considered a medical condition. The excess weight can be a strain on your bones and joints. And if you are obese, you're more likely to get other diseases. Doctors have developed a scale for telling how much excess weight you have. This measure, called the body mass index (BMI), depends on your height.

stroke

You have a stroke when the blood supply to a part of your brain is cut off. This damages your brain and can cause symptoms like weakness or numbness on one side of your body. You may also find it hard to speak if you've had a stroke.

gout

This is a disease of the joints that is caused by a buildup of a chemical called uric acid. This chemical actually forms a crystal within the blood that gets stuck in the joints, causing swelling and pain. Gout attacks often occur in the big toe, but the disease can affect other joints in the body as well. Attacks are excruciatingly painful, but, fortunately, can be treated with a variety of medicines and a special diet.

placebo

A placebo is a 'pretend' or dummy treatment that contains no active substances. A placebo is often given to half the people taking part in medical research trials, for comparison with the 'real' treatment. It is made to look and taste identical to the drug treatment being tested, so that people in the studies do not know if they are getting the placebo or the 'real' treatment. Researchers often talk about the 'placebo effect'. This is where patients feel better after having a placebo treatment because they expect to feel better. Tests may indicate that they actually are better. In the same way, people can also get side effects after having a placebo treatment. Drug treatments can also have a 'placebo effect'. This is why, to get a true picture of how well a drug works, it is important to compare it against a placebo treatment.

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