

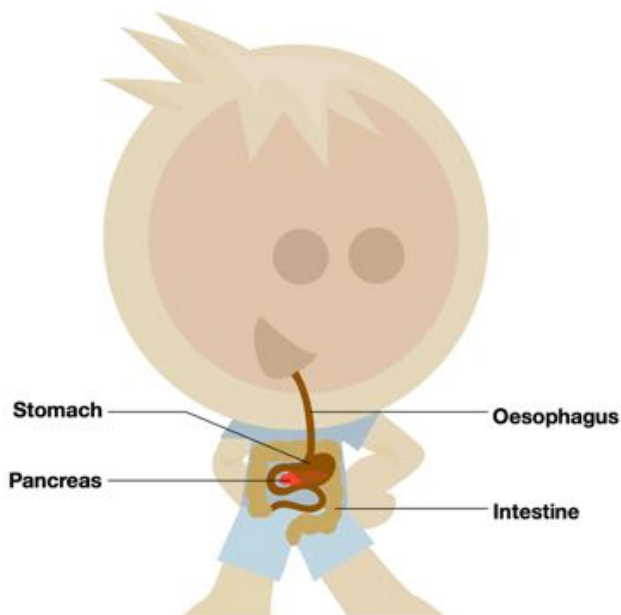
A: Introduction and Explanation of Type 1 Diabetes and Treatment

A1: What is Type 1 Diabetes?

The most common type of diabetes in childhood in the UK is Type 1 Diabetes. It affects over 26,500 children in the UK. Type 1 diabetes should not be confused with Type 2 Diabetes, which is usually diagnosed in adults and is associated with lifestyle factors.

In Type 1 diabetes your body loses the ability to regulate the level of glucose (sugar) in your blood due to a failure to make insulin. Glucose levels in the blood are usually controlled very accurately between about 4 to 7mmol/l.

Insulin is one of the key chemicals or hormones that regulate the body's blood glucose levels. Insulin is made in cells (islet cells) found in the pancreas, an organ found behind the stomach. Type 1 diabetes occurs because the body's own immune system attacks these cells and the body is unable to make enough insulin. Getting good control early will help preserve some islets cells for a time, making it easier to maintain normal blood glucose levels.



Key message: Type 1 diabetes is due to the body's inability to make sufficient insulin and control glucose levels.

How Insulin Works

We know that insulin is the vital 'messenger' which helps convert the food we eat into energy, by allowing glucose to pass from the blood to all the cells in the body. The sweet and starchy food we eat and drink, (carbohydrates) are broken down into

glucose (sugar) in the stomach and intestines; the glucose then passes into the blood stream. Insulin allows the glucose to be used as fuel for all our daily activities, even for sleeping, to ensure adequate growth and to repair cells when damaged. Insulin also transfers any extra glucose in the blood stream to muscles, fat cells and the liver to be stored until it is needed for energy.

Extra energy is required for exercise and during emergencies, e.g. when we are unwell. The body uses up the energy stored in our muscles and liver for these occasions. If the energy stores are empty due to a failure of glucose to cross from the blood to tissues, the body uses fat for energy. This explains why tiredness and loss of weight are common signs of diabetes.

Without insulin, the glucose from food and drink in the form of carbohydrates stays in the blood stream causing the blood glucose level to rise; some is filtered through the kidneys and then passed out of the body in the urine, taking water from the body along with it. This explains why many children drink (polydipsia) and wee a lot (polyuria), sometimes day and night before diagnosis or if their diabetes is not well controlled. High blood glucose levels can also encourage infections.

The amount of insulin being produced by your pancreas would have been slowing down for a considerable time (weeks-months) so sometimes the onset of the symptoms may have been gradual and can often go unrecognised for some time. Occasionally the presentation can be dramatic with severe dehydration, rapid breathing and profound vomiting. This is diabetic ketoacidosis (DKA) and requires urgent and careful treatment and is potentially life threatening.

How We Can Treat Diabetes

The body now needs help to process the glucose that is taken as carbohydrates in food and drink; otherwise you will continue to feel unwell and will eventually develop diabetic ketoacidosis. We can do this by giving you insulin that your body is not able to make itself. Insulin has to be delivered to the area under the skin (subcutaneous tissue) and it is therefore usually given by an injection.

Insulin has to be given in a dose which matches the carbohydrate content of the food and drink we eat at meals and snacks; this is called carbohydrate counting. The dose of insulin given with food and drink is called “bolus insulin”. Your body, even when not eating, always has a low level of insulin in the blood stream. This is important to deal with glucose released from the liver and muscles and is called “basal insulin”.

Key message: The children’s diabetes team will be able to teach you how to

care for diabetes and offer you ongoing help and support

What is Type 2 Diabetes ?

It is possible to be diagnosed with Type 2 diabetes as a young person even though public perception considers it a disease in older people. It is just as serious as Type 1 diabetes but will require different treatments and education sessions. With Type 2 diabetes the body does make insulin but the insulin does not work well enough to keep the blood glucose in the normal range.

Key Message : treatment of Type 2 diabetes aims to get your insulin working the best it can to control glucose levels

Other types of Diabetes

There are other types of diabetes, including steroid induced diabetes, cystic fibrosis related diabetes, some rare genetic syndromes and types of monogenic diabetes.

Monogenic diabetes is diabetes caused by a change in a single gene. It runs in families and is passed on directly from a parent to a child so does not 'skip a generation'. It includes Neonatal Diabetes and types of MODY (Maturity Onset Diabetes of the Young). This can be caused by a change in quite a few different genes and the treatment needed will depend on which gene is affected. Further information can be found on the website www.diabetesgenes.org or you can discuss this with Julie Cropper, who is the local Genetic Diabetes Nurse.

A2: Diabetes supplies and medication

You will need a variety of equipment and medication to look after your child's diabetes at home. Not all of the equipment will be needed every day, but may be needed for illness management, so it is important that it is always available. This section will cover:

- Equipment and medication to be kept at home.
- How to obtain supplies.
- Storage and use.

Equipment and medication to be kept at home

Insulin - 1 box of 5 cartridges or 1 box of 5 disposable pens or an insulin vial

Insulin pen(s) - with half or full unit increments

Pen needles - 1 box of 100 needles. (BD Pentapoint microfine plus 4 mm)

Safety Pen needles - For school or third party use (BD Autosield 5mm)

Finger-pricking lancets

Blood glucose test strips

Blood ketone test strips

Glucose & Ketone meter

Glucogel/Dextrogel.

Glucotabs

Glucagon kit

Sharps bin

All the above items are available on prescription. You will be given a small supply when you leave hospital but will need to obtain further supplies from your GP. The diabetes team will write to your GP and request a repeat prescription to be set up.

Your GP will normally dispose of full sharps bins. If a GP refuses to do this, please ring your local call centre for the clinical waste department to inform them.

Additional supplies will be needed if your child is discharged home on an insulin pump. Your diabetes nurse will discuss these with you.

You will also be given a finger-pricking device, a blood glucose meter and a blood ketone meter (which may be the same device). These items are not available on prescription. Please complete and return the warranty card which comes with your meter. This will enable you to contact the meter company directly via the customer care line to arrange further supplies and discuss any problems. The diabetes nurses may be able to help with urgent problems.

Storage and use

Insulin

- Store in a refrigerator. Keep away from the cooling element. Do not freeze. Insulin will last until the expiry date when stored this way.
- Keep cartridges not in use in the outer carton in order to protect from light.
- Keep the cap on FlexPens in order to protect from light.
- Protect from excessive heat and light.
- After first opening or if carried as a spare; do not refrigerate. Store below 30°C. Use within one month.

Pen needles and lancets

- A new pen needle or lancet should be used for each blood test or injection.
- Must be disposed of into a sharps bin*.
- Store at room temperature.
- Remove pen needle after injection and store pen without a needle attached in order to prevent air from entering the cartridge

- (*This may be disposed of via GP surgery, pharmacy or through the council)

Insulin pens

- These are obtained through your children's diabetes nurse specialist.
- Make sure you have the correct pen for the insulin(s) you are using.
- Keep a spare at home.

Blood glucose test strips

- Store test strips at room temperature
- Do not refrigerate
- Keep test strips within the closed container or sealed in foil paper
- Do not use test strips if they have been damaged in any way or are out of date
- Some glucose meters require calibration with control solution, and it is suggested that this is done with each new pack of test strips. This is important to ensure results are accurate. Follow instructions that come with your meter and guidance given by your diabetes nurse.

Ketone test strips

- Store at room temperature, away from direct sunlight and heat.
- Do not use beyond the expiry date printed on the foil packet and outer box.
- Do not use if wet, bent, scratched or damaged.

Glucagon

- Store either in a refrigerator (2°C to 8°C), or out of a refrigerator below 25°C for up to 18 months before the expiry date.
- Store in original package to protect from light
- Do not freeze, to prevent damage to the product
- Use immediately after preparation - do not store for later use
- Do not use after the expiry date stated on the label. The expiry date refers to the last date of that month. (You could use the expired Glucagon to practise the technique of preparing and mixing the solution.)
- Do not use if the solution, in rare cases, looks like a gel or if any of the powder has not dissolved properly
- Smaller children will not require the full amount, your diabetes nurse will advise about this

GlucoGel/DextroGel

- It is best to keep GlucoGel/DextroGel at room temperature. If GlucoGel/DextroGel is put in the fridge, the composition of the gel will not change but it will become thicker and harder to administer. If the gel has been kept in the fridge, allow it to reach room temperature again before using.
- Medicines should not be disposed of via the wastewater pipes or via household waste. Ask your pharmacist how to dispose of medicines which are no longer required.