Your Diabetes Handbook

Name: ______________________________

Royal Hospital for Sick Children, Edinburgh
How to use your Handbook

This handbook has been produced to help you and your child understand what Diabetes is, how it is treated and how you can carry on with your life as normally as possible.

The Diabetes Team have all contributed to this handbook to give you information on every aspect of your care, and to try and answer any questions you may have.

When you are ready, please read this handbook through with your child, depending on their age. Some of the information is given in depth, and you may find it easier to read the handbook in sections and keep it handy so that you can refer to it when necessary. You will find that there are basic points, highlighted in yellow, which are aimed at your child to read for themselves, or for you to read to them.

Some of the complicated words used in this book are defined in the Glossary on pages 71 - 73.

Please remember to bring your handbook with you to your clinic visits. If you have any questions, do not hesitate to telephone the Diabetes Team, or ask them at your next clinic visit.
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Introduction

Diagnosis

You have just been told that your child has Type I diabetes (previously known as Insulin Dependent Diabetes Mellitus or IDDM) and we all understand that this is a particularly difficult time for you.

It is important to realise that no-one is to blame when a child develops diabetes, and that although it is a permanent condition, it is one that can be treated. Daily insulin injections must be given to keep the diabetes under control.

Diabetes has not made you a different person - you will still be able to do all the same things at school, and with your friends!

Your child will very soon be back to good health and will return to school and all usual activities. A child whose diabetes is well controlled does not need hospital care more than other children.

Taking it in

We aim to support you through these difficult early days, both in hospital and at home, and to give you continuing support to manage your child’s diabetes. We will teach you how to keep your child’s blood glucose levels as normal as possible, allowing them to enjoy life to the full and grow in a healthy way through childhood and adolescence. This will be a
good preparation for your child in managing their diabetes as adults, and will reduce the chances of them having health problems at that time.

In these early stages it seems that there is much to learn - try not to let it overwhelm you; there is plenty of time and there are lots of people to help you and your family.

Your Diabetes Team are there to help you look after yourself

We do not expect you to understand all the initial explanations and hope that you will feel free to ask any member of your child’s Diabetes Team to answer your queries. Members of your family or friends may well offer ‘helpful’ suggestions and explanations - we hope that the information in this handbook, and from your Diabetes Team, guides you best.
What is Diabetes?

Diabetes is a condition caused by a lack of the hormone **INSULIN** in the body. Insulin is produced by a large gland called the pancreas which lies between the stomach and the backbone.

The pancreas produces **INSULIN**. Diabetes occurs when the pancreas stops making insulin.
How Insulin Works

Everyone requires insulin to live. It is vital in the process of converting the food we eat into energy for our bodies. We all need energy to walk, run, sleep and grow.

Some of the food we eat is broken down into GLUCOSE in the stomach. This glucose then goes into the bloodstream, but then needs to get into specific cells in muscles, fat and the liver to be stored until we need energy.

Our bodies use the food we eat to make glucose energy. The glucose goes from our stomachs into our blood. It now needs to move from our blood into our energy stores ready for use.

Insulin is the ‘messenger’ or ‘key’ that tells these cells to open up and allow the glucose in to make energy.

Every time a person eats, the level of glucose in the bloodstream rises and the normal pancreas automatically releases insulin to allow the glucose to enter the cells, and to make sure that the amount of glucose left in the blood is ‘just right’.

Insulin acts like a train moving the glucose into the energy stores.
Without insulin, your body stores have been short of energy and you will have had too much glucose in your blood, making you feel very tired.

So what’s gone wrong?
In your child with untreated diabetes the pancreas is no longer producing the insulin required to move the glucose into the body stores. There is then too much glucose building up in the blood unable to move into the stores. The energy stores are empty and leave your child feeling tired.
**The Results**

The excess glucose in the blood is removed by the kidneys and goes into the urine. This glucose in the urine acts like a sponge and draws water from the body. This explains why your child has been passing a lot of urine (and maybe bed-wetting in a previously trained child) and drinking large amounts of fluid to make up for that lost in the urine.

Most children with diabetes will have lost weight by the time the diagnosis is made. The energy stores are empty and the body switches over to ‘burning’ protein and fat for energy.

**Other Symptoms**

When fat is broken down for energy one of the waste products is acid (**KETONES**) which, if allowed to accumulate, can be dangerous to the body. These ketones cause a sweet smell (like nail polish remover) on the breath and if present over a period of hours to days may also have caused:

- a feeling of being unwell
- tummy pain
- vomiting
- deep or difficult breathing.

Once your child is treated with insulin these symptoms gradually disappear. If ketones build up in the body again, they indicate that there is too little insulin in the bloodstream.
What causes Diabetes?

No one really knows what causes diabetes. We know that some people are more at risk of developing diabetes than others because of the ‘genes’ that they are born with. However there is some ‘trigger’ quite early in life (possibly a viral infection) which then causes damage to the pancreas, probably over many months, leading to a lack of insulin production.

Is it in our Family?

Around 1 in 10 children with diabetes will have someone else in the family who has diabetes, and there is then a slightly higher risk of brothers, sisters and parents developing diabetes. Unfortunately there is no way of telling who will develop diabetes nor of preventing it developing, but this is an area of great research interest at present.

No one can catch Diabetes from you, nor is it caused by eating too many sweets!

How common is Diabetes?

Scotland has one of the highest levels of diabetes in the world, and unfortunately, the numbers of newly diagnosed cases are increasing each year. In Lothian we see about 40 new cases a year and have over 200 children attending our diabetes clinic.

Most large schools will have one or two pupils who have Diabetes.
What happens at Diagnosis?

Hospital Admission
When first diagnosed your child may be admitted to a medical ward, or if more unwell, to the High Dependency Unit. The length of stay in hospital will be kept as short as possible. You will be introduced to the Diabetes Team who will teach you about diabetes, help you in the care of your child’s condition, and discuss how long the stay in hospital will be.

You will soon get to know the staff on the ward, and your Diabetes Team

Support at Home
Before discharge, a home visit will be arranged with a Diabetes Nurse Specialist, and you will be given an appointment for the Diabetes Clinic within 14 days.

Advice and support for you and your family will be provided by the Diabetes Nurse Specialists. In addition to this service, an Emergency 24 Hour Help Line is available by telephoning 0131-536 0000 and asking for the Diabetes Ward. Advice will be given by the nurse on duty or a member of the Diabetes Team. Please do not hesitate to use this service, particularly in the early days and weeks. Later on, when you feel more confident, this service should be used only in an emergency, when immediate advice is necessary.

At all other times, please telephone the Diabetes Nurse Specialists (0131-536 0375), and leave a message. Messages left between 8.30am and 4.30pm on Monday
to Friday, will be dealt with within 24 hours. Messages left after 4.30pm on Friday, may not be dealt with until Monday morning.

By providing a quick response to any developing problem, we hope to assist you in managing your child at home.

By questioning and seeking advice you will gain in knowledge and experience which will give you confidence in caring for your child's diabetes.

**Coming back to Hospital**
Should your child require readmission to hospital for any reason other than diabetes, where possible, admission will be to a medical ward. This will apply for both planned and emergency situations. The Diabetes Team will ensure that your child's diabetes will be cared for whilst any other medical or surgical condition will be looked after by the appropriate team.

**On the Ward**
A member of the medical staff will discuss diabetes with you. The nursing team will help and guide you in the care and management of your child. You are encouraged to stay on the ward and participate in caring for your child, in order to gain confidence in managing your child’s diabetes. The staff recognise that this is a stressful time for families and understand that you will have anxieties and lots of questions.

**Meals**
All children with diabetes are given the same food supplied for the other children on the ward, with the
exception of a supply of fresh fruit and yoghurts to replace sweet puddings. We will encourage your child to drink plenty of sugar-free fluids.

**Injections**

As your body is not making insulin we will teach you how to give some to yourself.

On the ward insulin injections are usually given before breakfast and before tea. In some circumstances, it is necessary to give some extra insulin at lunchtime or bedtime.

It is most helpful if one, or both, parents or carers are available at injection time to learn about the insulin. Children can be remarkably resilient and accepting of what is happening to them, but need the reassurance of having a parent close by.

You will soon learn just how easy injections can be!

It will be necessary to measure the amount of glucose in your child’s blood regularly whilst in hospital and at home. This is a simple procedure that you will learn about on the ward.

Before going home you will be supplied with a discharge kit containing all the equipment needed to care for your child. Most of these items are available on prescription and you will receive further supplies from your GP. At discharge you will be given an appointment card for the Outpatient clinic.
**Diabetes Nurse Specialists**

The Diabetes Nurse Specialist will meet you as soon as possible after the diagnosis of diabetes is made, and will be responsible for co-ordinating the care of your child in hospital, when you go home and in the clinic. She will be involved in the ongoing education of your family and your child regarding the management of your child’s diabetes.

The Diabetes Nurse Specialist will liaise with your General Practitioner, Health Visitor, School and other groups your child is involved with (eg, brownies or scouts) and provide ongoing support for children, siblings, parents and the extended family where necessary.

Please contact the Diabetes Nurse Specialists for advice regarding insulin adjustments, equipment, diet, exercise, activity, illness, managing parties, holidays, travel and any other aspects of your child’s care that you have queries about.

The Diabetes Nurse Specialist will help you to apply for Disability Living Allowance (previously known as Attendance Allowance).

If for any reason your child requires temporary care where they are not residing in the usual family home, eg. if a parent is admitted to hospital, the carers will be offered the full diabetes education programme.
What about my Child’s Diet?

This advice is for use at home or in hospital for the first few days after diagnosis. Your Dietitian will be available to help you, and suggest foods for your meal plan on page 53. You can also make use of the Swop Lists below to add variety to the diet.

**Swop List 1**
At each meal time choose two foods (at least) from this list:

- Bread
- Potato
- Rice
- Pasta
- Breakfast cereal
- Milk
- Yogurt
- Fruit

**Swop List 2**
Choose in-between meal snacks from this list:

- Cereal bars
- Biscuits
- Fruit
- Savoury snacks
- Bread
- Milk
- Crumpet
- Scone

Do not worry about your child’s diet; children with diabetes do not need to eat very differently from everyone else. It is best to avoid rapidly absorbed sugary drinks (e.g. blackcurrant cordial or sweetened fizzy drinks).

You will need to eat regularly during the day to keep your blood glucose level just right.
Here are a few general points to guide you:

1. Do eat regular meals and between-meal snacks.
2. Do make a special effort to eat breakfast.
3. Choose foods you know and like.
4. Do not eat sweets, except when advised by your diabetes team.
5. Do not add sugar or drink sugary fizzy juice, squash or large quantities of fruit juice. Try low calorie drinks or water for extra drinks.
6. If you are hungry, do ask for more food from Swop Lists 1 and 2.
7. Do carry glucose tablets when away from home, e.g. at school or when travelling, for emergency use (if blood glucose levels fall too low - see page 27).
The Treatment

Is there a cure?

Diabetes cannot yet be cured, but it can be controlled by giving insulin by injection to allow the body to run normally again. Your child will feel well and will grow and mature normally. Your child will have insulin injections every day, and you will be taught how to give these.

You will learn to give yourself insulin by injecting it with a syringe or a pen device.

The importance of Insulin

It may be necessary to replace the fluid lost before diagnosis by a drip into a vein, or to clear the ketones by giving insulin into a vein. More commonly the only treatment that is required is by ‘subcutaneous’ (beneath the skin) injection of insulin.
You and your child will be taught how to test the level of blood glucose and how to keep it as close to normal as possible. The aim is to keep your child free from the symptoms of too little insulin (resulting in a high blood glucose) and too much insulin (resulting in a low blood glucose) by giving advice about a proper balance between insulin given by injection, healthy eating and regular exercise.

When insulin is injected, it tells the body stores to open up and let the glucose in. It is important to make sure there is enough glucose in the blood stream to fill the stores. Remember that glucose comes from food, mainly carbohydrate, and you can read more about this later in this handbook.

**Insulin lowers the blood glucose. Remember that food causes blood glucose to go up.**

The doctors or the Diabetes Nurse Specialists in the team will decide how much insulin your child needs, and how often. Dosages are prescribed in units. The number of units your child needs does not indicate the ‘severity’ of the diabetes - everybody with diabetes has individual needs - but in all cases the pancreas is permanently damaged and ceases to produce insulin.

**You will be given a meter to help you test for glucose in your blood. It can be difficult at first to get the balance right - ask the Diabetes Team for help.**
Over 10 means too much glucose in your blood. Glucose is piling up outside your stores.

Between 4 and 10 means the glucose in your blood is just right.

Below 4 means there’s not enough glucose in your blood and more will have to be collected from your stores, but this takes time.
Giving Injections

Types of Insulin

There are many types of insulin. The most common insulins used at this hospital are Actrapid (or Velosulin) and Insulatard, or a combination of these in a pre-mixed pen device.

**Actrapid**

This is a clear insulin which starts to work about 20 minutes after being injected, with its maximum effect between 2-4 hours.

**Insulatard**

This is a cloudy insulin which starts working 1-2 hours after injection. Its peak action is at 6-8 hours. It continues to work for 10-12 hours, or sometimes longer.
How to inject Insulin

Giving or taking an injection will become a normal part of your daily routine. You will be shown how to draw up your insulin. The first few injections may be difficult, but you will quickly get used to them.

Insulin is not given into a vein: it is injected into the fatty (subcutaneous) tissue under the skin and can be given in several different sites.

Injections *must* be given into the subcutaneous tissue - not into the muscle below or the dermis, just below the skin surface - to ensure that insulin is reliably absorbed.

The best way to ensure an injection is given into the subcutaneous tissue, not directly into the muscle, is to **PINCH-UP** and inject into the fold of skin.

**Remember to ‘Pinch-Up’ a fold of skin when you give your injections**
A correct pinch-up should be done only with the thumb and index/middle finger, so that the muscle is not drawn up into the fold. Insulin will be absorbed faster when injecting into muscle and this is not helpful.

The needle should only reach to the layer beneath the skin, not down to the muscle.
Where to Inject Insulin

Recommended injection sites are shown on the diagram below. The use of the upper outer area of the arms as an injection site is the least preferred one as the subcutaneous tissue layer is very thin there.

The pink areas are where you should inject insulin. Try to use different areas every day.
Problems with Injection Sites

It is important to rotate the injections round the various sites to prevent one part becoming lumpy and sore, which may stop the insulin from being absorbed properly.

‘Lumpy’ sites are caused by injecting insulin too often into the same site. The insulin itself causes extra growth of the fat tissue and these ‘fat pads’ contain both fibrous and fat tissue. Injections into fat pads will usually result in a slower and more erratic absorption of insulin, which can cause variable blood glucose readings.

Try to leave lumpy injection sites alone until the lumps go away (at least a couple of weeks)

When a new injection site is chosen, free from any fat pads, the insulin will have a quicker action, and the dose of insulin may have to be lowered to avoid hypoglycaemia (too low a blood glucose).

Where to keep your Insulin

It is important to know how to store your insulin. Your diabetes nurse specialist will discuss this with you.
What to do if an Insulin Injection is forgotten

It is best to contact the Diabetes Team for advice - do not feel embarrassed; it is sometimes easy to forget a dose of insulin!

Insulin Timing at Weekends

Your child’s weekend timetable may be very different from that during the week. Many children enjoy an extra hour’s sleep in the morning at weekends. This should not be a problem - we can discuss it further to suit each child’s individual needs.

When the clocks change for summertime and wintertime, there is no need to gradually adjust the time for meals and insulin injections!
The Honeymoon Period

You may find that shortly after diagnosis your child’s daily insulin doses are reduced because of lower blood glucose readings. This is very common and is known as the honeymoon period during which time your child’s pancreas is still producing a small amount of its own insulin.

This honeymoon period may last from a few weeks to, occasionally, two years, but unfortunately there is no treatment to prevent the inevitable time when the pancreas ceases to produce any insulin. This is the natural progression of the condition, and does not mean that the diabetes is getting worse. As pancreatic insulin production ceases, the body’s requirement for insulin given by injection increases.
If your Child is Unwell

You need not expect your child to experience more illness and miss more school simply because of diabetes. However any illness may upset the control of the diabetes.

The stress of an illness may cause the blood glucose level to rise (**HYPERGLYCAEMIA**) and ketones to appear in the urine. It is important to contact a member of the Diabetes Team if your child has hyperglycaemia and ketones, as he or she may become more unwell and need hospital admission.

**Emergency 24 Hour Help Line**

**Tel. 0131-536 0000**
and ask for the Diabetes Ward

*We expect you to use our emergency 24 hour telephone advice service to seek EARLY help in managing your child’s diabetes when he/she is unwell.*
A few children with diabetes react to ill health with a drop in their blood glucose (HYPOGLYCAEMIA - often called a HYPO) even if they do manage to eat.

Careful monitoring of blood glucose levels (at least four times a day) and urinary ketones (using ketostix) will help you know the effect of each illness on your child’s diabetes control. Ketones in the urine mean that the diabetes is getting out of control and this can occur during illness with low, ‘normal’, or high blood glucose readings. It is important to act quickly if your child has a moderate to large amount of ketones.

It is most important not to stop your child’s insulin when they are ill, but the dose may need to be adjusted. Please contact a member of the Diabetes Team before giving the insulin dose, if possible.

When you are sick it can be difficult to keep your blood glucose just right. This is not your fault and we will give you extra help at this time. Just phone us!

If your child is on a fixed mixed insulin regimen it is important that you always have supplies of short acting insulin (Actrapid) in case of illness.

The main problems arise if your child is vomiting and you will need to be in regular contact with your Diabetes Nurse Specialist or doctor ‘on call’ for diabetes. Through no fault of your own it may be necessary to admit your child to hospital and give fluids by a drip into a vein until the vomiting settles.
The general rule is to keep dietary intake as near normal as possible. Small and frequent snacks of carbohydrate-containing foods and drinks should be offered. If your child is unable to eat, it is then necessary to actively encourage sips of fluid containing sugar to replace the normal diet and prevent low blood glucose levels. Also encourage plenty of sugar free fluids.

Try to take sugary drinks every 1-2 hours if you are feeling sick and cannot eat.

Here are some ideas:

• Half a small glass of pure fruit juice
• Half a small glass of lucozade
• Two teaspoons of glucose in water, sugar free juice or tea
• Half a glass of ordinary (sugary) coke or lemonade (not diet variety)
• One cup of milk.

You could also try:

• One scoop of ice cream
• Three tablespoons of ordinary jelly
• Half a pot of ordinary (sugary) yoghurt
• A small bowl of thick soup.

Always remember to keep an extra snack near you - eg. a cereal bar.
Hypoglycaemia

Blood glucose less than 4 mmol/l = Hypoglycaemia or a ‘HYPO’

This is a term used for too low a level of glucose in the blood. It may result from:

- Not enough food i.e. missed or delayed meal or snack
- Extra exercise
- Too much insulin.

Having a Hypo

How will it feel when there is not enough glucose in your blood?

Everyone feels a little different. But you may feel:

- hungry
- just ‘not right’
- tired and wobbly
- grumpy
- weepy
- sweaty

You may also:

- have a sore head
- have blurred vision
- look pale
- or feel that you can’t think properly.
Treating a ‘Hypo’

Treating a Mild Hypo

Your body needs some glucose quickly - take something sugary, 3 glucose tablets, 50 ml of lucozade, or 2 teaspoons of glucose powder added to juice. This should make you feel better in a few minutes. You may need to repeat this again 5 minutes later.

REMEMBER to also eat some slower acting or starchy food to keep your blood glucose level up.

Treating a Moderate or Severe Hypo

Your child with diabetes will require assistance to treat this particularly low blood glucose level. At this stage it may be very difficult to give your child something sugary to eat or drink because they are unable to cooperate. It may also be dangerous to do so, as they may not be fully conscious or may have had a fit or convulsion. This is not very common.
You will be told how to give HYPOSTOP (a glucose gel to be rubbed into the inside of the cheek) and an injection of GLUCAGEN (if necessary) to correct the low blood glucose. Sometimes glucagen can cause vomiting.

Hypostop should not be given if your child is unconscious, unless by a health care professional. Proceed immediately to glucagen - you cannot do any harm with glucagen so do not hesitate to use it.

IF YOU HAVE HAD TO GIVE A GLUCAGEN INJECTION PLEASE CONTACT THE EMERGENCY DIABETES HELP-LINE FOR FURTHER ADVICE.

After treatment with either Hypostop or Glucagen your child will need more to eat - eg. sugary juice plus toast and jam.

Check your blood glucose reading regularly (every 15 minutes for an hour or so) after a hypo, to make sure your readings are back to normal

Continue to monitor blood glucose levels carefully, because once someone has had a ‘Hypo’, it is not uncommon for the blood glucose to fall again. The next dose of insulin may need to be reduced. If in doubt, contact the Diabetes Team.
Diabetic Equipment

Most items are prescribable, but a few are not.

Prescribable

- Insulin-vials, cartridges, and disposable pens
- Syringes and needles
- Needles for insulin pen devices*
- Glucagen kit (glucagon injection)
- Hypostop
- Blood Monitoring test strips
- Blood meter test strips
- Blood monitoring lancets
- Ketostix (please remember to write the date of the opening and renew after 6 months)

* it is expected that these will be prescribable in the near future

Non Prescribable

- Non disposable insulin pens
- Blood monitoring lancers (finger prick device)
- Blood meters
- Glucose tablets

With the exception of the glucose tablets the above non prescribable items can be obtained through your Diabetes Specialist Nurses. PLEASE NOTE this only applies whilst you are seen at the Paediatric Clinics.
Visits to the Diabetes Clinic

The Diabetes Team

The Diabetes Team includes a number of doctors (some specialising in diabetes and others working as paediatricians with an interest in diabetes), Diabetes Nurse Specialists and a Dietitian. Together they are responsible for helping you to learn to manage the many different aspects of your child’s condition.

The Diabetes Team should always be available when and if you need them. In the days and weeks following your child’s diagnosis there will be frequent contact with members of the Diabetes Team. You will then become more confident in managing your child’s diabetes and clinic visits are an opportunity for you, your child and the Diabetes Team to discuss any matters related to diabetes. You will need to visit the clinic at least three times a year as part of your child’s regular diabetes care.

We look forward to seeing you in clinic. Please tell us exactly how things have been, and not what you think you ought to say. We can be more help that way!

The Diabetes Team meets regularly to exchange information, and to keep all members well informed. It is important for your child to see various team members and not just a doctor at clinic.

Please arrive on time for your appointment and expect to be at clinic for at least one hour.
Routine clinic follow-up will be every 4 months but more frequently following diagnosis.

Other members of the Diabetes Team include:

**The Social Worker**

The Social Worker is available at most clinics throughout the period of your child's involvement with this hospital.

The Social Worker can offer:

- Financial assistance in some instances for expenses and essential equipment.
- Someone to speak on your behalf with other agencies such as Department of Social Security (DSS), Housing Department.
- Access to resources and family support services.
- Someone to talk to about any concerns or worries you may have.
- Advice and support in times of stress.

**The Clinical Psychologist**

The Clinical Psychologist helps children and families with the emotional aspects of illness. Some children are given help to cope more easily with injections, or to follow the dietary advice which has been discussed.

If you have any concerns about your child's behaviour or mood, which might be related to their diabetes, an appointment with the Clinical Psychologist can be arranged by one of the doctors in the clinic.
What happens at Clinic?

Your child will be measured and their **height** and **weight** recorded on a growth chart.

The Biochemistry staff will see your child next to take a finger prick blood test. This test is called the **Haemoglobin A1c** or **HbA1c** test and provides an accurate estimate of long term control of diabetes.

Understanding the HbA1c Test

Haemoglobin is the part of the red blood cell which carries oxygen from the lungs to the rest of the body. Some glucose sticks to the haemoglobin and stays there for the life span of the red blood cell - about 120 days. The amount of glucose that sticks to the red cell reflects the average blood glucose level during that period.

![Diagram of Haemoglobin in red blood cell](image)

When the average blood glucose level has been high, the HbA1c test will be high. It is not good for the HbA1c to be high, as the red cells become heavier and do not work so well. Most importantly, usually over a long period of time, these heavy red cells cause
gradual damage to the lining of the blood vessels leading to the complications of diabetes.

Try to think of the HbA1c as the percentage (%) of haemoglobin that has glucose stuck to it. It is normal for people with diabetes to have a slightly higher HbA1c result than people without diabetes. However, the nearer your child’s HbA1c result is to the optimal value for people with diabetes, the lower the risk of developing the complications of diabetes. It is equally important to avoid HbA1c results that are too low as this is likely to be the result of periods of significant hypoglycaemia. This can be particularly dangerous in young children, especially infants and toddlers.

The HbA1c result will help us to give you the best advice regarding any changes needed to treatment.

Remember, keeping a diary of home blood glucose results is principally to help you look after your diabetes.

Do please bring your blood glucose monitoring diary and blood glucose meter to clinic at every visit.

The HbA1c test is not affected by short term changes in blood glucose control. Daily home blood glucose monitoring tests give very valuable information to help us decide about more precise changes to the insulin doses.

Write down any questions you have so you remember to ask them at your visit.
Annual Review

This will take place on the first clinic appointment AFTER your child’s birthday.

This session may take longer than one hour as it includes the following:

- Blood pressure recording, and the usual height and weight measurements.
- Finger prick blood test to screen for thyroid disease. (People with diabetes have an increased tendency to develop thyroid problems, which can be treated with tablets.)
- A urine test to screen for any spillage of protein into the urine. (This may be a very early sign of possible kidney complications.)
- A medical review.
- Depending on the age of your child and the duration of diabetes, an examination of blood vessels at the back of the eye (fundoscopy) may take place. The pupil of the eye is dilated with eye drops and an ophthalmoscope (torch) is used to view the blood vessels. This allows any leaky blood vessels, usually related to high HbA1c readings over a long period of time, to be detected and appropriate treatment to be started.
- A discussion with the Diabetes Nurse Specialists.
- Assessment by the Dietitian.
- A discussion with the Psychologist, should you have any concerns.
Food and Drink

Diet is very important to a child with diabetes. There are some simple guidelines which you should encourage your child to follow:

- eat regular meals and snacks - include lots of fruit and vegetables
- include starchy foods at every meal and snack
- cut down on fat and fatty foods
- avoid too many sugary, sweet foods and drinks
- eat more high fibre foods
- be careful not to eat too much salt.

A Balanced Diet

You need to have a mixture of foods to make you grow and keep you healthy. We call this a ‘healthy’ or ‘balanced’ diet.

A healthy diet is good for everyone especially those with diabetes. The foods suitable for your child are ordinary foods which can be bought from your local shops and supermarkets. There is no need to buy special ‘diabetic’ foods - your child should eat the same foods as anyone else who eats healthily.

You may, however, have to make some small changes to the foods usually eaten. If your child eats properly, then blood glucose levels will be more easily controlled, and your child will feel much better.
Don’t worry you will still be able to eat some sweets especially before exercise and sports, or at the end of a meal. But, you should not have too many!

Let us look at the different food groups and see how to make sensible choices.

**Food has three main nutrients:**

- **Carbohydrate**  
  eg. bread, cereal, pasta, rice

- **Protein**  
  eg. chicken, red meat, fish

- **Fat**  
  eg. butter, margarine, oil, cream.
Carbohydrate (CHO)

Carbohydrate (CHO) is found in the starchy and sugary foods we eat. It is best if we get most of our energy from high fibre, starchy carbohydrates and these should make up the biggest part of the meal.

Remember you can eat all foods but some are better choices than others.

Your child should eat some starchy foods at every meal and snack. Everyone needs to eat different amounts of food. How much a child eats depends on age, weight, appetite and activity. Your Dietitian will advise you how much is required.

When your child first starts on insulin he or she will feel very hungry. This is normal, but tell your Dietitian if your child appears to be continually hungry.

The starchy foods are the ‘slow and sure’ ones, and are the best foods to choose. They make your blood glucose rise slowly.

Glucose in the blood mainly comes from the carbohydrate foods we eat. Your child will need to eat roughly the same amount of carbohydrate foods from day to day, split between three meals and three snacks. The Dietitian will help you to work out how much food your child needs to eat each day.
Foods which contain carbohydrate can be divided into two groups:

**Starchy Carbohydrates**
- these are broken down more slowly and will raise the blood glucose gradually so should be eaten at each meal and snack

**Sugary Carbohydrates**
- these cause the blood glucose to rise quickly, therefore should not be eaten very often. When eaten they are best included at the end of a meal or before exercise.

**Starchy Carbohydrate (slow acting)**
- Bread*
- Pasta*
- Rice - white and brown
- Cereals* - e.g. Porridge, Branflakes, Weetabix
- Lentils
- Beans
- Fruit
- Chapati
- Pitta bread*
- Oatcakes

*Try to choose wholemeal varieties as they contain more fibre
<table>
<thead>
<tr>
<th>Sugary Carbohydrate (fast acting)</th>
<th>Low Sugar or Sugar Free Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar &amp; all other sugars e.g. glucose, dextrose, fructose, syrup</td>
<td>Sweetener if necessary e.g. Canderel, Flix</td>
</tr>
<tr>
<td>Sugary diluting &amp; fizzy drinks</td>
<td>Sugar free drinks e.g. Coke, low calorie squash</td>
</tr>
<tr>
<td>Cakes &amp; sweet pastries</td>
<td>Scones, muffins, bran loaf, crumpets</td>
</tr>
<tr>
<td>Chocolate &amp; cream biscuits</td>
<td>Plain biscuits e.g. digestives, Hob Nobs, garibaldi, crackers</td>
</tr>
<tr>
<td>Sugar coated cereals e.g. Frosties, Coco Pops</td>
<td>Plain cereals e.g. cornflakes, Rice Krispies</td>
</tr>
<tr>
<td>Puddings</td>
<td>Sugar free puddings e.g. Sugar free Angel Delight, low sugar mousses</td>
</tr>
<tr>
<td>Jelly</td>
<td>Sugar free jelly</td>
</tr>
<tr>
<td>Jam, honey, marmalade</td>
<td>Reduced sugar jam &amp; marmalade</td>
</tr>
<tr>
<td>Tinned fruit in syrup</td>
<td>Tinned fruit in natural juice &amp; fresh fruit</td>
</tr>
<tr>
<td>Thick ‘n’ Creamy or custard-style yogurt, fromage frais with sugar</td>
<td>Very low fat or diet yogurt or fromage frais</td>
</tr>
</tbody>
</table>
Foods which contain VERY LITTLE Carbohydrate

PROTEINS:
Lean meat, chicken, turkey, fish, eggs, cheese
(remember not to fill up on these foods)

FATS:
Butter, margarine, oil, cream (remember to eat less of these foods)

FRUIT:
Grapefruit, gooseberries, water melon, raspberries, strawberries, lemon, black & redcurrants, blackberries

VEGETABLES:
Most fresh, frozen or salad vegetables except potatoes & pulses

SOUPS:
Consommé or thin vegetable soup, Oxo, Bovril, Marmite, Stock cubes

DRINKS:
Water - tap/bottled, soda water, tea, coffee, cocoa, sugar free squash or fizzy drinks

SWEETENERS:
Canderel, Flix, Saccharin (Saxin, Sweetex, Natrena) tablets or powders

MISCELLANEOUS:
Salt, pepper, herbs, spices, curry powder, mustard, vinegar, pickled onions, gherkins
**Protein Foods**

Proteins are used for growth and repair in the body. Your child should eat some protein foods everyday, but should not fill up on them.

Foods such as chicken, fish & eggs help you grow. Eat a little every day.

Some protein foods contain a lot of fat so choose carefully.

**Protein Foods**

Eat two to three portions daily (not including milk) e.g. at lunch and tea.

- Lean Meat
- Chicken, Turkey
- Fish
- Cheese
- Eggs
- Beans, Lentils
- Soya
- Nuts
- Milk

**Fatty Foods**

It is not good to eat a lot of fatty food as it may lead to heart disease. The following foods are high in fat and are also very high in calories.
**Fatty Foods**

Fried Foods, eg. chips, crisps and ‘fish suppers’  
Butter, margarine, oil, lard  
Pastry, eg. pies, sausage rolls  
Cream  
Fatty meats and meat products  
   eg. paté, salami, burgers, sausages  
Cheese, especially cream cheese.

**Ways of reducing fat are:**

- Grill, poach or stew food instead of frying  
- Choose chicken (do not eat the skin) and fish instead of fatty meats  
- Have lean meats - cut off the fat from the edges  
- Do not eat cheese between meals. Choose lower fat varieties e.g. cottage cheese, reduced fat cheese, Edam, Gouda  
- Spread butter/margarine thinly, or use low fat spread  
- Use semi skimmed milk (full fat milk for under 2-year-olds)  
- Eat less pastry, nuts, mayonnaise and salad dressing  
- Eat only one packet of crisps per day - try the new 80-90% fat free ones  
- Use yogurt instead of cream for toppings.

Use polyunsaturated/monounsaturated fat (vegetable and fish oils) in place of saturated fat (animal fat) as these are better for you.
Fibre

Fibre is the part of plants which is not broken down in the body.

Fibre is found in cereals, vegetables, fruit and pulses e.g. beans, lentil. It is good to include fibre in your child’s diet as it keeps the body healthy.

There are two main types of fibre - soluble and insoluble. **Soluble fibre is particularly good at slowing the rise in blood glucose levels and is found in oats, lentils, beans, peas and oranges.**

Try to include four to five portions of fruit and vegetables in your diet each day.

It is best to increase your child’s fibre intake gradually so that the body gets used to having more high fibre foods. It is also important to make sure that your child drinks enough fluid when fibre intake is increased. Try to include six to eight drinks everyday.
To increase your fibre intake, choose the high-fibre alternative:

<table>
<thead>
<tr>
<th>Ordinary Food</th>
<th>High Fibre Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>White bread</td>
<td>Wholemeal, granary and soft grain bread</td>
</tr>
<tr>
<td>White pitta bread</td>
<td>Wholemeal pitta bread</td>
</tr>
<tr>
<td>White pasta</td>
<td>Wholemeal pasta</td>
</tr>
<tr>
<td>White rice</td>
<td>Brown rice</td>
</tr>
<tr>
<td>Cream crackers</td>
<td>Wholewheat crackers, oatcakes, rye, crispbreads</td>
</tr>
<tr>
<td>Rich tea, Marie biscuits</td>
<td>Digestives, Hob Nobs or nutty varieties</td>
</tr>
<tr>
<td>Cornflakes, Rice Krispies</td>
<td>Branflakes, porridge, oat cereals, Weetabix</td>
</tr>
<tr>
<td>Mashed potato</td>
<td>Baked potato - try to eat the skins too</td>
</tr>
<tr>
<td>Pure orange juice</td>
<td>Whole oranges, satsumas</td>
</tr>
</tbody>
</table>
Meal Suggestions
The foods in blue contain carbohydrate.

Main Meals

- Spaghetti bolognese & green salad
  Fresh fruit salad topped with diet yogurt
- Grilled vegeburger/beefburger, coleslaw & baked potato
  Banana & small portion of ice cream
- Pizza & mixed salad
  Slice of carrot cake (home-made with less sugar)
- Meat or vegetable curry, boiled rice/chapati, tomato & cucumber salad
  Sugar free jelly with fruit in natural juice
- Grilled fish/fish fingers, peas & oven chips
  Baked apple & custard (use artificial sweetener)
- Thick lentil soup & wholemeal bread roll filled with tuna salad
  Diet fromage frais
- Turkey & vegetable casserole, broccoli & mashed potato
  Fruit crumble
- Roast chicken, sweetcorn & boiled potatoes
  Sugar free Angel Delight
Quick Meals

• Baked potato filled with tuna & sweetcorn
• Cold pasta salad & tomatoes
• Poached egg on granary toast
• Pitta bread filled with grated Edam cheese & salad
• Baked beans on toast
• Split pea soup & Italian crusty bread
• Spicy chicken in taco shells
• Pasta with smoked mackerel
• French bread filled with lean cold meat, lettuce, cucumber & tomato
• Hummus dip (chick pea & sesame paste) with raw vegetables e.g. carrot sticks, red & green peppers, celery sticks & warmed wholemeal pitta bread for dipping
Food Labels

What do they tell us?

Food labels can tell us a great deal about the ingredients in a manufactured product. For example, a strawberry low fat yogurt contains: skimmed milk, strawberries, sugar, stabilisers, pectin, carob, gum, flavourings, citric acid, elderberry extract.

Ingredients are listed in order of weight, with the largest first, so in the yogurt there is more sugar than flavourings, and skimmed milk is the largest ingredient.

A label also provides nutritional information such as how much protein, carbohydrate and fat is contained in the food. This allows you to compare two foods and choose the healthier one.

Example - Yogurt

Let us compare the Nutritional Content of two yogurts

<table>
<thead>
<tr>
<th>Per 100g</th>
<th>Low-Fat Yogurt</th>
<th>Diet Yogurt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>89 kcal</td>
<td>50 kcal</td>
</tr>
<tr>
<td>Protein</td>
<td>4.8 g</td>
<td>5.1 g</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>15.6 g</td>
<td>7.2 g</td>
</tr>
<tr>
<td>Of which sugar</td>
<td>15.6 g</td>
<td>6.6 g</td>
</tr>
<tr>
<td>Starch</td>
<td>0.5 g</td>
<td>0.6 g</td>
</tr>
<tr>
<td>Fat</td>
<td>1.3 g</td>
<td>0.1 g</td>
</tr>
</tbody>
</table>

Remember these figures are for 100g and most yogurts are packaged in 125g - 150g tubs.
In some foods e.g. cereals and biscuits, it is useful to see how much of the carbohydrate is in the form of starch, and how much is in the form of sugar. Choose the one which is higher in starch.

**Example - Cereal**

Look at the following examples of nutritional content from two cereals and choose the healthier one.

<table>
<thead>
<tr>
<th>Cereal A per 100g</th>
<th>Cereal B per 100g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbohydrate</td>
<td>86g</td>
</tr>
<tr>
<td>of which sugar</td>
<td>10g</td>
</tr>
<tr>
<td>of which starch</td>
<td>76g</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>88g</td>
</tr>
<tr>
<td>of which sugar</td>
<td>49g</td>
</tr>
<tr>
<td>of which starch</td>
<td>39g</td>
</tr>
</tbody>
</table>

Cereal A is the healthy choice because it has more starch, while Cereal B is the sugar coated cereal, and has more sugar and less starch.

Did you get it right? Have a look at the labels on foods in the kitchen, and have some fun testing each other!
Artificial Sweeteners - Which are suitable?

There are two main types of sweetener - intense and non-intense sweeteners - which are used instead of sugar.

**Intense Sweeteners**
The most commonly used in foods and drinks are:

- Acesulfame K (E950) e.g. Diamin, Hermesetas Gold
- Aspartame (Nutrasweet) (E951) e.g. Canderel, Flix
- Saccharin (E954) e.g. Hermesetas, Shapers, Sweetex
- Cyclamates (E952) - reintroduced into this country recently.

These are available in tablet, liquid and granular form. Intense sweeteners have no carbohydrate or calories. They can be used in drinks and on cereals (if really necessary) and may be useful for certain puddings e.g. milky puddings or crumble topping. It is best to add the sweetener after cooking/heating for the best flavour. Intense sweeteners are not suitable for baking a cake since they prevent it from rising.

**Non-Intense Sweeteners**

These include fructose and polyols (like sorbitol, maltitol, mannitol, isomalt, xylitol).

Non-intense sweeteners are not recommended because they may cause tummy ache and diarrhoea. They are often used in diabetic foods.
Diabetic Foods

Special diabetic food e.g. diabetic biscuits, chocolate, sweets are not advised because:

• they can have a laxative effect due to the sweeteners used in these products e.g. sorbitol and fructose (see above)
• they are very expensive
• most have some carbohydrate as well as the sugar substitute
• they are often high in fat and calories
• your child may feel different from his or her friends.

The British Diabetic Association does not recommend diabetic foods. It is far better to eat ordinary low fat, low sugar, high fibre foods available from the supermarkets.

You won’t have to eat special foods - you can eat all the things your friends do!
Sample Meal Plan

This page will give you some ideas for your child’s daily diet. You will be able to devise your own sample meal plan on the following page, with help from your Dietitian.

**Breakfast**
- Weetabix and semi skimmed milk
- Wholemeal toast and low fat spread
- Glass of milk

**Mid Morning**
- Banana
- Carton of milk

**Lunch**
- Baked potato & baked beans
- or cheese & tomato sandwich
- Diet yogurt
- Apple
- Sugar free drink

**Mid Afternoon**
- Muesli bar
- Diet coke

**Evening Meal**
- Chicken curry
- Vegetables/salad
- Boiled rice
- Sugar free Angel Delight
- or Sugar free Custard
- Water/sugar free drink

**Supper**
- Sandwich
- Glass of milk
Your Sample Meal Plan:

Breakfast:

Mid Morning:

Lunch:

Mid Afternoon:

Evening Meal:

Supper:
Exercise

A child with diabetes should be encouraged to take as much exercise as any other, but you must be aware of the effects of using up extra energy.

As well as being fun, exercise will also:

- use up energy and lower your blood glucose levels
- keep you fit
- help control your weight.

Any exercise such as football, gym, dancing, will use up extra energy (glucose). You may need to alter your child’s insulin or food intake on days when exercise is taken. If your child is planning to have a very active day consider reducing the insulin that morning.

Extra carbohydrate will usually be needed before, during and possibly after activity. The amount eaten depends on the type of activity and how long it lasts. The effect of exercise can last for at least 8 - 10 hours.

It is important to refill your stores by eating during and after the exercise, and you may need to decrease your evening insulin.
A fun/snack size chocolate bar can be eaten just before exercise to boost the blood glucose levels. For longer activity it is best combined with starchy carbohydrate e.g. a snack-size chocolate bar and a sandwich, or digestive biscuits.

**Examples:**
- a 5 year old at gym for 30 - 40 mins will probably need a fun size chocolate bar or a banana.
- a 14 year old playing rugby may need two bread rolls and a small chocolate bar (some before, some during the game, and possibly less insulin).

Always carry some quick acting glucose with you e.g. glucose tablets.

A special pocket can be sewn into your sports shorts to carry 3-6 glucose tablets.

Good control of diabetes will improve performance. However, the blood glucose will INCREASE during exercise IF there is a lack of insulin (high blood glucose) and ESPECIALLY if there are ketones.

Do not exercise if you have a moderate to large amount of ketones. Discuss it with the diabetes team!
Dental Health

Dental health is important for all children, and for children with diabetes in particular. Your child should visit your dentist regularly. Please inform your dentist that your child has diabetes.

If blood glucose control is poor, dental decay, gum disease and thrush may develop. Dental disease and treatment may disrupt the normal pattern of food intake and interfere with diabetes control.

Routine check-ups and polishes should be carried out by your own dentist who is able to call on specialists in paediatric dentistry if help is needed.

Prevention is the key and needs to be a routine part of diabetic care.

To look after your child’s teeth:

- Keep food and drinks with sugar and acid in them, that may affect your child’s teeth, to meal times.
- Make sure your child brushes his or her teeth twice a day using just a smear of fluoride toothpaste.

With these preventative measures, many dental problems can be avoided.
Treatment

Routine treatment can be carried out by your own dentist, including procedures which require an injection of local anaesthetic. A dental extraction under general anaesthetic requires admission to the diabetes ward to ensure appropriate management of your child’s diabetes (see page 58).

The Paediatric Dental Team can provide specialist advice and treatment, and are happy to help you and your dentist in any way they can. Contact them via the Dental Unit in the Hospital, or through the Edinburgh Dental Institute (0131-536 0680 or 4907).
General Anaesthetics

In the future your child might need to have a general anaesthetic in hospital. This could be for dental treatment, surgical operations, or special investigations or procedures unrelated to diabetes.

Any patient who requires an anaesthetic will need to have several hours without food or fluids beforehand. For a child with Diabetes it makes sense to time the procedure for early in the day when your child would already have an empty stomach.

We delay the morning dose of insulin until after the procedure and monitor the blood glucose levels throughout. The dose of insulin given may be different from your child's usual dose, but the Diabetes Team will be adjusting it as required, depending on circumstances at the time.

With careful introduction of diet and fluids your child should recover quickly and without problems. Discharge should be possible within the same timescale as any other child who does not have diabetes.

In some circumstances it may be necessary to give your child fluids intravenously (through a drip) especially if the blood glucose level is low, but we restrict this to the shortest possible time and introduce fluids and food when appropriate.
School Life

Your Diabetes Nurse Specialist will be in contact with school as soon as possible. She will give your teacher information on diabetes.

The Diabetes Nurse Specialist will make an appointment to meet with the appropriate teacher and school staff. You may attend this meeting. The school will be given guidelines which you may read - this includes contact information, treatment of hypos, information on exercise, school trips etc. If problems related to diabetes are encountered at school, joint meetings with parents, teachers and the Diabetes Nurse Specialist can be arranged.

When your child changes teacher or school, or goes on a trip, please inform one of the Diabetes Nurse Specialists. They will then arrange a meeting, if appropriate.

Eating at School

If your child takes a school lunch, it should be fine for this to continue. The most important thing to remember is that your child should get enough of the starchy carbohydrate e.g. potato, rice, pasta or bread. It will be better for them to change to fruit or yogurt instead of a sugary pudding. It may be easier (especially for a younger child), to have a packed lunch if your child finds it difficult to choose a suitable lunch.
Your child should have a morning snack at play-time with the other children, but may need to eat an afternoon snack during class - so it is best to avoid noisy snacks like crisps!

You will be asked to provide the class teacher with glucose tablets or lucozade in case your child has a ‘hypo’, and some biscuits to keep in the classroom.

**Lunch Box Suggestions**

- Filled wholemeal roll with tuna & salad
- Chicken drumstick & pitta bread filled with tomato & cucumber
- Italian roll with cheese & tomato
- Bran scone with peanut butter
- Rice or pasta salad
- Soup in a vacuum flask & granary roll
- Diet yogurt/fromage frais, natural yogurt, fresh fruit, cereal bar, dried fruit e.g. raisins or apricots, low fat crisps
- Diet drink or sugar free squash to drink
Holidays

Go ahead! There is no reason why your child should not enjoy holidays away from home like everyone else. Obviously it will be necessary to take supplies of insulin, needles etc. If you are going abroad, ask your Diabetes Nurse Specialist for a letter stating that you are carrying insulin, needles and syringes. Here is a checklist to help you pack.

Checklist

- **Insulin** - carried in your hand luggage not in the hold, and make sure you have two sets.
- **Additional Actrapid, Needles and Syringes** - be sure to take these, even if you have never had to use them before, as well as pen devices if you are using them.
- **Glucagen and Hypostop** - check these are still in date, and carry in your hand luggage.
- **Cool Bag** - if a refrigerator is not available you will need this to store insulin.
- **Fast-acting Carbohydrates** - as always, and extra snacks in case your journey is delayed.
- **Blood Glucose Monitoring Equipment** - and sufficient strips for the duration of your holiday.
- **Extra supplies of B.M.Stix** - in case of problems with a meter.
- **Ketostix** - check expiry date and ensure they have not been opened for more than six months.
- **Identity discs etc.** - be prepared!
And if you are Going Abroad:

There is no reason why your child should not travel abroad. You do not even need to order a special meal on the plane.

However, there are certain considerations you should be aware of:

• Check in advance that your insurance covers your child for any treatment required as a result of diabetes. It may not be sufficient just to declare that they have diabetes. You may also require a letter stating that your child is fit to travel.

• Consider time changes for flights and discuss with your Diabetes Nurse Specialist.

• Leaflets on diabetes with translations are available for most countries from the BDA or your Diabetes Nurse Specialist.

• Extremes of temperature can affect blood glucose because of the way in which insulin is absorbed - usually more quickly if the weather is very hot.

• If activity is greatly increased e.g. swimming or skiing, blood glucose may be much lower and less insulin may be required.

• Remember many hotels or bars abroad do not sell sugar-free diluting juices, but they may be available in supermarkets.
Social Life

During the holidays, if your child stays up later than normal, an extra snack should be given before he or she goes to bed. This will help prevent the blood glucose from falling too low through the night.

Parties and Special Occasions

All children love parties and your child should be no different. With a little planning and thought about the timing of the food offered, it should be easy!

When you are at a party try and have more of the savoury food e.g. sausages, chicken drumsticks, sandwiches, popcorn, crisps and pizza.

There is usually plenty of activity or games at a party so it is OK for your child to have some cake and sweet food as a treat. In any case, your child will need extra food to prevent the blood glucose level from going too low.

If it is possible, suggest to the host that everyone has sugar free drinks (better for everyone’s teeth too!), but in some cases you might need to supply some. Sugar free jelly can also be used for everybody.
Christmas

If your child gets up extra early (perhaps 5.00am) on Christmas morning it is best to give something to eat before injection time to prevent a ‘hypo’. Satsumas, clementines, an apple or a fun sized chocolate bar found in the stocking may be eaten!

You can eat a little of *everything* the rest of your family are having on Christmas day!

Remember to get your child to eat a snack if your meal is later than usual. The main course of traditional Christmas lunch does not usually have a lot of carbohydrate, so the pudding will make up for this.
Toddlers

Many toddlers with or without diabetes go through a period of ‘rebellion’, food refusal and fussy eating. This is common behaviour in this age group.

The following tips may be helpful.

• Children’s appetites vary from day to day. If your child is not very hungry offer 6 small meals/snacks during the day. Young children like to ‘graze’ - offer an attractive plate with small sandwiches, a few crisps or mini savoury crackers and some chopped/sliced fruit. This can be eaten over a one to two hour period.

• Do not make a fuss or let your child see that you are anxious if a meal is refused. Never force your child to eat. As the blood glucose falls he or she will usually feel hungry.

• Avoid using sweet food or drinks to replace a meal. Children are very clever and will soon learn to manipulate the situation if they realise food refusal means a chocolate biscuit or other treat!

• Offer a wide range of foods at meal times. Continue to use suitable family foods.

• Some children find breakfast difficult to eat, but will usually take a drink of pure fruit juice. Then offer cereal or toast an hour later.

• Discuss any issues or problems with your Dietitian.
Trouble Shooting
Problems with Diabetes Control

Managing diabetes becomes part of your daily routine. We do appreciate how much effort goes into this. However, there are times when things ‘do not seem to be working’ and you need extra support.

It is important that you seek early advice from a member of the Diabetes Team - we may not have an immediate answer, but we will try hard and work with you to sort things out as soon as possible.

You will already know from reading this handbook, and from your own experience, that insulin requirements vary according to activity, periods of rapid growth and puberty, illnesses, eating patterns, worry, excitement and other factors.

We would therefore need to discuss:

**Insulin Doses**

After the initial ‘honeymoon period’, the daily insulin requirement is around 0.7 - 0.9 units of insulin per kilogram of body weight per day (in a child not yet in puberty).

eg: a child weighing 30 Kg would be expected to take up to a total of about 27 units of insulin each day (30 Kg x 0.9 units = 27), possibly divided as 18 units before breakfast and 9 units before tea.

During puberty the daily insulin requirements increase to a possible maximum of 1.5 units of insulin per kilogram per day when your child is growing very quickly.
Growth hormone levels rise during puberty and cause blood glucose levels to rise too. This explains why more insulin is required during this time. It is, however, important to decrease the total daily amount of insulin when your child stops growing and reaches their final height.

**Too much insulin drives your appetite, causing you to eat more, gain weight and further increase your blood glucose readings. This makes you think you need to increase your insulin further, when it needs to be cut back.**

A temporary increase in insulin may be required (sometimes for as long as one month) to get over a period of higher blood glucose readings, but it is then important to cut back to the appropriate insulin doses.

**Injections**

_a. Sites_
We will check your injection sites at each clinic visit to help you spot any early ‘fat pads’ (see page 21) developing. This may be a cause of poor control.

_b. Technique_
Not concentrating on giving the injection properly may lead to some insulin leaking from the injection site, or injections being given too deeply (see page 19).

_c. Missed Injections_
This is unfortunately very common as a cause of poor diabetes control. We need to address this, and would do so sensitively.
**Diet**

Everyone enjoys eating ‘treats’ on special occasions, but always eating too much or too many foods that are not recommended, causes high blood glucose levels and poor diabetes control. Increasing the insulin doses will improve blood glucose levels, but may cause excessive weight gain. Speak to the Dietitian to see if you child is eating inappropriately.

**Exercise**

Exercise uses up energy and may cause low blood glucose levels during exercise and for up to 12 hours afterwards (while the body restocks its energy stores). Make sure your child eats some extra carbohydrate or reduces their insulin dose before exercising (see page 54).

Your child’s insulin requirements may vary according to the amount of exercise he or she is taking throughout the year. For example the difference between term-time and holidays, or summer and winter activities.

**In Conclusion**

It may well be that several members in the team will need to help when there are problems with blood glucose control, as there is often not one easy answer.

We feel that it is important to have both a psychologist and a social worker as an integral part of the team - they will then be familiar people available to help you best when, and if, you need them.
Diabetes U.K.

Diabetes U.K., founded in 1934, was the first medical self-help charity in Britain. The aims are: to help and care for people with diabetes and those close to them, to represent and campaign for their interests, and to fund research into diabetes.

Diabetes U.K. understands the particular problems of children with diabetes. The Youth and Family Events care interventions team offers support through information packs and contact networks. Organised activity holidays and family weekends can also help young people and their families overcome difficulties and gain educational insight, as well as giving an opportunity to meet others in the same situation.

You may also be grateful for local support and social contact. Diabetes U.K. is a nationwide organisation with local voluntary groups where members get together for meetings and events.

Members of Diabetes U.K. receive ‘Balance’ magazine every two months. There are also magazines specifically for children and adolescents. This provides a way of keeping in touch with progress in care and research as well as providing menus and ideas for making life easier.

Membership is free for children in the first year. If you would like further information, or to join the association, please ask your Diabetes Nurse Specialist or contact Diabetes U.K. direct at 10 Queen Anne Street, London, W1M OBD, telephone 0207-323 1531.
Diabetes Groups

Events are arranged for children aged 8 - 13 years by the Young Diabetics Edinburgh (YDE), on the third Thursday of the month from September to May.

You will receive details of these events from members of the Diabetes Team. This group is arranged on a voluntary basis and in staff’s own time.

Functions are also organised by the children’s branch of Diabetes U.K.

The above are open to all our patients in Lothian, but if you are from West Lothian you may be interested to know that there is a branch of Diabetes U.K. there.
### Glossary

- **Blood Glucose**: The level or concentration of glucose in the blood.
- **Carbohydrate**: One of the three main energy giving nutrients in foods, composed mainly of sugars and starches.
- **Glucagen Kit**: A box containing a syringe of fluid and a vial of glucagon powder to be injected to correct a severe 'hypo'.
- **Glucagon**: A chemical messenger which increases glucose levels in the blood.
- **Glucose**: A sugar which is the chief source of energy for the body.
- **Glycosuria**: The presence of glucose in the urine.
- **Glycosylated Haemoglobin**: see HbA1c.
- **HbA1c**: A blood test that measures how much glucose is joined to red cells in the blood. It gives a measure of the average blood glucose level during the previous 6 - 12 weeks.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td><strong>Honeymoon Period</strong></td>
<td>The length of time during which the pancreas of someone who has recently been diagnosed with Type 1 diabetes continues to make some insulin (see page 23).</td>
</tr>
<tr>
<td><strong>Hormone</strong></td>
<td>A chemical substance produced in one of the glands in the body and carried by the blood to have a specific effect on the functioning of other cells in the body.</td>
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<tr>
<td><strong>Hyperglycaemia</strong></td>
<td>High blood glucose level.</td>
</tr>
<tr>
<td><strong>Hypoglycaemia or ‘Hypo’</strong></td>
<td>Too low a level of blood glucose.</td>
</tr>
<tr>
<td><strong>Hypothyroidism</strong></td>
<td>Too low a level of thyroid hormone in the blood.</td>
</tr>
<tr>
<td><strong>Incidence</strong></td>
<td>The number of diagnosed cases per year of a particular disease.</td>
</tr>
<tr>
<td><strong>Insulin</strong></td>
<td>A hormone produced by the beta cells of the pancreas which lowers the blood glucose level by enabling transport of glucose from the blood into the body cells. This allows the cells to use glucose for energy.</td>
</tr>
<tr>
<td><strong>Ketoacidosis</strong></td>
<td>A serious condition caused by a deficiency of insulin which results in body fat being used up to form ketones (which can be detected in the urine) and acids.</td>
</tr>
<tr>
<td><strong>Ketones</strong></td>
<td>Fat is broken down to fatty acids when the body cells are starving due to a lack of glucose. The fatty acids are transformed into ketones by the liver, and ketones then appear in the urine. This can occur when there is a lack of insulin (HIGH BLOOD GLUCOSE) or when there is a lack of food (LOW BLOOD GLUCOSE).</td>
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<tr>
<td><strong>Microalbuminuria</strong></td>
<td>Very small amounts of protein in the urine.</td>
</tr>
<tr>
<td><strong>Pancreas</strong></td>
<td>A large gland situated near the stomach which produces digestive enzymes, insulin and other hormones.</td>
</tr>
<tr>
<td><strong>Subcutaneous</strong></td>
<td>In the fat tissue under the skin.</td>
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This section will be completed at your Clinic Appointments

<table>
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<tr>
<th>Date</th>
<th>Result</th>
<th>Comment</th>
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**HbA1c Results**
Graphs for filling in your HbA1c results
If you wish, you can make a note of your child’s height and weight at each clinic visit:

<table>
<thead>
<tr>
<th>Date</th>
<th>Height</th>
<th>Weight</th>
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</table>
Your Diabetes Team

Consultant

Doctors

Diabetes Nurse Specialists

Dietitian

Social Worker

Psychologist