

Patient decision aid

## Type 2 diabetes in adults: controlling your blood glucose by taking a second medicine – what are your options?

[nice.org.uk/guidance/ng28](http://nice.org.uk/guidance/ng28)

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### About this decision aid

This decision aid can help you think about your options for controlling your blood glucose to try to reduce the long-term risks of diabetes. It can help you if you are an **adult with type 2 diabetes** and:

- you have been taking a single medicine to control your blood glucose (sugar) level as measured by your haemoglobin A1c (HbA1c) level **and**
- your HbA1c level is higher than the target level you had agreed with your healthcare professional.

(We use 'healthcare professional' in this decision aid to mean the doctor, nurse, pharmacist or other professional who is helping you. Different healthcare professionals might help you with different parts of your care.)

This decision aid can help you make up your mind about 2 things:

- firstly, what new blood glucose (HbA1c) target level is best for you **and**
- secondly, which medicines you might try to achieve this target.

For the first of these, the decision aid explains the advantages and disadvantages of controlling your blood glucose. It then asks you to think about the things that are important to people who are agreeing a new HbA1c target. For the second, the decision aid covers many of the questions people with type 2 diabetes have about medicines. **It can help you to make a decision that is right for you, with help from the healthcare professional who is advising you.** Your decision depends on several things. Different people will feel that some of these things are more important to them than others, so it is important that you make a decision that is right for you. You might also find it helpful to talk things over with your family or friends.

This decision aid is based on the recommendations in NICE's [type 2 diabetes in adults](#) guideline. It does not cover other parts of your care, or medicines that you might need to take later on in your condition, such as insulin. We have also produced a [user guide](#) for healthcare professionals to explain how this decision aid was put together.

NICE guidelines give advice to healthcare professionals on the care and support that should be offered to people who use health and care services. You have the right to be involved in discussions and make informed decisions about your treatment and care with your healthcare professional. You should be given information that explains the options in a way you can understand. For more information see [your care](#).

## Your target blood glucose (HbA1c) level

The HbA1c blood test reflects your average blood glucose level over the past 2–3 months. NICE recommends that when you are first diagnosed with type 2 diabetes, you should agree a target HbA1c level with your healthcare professional and they should support you in trying to reach it. This target level is usually 48 mmol/mol (6.5%), but may be 53 mmol/mol (7.0%) for some people.

As type 2 diabetes progresses over time, a person's blood glucose levels naturally tend to get higher, even though they take a medicine to try to control their blood glucose. If you are taking a single medicine and your HbA1c level increases to 58 mmol/mol (7.5%) or higher, NICE recommends that your healthcare professional should:

- offer you diet and lifestyle advice and
- agree a new target HbA1c level with you and support you to aim for it, and
- talk with you about taking an additional medicine to help you reach this new target.

There is more information about what target HbA1c levels NICE recommends in [‘Agreeing a new target blood glucose \(HbA1c\) level’](#) later in this decision aid.

Tell your healthcare professional if you have any concerns or problems with any of the medicines you are currently prescribed. For example, some people find it hard to remember to take their medicines as recommended or find that the medicines don’t suit them very well. It may be that you can get better control of your blood glucose by:

- making better use of your current medicine (for example, by having something to help you remember to take it regularly) or
- changing to a different medicine.

## **What are the advantages and disadvantages of controlling your blood glucose?**

### ***Advantages***

#### **Controlling the symptoms of diabetes**

High blood glucose levels can cause symptoms such as feeling very thirsty, needing to pass urine a lot and feeling more tired than usual. Controlling blood glucose can stop these symptoms.

#### **Preventing some long-term health problems**

In the long term, having high blood glucose levels increases the chances of other health problems. Controlling your blood glucose to an HbA1c level that is lower than is needed to stop diabetes symptoms will reduce your chance of getting some of these problems, but not others.

Controlling your blood glucose more than you need to stop diabetes symptoms:

- reduces your risk of having a heart attack, having such bad foot problems that you need an amputation, or developing kidney, eye or nerve problems.
- does not seem to change your risk of dying early, dying from heart disease (including dying from a heart attack), having a stroke, or needing surgery to repair damaged blood vessels in your heart or legs.

## **How will controlling your blood glucose affect you?**

Few medicines work in everyone who takes them and we cannot say for sure whether you will or will not benefit:

- some people who control their blood glucose like this will still have a heart attack, or need an amputation, or develop kidney, eye or nerve problems.
- some people will not have a heart attack, or need an amputation, or develop kidney, eye or nerve problems anyway – whether or not they control their blood glucose like this.

The likelihood that you will benefit from controlling your blood glucose like this depends on how likely you are to get these problems anyway. If the chance of you getting them is already small, reducing it further might not make much real difference. If the chance of you getting them is higher, reducing it by the same proportion will make a bigger difference.

## ***Disadvantages***

### **Taking more medicines**

The lower you want to keep your blood glucose (HbA1c level), the more medicines you are likely to need to take. (However, losing weight and keeping active can delay the time when more medicines are needed.) Taking more medicines may be inconvenient.

### **Side effects from medicines**

Taking more medicines to keep your HbA1c level low also increases the chance that you will get side effects. Not everyone will get side effects, but we cannot tell in advance whether you will or will not get them. There is more information about possible side effects in [‘Information about medicines to help control your blood glucose \(HbA1c\) level’](#) later in this decision aid.

### **Hypoglycaemia (‘hypos’)**

One possible side effect of taking medicines to control your HbA1c is having low blood glucose (hypoglycaemia) – often called a ‘hypo’. Most hypos are mild, but some can be severe, which means that you need help from someone else to treat the hypo. There are special rules relating to hypos for drivers who have diabetes. By law you must tell the DVLA if you have more than 1 severe hypo in 12 months or if you have a severe hypo while driving. You must also tell the DVLA if you or your healthcare professional feel you are at high risk of developing severe hypos, or if you develop difficulty in recognising the warning symptoms of a hypo. Your healthcare professional may also advise you to check your blood glucose level at times relevant

to driving, especially if you take medicines that are particularly linked with an increased chance of hypos. Ask your healthcare professional for more information. Note: there are additional rules for people who hold bus or lorry driving licences.

### ***What else can you do to help your diabetes?***

**Controlling your blood glucose is just one of several aspects of your care.** It is also important to have a healthy diet, keep active, control your weight, blood pressure and cholesterol, and stop smoking if you smoke. These will help to improve your overall health and reduce your chances of heart disease and stroke (including your chance of dying from them). Ask your healthcare professional if you would like help or support.

You can find more information about type 2 diabetes from [NHS Choices](#) or [Diabetes UK](#). The NICE guideline on [type 2 diabetes in adults](#) has more information about what NICE recommends for your care.

### **Agreeing a new target blood glucose (HbA1c) level**

There is no HbA1c target level that is right for everyone. NICE recommends that:

- for many people, a new target level of 53 mmol/mol (7.0%) will be a good choice.
- you should choose a higher target HbA1c level if that would be better suited to your individual circumstances and what is important to you.

Several things will affect the target HbA1c level you agree with your healthcare professional; these are described on the next page.

## Your target blood glucose (HbA1c) level: weighing it up

Make a mark on the lines to show how you feel about these statements. The more you agree with the statement on the left, the further to the left you should put the mark. The more you agree with the statement on the right, the further to the right you should put the mark. You and your healthcare professional can use this to help decide the best target HbA1c level for you.

Thinking about things like driving, having severe hypos would not be a problem for me\*

Thinking about things like driving, having severe hypos would be a big problem for me\*

I'm not bothered about the possibility of getting other side effects

Getting other side effects would be a big problem for me

I'm happy to take more medicines if I need to

I don't want to take any more medicines

I don't have any health problems apart from my diabetes

I have lots of health problems

Thinking about my age and my health overall, I'm hoping to see longer-term benefits

Thinking about my age and my health overall, shorter-term benefits are more important to me



\*Hypos might also be a problem for you for other reasons, such as if you operate machinery, if you are at risk of falling, or if you find it difficult to recognise the warning symptoms of a hypo.

## Information about medicines to help control your blood glucose (HbA1c) level

This section is about the different medicines you might take as well as your current medicine to try to control your blood glucose. Some medicines may not be suitable for you if you have certain other medical conditions, such as problems with your heart, kidneys or liver. Your healthcare professional will give you advice about this.

The following tables and diagrams cover many of the questions people with type 2 diabetes have about medicines. They can help you to think about what is important for you, and to discuss this information with your healthcare professional. The medicines have been put into groups or 'families' of medicines that work in similar ways. It is important to note that:

- the table lists medicines in alphabetical order, not in any order of preference.
- not all medicines work for everyone. Some medicines may work better at lowering blood glucose than others for an individual person, but it is not possible to tell in advance which will work best for you.
- the table provides information about side effects that are thought to concern people with type 2 diabetes most. Some people may have other less common side effects.
- not everyone taking a particular medicine will get side effects.
- you can find more information in the information leaflets that come with the medicine.

## Medicines to help control your blood glucose

Medicine name	What does taking it involve?	Can it cause hypoglycaemia (hypos)?	What is its effect on weight?	Other issues (The <a href="#">diagrams</a> on pages 12–14 show what the numbers in this column mean)
<b>DPP-4 inhibitors</b> <ul style="list-style-type: none"> <li>alogliptin</li> <li>linagliptin</li> <li>saxagliptin</li> <li>sitagliptin</li> <li>vildagliptin</li> </ul>	1 tablet usually taken once a day	DPP-4 inhibitors do not usually make you more or less likely to get hypos. But anyone with type 2 diabetes can get hypos.	Usually no effect on weight	<ul style="list-style-type: none"> <li><b>Digestive problems</b> such as diarrhoea, abdominal pain and heartburn, and also <b>rashes/itching</b> and <b>urine infections</b>, have been seen in 10 to 100 people in every 1000 who take DPP-4 inhibitors. But 900 to 990 people in every 1000 do not get these problems.</li> <li><b>Inflammation of the pancreas</b> has been seen in 1 to 10 people in every 1000 who take DPP-4 inhibitors. But 990 to 999 people in every 1000 do not get this problem.</li> </ul>
<b>Metformin</b>	1 tablet usually taken 2 or 3 times a day	Metformin does not usually make you more or less likely to get hypos. But anyone with type 2 diabetes can get hypos.	Usually no effect or small weight loss	<ul style="list-style-type: none"> <li><b>Digestive problems</b> such as nausea, vomiting, diarrhoea, abdominal pain and loss of appetite have been seen in more than 100 people in every 1000 who take metformin. Not everyone gets these problems. They most often happen at the beginning of the treatment and then usually go away.</li> <li><b>Changes in the sense of taste</b> have been seen in 10 to 100 people in every 1000 who take it. But 900 to 990 people in every 1000 do not get this problem.</li> <li>Very rarely, metformin can cause a <b>blood problem</b> called lactic acidosis. This may affect fewer than 1 in 10,000 people who take it. Most people do not get this but it is very serious if it occurs. The risk is higher for people with liver or kidney problems, uncontrolled diabetes, prolonged fasting, or dehydration due to diarrhoea or vomiting.</li> </ul>



Medicine name	What does taking it involve?	Can it cause hypoglycaemia (hypos)?	What is its effect on weight?	Other issues (The <a href="#">diagrams</a> on pages 12–14 show what the numbers in this column mean)
<b>Pioglitazone</b>	1 tablet taken once a day	Pioglitazone does not usually make you more or less likely to get hypos. But anyone with type 2 diabetes can get hypos.	Average 2–3 kg increase over 12 months	<ul style="list-style-type: none"> <li>• <b>Bone fractures</b> have been seen in 10 to 100 women in every 1000 who take pioglitazone. But 900 to 990 women in every 1000 do not get this problem</li> <li>• <b>Bladder cancer</b> has been seen in 1 to 10 people in every 1000 who take pioglitazone. But 990 to 999 people in every 1000 do not get this problem.</li> <li>• <b>Fluid retention</b> can occur in some people who take pioglitazone, and this could worsen heart failure in people who already have it or might get it. It is not certain how many people in 1000 would get fluid retention.</li> <li>• People taking pioglitazone need a <b>blood test</b> from time to time to check how well their liver is working.</li> </ul>
<b>SGLT-2 inhibitors</b> <ul style="list-style-type: none"> <li>• canagliflozin</li> <li>• dapagliflozin</li> <li>• empagliflozin</li> </ul>	1 tablet taken once a day	SGLT-2 inhibitors do not usually make you more or less likely to get hypos. But anyone with type 2 diabetes can get hypos.	Average 2–3 kg decrease over 6–12 months	<ul style="list-style-type: none"> <li>• <b>Digestive problems</b> such as nausea and constipation, and also <b>thirst, increased passing of urine, urine infections</b> and <b>thrush</b> (in men and women) have been seen in 10 to 100 people in every 1000 who take SGLT-2 inhibitors. But 900 to 990 people in every 1000 do not get these problems.</li> <li>• <b>Low blood pressure</b> (which might lead to fainting or other problems) has been seen in 1 to 10 people in every 1000 who take SGLT-2 inhibitors. But 990 to 999 people in every 1000 do not get this problem. The risk is higher in older people and in people with heart or circulation problems, or dehydration due to diarrhoea or vomiting.</li> <li>• People taking SGLT-2 inhibitors need a <b>blood test</b> from time to time to check how well their kidneys are working.</li> </ul>

Medicine name	What does taking it involve?	Can it cause hypoglycaemia (hypos)?	What is its effect on weight?	Other issues (The <a href="#">diagrams</a> on pages 12–14 show what the numbers in this column mean)
<b>Sulfonylureas</b> <ul style="list-style-type: none"> <li>• glibenclamide</li> <li>• gliclazide</li> <li>• glimepiride</li> <li>• glipizide</li> <li>• tolbutamide</li> </ul>	1 to 3 tablets, usually taken once a day	Sulfonylureas make you more likely to get hypos. The number of people affected is not certain, and anyone with type 2 diabetes could get hypos.	Possible increase but amount not certain	<ul style="list-style-type: none"> <li>• <b>Digestive problems</b> such as nausea, diarrhoea and abdominal pain have been seen in 10 to 100 people in every 1000 who take sulfonylureas. But 900 to 990 people in every 1000 do not get these problems.</li> </ul>

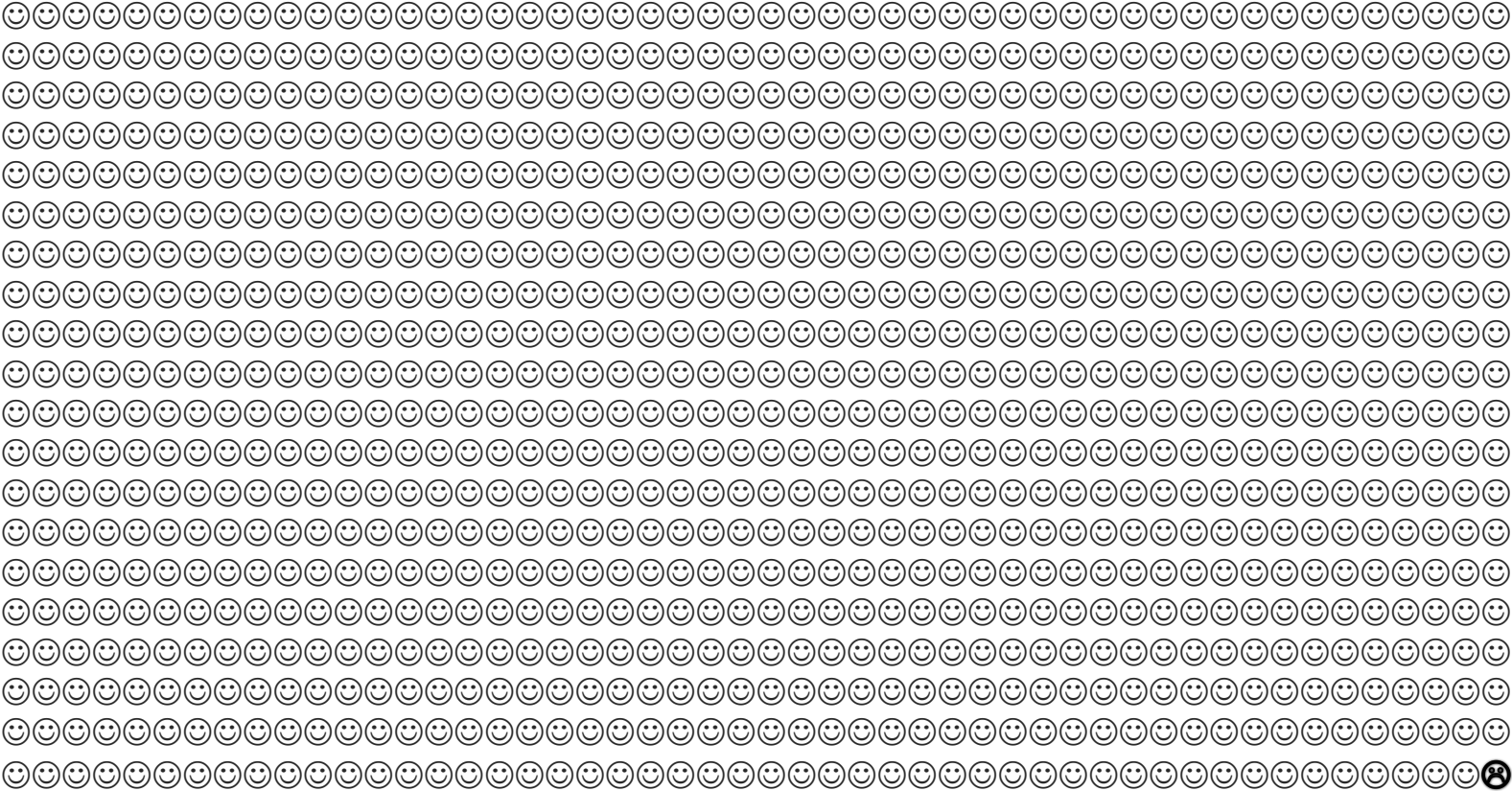
## How you feel about choosing a medicine to try

You can use this table to help you think about how important the issues are to you.

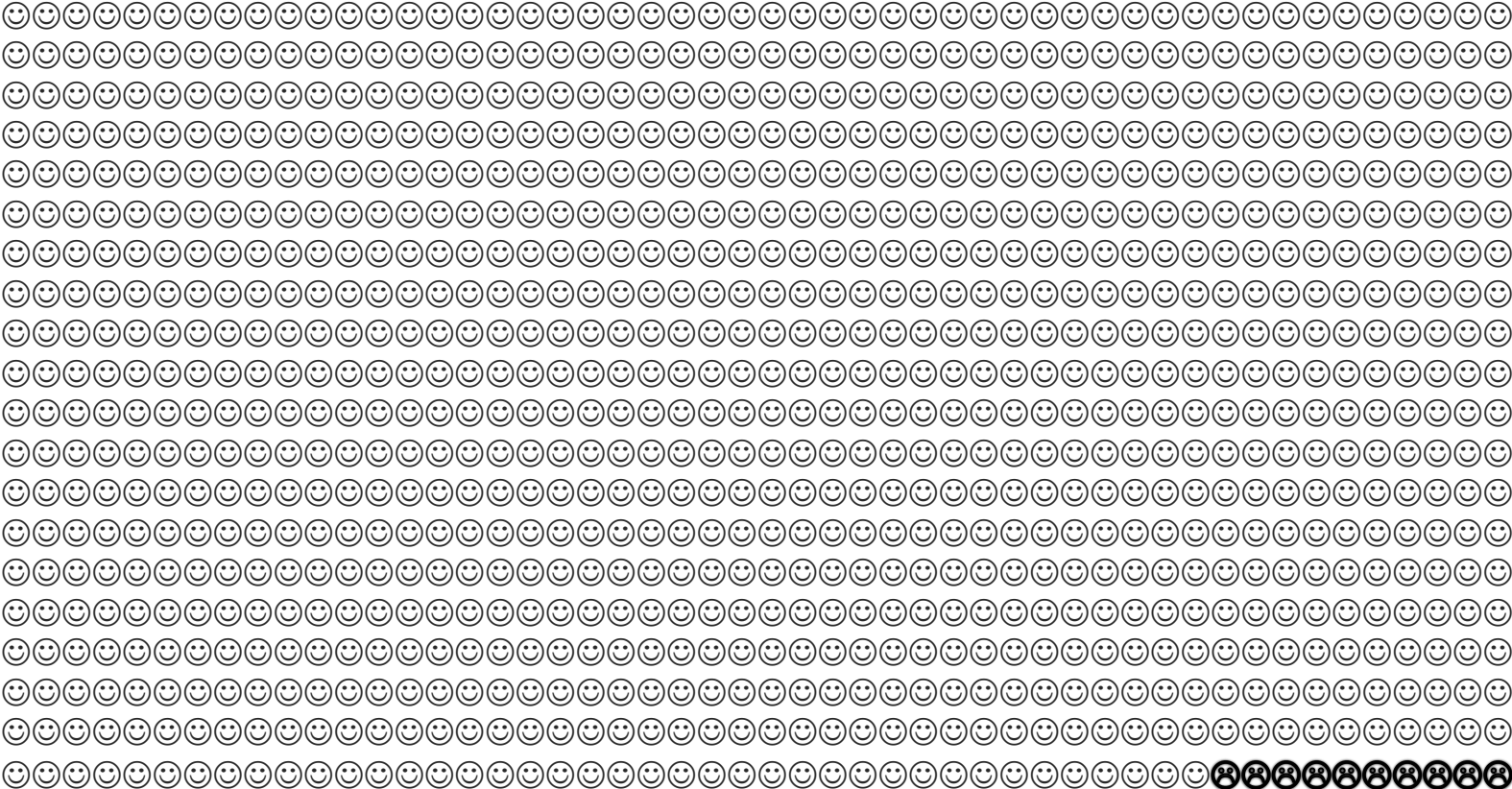
Issue	How important is this to me?			
	Very important	Important	Unimportant	Very unimportant
Getting to a lower target blood glucose (HbA1c) level				
How many tablets I would have to take and how often				
The possibility of getting hypos				
The possibility of gaining weight				
The possibility of other side effects				
Other concerns or questions I want to discuss with my healthcare professional				

# Diagrams to explain numbers relating to side effects

## 1 in 1000



**10 in 1000**



**100 in 1000**

