

# preparing to start insulin in Type 2 diabetes

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**0845 600 5055**

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[www.changingdiabetes.co.uk](http://www.changingdiabetes.co.uk)

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Crawley, West Sussex RH11 9RT.



*Hartmut Kraft lives in Germany  
and has Type 2 diabetes*



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**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.*

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

# Who is this booklet for?

This booklet is for people with Type 2 diabetes who are currently taking oral medication to help keep their blood glucose levels under control but are now preparing to start insulin therapy.

The typical treatments for diabetes are usually:

- diet and exercise
- tablet(s) diet and exercise
- insulin, tablet(s) diet and exercise

This booklet provides information about taking insulin, it aims to help answer some of the questions you may have.

If you need more information or further advice your Doctor or Diabetes Nurse will be happy to help you.

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## Answers

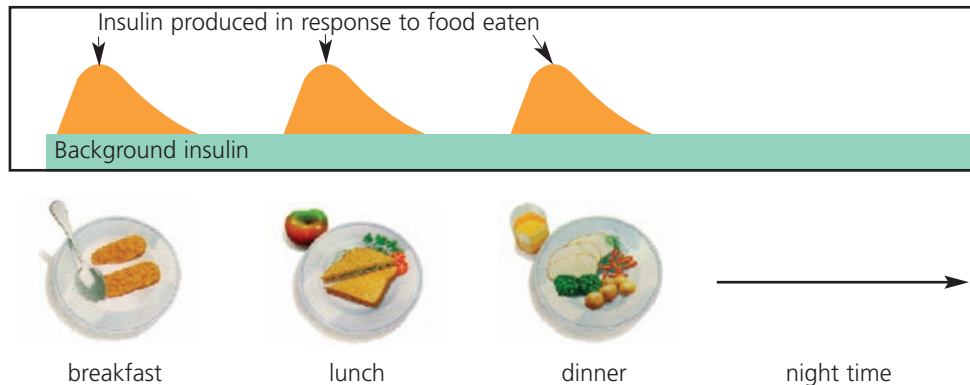
# Why may I need to use insulin?

- Type 2 diabetes (the type you have) usually develops slowly, as your body produces less insulin or is unable to use the insulin you are making
- As your body's insulin production decreases the tablets that you are taking may not be enough to keep your blood glucose at the right level
- Many people with Type 2 diabetes will eventually need to take insulin

# 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 reduce the glucose in the food that they have eaten

## This is how insulin is produced normally



When you have Type 2 diabetes your body may not produce enough insulin or cannot use the insulin properly. This causes a rise in blood glucose levels and therefore does not create a picture like this

By injecting insulin it reduces blood glucose levels to more normal levels helping you to recreate this picture

# 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 to 5 hours)
- Premixed insulin
  - 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 routine is different. You may inject your insulin anywhere between once up to five times a day depending on which routine best suits your lifestyle. Your Doctor or Diabetes Nurse will discuss this in more detail when you start insulin

# How will I know which insulin is right for me?

Your Doctor or Diabetes Nurse will discuss this with you in detail. This will include information on:

- the types of insulin delivery devices that are available
- eating habits (regular mealtimes or chaotic eating patterns)
- lifestyle (very busy and active or more of a routine)
- amount of exercise that you do
- any issues with your weight that you may have
- how many times a day you will need to test your blood glucose
- any fears or anxieties that you may have about starting insulin

# How do I inject insulin?

**There are 3 main types of insulin delivery systems:**

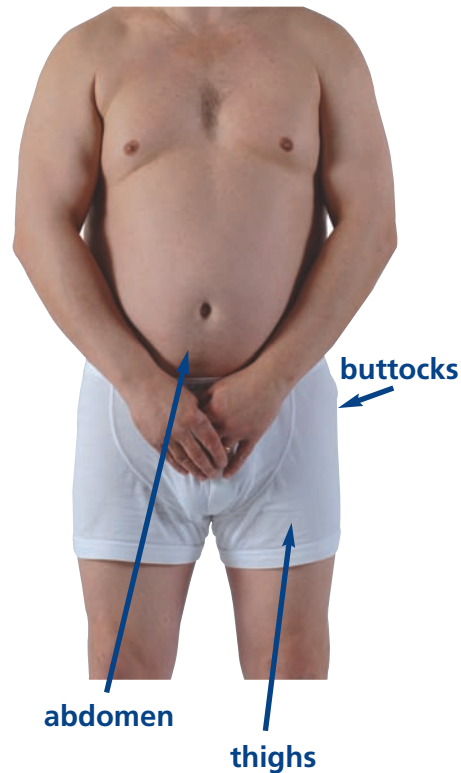
- vial and syringe. These are rarely used these days as the injection 'pens' are much easier for patients to use
- reusable injection pens. These delivery devices are designed to be re-used and will last for a long time. You will need to load a cartridge of insulin into the pen before using, each cartridge will normally last between 7 and 10 days (depending upon the insulin dose you are taking)
- 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**

- 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!
- Your Doctor or Diabetes Nurse will show you how to inject with your device properly

# 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 **8.5mmol/l**
- Your Doctor and Diabetes Specialist 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<sub>1c</sub> 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, keep 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 Specialist 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

# 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 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

# What changes will I need to make in my life?

The majority of people who start using insulin do not have to make any major changes to their lives.

There are just a few things that you will need to consider:

## Driving

- If you drive a car, you must inform the Vehicle Licensing Authority (DVLA) at Swansea and your insurance company that you have diabetes and now take insulin
  - It will normally be necessary to complete a medical questionnaire issued by the DVLA
  - You will then be issued with a driving license normally renewed every 1, 2 or 3 years
- If you're taking insulin you cannot hold a license for a Large goods vehicle (LGV) or Passenger carrying vehicle (PCV)

## Carry a diabetes identification card

When taking insulin there can be an increased risk of hypoglycaemia (very low blood sugar levels). It is important to carry some identification saying that you have diabetes and are treated with insulin .

## Holidays

It is important to plan ahead and tell your GP or Diabetes Nurse at least two weeks before you go to ensure that you have

- a prescription for sufficient insulin supplies
- a letter from your doctor or diabetes nurse verifying that you need to carry needles/medical equipment in case you get stopped by customs

It is also important to ensure your travel insurance covers diabetes

# 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
- ✓ 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 (a type of acid) in your urine
- ✓ If you are not feeling better in 2-3 days

# Can I travel or go on holiday?

**Yes** – just plan ahead.

You will need to take with you:

- ✓ Any tablets that you have been prescribed\*
- ✓ 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 (and tablets for diabetes if you have been prescribed them)
- ✓ 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