

Patient information from BMJ

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Diabetes type 2: should I take insulin?

If you take tablets for diabetes and they don't control your blood sugar well enough, your doctor might suggest that you start taking insulin. This leaflet tells you what taking insulin involves and how it can help.

What is insulin?

Insulin is a hormone that your body makes to keep the amount of glucose (sugar) in your blood steady. If you have type 2 diabetes your body doesn't make enough insulin, or the insulin it does make doesn't work properly. This means that too much glucose builds up in your bloodstream. This can make you ill.

The insulin you take for diabetes is made in a laboratory to be as much like natural human insulin as possible. It works in the same way to keep your blood sugar under control.

You can't take insulin as a tablet, because the digestive juices in your stomach would destroy the insulin. It's usually taken as an injection. You might worry about the idea of giving yourself an injection.

But there are special devices made for people with diabetes who need to take insulin. These devices make injecting insulin much easier and the needles are very thin. So it shouldn't hurt and you will probably find you soon get used to it.

Some people with diabetes need to use a device called an insulin pump. This is a small machine about the size of a pack of cards that regularly delivers small amounts of insulin into the body through a tube that goes into the skin.

Why might I need to take insulin?

Most people with type 2 diabetes start by taking tablets to control their blood sugar. These tablets encourage the body to make more insulin or to make better use of insulin. But some people make so little insulin that these tablets are not enough. They need to take extra insulin to keep their blood sugar under control.

If your blood sugar is too high you might get symptoms of high blood sugar (hyperglycaemia) such as feeling tired and thirsty a lot. Although not everyone gets symptoms.

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If your blood sugar stays too high for a long time it can damage your blood vessels. You could get serious problems, such as damage to the nerves in your feet, which can make it hard to walk, or to your eyes, which could damage your eyesight.

Your doctor will measure how well your blood sugar is controlled using a blood test called the haemoglobin A1c test (also known as HbA1c). This test can show how high your blood sugar has been over the previous three months.

If this test shows your blood sugar is too high over a long time, even when you are taking diabetes tablets, your doctor might suggest that you start taking insulin.

How can it help?

Having insulin injections can help bring your blood sugar levels back under control. You should no longer get symptoms of hyperglycaemia. And if your blood sugar levels are lower you are less likely to get damaged blood vessels in your eyes, nerves, and kidneys.

Insulin should lower your haemoglobin A1c level. If you start taking insulin because your diabetes is not well controlled, your HbA1c level is likely to be one to two points lower after four months than if you'd been taking tablets instead. This shows that your blood sugar is better controlled with insulin.

If you have just started treatment for type 2 diabetes you are unlikely to start with insulin. Diabetes tablets are likely to work as well as insulin for you to begin with.

Can it be harmful?

If you take insulin injections instead of tablets you are more likely to get low blood sugar (hypoglycaemia) and to put on some weight.

The biggest problem with taking insulin is getting a good balance between your insulin dose and your eating and activity. If you take too much insulin you could get low blood sugar (hypoglycaemia).

But if you don't take enough insulin your blood sugar can go too high. This is called hyperglycaemia. People who take insulin need to check their blood sugar level regularly to keep it in their target range.

Before you start taking insulin your doctor or nurse will explain how to recognise the signs of very low blood sugar and what to do about it. Some people call having very low blood sugar having a hypo (from the word 'hypoglycaemia').

If you have a hypo you might feel drowsy, dizzy, or confused. You might even lose consciousness. This can be dangerous. But if you learn to recognise the warning signs, taking some glucose pills or having a sugary drink can keep you from having a bad hypo.

It's useful if family members or close friends know what to do if you have a hypo or lose consciousness.

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This might include knowing how to use a glucagon kit in an emergency. Glucagon is a hormone that helps to raise blood sugar levels. If you have a severe hypo or if you lose consciousness a glucagon injection can help restore your blood sugar to a safer level.

It's a good idea if family members and close friends know how to use the kit, in case you can't give yourself the injection.

Many people who take insulin wear an insulin bracelet or badge. These items can be marked with personal information that can help medical personnel in an emergency.

How and when do I take insulin?

The type of insulin you take will depend on how your body responds to insulin and how you want to use it. Your doctor or diabetes nurse will help you to work out which type of insulin is best for you, and to work out a dosing schedule that suits you.

It might take some time to get your dosing schedule to fit well with how you live. Different people need different dosing schedules. The amount of insulin you need changes according to how much you eat and how much exercise you take.

The first drug many people with type 2 diabetes will be prescribed is metformin. Many people who take insulin will keep taking metformin. Some people find that they can manage their blood sugar best by having an injection of long-acting insulin at night. If that doesn't work they might also have injections before meals.

You will have to adjust your dose of insulin if you plan to eat, or to exercise, more or less than usual. But if you have trouble mixing insulin pre-mixed versions are available.

Changes in your body can affect how much insulin you need: for example, if you have an infection, or if you're stressed, or your body is having hormone changes from puberty.

If you become pregnant your doctor will want to monitor your insulin needs closely. You will need to be extra careful during these times. You might need to see your doctor or diabetes nurse if you find it hard to control your blood sugar levels.

You can inject insulin into several different places on your body, but here are a few rules to remember:

- Insulin injected in your abdomen works fastest
- Insulin injected into your thigh works more slowly
- Insulin injected into your arm works at medium speed.

It's a good idea to vary where you inject. This doesn't necessarily mean that you inject in different areas of the body, just that you avoid injecting in the same spot all the time.

Testing your blood glucose

If you take insulin you need to test your blood sugar regularly to make sure it isn't getting too high or too low. There are kits to help you do this.

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You take some of your blood, usually one drop from your finger or your forearm. Most people use a testing device for this. When you press the button the needle goes into your finger to give you the right amount of blood.

When you have a drop of blood on your finger you touch the drop to a test strip on a meter. The meter analyses your blood and tells you how much sugar is in it. The number usually shows on a little screen on the meter. Sometimes you might also use a continuous glucose monitoring device.

Your doctor will help you decide how often to test your blood. Some people need just one test a day. Others need to do it before they take their insulin (three or four times a day).

Based on your test results you might need to adjust your insulin dose or your activities. You will get used to this over time. But if you're not sure what to do, ask your diabetes nurse or your doctor for advice.

Driving and insulin

The law about insulin and driving varies from country to country. For example, in the UK and Australia you need to let the local driving licence authority know if you are using insulin. In the UK it's the DVLA. You need to be careful about your blood sugar level when you're driving. If your blood sugar drops too low when you're at the wheel you could have a hypo and black out.

Check your blood sugar level just before you get into the car. Always have some sugary drinks or sweets in the car. If you feel you're going into a hypo you can stop and have a drink or some sweets to boost your blood sugar. It's a good idea to check your blood again before driving.

You might also want to make sure you're wearing an insulin bracelet or badge when driving, and to have a glucagon kit handy.

What are the alternatives?

Some people find that taking tablets and watching their diet is enough to keep their blood sugar under control. But if your blood sugar is not well controlled with tablets you risk getting serious health problems from diabetes.

If your doctor thinks you might benefit from taking insulin you will usually have plenty of time to discuss this, think about it, and make a decision with your doctor.

Your doctor will also make sure that you know how to inject yourself and how to test your blood sugar. He or she should give you a lot of help and support to adjust to taking insulin.

It's also important to remember that, whether you take insulin or not, you still need to take measures to control other problems linked with diabetes, such as high cholesterol and high blood pressure.

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