

Type 1 diabetes

Novo Nordisk Customer Care
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For more information on diabetes visit our website
where Novo Nordisk booklets are available
in a downloadable format:

www.changingdiabetes.co.uk

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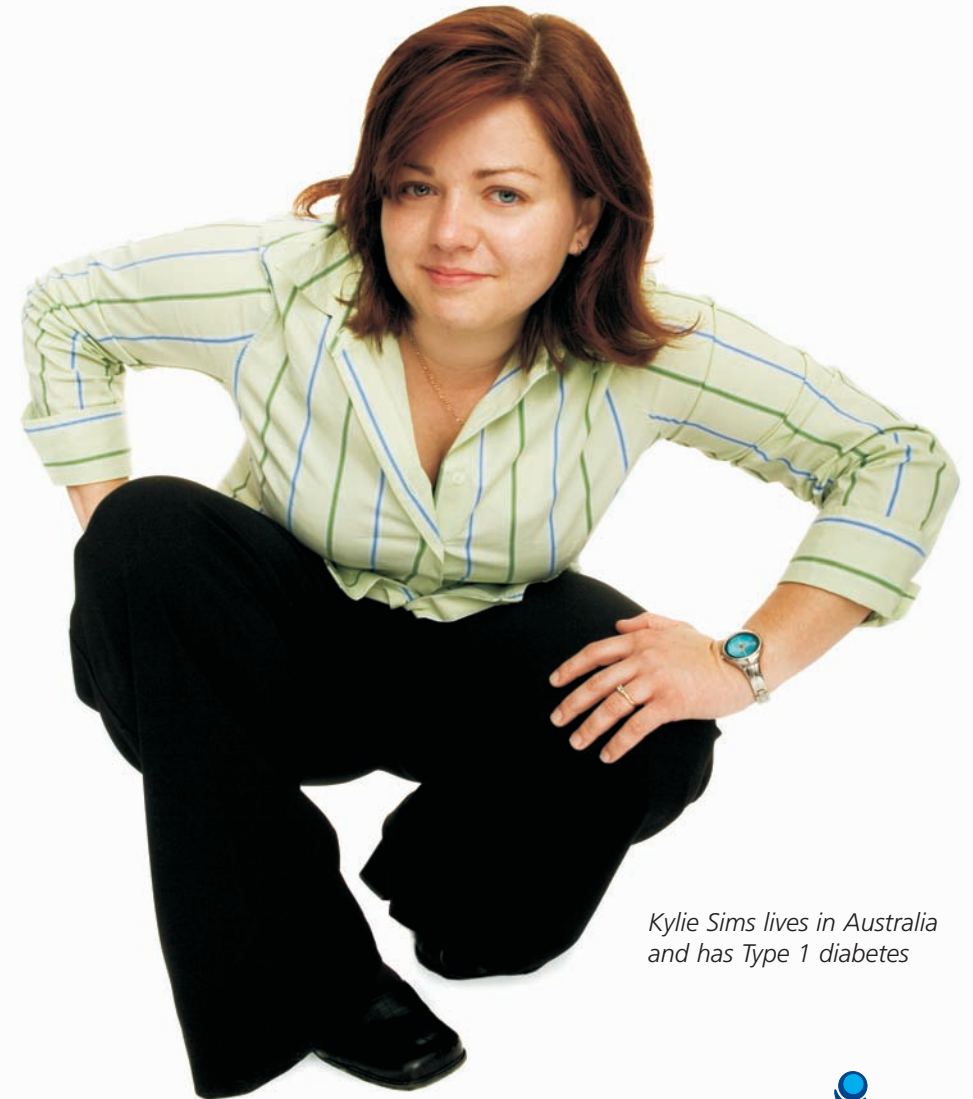
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Further information is available from:
DIABETES UK, TEL: (020) 7424 1000
WWW.DIABETES.ORG.UK



*Kylie Sims lives in Australia
and has Type 1 diabetes*

changing diabetes



Novo Nordisk was one of the first companies to introduce insulin to the world more than 80 years ago. Since that time Novo Nordisk has been dedicated to changing diabetes by tackling diabetes in as many ways as possible. We are committed to defeating this disease in our lifetime, we can win, but we can only win together.

Who is this booklet for?

This booklet is for people with Type 1 diabetes who need to take insulin.

It can help answer some of the questions you may have about Type 1 diabetes and its treatment.

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

Remember – diabetes should not stop you enjoying life

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Answers

What is diabetes?

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

Blood glucose and blood sugar are the same thing

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 stream to be used as energy



- Some foods provide glucose very quickly, e.g. jams, sweets and fruit juice
- Other foods provide glucose slowly, e.g. potatoes, bread, pasta 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 diabetes your body doesn't make enough insulin. Without insulin there will be too much glucose left in your blood (high blood glucose)

Are there different types of diabetes?

There are three main types of diabetes

Type 1 diabetes (the type you have)

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

Type 2 diabetes

- Is when your body can't make enough insulin or when the body can't use the insulin it makes properly
- Usually occurs later in adult life
- Usually treated with diet, exercise and tablets although many people will eventually need to take insulin

Gestational diabetes

- Occurs in some women during pregnancy
- After childbirth blood glucose levels usually return to normal

Why did I develop Type 1 diabetes?

Type 1 diabetes develops when the body's immune system starts to destroy the insulin-making cells in the pancreas. The immune system is our natural defence system against foreign substances such as viruses and bacteria.

There are certain genetic features which may make your body turn against itself and start attacking the cells which make insulin. No-one knows why this happens and much more research is needed to understand it better.

Is there anything I could have done to prevent the onset of Type 1 diabetes?

No. At the moment there is no way of preventing Type 1 diabetes.

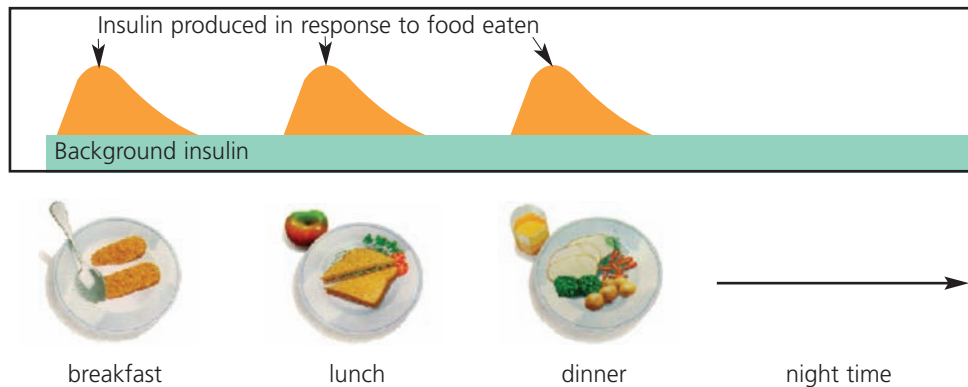
Is there a cure for diabetes?

Although research is being carried out all over the world there is currently no cure. Type 1 diabetes always has to be treated with insulin which is normally injected using a very fine needle.

How does insulin work?

- People who do not have diabetes will have a constant level of insulin being produced - this is called 'background' or 'basal' insulin
- When they eat, their bodies will produce more insulin to counter the glucose in the food that they have eaten

This is a picture of what a 'normal' insulin profile looks like



When your doctor or nurse is helping you decide what insulin to use, this is the picture they are trying to create for you

Are there different types of insulin?

Yes - The different types of insulin are summarised below.

Long-acting insulin

- Background or basal insulin that lasts for a long time (up to 24 hours) through the day and night

Very fast-acting insulin

- Meal time insulin that works very quickly for a short period of time (usually between 3 and 5 hours)

Premixed insulin

- Addresses the background and meal time requirements
 - A mix of insulins usually given daily providing the background and meal time insulin requirements

How often will I need to inject my insulin?

Everyone's lifestyle and routine is different.

Your Doctor or Diabetes Nurse will discuss this in more detail when you start insulin

How do I inject insulin?

There are 3 main types of insulin delivery systems:

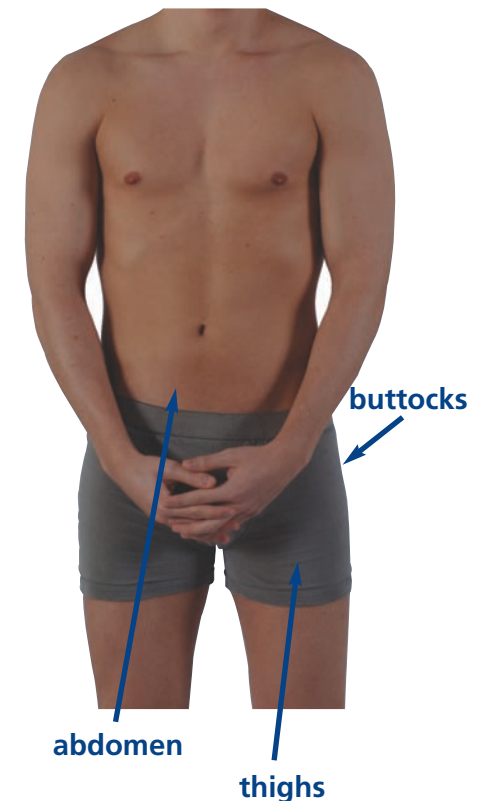
- vial and syringe. These are rarely used these days as the injection 'pens' are much easier for patients to use
- reusable injection pens. These delivery devices are designed to be re-used and will last for a long time. You will need to load a cartridge of insulin into the pen before using. Depending on the insulin doses you are using each cartridge will normally last between 7 and 10 days
- disposable injection pens. These delivery devices will already contain the insulin that has been prescribed for you. Once you have used all the insulin in a pen you throw the pen away and start a new one

Most injection devices are easy to use but it is important that you select the one that is best for you and make sure that you are confident and comfortable using it

- Your Doctor or Diabetes Nurse will show you how to inject with your device properly
- All injection devices come with very good, easy to use instructions
- The insulin is injected just under your skin, not into a vein as many people imagine!

Where do I inject insulin?

- **The best place to inject** is into the fatty areas of your abdomen, buttocks or thighs
- **Don't worry** – you will be shown how to inject insulin by your Doctor or Diabetes Specialist Nurse
- **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
 - Injection sites
 - Adjusting your insulin dose
 - Disposing of the needles



How do I store my insulin?

Do

- ✓ Store insulin you are not using in the fridge
- ✓ If travelling, keep your spare insulin in a cooler bag or vacuum flask

Don't

- ✗ Freeze your insulin
- ✗ Keep your insulin above 30°C
- ✗ 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

Why should I test my blood glucose?

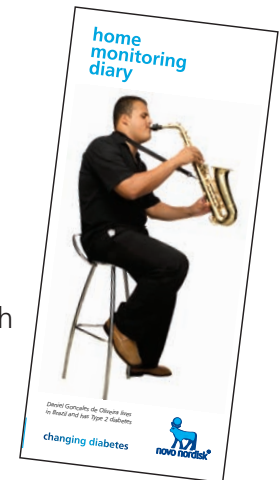
- You can check if your blood glucose level is too high or too low – *and take action*
- You will be given a home monitoring diary to record the results
- Your insulin may be changed depending on the results

Good control of your diabetes helps keep you healthy

High levels of glucose in your blood over a long time can cause problems with your:

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

However, by taking your insulin as instructed by your Doctor or Diabetes Nurse and with routine blood glucose monitoring, you can achieve blood glucose control which will minimise the risk of these complications



What should my blood glucose level be?

- Blood glucose is measured in millimoles per litre (mmol/l)
- In general, you should aim to keep your pre-meal blood glucose level between **4 and 7mmol/l** and your post-meal level (measured 1-2 hours after eating) below **9mmol/l**
- Your Doctor and Diabetes Nurse 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
- Additionally, your Doctor or Diabetes Nurse may use a **test called an HbA_{1c} test** that gives an indication of your blood glucose control over the previous few weeks

What if I have a high blood glucose level?

Hyperglycaemia is the medical word for high blood glucose.

How will I feel?

You may have high blood glucose and not know it.

Other times you may feel, or have, one or more of the following:

- Tired
- Thirsty
- Blurred vision
- Pass large amounts of urine

These symptoms may develop slowly over hours or even days.

What causes hyperglycaemia?

- Not enough insulin
- Too much of the wrong kind of food
- Less exercise than normal
- Illness or infection
- Stress
- Weight gain

What if I have a high blood glucose level?

What should I do?

- Don't panic, remain calm
- It is normal for your blood glucose level to go up and down in a day
- Never miss your insulin injection
- If you have high blood glucose levels for a few days in a row, or you feel unwell, see your Doctor or Diabetes Nurse
- Test your urine for ketones (a type of acid) if you have been instructed to do so by your Doctor or Diabetes Nurse

Emergency situations

Contact your Doctor, Diabetes Nurse or dial 999 if:

- Vomiting and unable to hold down fluids *and/or*
- Your breath smells of acetone (sweet-smelling)
- If you have a high blood sugar and ketones in your urine

What if I have a low blood glucose level?

Hypoglycaemia is the medical word for low blood glucose.

Hypoglycaemia is often called a '**hypo**'.

How will I feel?

When your blood glucose level drops you may feel:

- Dizzy
- Sweaty
- Hungry
- Cold
- Faint
- Tired
- Confused
- Irritable
- A pounding heartbeat
- Occasionally you may pass out (lose consciousness)

The way you feel when your blood glucose is low varies from person to person

A 'hypo' can develop quickly, within minutes.

What if I have a low blood glucose level?

What causes hypoglycaemia?

- Too much insulin
- Eating too little or eating less than normal
- More exercise than normal
- Alcohol
- Stress and illness
- Hot weather
- Injecting into a muscle instead of the fatty layer under your skin



What should I do if it is low?

- Eat or drink something immediately containing sugar, e.g. sweets, glucose tablet, sweet drink (**not a diet drink**)
- You should feel better after 5-10 minutes, if not have some more sugar
- Eat a normal meal as soon as you can
- Your Doctor or Diabetes Nurse can give your friends and family advice on severe 'hypos' and what to do if you become unconscious

If possible check your blood glucose level

What else can I do?

As you read earlier, high levels of glucose in your blood over a long time can cause problems

Eyes

Have annual check ups

- A 'standard' eye test at the opticians and retinal screening - this can be arranged by your Doctor or Diabetes Nurse
- Retinal screening enables people with diabetes to be checked for early signs of retinopathy (damage to the retina) so that, if necessary, treatment can be given early
- Eye tests are free for people with diabetes

Looking after your feet...

Research has shown that people with diabetes who take good care of their feet and protect them from injury can significantly reduce the risk of developing foot ulcers.

If you do develop foot ulcers it is good to know that they often respond well to treatment. DO remember however that if left untreated, even the smallest foot ulcers can develop into serious problems. The following information will help you to look after your feet:

It is ESSENTIAL to examine your feet daily for cuts or anything unusual.

1. Wash your feet daily.

Test the water temperature with an elbow to avoid scalding accidents.

2. Dry – especially between toes.

Cut and file toenails straight across. Contact a podiatrist if you have any problems.



3. Apply moisturiser (or hand cream) to keep your skin supple and prevent cracking. Do not put creams or oils between the toes, as they may trap moisture and cause infection.



4. Signs of infection: Learn to spot the first signs of infection. Your skin may be warmer than usual, red or swollen. Pain and tenderness suggest that your pain alarm system is still working but infections need to be treated straight away.



5. Breaks in the skin should be covered with a dry, sterile dressing. Do NOT burst blisters but seek help from your GP or podiatrist.



6. NEVER use sharp instruments on your feet.

Do NOT use corn plasters etc. as they contain ACIDS.

If any problems occur seek advice from your GP, diabetes clinic or podiatrist.

7. AVOID direct heat and hot water bottles – loss of pain and temperature sensitivity make these dangerous.

8. Remember DIABETES can affect the rate of healing and breaks in the skin may take a little longer to heal.

Older people are most at risk.

9. Ensure shoes fit well – have your feet measured.

Remember shoes must fit feet – NOT VICE VERSA.

Never go barefoot.



10. Check inside shoes for sharp objects, etc. Also check inside socks.



11. Keep in touch with a podiatrist who is there to advise on foot care.

What about diet?

You can help to keep your blood glucose levels within recommended limits by combining your diabetes treatment with a healthy diet, regular physical activity and weight control.

Having diabetes doesn't mean that you have to cut out the foods you like or buy special "diabetic" foods, however it does mean that you should aim to eat a balanced diet which can help control both your weight and your blood glucose as well as keeping blood pressure and cholesterol levels down.

Eat healthy food

- Foods that are good for people with diabetes are good for everyone



Remember:

- ✓ Avoid fatty foods
- ✓ Eat mostly vegetables, fruit, cereals, rice and pasta
- ✓ Eat only small amounts of refined sugar e.g. jam and sweets
- ✓ Keep to sensible amounts of alcohol

What else should I do?

- ✓ Different insulin regimes may require a particular dietary pattern. Please discuss this with your Doctor or Diabetes Specialist Nurse
- ✓ Eat at regular intervals – don't skip meals
- ✓ Don't over eat – watch your weight
- ✓ If you smoke – **STOP**



What about exercise?

Physical activity is an important part of managing your diabetes as it helps to regulate your blood glucose levels, helps insulin to work more effectively and helps to reduce the risk of heart disease, high blood pressure and strokes.

Why?

- ✓ Improves your blood glucose control
- ✓ Helps you lose weight
- ✓ Makes you feel better

What sort of exercise?

- ✓ Any kind of movement that you enjoy, e.g. swimming, walking, dancing, tennis, football, even housework!
- ✓ If you are new to insulin, start your exercise slowly with advice from your Doctor or Diabetes Specialist Nurse

How often should I exercise?

- ✓ Aim for 20-30 minutes at least three times a week

What else should I do?

- ✓ Carry glucose tablets in case of 'hypos'
- ✓ Check your blood glucose level is normal before and after exercise
- ✓ Wear well-fitted, cushioned shoes or trainers

Most of all – have fun



What about sick days?

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

What should I do?

- ✓ Never stop taking your insulin
- ✓ Test your blood glucose at least 4 times a day
- ✓ Drink plenty of liquids (both water and high calorie fluids such as fruit juice or milk)
- ✓ Rest
- ✓ Eat your regular food if you are able, if not have nourishing fluids i.e. soft drinks (not the diet version) or soups
- ✓ Test your urine for ketones

When should I call my Doctor?

- ✓ Continuous diarrhoea or vomiting
- ✓ You can't eat for 24 hours
- ✓ If you have a high temperature
- ✓ If you continue to have high blood glucose levels
- ✓ If you have ketones in your urine
- ✓ If you are not feeling better in 2-3 days

Can I drive a car?

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

- Insurance company
- Vehicle Licensing Authority (DVLA) at Swansea

Drivers Medical Group
DVLA
Swansea
SA99 ITU

- It will normally be necessary to complete a medical questionnaire issued by the DVLA

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

As you're taking insulin you **cannot** hold a licence for a:

- Large Goods Vehicle (LGV)
- Passenger Carrying Vehicle (PCV))
- **However** it is possible to apply for a special licence for certain vehicles in some circumstances



For further information please contact Diabetes UK (see back page for contact details)

Can I travel or go on holiday?

Yes – just plan ahead.

You will need to take with you:

- ✓ Spare insulin, needles and pen or syringes*
- ✓ Finger pricker, blood glucose test equipment*
- ✓ Diabetes identification, e.g. a card or bracelet/necklace*
- ✓ Health insurance (form EHIC for European Union Countries available from the Post Office)
- ✓ Travel insurance which covers diabetes
- ✓ Doctor's written prescription for insulin
- ✓ Letter from your Doctor verifying that you need to carry needles/medical equipment in case you get stopped by airport security*
- ✓ Food supplies for the journey, e.g. snack bars, fruit*

* You should carry these items in your hand luggage

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

Checklist

- ✓ Always take your insulin
- ✓ Test your blood glucose regularly
- ✓ Carry glucose tablets in case of 'hypos'
- ✓ See your Doctor or Diabetes Specialist Nurse regularly to check your diabetes and general health
- ✓ Have your eyes tested annually
- ✓ Eat a healthy diet
- ✓ Don't smoke
- ✓ Stay within the recommended alcohol limits (14 units for a women, 21 for a man)
- ✓ Exercise
- ✓ Watch your weight
- ✓ Check your feet daily
- ✓ Inform your motor insurance company and the DVLA
- ✓ Carry a diabetes identification card