

type 2 diabetes



changing diabetes





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Who is this book for?

This booklet is for people with type 2 diabetes.

Many people develop type 2 diabetes, especially later in life, so you're not alone. You may have felt unwell for some time, and not known why, so being diagnosed with type 2 diabetes can be a relief. It also means you can take action to avoid problems in the future.

This booklet can help answer some of the questions you may have about type 2 diabetes and its treatment.

If you need more information, or have any worries, your Doctor or Diabetes Nurse Specialist will be happy to help.

This booklet is one of the series of booklets provided by Novo Nordisk to people with diabetes.

The other booklets in the series are:

- looking after yourself
- help with 'hypos'
- type 1 diabetes

Remember – diabetes should not stop you enjoying life

Contents

Questions

Answers

What is diabetes?	Page 1
Why is my blood glucose level high?	Page 2
Are there different types of diabetes?	Page 3
What is type 2 diabetes?	Page 4
How do I know if I have type 2 diabetes?	Page 5
How is type 2 diabetes treated?	Page 6
Will I need tablets for diabetes?	Page 8
Will I need insulin?	Page 9
How do I inject my insulin?	Page 10
How do I store my insulin?	Page 11
Why should I test my blood glucose?	Page 12
What should my blood glucose level be?	Page 13
What if I have a low blood glucose level?	Page 14
What if I have a high blood glucose level?	Page 16
What about sick days?	Page 18
Can I drive a car?	Page 19
Can I travel or go on holiday?	Page 20
Checklist	Page 21

What is diabetes?

- Diabetes is a long-term disorder characterised by a raised level of glucose (or sugar) in the blood

Blood glucose can be called blood sugar

Where does glucose come from?

- Glucose comes from food, particularly starchy and sugary foods (called carbohydrates)
- Digestion breaks down carbohydrates into glucose which goes into your blood as energy



- Some foods provide glucose very quickly, e.g. jams, sweets and fruit juice
- Other foods provide glucose slowly, e.g. potatoes, bread and rice

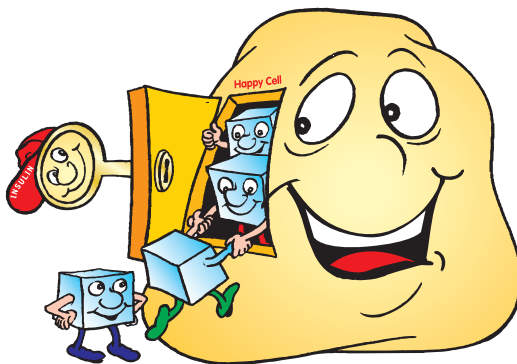


Why is my blood glucose level high?

- The *pancreas* (a gland in the body near your stomach) makes a hormone called *insulin*
- Insulin is very important – it helps glucose move from the bloodstream into the parts of your body which need it to make energy

When you have type 2 diabetes your body doesn't make enough insulin and the insulin your body produces doesn't work very well (this is called insulin resistance). Without insulin there will be too much sugar left in your blood (high blood glucose)

Insulin acts as a key, unlocking the door to your cells to let glucose in



Are there different types of diabetes?

There are three main types of diabetes

Type 1 diabetes

- Is when the body can't make insulin as most of the insulin-producing cells have been destroyed
- Insulin injections are always needed

Type 2 diabetes (the type you have)

- Occurs when your body makes some insulin, but not enough to meet your overall requirements
- Can be influenced by lifestyle choices
- May be treated with diet and exercise or tablets at first
- Most people with type 2 diabetes will eventually need to take insulin

Gestational diabetes

- Occurs in some women during pregnancy
- After childbirth blood glucose levels usually return to normal
- There is an increased risk of type 2 diabetes in later life for women who have had gestational diabetes

What is type 2 diabetes?

- Type 2 diabetes is when your body can't make enough insulin or when your body can't use the insulin it makes properly (insulin resistance)
- As a consequence, too much glucose stays in your blood
- The job of insulin is to unlock the doors to your cells and let the glucose in

Type 2 diabetes

- Is the most common type of diabetes
- Develops gradually - therefore may be present for many years before being diagnosed
- Is found mainly in people aged over 40
- Risk factors include:
 - Age
 - Obesity - particularly around the abdominal area (the belly)
 - Having a blood relative with diabetes

How do I know if I have type 2 diabetes?

People with type 2 diabetes often have very few or no symptoms

Some of the symptoms you may have include:

- Thirst and a dry mouth
- Passing a lot of urine
- Tiredness
- Blurred vision

Don't worry – healthy living and taking your medication will make you feel better

How is type 2 diabetes treated?

Type 2 diabetes is always treated with healthy eating, exercise and lifestyle changes. In addition, tablets or injections may be necessary to help control your blood glucose, weight, blood pressure and cholesterol.

Diet and exercise

Diet

Eating a healthy diet and taking regular exercise

- Helps your body use any insulin it makes
- Helps you lose weight and makes you feel better

What sort of food is good?

- Vegetables, fruits, wholegrain bread, cereals, rice and pasta
- Some fish, chicken and lean meat
- Eat only **small** amounts of animal fats and refined sugar (e.g. sweets and biscuits, etc.)

What else should I do?

- Eat at regular intervals – don't skip meals
- Don't over eat
- If you smoke – *STOP* – Talk to your Doctor or Diabetes Nurse Specialist for advice on how to stop smoking
- Don't drink too much alcohol

Recommended maximum alcohol intake for adults

- Women – 14 units per week
- Men – 21 units per week

One unit = half a pint of ordinary beer/lager, or one standard glass of wine, or one small measure of spirits

How is type 2 diabetes treated?

Exercise

- Improves your blood glucose control
- Helps you lose weight
- Improves your blood circulation

What sort of exercise?

- Any kind of movement that you enjoy, e.g. swimming, walking, tennis, even housework!

How often should I exercise?

- Aim for 30 minutes of physical activity every day

What else should I do?

- Wear well-fitted, cushioned shoes or trainers
- Carry glucose tablets in case of 'hypos' (low blood glucose) if on insulin or certain tablets

Will I need tablets for diabetes?

Diabetes is a progressive disease. If diagnosed early it can be treated with healthy eating, exercise and lifestyle changes for many years. However, most people will eventually need tablets to help control type 2 diabetes, in addition to diet and exercise. Some may even require tablets at the time of diagnosis to help control their blood glucose.

How do tablets work?

- Some help the pancreas make more insulin
- Some help your body use insulin better
- Some slow the digestion of food and absorption of glucose
- Some people may have to take more than one type of tablet

In addition to glucose lowering tablets, you may also have to take tablets to control blood pressure and reduce cholesterol. Make sure you have your blood pressure checked regularly.

Sometimes treatment of type 2 diabetes may require that you take an injection. This may be in the form of insulin, or newer emerging anti-diabetes medications.

Will I need insulin?

Everyone's diabetes is different and requires different treatments. Many people with type 2 diabetes will eventually need to take insulin because the body gradually stops making its own.

Why is insulin injected?

- Insulin can't be given in tablet form, as it would be destroyed in the stomach

Are there different types of insulin?

Yes - The different regimens of insulin are summarised below:

1. Long-acting insulin

- Background or basal insulin that lasts for a long time through the day and night

2. Premixed insulin

- Addresses background and meal time requirements

3. Very fast-acting insulin

- Meal time insulin that works very quickly for a short period of time

How often will I need to inject my insulin?

Everyone's routine is different. Often with type 2 diabetes, you will only require one injection per day, but you may inject anywhere between one and five times a day. The number of injections depends on your lifestyle and the degree of control of your diabetes.

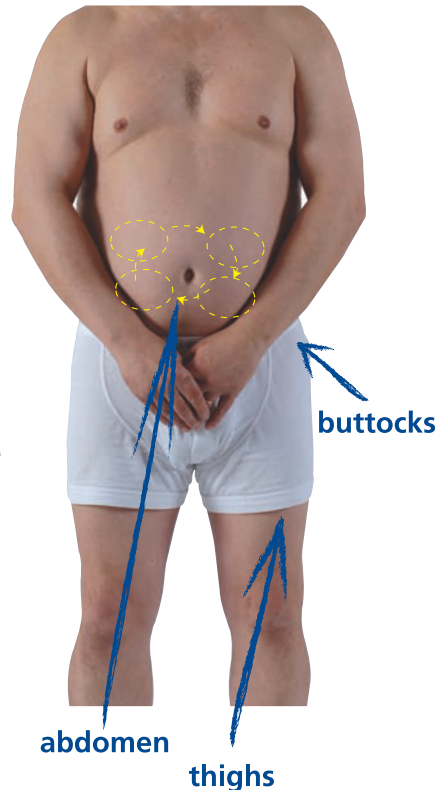
Your Doctor or Diabetes Nurse Specialist will give you more information if you need insulin and help you decide which is the best regimen for you

How do I inject my insulin?

- Insulin is available in a range of different injection devices such as:
 - disposable pens
 - durable injection devices or vial & syringe
- Should you need a spare or replacement device it may be useful to know that Novo Nordisk devices are available from your diabetes clinic or pharmacy

Where do I inject my insulin?

- The best place to inject is into the fatty areas of your abdomen (belly) or your thighs.
Other areas which can be used include the buttocks.
- Injecting insulin is easy, you will be shown how by your Doctor or Diabetes Nurse Specialist
- Don't inject in the same spot all the time as it can cause lumps in your skin. These lumps stop the insulin from working properly
- **You will be given more advice on:**
 - Injection techniques
 - Rotating injection sites
 - Adjusting your insulin dose
 - Disposing of the needles



How do I store my insulin?

Do

- ✓ Keep the insulin you are using at room temperature
- ✓ Store insulin you are not using in the fridge

Don't

- ✗ Freeze your insulin
- ✗ Keep your insulin in direct sunlight, e.g. on a window sill
- ✗ Keep your insulin in a hot place, e.g. above a radiator
- ✗ Use insulin that is lumpy or a strange colour
- ✗ Use insulin after the expiry date

If travelling

Do

- ✓ Keep your spare insulin in a cooler bag or vacuum flask
- ✓ Ensure you carry your insulin in your hand-luggage on a plane

Don't

- ✗ Allow your insulin to be stored in the hold of an aeroplane as it may freeze and become useless
- ✗ Leave your insulin in the car

Why should I test my blood glucose?

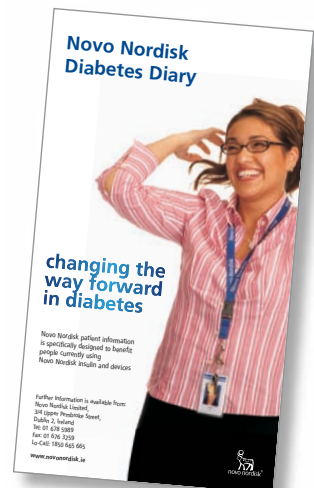
- Monitoring your blood glucose helps you to control your diabetes more effectively
- You can check if your blood glucose level is within the target range and if not take action to correct it
- You will be given a home monitoring diary to record the results
- Your medication may be changed depending on the results

Good control of your diabetes helps keep you healthy

Research shows high levels of glucose in your blood over a long time can cause problems with your:

- Eyes
- Kidneys
- Heart
- Nerves
- Blood circulation
- Legs and feet

However by keeping your glucose levels as close to normal as possible these problems may be avoided



What should my blood glucose level be?

- Blood glucose is measured in millimoles per litre (mmol/L)
- In general, people with type 2 diabetes should aim to keep their blood glucose levels between **4 and 7 mmol/L** before meals. However you may be given your own range depending on your treatment
- Your Doctor and Diabetes Nurse Specialist will teach you how and when to test your blood glucose and if you need to change your insulin dose depending on the results
- You will be given a home monitoring diary to record these results
- For your clinic visits, you will get a blood test called a HbA_{1c}. This gives an estimate of your blood glucose control over the preceding 6 - 8 weeks. The aim is to keep the result of this test below 6.5%, as this reading has been shown to prevent, or delay, the onset of complications of diabetes.

What if I have a low blood glucose level?

Hypoglycaemia is the medical word for low blood glucose.

Hypoglycaemia is often called a **'hypo'**. This is when your blood glucose level is less than 4.0 mmol/L.

How will I feel?

When your blood glucose level drops you may feel:



- Dizzy



- Sweaty



- Hungry



- Cold



- Faint



- Tired



- Confused



- Irritable

- Have a pounding heartbeat
- If left untreated you may pass out (lose consciousness)

A 'hypo' can develop quickly within minutes.

What if I have a low blood glucose level?

What causes hypoglycaemia?

- Too much insulin
- Missing meals or snacks
- Exercise without eating or reducing insulin dose
- Alcohol - particularly the "morning after"
- Stress and illness
- Hot weather



What should I do?

- Eat or drink something immediately containing sugar, e.g.
 - 5 glucose tablets **or**
 - 15g of fast-acting carbohydrates e.g. 6-8 jellybabies **or**
 - 200ml of fruit juice drink **or**
 - 150-200ml of sugary drink (not a diet drink)

You should feel better after 5-10 minutes, if not take more sugar

- Check your blood glucose
- Eat your normal meal if due or a snack e.g. bread, fruit
- Your Doctor or Diabetes Nurse Specialist can give your friends and family advice on severe 'hypos' and what to do if you become unconscious. You may have to be given an injection of glucagon. It is important that your family and friends know how to do this. Please see the booklet on "**help with hypos**" for more information

What if I have a high blood glucose level?

- **Hyperglycaemia** means high blood glucose

How will I feel?

You may have high blood glucose and not know it.

Other times you may experience one or more of the following:



- Tiredness



- Thirst



- Blurred Vision



- Pass a lot of urine

These symptoms may develop slowly over hours or even days.

What if I have a high blood glucose level?

What causes hyperglycaemia?

- Not taking your medication
- Too much of the wrong kind of food
- Illness/infection
- Weight gain
- Not enough exercise
- Stress
- Certain medications e.g. steroids

What should I do?

- Don't panic
- It is normal for your blood glucose level to go up and down in a day
- Always take your medication as instructed
- If you have high blood glucose levels for a few days in a row, or you feel unwell, see your Doctor or Diabetes Nurse Specialist

What about sick days?

When you feel ill or stressed your blood glucose level can rise.

What should I do?

- ✓ Never stop taking your medication
- ✓ Test your blood glucose at least 4 times a day
- ✓ Drink plenty of liquids
- ✓ Rest
- ✓ Eat your regular food if you are able

When should I call my Doctor?

If you:

- ✓ Have continuous diarrhoea or vomiting
- ✓ Continue to have high blood glucose
- ✓ Have a high temperature
- ✓ Can't eat for 24 hours

Can I drive a car?

Yes – if you have passed your test!

But, by law, you must inform the following you have diabetes and take insulin:

- Insurance company
- Vehicle Licensing Authority
- It will normally be necessary to complete a medical questionnaire issued by the Licensing authority

You may then be issued with a driving license to be renewed every 1, 2 or 3 years

If you're taking insulin you cannot hold a license for a:

- Large Goods Vehicle (LGV)
- Passenger Carrying Vehicle (PCV)
- However, it is possible to apply for a special license for certain vehicles

- **If you are taking insulin:**

- Always check your blood glucose before driving
- Never drive if your blood glucose is below 5.0 mmol/L unless you have eaten
- Always carry glucose in your car for emergencies
- On long journeys, stop regularly and check your blood glucose



Can I travel or go on holiday?

Yes – just plan ahead.

Tell your Doctor or Diabetes Nurse Specialist at least two weeks before you go for more information.

Remember to bring:

- ✓ Spare tablets, insulin, needles and pen or syringes
- ✓ Finger pricker, blood glucose test equipment
- ✓ Diabetic identification, e.g. a card or bracelet/necklace
- ✓ Health insurance (European Health Insurance Card (EHIC) - application form available on www.ehic.ie or from your local health centre)
- ✓ Travel insurance which covers diabetes
- ✓ Doctor's written prescription for insulin
- ✓ Letter from your Doctor or Diabetes Nurse Specialist verifying that you need to carry needles/medical equipment in case you get stopped by security
- ✓ Food supplies for the journey, e.g. snack bars, fruit
- ✓ Your usual treatment for a hypo. It may be necessary to bring glucose tablets rather than a glucose drink onto an aeroplane due to restrictions at security.

Checklist

- ✓ Always take your medication
- ✓ Test your blood glucose regularly
- ✓ See your Doctor regularly to check your diabetes and general health
- ✓ Have your eyes tested
- ✓ Eat a healthy diet
- ✓ Don't smoke
- ✓ Keep to sensible amounts of alcohol
- ✓ Keep fit
- ✓ Watch your weight
- ✓ Check your feet daily
- ✓ Wear comfortable shoes
- ✓ Inform your motor insurance company and the licensing authority if you take insulin
- ✓ Carry diabetes identification

**Now go out and enjoy life – don't let
diabetes stop you**

This booklet is provided as an educational service to people with diabetes by:
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changing the world of diabetes

Living with diabetes isn't easy. It takes discipline, control and support from the people around you. At Novo Nordisk, we want to be your partner in living well with diabetes. We understand that diabetes is just part of who you are - not what defines you. And that you need to be able to count on the company that supplies your medicine.

So what can you expect from us? Besides the medication you need to stay healthy and in control of your life, our leadership in the search for a cure. You can expect us to continue taking real steps in making sure everyone with diabetes, no matter where they are, has access to the care they need. To be ethical and responsible in the way we do business. And just as importantly, you can count on us to help change the way the world sees your diabetes - so that it just sees you.



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