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# Diabetes type 2: what are the treatment options?

**If you have diabetes, there are treatments you can take and things you can do to help you live a long and healthy life. Although not everyone with diabetes needs medicine, most people do. You might need to take several types.**

## What is type 2 diabetes?

If you have diabetes you have too much glucose in your blood. Glucose is a kind of sugar that your body uses for energy. Normally, a chemical in your body called **insulin** helps keep the levels of glucose in your blood steady.

If you have type 2 diabetes your body is not making enough insulin, or the insulin your body makes is not working properly. This means glucose can build up in your blood. Doctors call this **hyperglycaemia**.

Having type 2 diabetes and too much glucose in your blood increases your chances of some serious complications, including:

- damage to your larger blood vessels, leading to heart attacks and strokes
- damage to your smaller blood vessels, particularly in the eyes, kidneys, and feet.

Many people with diabetes need treatment to prevent these problems. This includes medicines to lower blood glucose (blood sugar), blood pressure, and cholesterol.

As well as taking medicines, people with diabetes need to look after themselves in other ways, to help keep the heart healthy and control blood sugar. These include:

- eating healthily. Your doctor or nurse might refer you to a dietitian to help you plan the best way for you to eat
- exercising regularly. Being physically active can help reduce complications and control your weight. If you are overweight, losing some weight can also help reduce your blood sugar, blood pressure and cholesterol.

For more information, see our leaflet: *Diabetes: what can I do to keep healthy?*

## Medicines to control your blood sugar

There are several types of medicine that can help keep your blood sugar levels under control. Some of them help your body release more insulin. Others help your body use insulin better. Some are tablets and others are injections. You might take a combination of tablets, or tablets and injections, depending on what suits you and helps you the most.

Your target blood sugar level will also be individual to you and may be different to other people with diabetes.

### Tablets to control blood sugar:

- **Metformin:** this is the first medicine that most people with type 2 diabetes are offered for controlling blood sugar. You might take metformin on its own or with another type of diabetes medicine.

  It doesn't make you put on weight, unlike some diabetes medicines. Metformin can make you feel sick or make you get diarrhoea. This is more likely if you take it on an empty stomach.

  Your doctor will probably recommend that you build up the dose slowly and take this medicine with food.
- **Dipeptidyl peptidase-4 (DPP-4 inhibitors):** these medicines also help lower your blood sugar. You might also hear them called gliptins. Examples of these medicines are alogliptin, linagliptin, saxagliptin, or sitagliptin.

  These medicines are often used together with metformin.
- **Sulfonylureas:** these medicines help your body release more insulin. There are different types of sulfonylureas. Examples of commonly used ones are glimepiride, glipizide, or gliclazide. You might take a sulfonylurea on its own, or with metformin or other medicines.

  Sulfonylureas can sometimes make your blood sugar too low. The medical name for this is **hypoglycaemia**. Some side effects of sulfonylureas include weight gain, feeling sick, mild diarrhoea and constipation
- **Meglitinides:** these are similar to sulfonylureas and are sometimes used instead. You take them just before you eat. You might take them as well as metformin. They can make your blood sugar too low, although this is less likely than with sulfonylureas. They can cause some weight gain.

  Examples of meglitinides you may be offered are repaglinide and nateglinide.
- **Sodium-glucose cotransporter-2 (SGLT2) inhibitors:** these work by helping the kidneys to filter more glucose out in your urine and this reduces blood sugar. Examples of this type of medicine include canagliflozin, dapagliflozin, empagliflozin, and ertugliflozin.

  These medicines may help protect your kidneys and heart from developing some other problems. You may be given one of these medicines on its own or with other medicines to help control blood sugar.
- **Glitazones:** these medicines are not used as often as some other diabetes medicines. And they are only used if you are also taking either metformin or a sulfonylurea. You might also hear

them called thiazolidinediones. Examples of this type of medicine include pioglitazone and rosiglitazone.

Your doctor will want to monitor you regularly if you take a glitazone as they can cause serious side effects in some people. These including liver damage, heart failure, and an increased chance of fractures.

### Injections to control blood sugar

- **Insulin:** some people with diabetes need to take insulin to keep their blood sugar under control. Insulin is taken as an injection. Not everyone with type 2 diabetes needs to take insulin. But if your diabetes medicine is not working to keep your blood sugar under control your doctor may suggest you consider insulin.
- **Glucagon-like peptide-1 (GLP-1) agonists:** these are medicines given by injection or as tablets, and are used on their own or with other medicines like metformin and sulfonylureas. As well as controlling blood sugar they might also help reduce your chance of having a heart attack or stroke.

  They can have some side effects, such as lowering the level of sugar in your blood after you eat, and some people lose a little weight. Examples of these medicines include dulaglutide, exenatide, liraglutide, lixisenatide, and semaglutide.

## Medicines to prevent heart attacks and strokes

Having diabetes increases your chances of having a heart attack, stroke, or other circulation problems. So most people with diabetes take medicines to help prevent these problems. These might include medicines to:

- control blood pressure
- control cholesterol
- prevent blood clots.

### Medicines to control your blood pressure

Most people with diabetes need to take medicines for their blood pressure. You may also try lifestyle changes. For example, reducing the amount of salt you eat, adding more fruit and vegetables to your diet, and losing weight. If your doctor recommends blood pressure tablets your blood pressure is probably higher than the ideal blood pressure range for you despite other changes.

These are some of the types of medicines you might be prescribed. You might take just one, or a combination of tablets.

- **ACE inhibitors:** these medicines help stop your blood vessels from narrowing too much and your heart from working too hard. Common examples include aptopril, enalapril, lisinopril, and ramipril.

  ACE inhibitors can have some side effects. These are usually mild. The most common side effect is a dry cough. Some people get low blood pressure (which can make you feel dizzy), kidney problems, or problems with their heart rhythm.

- **Angiotensin-II receptor antagonists:** these drugs work in a similar way to ACE inhibitors. If you can't take an ACE inhibitor your doctor might prescribe an angiotensin-II receptor antagonist. Common examples include candesartan, irbesartan, losartan, and valsartan.

  Most people only get mild side effects from angiotensin-II receptor antagonists. The most common side effect is dizziness.

- **Diuretics:** these help your body get rid of excess salt and water.You might also hear them called 'water tablets'. Your doctor might suggest you take a diuretic as well as other blood pressure drugs. There are many different types of diuretics.

  Diuretics can make you feel thirsty and can raise your blood sugar. They also make you urinate more.

- **Calcium-channel blockers:** these medicines keep your blood vessels relaxed and open, making it easier for blood to flow through them. Common examples include mlodipine, felodipine, and nifedipine.

  Possible side effects include headaches, dizziness, swollen ankles, flushing (going red in the face), an uneven heart beat, and constipation.

### Medicines to control your cholesterol

Taking a type of medicine called a statin can help lower your cholesterol. This can also reduce your chance of a heart attack or stroke. If you have diabetes this can help reduce your risk of these serious problems even if your cholesterol level is not high to start with.

If your cholesterol is still high after taking statins, or if you can't take statins, there are other options. But we don't know if they work as well as statins to reduce the chance of a stroke or heart attack.

### Medicines to stop your blood from clotting

Aspirin makes your blood less likely to form blood clots. This can help prevent a stroke or heart attack in people who are at high risk of these problems. Many people with diabetes take a low daily dose of aspirin.

## Side effects and monitoring your treatments

You may experience some side effects with these medicines. We don't know as much about the side effects of newer medicines as we do about the ones that have been around for longer.

The leaflet that comes with your medicine will describe the possible side effects. Most side effects are not common but you should tell your doctor or pharmacist if you get any problems. You might be able to try different treatments.

You will need to have your medicines checked regularly even if you don't get any side effects, to see if they are still the best options for you.

For more information on living with type 2 diabetes, see our leaflets *Diabetes: what can I do to keep healthy?* and *Diabetes type 2: questions to ask your doctor*.

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