NHS

The Diabetes Education Application Deapp 2.0

Children's Diabetes Handbook 2023/24

Information for Children, Parents and Carers

Used by NHS hospitals across the UK!

v1.7

Leicester Children's Hospital

LEICESTER'S RESEARCH

The Diabetes Education Application Deapp 2.0

HEAL med innovative education

NHS University Hospitals of Leicester NHS Trust

Important

Always follow the guidance and advice from your diabetes team.

This handbook was created with the guidance of the NHS and follows recognised guidelines such as ISPAD and NICE.

There may be times when your diabetes team advises you differently from the information in this handbook, always follow the diabetes teams advice for you own individual care.

If you are ever unsure just ask your diabetes team.

Licence Key Stickers

Contents

Introduction 3
Our Team 4
Expectations 5
Help and Support 8
The Team 9

Session 1: What is Diabetes? 11
Why has this happened? 12
The Symptoms of Diabetes 14
Ketones 15
Treating Diabetes 17
Journey of Toast 19

Session 2: Practical Skills 21
Monitoring Your Glucose Levels 22
How to do a Finger prick Glucose Test 23
Types of Insulin 25
Preparing the Needle 27
Putting a Cartridge in Your Pen 28
Attaching the Needle to the Insulin Pen 29
Injection Sites 31
Sharps 33

Session 3a: Food 35
Healthy Eating with Type 1 Diabetes 35
Carbohydrates, Proteins and Fats 36
Insulin 37
Meals and Snacks 38
Drinks 40
Interpreting Food Labels 41
Different Types of Sugar/Sweetener 42
Glycaemic index 42
Eating Out, Parties and Takeaways 44
Good Eating Habits 45
Healthy Eating and Long-Term Health 46

Session 3b: Carbohydrate Counting 47
Carb Counting and Ratios 47
Sugary Drinks and Sweets 49
Using Food Labels 50
Using the Carbohydrate per 100grams 51
Tools for Carb Counting 53

Session 4: Highs and Lows 55
Symptoms of Hyperglycaemia 55
Correction Doses 56

Session 4: Highs and Lows
Ketones 57
Quick Reference: Management of Hyperglycaemia 59
Hypoglycaemia 60
How to Treat a Hypo 62
Glucagon Injections 63
Quick Reference: Management of Hypoglycaemia 65

Session 5: Sick Day Rules 67
Understanding Ketone Results and What to Do 68

Session 6: Diabetic Ketoacidosis (DKA) 73
Warning Signs and Symptoms of DKA 74

Session 7: Correction Doses 75
Correction Doses 75

Session 8: Emotional Wellbeing 77
Being Diagnosed 77
Resources 78
Self-Care Activities 80

Session 9: School 81
Childcare, Nursery , School, College and University 81

Session 10: Exercise 85
Exercise 85
Glucose Levels Table 88
Top 7 Tips – Enjoy being active 89
Words From Celebrities 90

Session 11: Future Complications 91
Complications 91
HbA1c Table 92

Session 12: Travel and Lifestyle 95
Travelling 95
Lifestyle 98

Appendix 101
Further Information 103
Links and Websites 104
Notes 105

Introduction

If you are reading this handbook, you or a family member may have been recently diagnosed with type 1 diabetes. You may be feeling worried and will probably have lots of questions running through your head. You may also feel shocked and scared about what changes this means to your life. We want you to know that these feelings are completely normal.

We know that all young people feel fed up caring for diabetes from time to time. This is why we have lots of top tips and resources for helping you to manage your feelings.

Your feelings about diabetes are really important to us. You don't have to be best friends with diabetes, but building a good relationship with it can reduce feelings of burden.

Your healthcare team are here to guide you through these changes, and provide support for you and your family. They will work with you and your family to try and keep your day to day life as close to the way it was before your diagnosis.

This handbook complements the Deapp 2.0 app and will help to answer some of the questions and worries you may have. It will guide you through the education process that you will receive on diagnosis.

Our Team

All of our staff are trained in looking out for signs that children and young people might be struggling. Some teams may also have a social worker or psychologist to talk to, just ask one of the team and they will put you in touch.

Team Vision

As a healthcare team we are committed to improving the health and wellbeing of young people living with diabetes and their families by providing high quality, integrated physical and emotional healthcare.

Our mission statement is

To empower children and their families to manage their diabetes so they can continue to live a healthy, happy life.

What care can you expect from the diabetes team?

1. They will introduce themselves.
2. You will be looked after by a specialist multi-disciplinary diabetes team as described on our introduction page in this handbook.
3. You will be treated with respect and compassion at all times.
4. They will explain 'What is Type 1 Diabetes?'.
5. You and your family/carers will be given the time to talk about your feelings and your worries.
6. You will be seen by a Dietitian to talk about food and be advised if there are changes you need to make with what you eat and drink.
7. You will be given insulin to take home on discharge. Future prescriptions can be obtained in your clinic appointment or from your GP.
8. You will be given names of diabetes support groups to help you with your diabetes.

9 They will teach you how and where to give your injection and how and when to test your glucose levels.

10 They will tell you what levels your glucose levels should be and advise you how to keep this within range.

11 They will tell you all about insulin and when to give it.

12 They will teach you how to recognise and when to treat a high and a low glucose level.

13 You will have regular ongoing phone calls and appointments with your diabetes team.

14 You will be given the telephone numbers for contacting the diabetes team in office hours and out-of-hours.

15 They will give you a school diabetes care plan and education resources for you to pass onto your school.

What the diabetes team will expect from you and your family/carers?

1. You will need to attend at least four clinic appointments a year for checks on your growth, general health, and screening for other conditions and to talk about any concerns or problems you have.
2. You will see a Dietitian at least once a year to who will review your diet and provide relevant advice to help manage your Diabetes.
3. You will need to attend all diabetes education sessions organised by the team to help you to continue to improve your diabetes care.
4. The aim is to keep your HbA1C less than 7%
5. You will be empowered to reach out if you have concerns about your diabetes management.
6. To ensure you have glucose and ketones testing equipment and strips with you at all times.
7. To monitor your glucose with a Continuous Glucose Monitor (CGM) or at least 5 glucose checks a day.
8. To have hypo treatments and snacks with you at ALL times.
9. To update the diabetes team if you have changed your home address and/or telephone numbers.
10. DO NOT LET DIABETES STOP YOU FROM DOING WHAT YOU WANT TO DO.

Help and Support

Your diabetes team are here to help you and your family manage your diabetes.

Your health and happiness are really important to us.
Your team will see you regularly from now on and do their best to answer your questions.
There is no such thing as a silly question, so don't be shy.

It is really important to remember that you are still you.
Don't let diabetes control your life, instead take control of your diabetes.

Introduction

This handbook for type 1 diabetes has been produced to guide you through the education process that you will receive on diagnosis and for re-education.
It complements the Deapp videos and it will be a resource that you can continue to use once you are home.

The Diabetes Team

There are a range of health professionals who are here to help you manage your diabetes and you will start to meet members of the team from the beginning. They work alongside you and your family to manage your diabetes until you transition to adult services.

1 Doctors

- Advise you on the appropriate treatment for your diabetes.
- See you in multi-disciplinary clinic appointments (minimum 4 times a year).
- Advise on adjustments to your insulin doses.
- Explain test results.
- Refer you to other health professionals if required.

2 Diabetes Specialist Nurses/ Educators

- Offer support and reassurance on managing your diabetes.
- Are available for advice between clinic appointments including advice on insulin adjustment (see office hours and out-of-hours telephone numbers at the end of the booklet).
- Will teach you to use the equipment needed for checking glucose levels and delivering insulin.
- Liaise with and educate school staff.
- Provide advice on all aspects of managing diabetes including exercise and travel.

3 Dietitians

- Will provide advice on eating a healthy balanced diet.
- Will teach you to count carbohydrates so you can match insulin to what you eat.
- Advise on any other medical conditions where diet forms a part of your treatment plan.

4 Social Workers & Psychologists

- Support children, young people and their families to feel better equipped to manage the ups and downs of living with diabetes.
- Help to deal with feelings related to diabetes like feeling different.
- Help with worries about treatment such as needles or glucose monitoring.
- Help with difficulties relating to food, eating and body image.
- Provide support relating to how diabetes can affect family life.

5 Administration Support

- Processes referrals.
- Book appointments.
- Send out text reminders.
- Connect you with the team.

To sum up

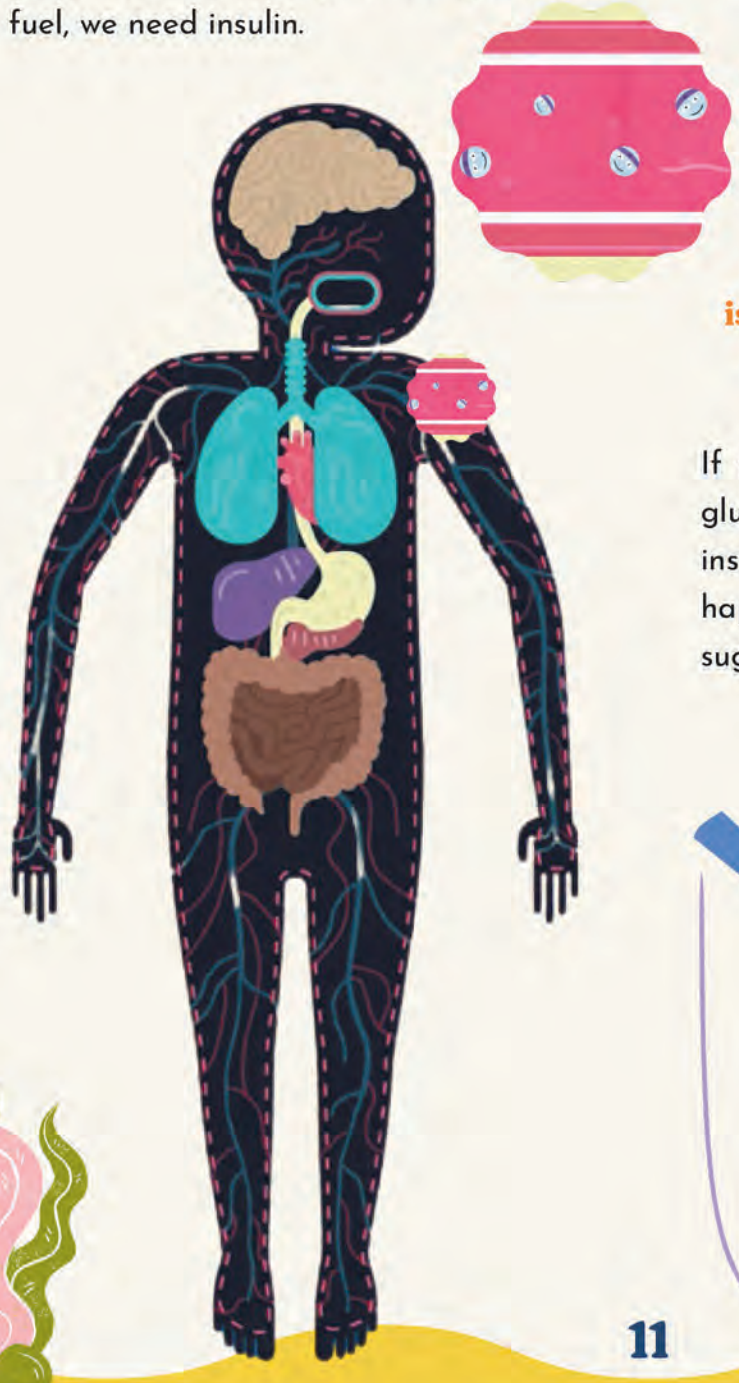
Over time you will get to meet all members of the team. You may see different members of the team (doctors, diabetes nurses/educators, social workers and dietitians) when you come for your out-patient appointments.

Session 1 What is diabetes?

Diabetes is when your body cannot use glucose, which is a type of sugar.

Glucose comes from the food we eat. The glucose from your food is carried in your blood stream to where it is needed.

We all need glucose to fuel our body to give us energy. It's a bit like how cars use petrol for fuel. To help us use glucose as fuel, we need insulin.



If you haven't got insulin the door stays locked.

Insulin is like a key that opens the door to allow glucose to get from the blood into the cells in your body where it is used as fuel.

The type of diabetes you have is most likely to be type 1 diabetes, which is where your body has stopped making insulin.

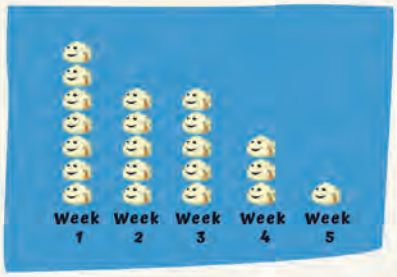
If you haven't got enough insulin, the glucose gets stuck in the bloodstream instead of being used as fuel. When this happens, the only way to eliminate the sugar is to wee it out.

That is why you are weeing a lot and if you are weeing a lot you are losing water, so you become more thirsty.

Why has this happened to you?

Diabetes is known as an 'Autoimmune Disease'

Your immune system, which is what your body uses to fight off germs, starts attacking your body as well as germs. It has become confused and starts attacking the cells that make insulin. We don't know why this happens or what causes it.



Some people think there is a virus that looks like the cells that make insulin.

If you get this virus, your immune system fights the germs. In doing so, it destroys the virus to make 'antibodies' to protect you next time. Sometimes the immune system gets confused and thinks the cells that make your insulin might be like a virus.

The immune system then carries on destroying the insulin cells even after the virus has gone. Once you have those antibodies, they are always there. Your immune system remembers, so if we try to give you new insulin cells, your immune system will kill them straight away.

You can't make more insulin cells once they have gone as you are born with a set amount.

Symptoms of diabetes start when the number of cells you have that produce your insulin reduce to the point where they can't make enough.

It is quite a slow process and can vary. You may have had this coming on for the last few weeks or months.

We have done lots of work to try and see if we can stop this from happening.
At present, there is no cure for type 1 diabetes, but this should not stop you from doing anything you want to do if you look after yourself properly.

It is nobody's fault you have diabetes.

It is nobody's fault you have diabetes. It is not because you've eaten too many sweets, or you've eaten the wrong foods and it's nothing to do with your weight.

Nothing you could have done would have made any difference.

It just happens.

We usually find that there is no one else in the family with diabetes, it just happens. The chances of getting diabetes are about 4 in a thousand. However there is a bit to do with genetics, which is the way your body is put together. If there is someone in your family with diabetes, then those chances of getting it are higher, but most of the time it just happens.

What symptoms do people with diabetes usually have?

People with diabetes usually wee a lot, are thirsty and drink a lot....

Sometimes you may have needed to get up in the night and might have wet the bed.

You may eat more, feel hungrier and may lose weight.

You might also become more tired and moody. You may have put mood changes down to other things, such as teenage behaviour or changing schools. You may have come into hospital feeling not too poorly or really poorly.

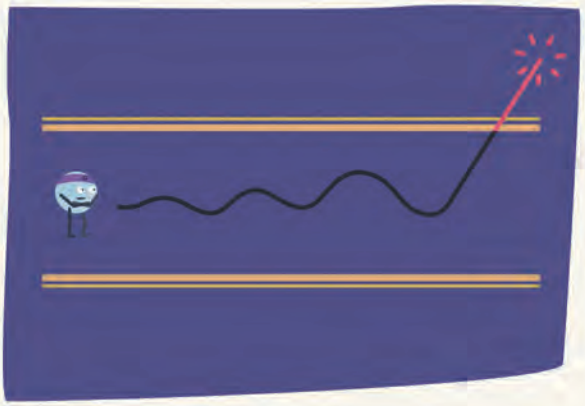
However if you leave diabetes to carry on with no-one noticing, you can end up finding it difficult to breathe, have a tummy ache, vomiting and become seriously unwell.

Either way, it is good you are now getting care from your hospital and starting treatment, so you can feel better and learn how to manage your diabetes.

Ketones

If there isn't enough insulin in your body, you can't use glucose as fuel to give you energy. Your body will start to feel tired and weak. Your glucose levels will get higher and higher because the body can't use glucose for energy, so instead you get energy by breaking down fat.

The build-up of ketones in the body is called 'Diabetic Ketoacidosis' or 'DKA'



Ketones are acids that are made when your body breaks down your muscle and fat. When fat is broken down, the ketones build up in your body. This can make you feel very unwell because ketones are poisonous and dangerous.

It is very important to remember:
High Glucose + High Ketones
= DANGER

This is because acid builds up in your blood stream and you then have to breathe the acid out, this can make your breathing extra hard. That's why your breath may have a distinctive smell of pear drops or nail polish. This is the build-up of ketones in your blood stream.
If you don't do anything about DKA it can cause your brain to swell and some people have been known to die because of DKA.
For advice on how to prevent DKA, please go to 'Sick Day Rules'

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Advice on how to prevent DKA

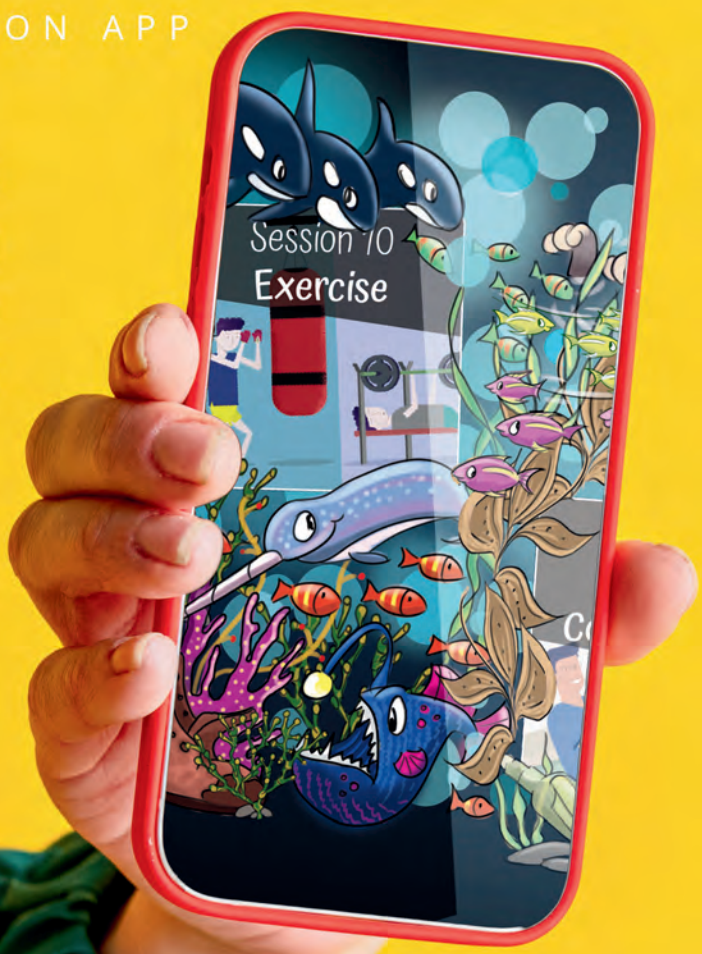
The Diabetes Education Application

Deapp

DIABETES EDUCATION APP

12 SESSIONS 50+ VIDEOS

COVERING A RANGE OF TOPICS SUCH AS PRACTICAL SKILLS, CORRECTION DOSES, DKA,EMOTIONAL WELLBEING, DRIVING AND DIABETES, AND RELATIONSHIPS.



The Diabetes Education Application **Deapp 2.0**

DOWNLOAD

@DeappEducation

To treat diabetes and get your glucose levels back to normal, we need to make sure you have some insulin. We can do this by giving you either insulin by injection or via an insulin pump.

We need to try and copy what your body would do if it didn't have diabetes. To do this, you will need to have two different types of insulin (if you are not on a pump).

You will need an injection of long acting insulin once or twice a day. This provides a background low level of insulin that is always there.

You will also need an injection of fast acting insulin each time you have something to eat and sometimes at other times if your glucose levels are too high.

The aim of treating diabetes is to keep your glucose levels as near to normal as possible, that is between 4mmol/L and 7mmol/L*, to keep your body as healthy as possible.

You can check your glucose levels by doing a glucose check or using Continuous Glucose Monitoring (CGM).

It is really important to check your glucose at least 5 times a day. If you do not check your glucose, you will not know what your readings are and you will not be able to give the right amount of insulin.

Slow/Long Acting Insulin

Rapid/Fast Acting Insulin

Aim to have glucose levels between 4 mmol/L and 7mmol/L*

***4–7mmol/L is the NICE UK guidelines. Some hospitals use 4–10 mmol/L as per the ISPAD guidelines. Your diabetes team will advise you.**

What is Type 2 Diabetes?

There are also other forms of diabetes. Type 2 diabetes is the most common in adults and a rising number in young people.

Type 2 diabetes is where your body is producing insulin, but the insulin is not working correctly or producing enough. This causes higher levels of glucose in your body, known as insulin resistance.

There are some things that increase the chances of a child or young person getting type 2 diabetes, these are:

- Being overweight.
- Strong family history of type 2.
- Coming from a South Asian or African Caribbean background.
- Having low levels of activity.

A very important treatment for high glucose levels in type 2 diabetes is to lose weight if you have a high BMI and maintaining a healthy lifestyle. Many people with type 2 also require medication or insulin.

If insulin is the key to your cells, type 2 diabetes is like having a rusty one that doesn't work very well.

Glucose levels rise as a result of the carbohydrate we eat

To help explain what happens in your body when we eat carbohydrates, let's use the example of toast eaten at breakfast time.

The main ingredient of toast is starch, which is a complex or long acting carbohydrate. Many other foods also contain carbohydrates. Carbohydrates (see later section on Food) break down to provide glucose for the body to use as fuel and energy.

How is my toast converted into energy?

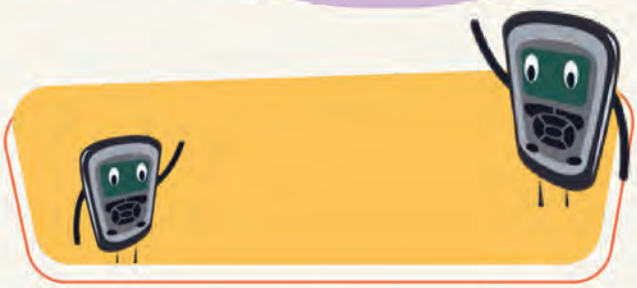
Once you have eaten your toast, it travels to your stomach and small intestines. The carbohydrate in your toast gets digested into glucose. The glucose gets absorbed into the bloodstream and is taken to all the cells in your body. The glucose moves from your bloodstream to the fluid around your cells called interstitial fluid.

The glucose needs to get into your cells so it can be converted to energy. The cells are locked and they need a "key" (insulin) to let the glucose in. The insulin "keys" are produced by the beta cells found in the pancreas. Insulin opens the cells and allows the glucose to enter.

TOAST
T
Your toast will give you the
POWER
to do your work.

Your glucose levels will be tested with the help of a special measuring meter called either a glucose meter or glucose sensor.

Monitoring your glucose levels helps you to balance your insulin with what you eat and your activity levels. It also helps you to look after your diabetes well, which in turn helps you keep healthy later on in life. Without monitoring your glucose you won't know whether your levels are above or below target. Monitoring glucose also helps the diabetes team work out the right dose of insulin for you to take and whether it needs changing.



The number of tests/scans you do each day will change depending on what you are doing.

If you are in hospital, the diabetes team will monitor your glucose levels more closely than when you are home. At home it is advised to monitor them before and after meals as well as overnight (at least 5 times each day). You should monitor your glucose more closely if you are unwell, exercising, or if your glucose levels are above target or below target.

Some people may use a sensor called a CGM (Continuous Glucose Monitoring) device, to keep track of glucose levels throughout the day without the need for excessive finger pricks. This is a great way of understanding your glucose levels and how they respond to certain foods, exercise etc. It can also be reassuring to have continuous monitoring overnight. There are several CGM devices available.

Monitoring your glucose levels

The level to aim for is between 4–7mmol/L

Your glucose levels may be slightly higher after you have eaten, which is normal.

It is important from now on that you keep an eye on your glucose level readings. You will find it helps to write them down in a diary to begin with. This can help you to look for patterns. At home the diabetes team will give you a call and you will be able to discuss your glucose levels.

This will help you and your team to know whether you are on the right amount of insulin and to make changes if there are any needed.

Your glucose readings are also recorded on your meter and if using Continuous Glucose Monitoring (CGM) in the cloud.

When you go to clinic the diabetes team will look at your glucose levels on the computer or from your record book if not using CGM.

The team will show you how to do this at home if you have a computer. This helps you to see patterns in your readings. For example, if your glucose levels are often high when you wake up and you are using pens, then your long acting insulin may need to be increased to bring this back down. Also, if there is a pattern of lots of low readings at a certain time of the day then you might lower the insulin dose to try and stop these from reoccurring.

As time goes by you will be able to see these patterns yourself and you and your parents will be educated on how to change the amount of insulin you give yourself.

Session 2

How to do a Finger Prick Glucose Test

A glucose reading is quite simple and you will quickly become good at doing it.

1. **Wash hands**
   Wash hands with soap and warm water and dry thoroughly.

2. **Prepare your finger pricker**
   You will need to prepare your finger pricker by ensuring the needle depth indicator is set properly (usually between 1-2) and that you have a clean needle each time.

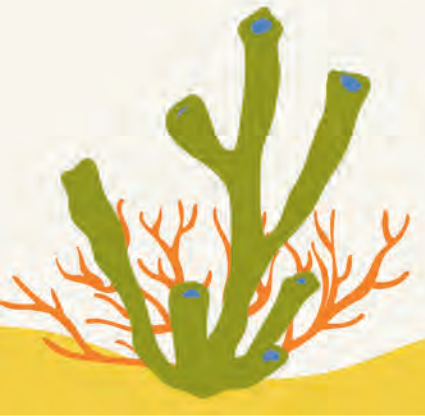
3. **Take a test strip**
   Take a test strip and insert it into the meter. The " barcode" end in first.

4. **Prick your finger with your pricker**
   Remember do not prick your thumb or first finger.

5. **Ensure that there is enough blood on the finger**
   Hold the test strip to the spot of blood on your finger. The strip will absorb the blood up. An 'egg timer' will appear on the screen when enough blood has been obtained and give you your glucose reading in approximately 10 seconds.

6. **Turn your finger upside down**
   If you are struggling to get enough blood, turn your finger upside down and squeeze the end of your finger (as though you are milking it).

7. **Place the test strip in the sharps bin**
   Place the test strip in the sharps bin and record your blood result in your diary.



Changing the needle barrel in your finger pricker

If your finger pricker uses a barrel, to replace it you will need to:

- Remove the end cap of the finger pricker (the part with numbers on) to reveal the barrel.
- Simply remove the barrel by pulling upwards.
- Place a new barrel white end down in the end of the finger pricker and push into place.
- Replace the cap ensuring that the needle depth number is set correctly.
- You will notice that the number below the white lever in the centre of the pricker returns to 6.

Your finger pricker is ready to use

- Your finger pricking device may vary so please follow instructions on how to replace needles/ lancets that come with the device or as per your diabetes team.

Remember to check the expiry date on the box of strips before using.

Session 2 Types of insulin

From now on you will need to take insulin every day.
You are going to use two types of insulin.

One is the 'Rapid Acting Insulin',
It is also called 'Bolus Insulin'.

- One is the 'Rapid Acting Insulin'. It is also called 'Bolus Insulin'. This may be called NovoRapid, Humalog, Apidra or Fiasp (Ultra Rapid). Others may be available. You take the Rapid Acting Insulin about 15 minutes before your meal. It starts working after 15 minutes and it is most effective in the first 2-3 hours. It works to keep glucose levels in normal range.

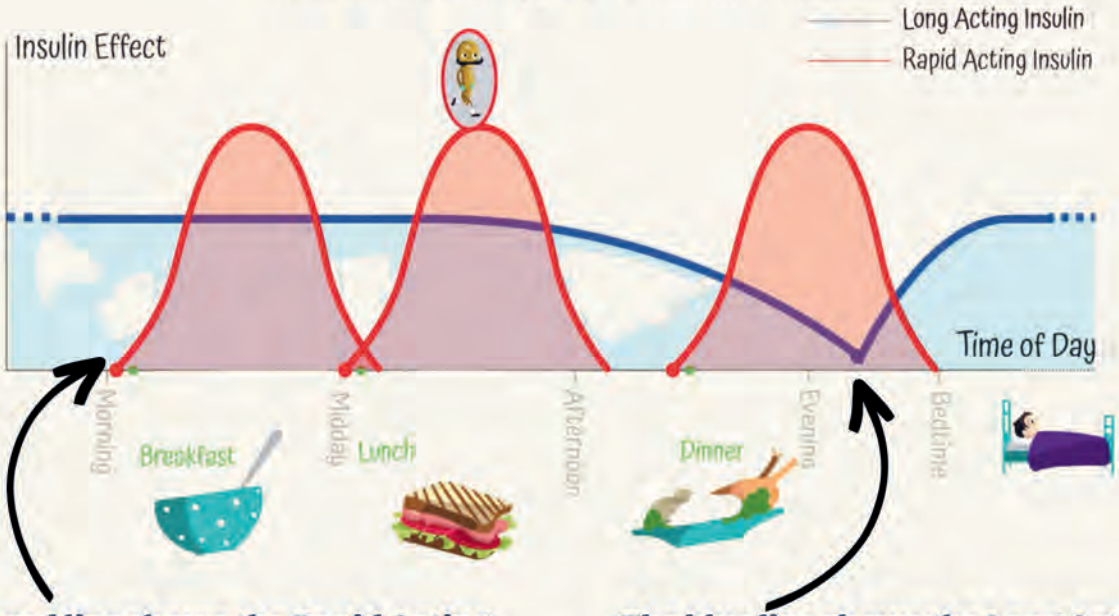
- Exactly how long it lasts can be different for different people, but what is important is that the Rapid Acting Insulin needs to be taken before every meal i.e. breakfast, lunch, dinner, as well as for snacks.

You will also take another type of insulin, which is called 'Long Acting Insulin',
It is also called 'Basal Insulin'.

- This "Long Acting Insulin" may be called 'Levemir' (Determir) or 'Glargine' (Optisulin) or 'Degludec' (Tresiba) depending on what your hospital has prescribed. Again, others may be available.
- The reason why you need Long Acting Insulin is because your body always needs a background level of insulin to help keep the glucose coming from your liver under control.
- The liver releases glucose to provide your body with a source of energy between meals.
- If given as an injection, Long Acting Insulin can be given once or twice a day, but it must be at roughly the same time each day.

Whatever time you decide you need to stick to it and you will take the same amount of Long Acting Insulin every day, unless the diabetes team tells you otherwise.

This diagram will hopefully give you a better idea of how the two types of insulin work.



The red line shows the Rapid Acting Insulin. It works quickly and it doesn't stay in your body for very long. You can see how it is needed at the same time as you eat your meals.

Initially you may be on fixed doses of insulin at meal times. We will then teach you how to count the carbohydrate content of your meal. Your meal time insulin will then vary depending on what you eat. If you have a big dinner and a small breakfast then you may need to take more insulin before your dinner than you do before your breakfast. It is very important to keep a record of what doses of insulin you are on. You will also need to have insulin with any snacks. The diabetes team will let you know when this is needed.

The blue line shows the Long Acting Insulin that you will take once or twice a day. It is slow and steady and it stays in your body for much longer than the Rapid Acting Insulin.

Your Rapid Acting Insulin and your Long Acting Insulin will come in different colour pens, so you don't get the two kinds of insulin mixed up. However, it has happened before. If you do get them mixed up and inject the wrong type, don't panic. You will need to contact your diabetes team for advice. You will be told to test your glucose regularly over the next 1 - 2 hours. You may need to eat a large snack with lots of carbohydrate, but it is important that you contact your diabetes team, as their advice will be individual to you.

Your insulin pen will look something like this picture but may vary slightly. However, they all work in the same way. The insulin comes in small cartridges. Make sure you check that they are in date before being used.

Spare cartridges should be stored in a fridge until needed. Once the cartridge is fitted into your pen it is safe to use for 28 days before it must be changed. Your pen doesn't need to be kept in the fridge.

If you get the types of insulin mixed up, don't panic.

Putting a cartridge in your pen

1. **Remove the cap.**
2. **Twist and unclip the two halves.**
3. **The cartridge then fits into the barrel. It can only go in one way with the threaded end exposed, so the needle can be attached.**
4. **Some pens may come pre-loaded.**

Session 2

Attaching the needle to the insulin pen

Each time you take your insulin you will need to attach a new needle to the pen.

1. **Firstly peel off the foil**

2. **Twist the needle on to the end of the pen**

3. **Remove the clear cap and the inner cap**
   Keep the clear cap to help you remove the needle later, but the inner cap can be thrown away straight away.

4. **Prime the needle by doing a 2 unit air shot**
   You need to hold the pen, pull out the end, dial 2 units and press the button on the end of the pen. You should see insulin squirt out of the needle. If you do not see any insulin then repeat this step. Once you are happy that you have seen insulin coming out of the needle, you can move onto the next step.

5. **Use the dial at the top of the pen to set the correct number or dose to be given**
   You do this by pulling the end of the pen out and then turning the dial away from you until you get the correct number/dose. To begin with, your diabetes team will write your dose down in your blood glucose diary.

Please note that some injection pens go up in half insulin unit increments

6. **Hold the pen right at the top**
   Hold your pen right at the top, near the button on the end of the pen with your finger and thumb in an "L" shape.

Injecting insulin will be demonstrated to you by our nursing team and diabetes educators

7. **Press your hand gently on the skin and inject into the leg, stomach or bottom at a 90 degree angle**

8. **Count to 10 – slowly (one elephant, two elephants, etc.)**

9. **Move hand away from your skin**

10. **Remove needle from the site. Do not rub the site**

11. **Dispose of the needle**
Replace the clear cap onto the pen and twist it anti clock-wise until the needle is inside the cap (this may require a parent/carer to do).

12. **Dispose of the needle into a sharps bin**

13. **Needles should only be used once**
If they are used more than once they will become blunt or bend and hurt.

Sometimes you may see a spot of blood when you pull the needle out. This means you have hit a tiny blood vessel under the skin. You can't avoid this, and it will not harm you, but you may have a small bruise for a day or so.

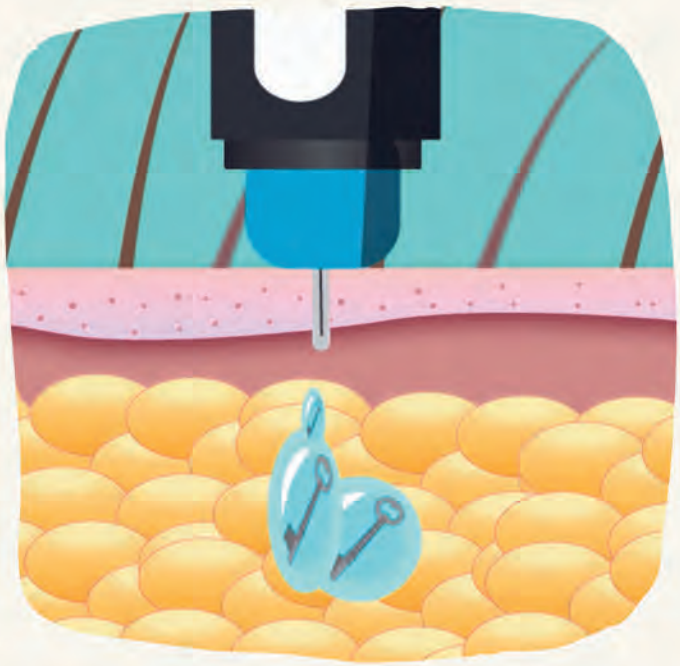
If insulin leaks out of the injection site, you may not have injected deeply enough.

If this happens a lot, you may need to hold the needle in for longer than 10 seconds.

Never repeat part of the insulin dose as this can cause hypoglycaemia (low glucose).

Insulin will be absorbed into the fatty tissue which is called the "Subcutaneous Tissue".

It is just under the skin. The skin is 2mm thick and the needles we use are 4mm long, so the insulin will go just underneath the skin as shown here.



There are a few places on your body where you have lots of subcutaneous tissue.

One of these places is your stomach, especially underneath your belly button. Imagine a smile under your belly button that is where you can inject.
Two other places are the sides of your thighs and the top of your bottom. These are all where you should do your injections. It is important that you don't get into a habit of injecting into the same place all of the time.

These places are where you should have your injections.

Rotate the place that you inject regularly

Avoid using the same place to inject.

If you do inject into the same place all of the time, then you will get a hard lump under your skin.

As well as not looking or feeling very nice, the lumps can affect how your insulin works. If the insulin is injected into the lumpy area, it can become trapped for a while.

It cannot get on with the job it needs to do in your body. Your glucose levels could rise and then fall because the insulin was slow to get there.

It is easier to avoid getting these lumps by changing the sites of where you give your injections.

Session 2

Sharps

"Sharps" is the word we use for things like needles , barrels and your used glucose strips.

They are things that you must throw away in a special box called a "Sharps Bin". They are usually yellow in colour, but come in different shapes and sizes.

A sharps bin protects the user, any other member of the household and any people involved in the removal of waste from your home. Sharps injuries are on the increase as more waste is sorted to extract recyclable items.

What should go in the sharps bin?

- Used barrels for finger pricker
- Insulin pens
- Injection vials/cartridges
- Needles/syringes
- Any sensor or pump cannula
- Used glucose and ketone strips

Safe Disposal in your home

- The sharps bin must be correctly assembled and labelled and the lid must be secure.
- Bins must be placed **out of reach** of young children.
- The lid of the sharps bin must not be removed once the bin contains sharps.
- Bins that contain sharps must be securely placed on work surfaces i.e. no part of the bin should overhang the surface on which it stands and it should not be possible for it to be easily or inadvertently knocked down.
- Sharps bins **must not** be filled above the "full line".
- **Do not force** into a full bin by pushing down with your hands.
- When bins are full, they must be sealed and labelled.
- Full bins must be securely stored whilst awaiting collection.
- Call your local council to see what their method of sharps disposal is.

NEVER PUT ANY SHARPS MATERIAL DIRECTLY INTO DOMESTIC WASTE

Mini Re-Usable Box
www.heal-med.co.uk/shop

If you are out and about, you are not going to carry around your sharps bin with you. If you can't get to a sharps bin, you can put the lid on your needle and either put it in your testing kit or use a small sealed container or needle remover. Later that day when you get home, you can carefully empty your sharps into the sharps bin.

The recommended diet is the same as for children and young people without diabetes and is suitable for the whole family.

Eating a balanced healthy diet including plenty of fruit and vegetables will give you all the energy and nutrients you need for optimal growth, development and good health.

The Eatwell Guide groups similar types of food together and shows how much of each type of food you should eat everyday for good health.

Fruits, vegetables and wholegrain carbohydrate should form a large proportion of the food we eat.

Include a food from the carbohydrate group with each meal e.g. potatoes, bread, rice, pasta or cereal for breakfast .

Eat at least 5 portions of variety of fruit and vegetables every day. Aim for 2 portions of protein foods each day.

Carbohydrates, Proteins and Fats

The Foods We Eat

The foods we eat are made up of carbohydrates, proteins, fats, vitamins, minerals and fibre. Whilst they are all important for our health, only foods containing carbohydrate need insulin for the body to be able to use them.

Foods can contain different types of carbohydrates, such as sugars naturally occurring in fruit and milk or those added to soft drinks, foods made from grains and starchy vegetables.
Both the amount and type of carbohydrate you eat will affect your glucose levels.

Carbohydrates

When you eat, the carbohydrate part of the meal is digested and broken down into glucose which is then absorbed into the bloodstream. This causes your glucose levels to rise. The insulin you take with each meal or snack allows all the cells in your body to use the glucose from your blood to provide you with energy.

Some foods containing carbohydrates increase your glucose levels more quickly than others. Refer to the section on glycaemic index.

Fast acting, sugary or simple carbohydrate (e.g. sugar and sweets) are broken down very quickly (within a few minutes) into glucose and absorbed into the bloodstream.

Long or slow acting starchy or complex carbohydrate (e.g. bread, rice, pasta and potatoes) are digested more slowly into glucose (over 1-2 hours) and then absorbed into the bloodstream.

The amount of fat or protein in a meal or snack may also affect your glucose levels but it is important to learn about the effect of carbohydrates initially as they have the biggest impact on blood glucose levels.

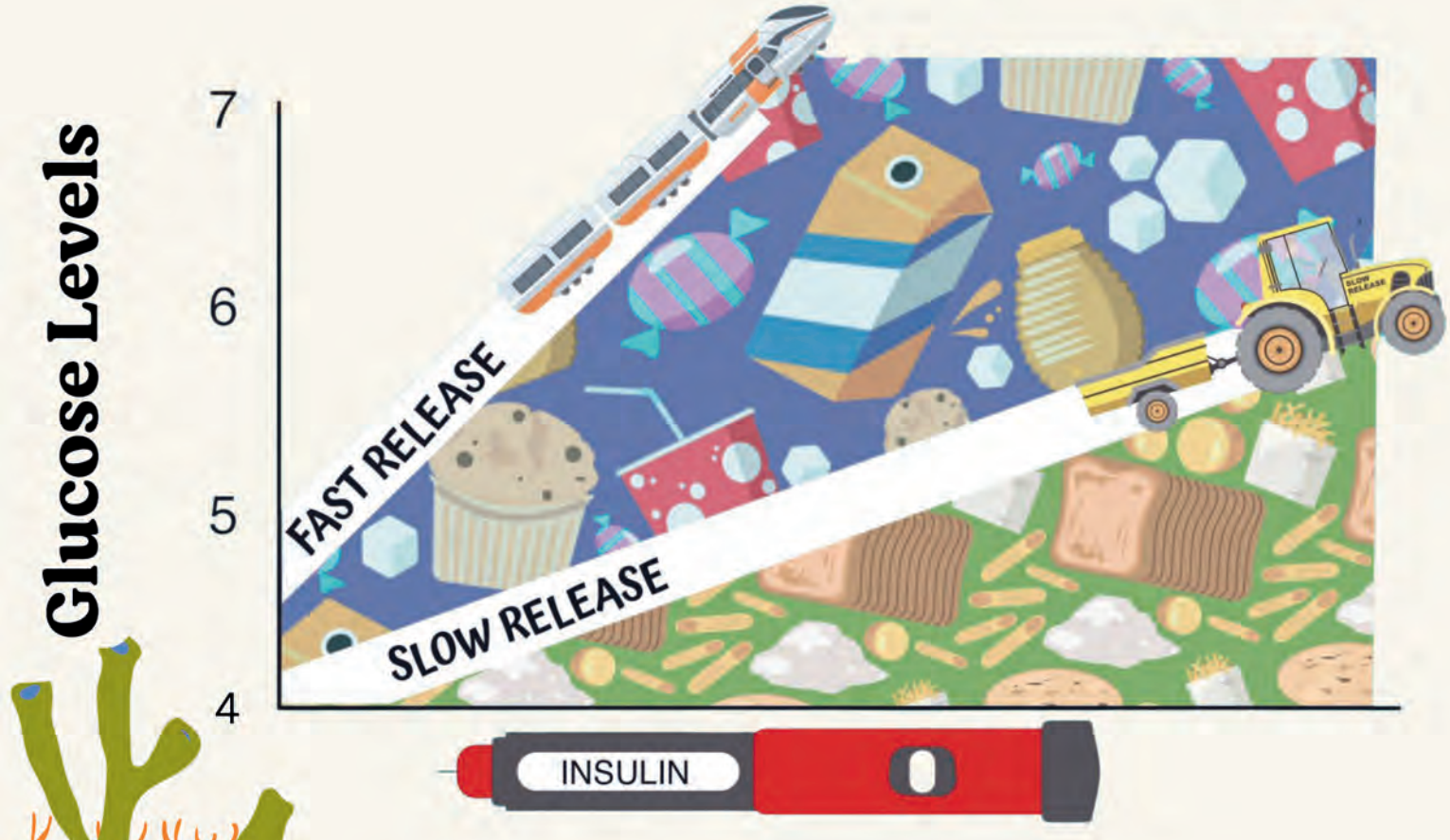
Insulin

Regardless of the type you eat, all carbohydrates make your glucose level rise therefore they all need to be matched with Rapid Acting Insulin.

The carbohydrates you eat will be used for the energy your body needs and some will get stored (as glycogen) in the liver and muscles to provide energy at other times when your body needs it.

This is called Carbohydrate Counting.

Rapid Acting Insulin should ideally be given 15-20 minutes before eating any carbohydrates, so that the insulin is ready in the body to start working as soon as you start eating. If you have too much carbohydrate for the dose of insulin prescribed, your glucose will stay high. If you do not eat enough carbohydrate for the dose of insulin prescribed, then your glucose may drop too low. To fine tune this and prevent highs and lows we will teach you to adjust your insulin for the amount of carbohydrate you eat.
(See section on Carbohydrate Counting).



Meals

It is important to eat regular meals with a variety of foods, including a starchy carbohydrate food. So always make sure you fill up properly at mealtimes.

Healthier choices
(These all require insulin)

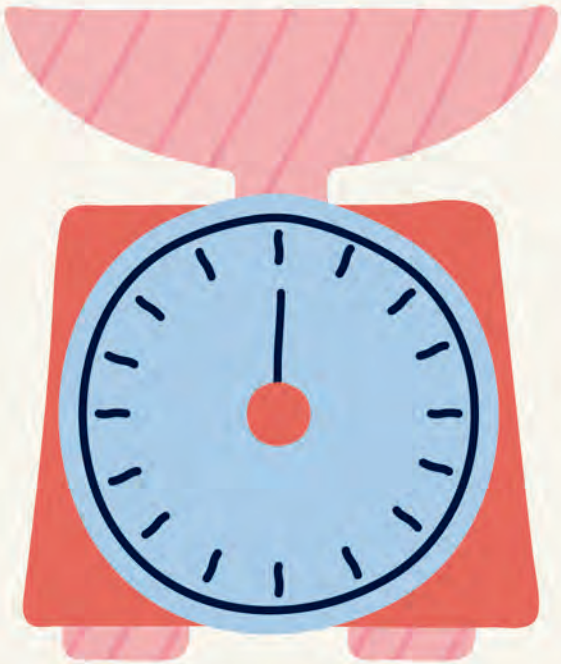
- Low GI Cereal and Milk
- Fruit
- Toast
- A Yoghurt
- A Sandwich
- A Wrap
- A Glass of Milk
- Crackers
- Crumpets
- Rice Cakes
- Oat cereal bars
- Plain popcorn
- Bread sticks

Other Snacks
(These all require insulin)

- Crisps
- Cakes
- Biscuits
- Chocolate

Foods which contain a lot of added sugar, such as sweets, are best eaten in small amounts occasionally and at the end of a meal, due to their high sugar content. If eaten on their own they will cause your glucose level to rise too quickly.

A lot of people find they are very hungry just after they have been diagnosed with type 1 diabetes. This is normal and will settle down after a few days or weeks.



We will teach you to work out the amount of insulin you need to inject for your chosen snack

Carb-free or Low Carb Snacks
(No insulin required)

Healthy Choices

- Raw vegetables or salad e.g. carrot sticks, cucumber, celery, courgette sticks, cauliflower, red/green/yellow peppers, lettuce, baby corn, mange tout, cherry tomatoes - try them with salsa, hummus, tahini, tzatziki, sour cream and chives, or guacamole
- Avocados
- Olives
- Nuts (not for children under 5 years)
- Pumpkin, sunflower or sesame seeds
- An omelette and grilled tomatoes, scrambled egg or boiled egg
- Chicken slices/drumstick, turkey, ham or tuna - with a mixed salad
- A matchbox size portion of cheese
- Sugar-free jelly or sugar free ice poles
- Berries
- Cottage cheese

Important to note

While having lower carbohydrate snacks such as processed meats can be filling, it is important not to have them too often as the additional saturated fat and salt they contain is not healthy. However, cheese is a good source of calcium and is a suitable snack for small children.

Less Healthy Choices

- 2-3 Cocktail sausages
- 1 Pepperoni stick
- Low calorie hot chocolate
- Processed meats

Cheese is a good source of calcium and is a suitable snack for small children

Water

Drinking water regularly throughout the day is important for keeping you healthy and hydrated, especially when the weather is warmer or when you are more active and exercising. Drinking water is advised, especially if your glucose level is above target, to prevent dehydration.

Squash and soft drinks

Drinks labelled 'no added sugar' such as diluted squash, or soft drinks labelled 'diet' contain minimal amounts of sugar and are ok to have occasionally. Frequent consumption is not healthy for your teeth as these drinks are acidic. Check the label for 'trace', 0g or less than 1g sugar per serving.

Drinks labelled 'no added sugar' are ok to have occasionally

Milk

Milk is a healthy choice because it contains calcium, which helps to build healthy bones and teeth. Milk contains the natural sugar lactose, so it will need to be matched with rapid acting insulin.

Fruit Juice

Fruit juice is best avoided between meals because of the natural sugar it contains called fructose which is absorbed very quickly into the blood stream. It is best consumed with a main meal or saved as a hypo treatment.

If you wear a glucose sensor, good hydration helps to make sure that these work well

Session 3a

Interpreting Food Labels

Food labels can help you calculate how many carbohydrates the food contains.

Strawberry Greek Yoghurt Serves per container: 4	NUTRITION INFORMATION Serving Size: 125g	NUTRITION INFORMATION Serving Size: 100g
	Per Serve	Per 100g
Energy Kcal	391kcal	313kcal
Protein	10.1g	8.1g
Total Fat	0.3g	0.2g
• Saturated Fat	0.1g	0.1g
Carbohydrate	**12.3g**	**9.9g**
• Sugar	11.5g	9.2g
Sodium	40mg	32mg
Calcium	131mg	105mg

Example of a nutrition information label for a 500g tub of yoghurt

The nutrition information panel will give you information about:

- Suggested serving size
- Nutritional information per serving and per 100g

This includes the total carbohydrate per serving and per 100g as well as the sugar per serving and per 100g. The sugar value is included within the total carbohydrate value and may include natural sugars within the food, such as fruit or milk sugars as well as added sugars.

When counting carbohydrate it is the **total amount of carbohydrate** that needs to be used. This includes all of the starch and sugars within the food.

Supermarkets offer a wide range of 'low sugar' food options.

Different Types of Sugar/Sweetener

Brown sugar, gur, jaggery, honey and syrup

have the same effect on Glucose levels as white sugar.

You can still use regular sugar to sweeten foods, as long as it's used in small amounts (e.g. 1 teaspoon sugar on porridge or a thin spread of jam on wholegrain toast). Alternatively, you can use granulated or tablet sweeteners to replace sugar in drinks, to sweeten porridge or other cereals, or to sweeten fruit, milk puddings and custard. Suitable brands include Canderel, Sweetex, Hermesetas, Splenda and Truvia.

Glycaemic Index (GI)

The Glycaemic Index, GI for short, is a measure of how quickly carbohydrate is broken down into glucose in your digestive system and absorbed by the body into the blood.

While low GI foods may be beneficial in keeping your glucose levels stable, some low GI foods such as takeaways and pizzas are not the healthiest choices and can cause high glucose levels many hours after eating. Therefore, aim to incorporate a range of healthy, lower GI carbs into your diet.

Rapid or fast acting carbohydrates are classed as high GI

Your insulin cannot work this quickly so high GI foods and drinks are best avoided unless you are using them to treat a low glucose (hypo) or to manage exercise.

Long or slow acting carbohydrate are classed as low GI

Low GI foods result in a slow and steady rise in glucose level over several hours.

Session 3a

The quantity of carbohydrates is the most important.

Carbohydrate Food	Healthy Lower GI Choice
Bread	♥ Multigrain ♥ Rye ♥ Wholegrain ♥ Seeded ♥ Chapatti ♥ Pitta
Potatoes	♥ Potatoes with skins ♥ Sweet Potato
Pasta	♥ Noodles ♥ Wholegrain Pasta
Rice	♥ Basmati rice or other low GI labelled rice
Other Grains	♥ Bulgur wheat ♥ Couscous ♥ Sweet corn ♥ Barley ♥ Quinoa
Breakfast Cereals	♥ Porridge oats ♥ Muesli ♥ Bran cereal
Pulses and Beans	♥ Butter Beans ♥ Chickpeas ♥ Peas ♥ Kidney Beans ♥ Lentils
Fruits	♥ Apples ♥ Kiwi ♥ Banana (Unripe= lower GI) ♥ Grapes ♥ Plums ♥ Oranges ♥ Pears
Dairy	♥ Milk ♥ Plain Yoghurt ♥ Greek Yoghurt

But remember...

Although many factors determine how quickly a carbohydrate will raise your glucose level, ultimately the most important thing is the quantity of carbohydrates eaten in the meal and ensuring that the appropriate amount of insulin is given (see section on Carbohydrate Counting).

Routine monitoring of your glucose levels will help you determine your own response to different types of carbohydrate.

See section on 'Carbohydrate Counting'

You can still enjoy parties and meals out with family and friends.

Have your meal in front of you before injecting insulin.

If you are eating out, make sure the meal is in front of you before injecting your Rapid Acting Insulin.

Order an alternative if you do not like what you have ordered.

If you find you do not like the meal you have ordered and cannot eat the carbohydrate part of your meal, then order an alternative such as a bread roll to replace the carbohydrate and prevent a hypo later on.

Takeaways are often high in fat.

Takeaways can still be enjoyed as an occasional treat. You may notice that some takeaway foods affect your glucose levels differently to foods and meals you eat at home. If you experience problems, your diabetes team will explain how to manage your glucose levels for meals with a high fat content. (See section on Glycaemic Index).

Good Eating Habits

Developing good eating habits from childhood teaches young people to eat the right foods at the right times and so encourages a healthy diet for life. Filling up properly at meal times and including vegetables/salad and a good protein source with meals can prevent unhealthy snacking between meals.

You can achieve good eating habits by:

Eating regular meals

Breakfast lunch and evening meal, ideally sitting, and eating with other family members or friends.

Filling up properly at mealtimes and including vegetables or salad with meals.

Getting into a good routine helps you to eat the right amount of food to grow, stops you from eating unhealthy snacks between meals and ensures you maintain a healthy weight. It is also important for controlling your glucose levels.

Healthy Eating and Long Term Health

A variety of factors can contribute to good long-term health including:

- **Being a healthy weight.**
- **Eating plenty of fruit and vegetables.**
- **Having less saturated fat by eating less snacks such as biscuits and crisps, less fatty meats and less full fat dairy products.**
- **Eating foods with a low glycaemic index.**
- **Eating freshly prepared foods and limiting intakes of added salt and highly processed foods such as chips, processed meat and tinned or packaged foods.**

Healthy eating can reduce the risk of cardiovascular (heart) disease for everyone.

Session 3b

Carbohydrate Counting & Ratios

Learn how to change your insulin dose for your portion size of carbs.

Carb counting gives you better control, as you have the flexibility and freedom to have bigger or smaller carb portions each day and match the insulin dose to exactly what your body needs.

You will need to work out the grams of carbohydrate you want to eat based on the weight of your portion. The diabetes team will give you a calculation to use so you can work out how much insulin you need for the grams of carbs you are going to eat.

For example you may need 1 unit for every 5, 10, 15 or 20 grams of carbs. Everyone is different. These values are referred to as insulin to carbohydrate ratios or ratios for short.

This information will be set by your diabetes team, and can be programmed in to smart phone apps that can help to calculate your insulin dose. You need to know your glucose level and amount of carbs in your meal. So checking your glucose levels and learning to accurately carb count are really important!

Carb counting and Ratios

Often abbreviated to 'Carb Ratio' ICR.

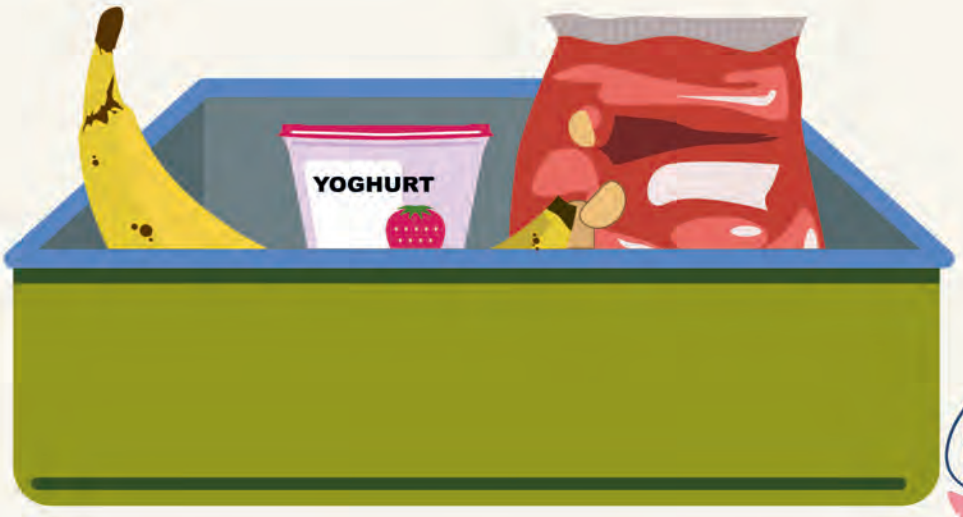
- This is the number of grams of carbohydrates for which you need 1 unit of insulin.
- It can vary over the day. Typically you need more insulin for the same amount of carbs earlier in the day.

Which Foods Do You Need To Carb Count?

- Breakfast cereals, bread, potatoes, rice, pasta, noodles, chapatti, naan bread, sweet potato, couscous, bulgur wheat, quinoa, crumpets, crackers and anything made from flour.
- Fruit and fruit juice.
- Battered or crumbed foods, sausage rolls, pies, pasties, samosas and baked beans (sauce).
- Milk, yoghurt, custard, ice-cream and white sauces.
- Sweets, chocolate, crips, savoury snacks, biscuits, cakes and desserts.
- Sauces and gravy.

Which Foods Don't You Need To Carb Count?

- Meat, chicken, fish and seafood (without batter, breadcrumbs or pastry coatings/toppings).
- Eggs.
- Cheese.
- Nuts and seeds.
- Butter, lard, ghee, margarine and cooking oils.
- Vegetables and salad.
- A small amount of cream (squirty, double, single cream etc).
- Mayonnaise.



Sugary Drinks and Sweets

Most carbohydrate foods are easily matched with insulin. However, full sugar drinks are best avoided altogether unless treating a hypo or using to manage exercise.

This is because they will cause your glucose level to rise too quickly. Eating whole fruit is better because it contains more fibre and therefore results in a slower rise in glucose levels.

Sweets which are made almost entirely of sugar, such as jelly beans or fruit pastilles, are best avoided or only eaten occasionally as a treat.

Full sugar drinks are best avoided altogether unless treating a hypo or using to manage exercise.

An easy way to start learning your carb values is to look at food labels.

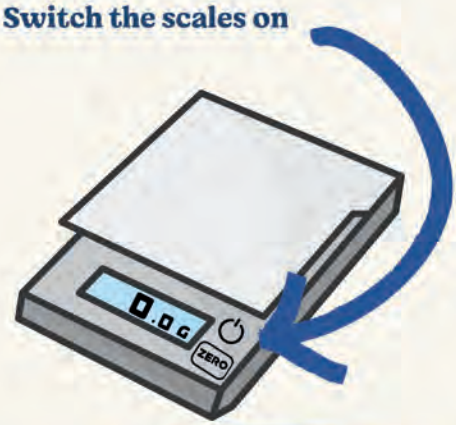
Nutritional Information
Energy
Fat
of which saturates
Total Carbohydrates
of which sugars
Fibre
Protein
Salt

Using the 'carbohydrate per 100 grams' value

Some labels will only tell you the carbohydrate per 100 grams. If you would like to eat more or less than this you will need to weigh your portion and do a calculation.

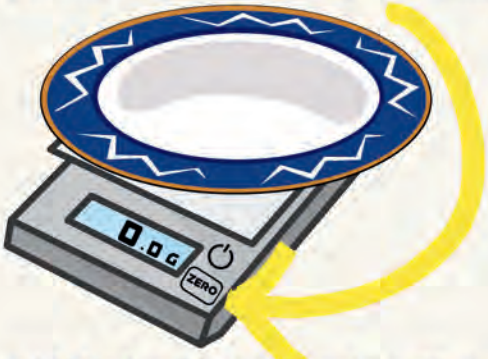
The best scales to use for this are flat digital weighing scales.

1 **Switch the scales on**



2 **Place the empty plate or bowl on the scales**

3 **Press the 'zero' or 'tare' button. The scales will now show '0' grams.**



4 **Add the food and the scales will now tell you the weight of the portion**

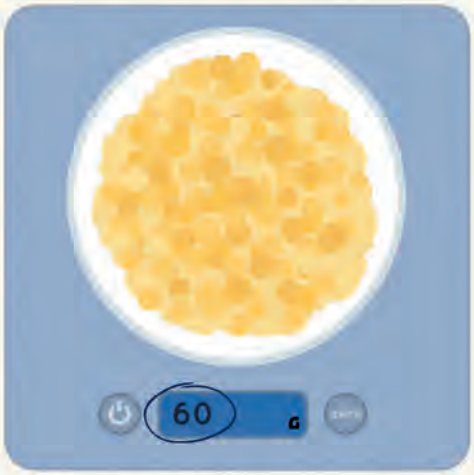
Session 3b

Carbohydrate per 100g

The next step is to find the carbs per 100 grams from the food label. Let's practice with the following examples:

Nutrition Information

Per 100g	
Energy	380kcal
Fat	0.9g
of which saturates	0.3g
Total Carbohydrates	80g
of which sugars	10g
Fibre	4.5g
Protein	7.3g
Salt	0.43g



Working out the carbs in a bowl of breakfast cereal. You will need to find the carbs per 100g from the label and the weight of your portion using digital scales. In the example above this is:

80g carbohydrate per 100g from the food label

Weight of cereal portion, for example 60g

Dividing carbs per 100g by 100 will give you the carbohydrate in 1g of a food. You can then multiply this value by the number of grams you are eating to work out the carbohydrate value of your portion.

So in this example:

80 ÷ 100 × 60 =

48g carbs in your portion of food

Pizza Weight 300g

Whole Pizza = 90g carbs

There are 6 slices in this Pizza.
1 Slice = 1 Portion

= 90g carbs ÷ 6

= 15g carbs per slice

Carb counting means working out the grams of carbohydrates you want to eat based on the weight of your portion.

If you are going to eat a food containing carbs that is being split into several portions, it is better to work out the carbs in the whole food item first and then divide by the number of portions E.g. if you are going to eat 1/6th of the whole food item then divide (÷) by 6.

In the example above, the food label tells you that there is 30 grams of carbs per 100 grams of pizza and that the whole pizza weighs 300 grams. You are going to eat 1/6th of the pizza.

30g carbohydrate per 100g from the food label

Weight of whole pizza = 300g

The calculation to use is:
Carbs per 100g from the food label divided (÷) by 100 and times (x) by the weight of the whole pizza

In this example the whole pizza contains

30 ÷ 100 × 300 = 90g carbs

So one slice = the amount of carbs in the whole pizza divided (÷) by 6 slices

90 ÷ 6 = 15g carbs

Session 3b

Tools for carb counting

Books and Apps are available to help you work out the carb content of your food. Books like the 'Carbs & Cals' may be helpful in getting started.

'Carbs & Cals' is a resource that shows you photographs of different portion sizes along with the weight of the food and the carb value of each portion. Find the picture that matches the portion you want to eat, weigh out that portion and use the carb value listed.

If you have worked out the carb value of your portion and the portion fills a favourite cup or bowl, then next time you can measure out your serving using the cup or bowl without the need to weigh.

So How Much Insulin Do I Need?
This will depend on your own individual ratios.
Let's practice using the examples below:

The total carbohydrate of your meal or snack is 30g

To work out your insulin dose: divide (÷) the total carbohydrate by your ratio

Example 1

If your ratio is 1 unit of insulin for every 10g carbohydrate and your meal contains 30g carbohydrate then divide 30 by 10

30 ÷ 10 = 3 units of insulin

Example 2

If your ratio is 1 unit of insulin for every 15g carbohydrate and your meal contains 30g carbohydrate then divide 30 by 15

30 ÷ 15 = 2 units of insulin

Carb Counted Menus for Primary Schools

If you attend primary school and have school meals, carb counted menus are available for most primary schools in the area.

Please ask your dietitian for further information.

Unfortunately these are not available for secondary schools. If you are struggling to count carbohydrates at secondary school, please let your dietitian know so they can give you some help.

Hyperglycaemia is also known as above target or high glucose levels.

You should aim for glucose levels between

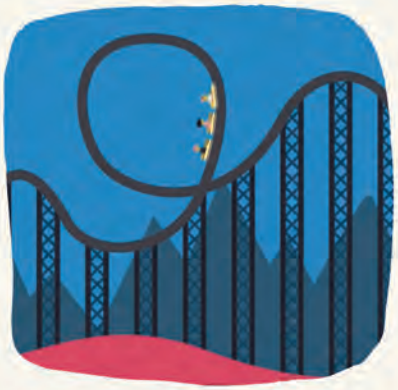
4 - 7 mmol/L.

A high glucose level is anything above 7mmol/L, but immediate action needs to be taken if it reaches 14mmol/L.

The signs and symptoms of Hyperglycaemia (Highs) can include:

- **Feeling Thirsty**

- **Needing the Toilet more**



- **Lacking in energy and becoming more Tired**

- **Over a period of time, losing weight and becoming Thin**

Thirsty, Toilet (Wee), Tired, Thin.

The main way to get your glucose levels back down is by giving more insulin. This is called a

Correction Dose

Correction Dose:

- Also called Insulin Sensitivity Factor or ISF.
- This is the amount your glucose level drops when given 1 unit of insulin.
- An example of a correction dose would be 1 unit of insulin drops your glucose level by 3mmol/L.

Glucose Target:

- The glucose (sugar) level that is pre-set by your diabetes team to which your insulin dose is designed to reach in about 2 hours after an insulin bolus.
- A typical glucose level target would be 6mmol/L.

Active Insulin Time:

- The length of time the insulin remains active and available in your body. This feature helps to prevent over correcting of glucose levels.
- A typical active insulin time would be 3 hours.

For example, it is safe to give a full correction dose if it has been more than 2 hours since your last meal or snack and your blood glucose is still above 8.0 mmol/L.

If regular corrections are required, it means your insulin requirements have gone up and you will need more insulin on a regular basis.

As you get older, especially during puberty, you are going to need more insulin, so insulin doses will need to be adjusted more frequently. If this is happening, you will need to contact the diabetes team so we can help you adjust your doses of insulin.

Hyperglycaemia can create ketones. This is discussed more in depth in the 'Sick Day Rules' section of this booklet.

Hyperglycaemia can also be caused by:

- Feeling sick/unwell
- Going through a growth spurt or puberty
- Stress (for example exams)

Having high blood glucose levels for a long period of time can lead to complications. (See 'Future Complications' section). It is very important that you gain good control of your glucose levels.

In some circumstances, exercise can also make your glucose rise, but generally when you exercise, we expect glucose levels to drop.

The diabetes team will empower you to make your own adjustments to your insulin doses.

Ketones are dangerous and must be checked when you have a high glucose level above 14mmol/L and you are feeling unwell, or if you are unwell with a glucose level in range and have no idea why.

Any illness like, coughs, colds, flu, and any type of infection can affect your glucose level and generally cause them to go higher rather than lower.

The only exception is when you have diarrhoea or vomiting. This would generally make you have lower glucose levels.

Ketones are checked in the same way as you test your glucose. You will use different strips for ketone testing and you may also use a different meter. (Your diabetes team will advise on this).

Check Blood Glucose Levels

Glucose OVER 14mmol/L =
Hyperglycaemia

When did the you last eat?

Less than 2 hours ago

Encourage to drink water

Re-check glucose and ketones in 1 hour

More than 2 hours ago

Unexplained Hyper?

Yes

No

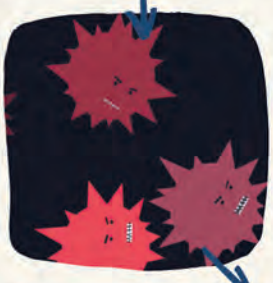
Check Ketones

Ketones above 0.6?

Ketones below 0.6?

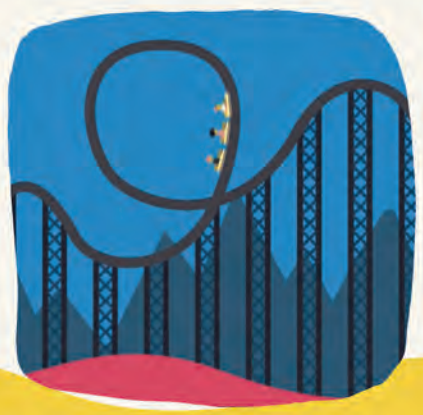
Give correction dose as per your correction factor (this can be calculated on your insulin calculator). Encourage to drink water

Re-check glucose in 2 hours



Follow Sick Day Rules

Re-check glucose and ketones in 2 hours



Hypoglycaemia

Hypoglycaemia or 'Hypos' is another word for low glucose levels.

You will have high glucose levels as well as lows.
This is a normal part of diabetes.

At the beginning you might have lots of both as you learn to manage your diabetes.

Hyperglycaemia and Hypoglycaemia can be caused by a mis-match between food (carbohydrates) and insulin.

Hypoglycaemia or 'Hypo' is when your glucose level has dropped to below 4.0 mmol/L

If you feel different or look different, just check your glucose levels by doing a finger prick check or look at your CGM.

It is really important you wash your hands first to get a correct result as demonstrated in the practical skills session.

Hypos are most often caused by:

- Too much insulin for the amount of carbohydrate eaten.
- Extra exercise than usual.
- Illness such as diarrhoea and vomiting.
- Stress or anxiety.
- Hot or cold weather.
- Hot baths.

If your glucose level drops below 4.0 mmol/L you will need to bring it back up as quickly as possible. A persistent low glucose can become dangerous.

Make sure that you always have a glucose meter/scanner or mobile if you are wearing a CGM. Always carry hypo treatment with you at all times. Sometimes it is difficult to know why you have a low glucose level.

Signs and Symptoms of a Hypo may include:

- Feeling hungry.
- Sweating.
- Looking pale.
- Feeling grumpy and irritable.
- Being wobbly or shaky.
- Feeling tearful.
- Having a headache or tummy ache.
- Not feeling or behaving quite right.
- Feeling tired or sleepy.
- Unable to concentrate.

You need to treat a hypo if your glucose is less than 4.0 mmol/L .

If you think you are having a hypo, never leave it untreated, as you could become unconscious or could have a seizure. This is fortunately very rare.

Treat the hypo where you are. Walking around will cause your glucose levels to drop further and this may lead to you falling or tripping.

This is why it is important that you are always ready to treat a hypo wherever you go.

How to Treat a Hypo
You can use one of the following treatments shown in this table:

Table 01

Age	2–6 Years	7–9 Years	9–12 Years	12–14 Years	14–18 Years	18+ Years
Weight	10–20kg	20–30kg	30–40kg	40–50kg	50–60kg	70+kg
Amount of Carbs to take	6g	9g	12g	15g	18g	21g
Glucotab (4g/tablet)	1–2	2	3	4	5	6
Dextrose Tablet (3g/tablet)	2	3	4	5	6	7
Lift (15g/60ml)	½ bottle 30ml	½ bottle 30ml	⅔ bottle 50ml	1 bottle 60ml	1 bottle 60ml	1½ bottle 90ml
Fruit Juice	60ml	90ml	120ml	150ml	180ml	200ml
Dextrogel	½ tube	1 tube	1½ tubes	1½ tubes	2 tubes	2 tubes

How to Treat a Hypo

Wash and dry your hands

01 Follow one of the fast acting treatments from table 1, Wash and dry your hands if using a finger pricker or use sensor if wearing one. Then re- check glucose in 15 minutes.

02 **Treat again if still below 4mmol/L**
Have fast acting carbohydrate

Repeat these steps until glucose above 3.9 mmol/L.

If concerned, please contact your diabetes team or call 999.

Note

If hypo occurs before a meal, always treat the hypo first with a hypo treatment (table 1) and retest 15 minutes later.
When glucose reaches 4mmol/L or above, and a meal is not due straight away, have 10–15g of slow releasing carb (snacks) with NO insulin to prevent a further hypo. (This will be different for pumps– your diabetes team will advise you)

Advice for Parents & Carers

Do not use chocolate to treat a hypo.

This is because it is high in fat and releases glucose slowly.
If your child is unconscious or drowsy or unable to swallow, never attempt to give food or drink as there is a risk of choking.
If your child is unconscious, having a seizure, unable to swallow or if there is a risk of choking, the best and easiest treatment to use is a Glucagen also known as Glucagon injection kit. The diabetes team often refers to this as the 'emergency orange injection'. You may have been given Ogluo to use - please ask your diabetes team how to use this.

If your child/young person is unconscious, or having a seizure, or unable to swallow or if there is a risk of choking, the best and easiest treatment to use is a Glucagen injection kit, also known as Glucagon, or Ogluo.

Product may look different

Advice for Parents & Carers
Glucagon Injections

TREATMENT OF SEVERE HYPOGLYCAEMIA

Glucagon is a hormone that raises the glucose level by making the liver release its store of glucose into the bloodstream.

Glucagon is given if the person is:

- Too drowsy
- Uncooperative
- Unconscious
- Fitting

Do not attempt to give anything by mouth in any of these situations because this may cause choking.

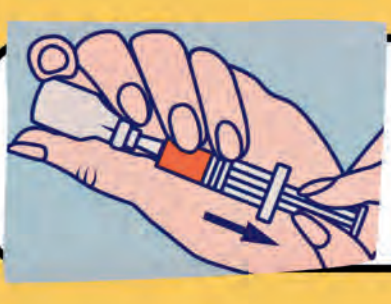
Place the child on their left side in the recovery position to keep their airways clear.

Glucagon can be stored at room temperature for 18 months or in the fridge until it expires. Once removed from the fridge to room temperature DO NOT put back.

Instructions for Administering Glucagon

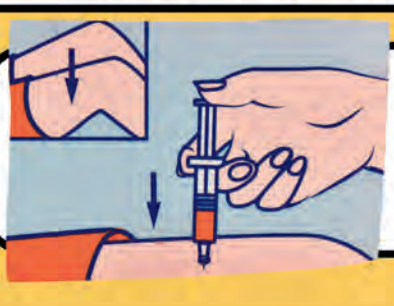
Remove the orange plastic cap from the bottle of white powder (glucagon) and the needle guard from the syringe containing sterile water.

Inject all the water into the bottle containing glucagon. No need for shaking as the glucagon will dissolve into the fluid.



Without withdrawing the needle, turn the bottle upside down.
Draw up the solution into the syringe.

Under 8 years:0.5mg (half syringe)
Over 8 years: 1.0mg (whole syringe)



Now inject all the glucagon with the same technique as you would an insulin injection, however inject deeper (intramuscularly)

Call an ambulance 999 – your child/young person may need to be assessed in A &E

Glucagon may take 5 to 15 minutes to work, therefore don't expect an immediate improvement.

Advice for Parents & Carers
Glucagon Injections

RECOVERY FROM SEVERE HYPOGLYCAEMIA

- When your child/young person wakes up after the glucagon injection has been given, they may vomit.
- The effects of glucagon only last a few hours, so they may risk having another hypo.
- To prevent this from happening, when they have stopped vomiting, it is a good idea to give a hypo treatment (fast acting carb followed by a longer acting carb), to prevent a hypo from re-occurring.
- If you cannot give the injections, because you may be feeling anxious or scared, put your child/young person in the recovery position and call 999 and ask for an ambulance. Try not to panic and wait for the Paramedics to arrive.
- Glucose levels are often elevated following a severe hypo. Any high glucose levels after a severe hypo requiring glucagon should not be treated with extra insulin.

You can watch the video on how to give a 'glucagon injection' by going to the Quick Link section of the Deapp 2.0 app. By familiarising yourself with the glucagon injection, you might find this less worrying should you have to use it.

Some children/young people may not have any hypo symptoms (also known as hypo unawareness). If you think your child/young person may be experiencing a hypo, it is important to check their glucose levels so you may start to recognise their signs and symptoms and act quickly

You may be given Ogluo to use - please ask your diabetes team how to use this.

Make sure your glucagen hypo kit is in date

Session 4

Management of Hypoglycaemia

Glucose BELOW 4.0 mmol/L = Hypo

Take hypo treatment: Fast acting carbs such as glucose tablets.

15 Wait 15 mins and Recheck Glucose

Repeat hypo treatment

Glucose 4 mmol/L or more

Glucose 3.9mmol/L or less

Meal time
Have a meal and insulin as normal.

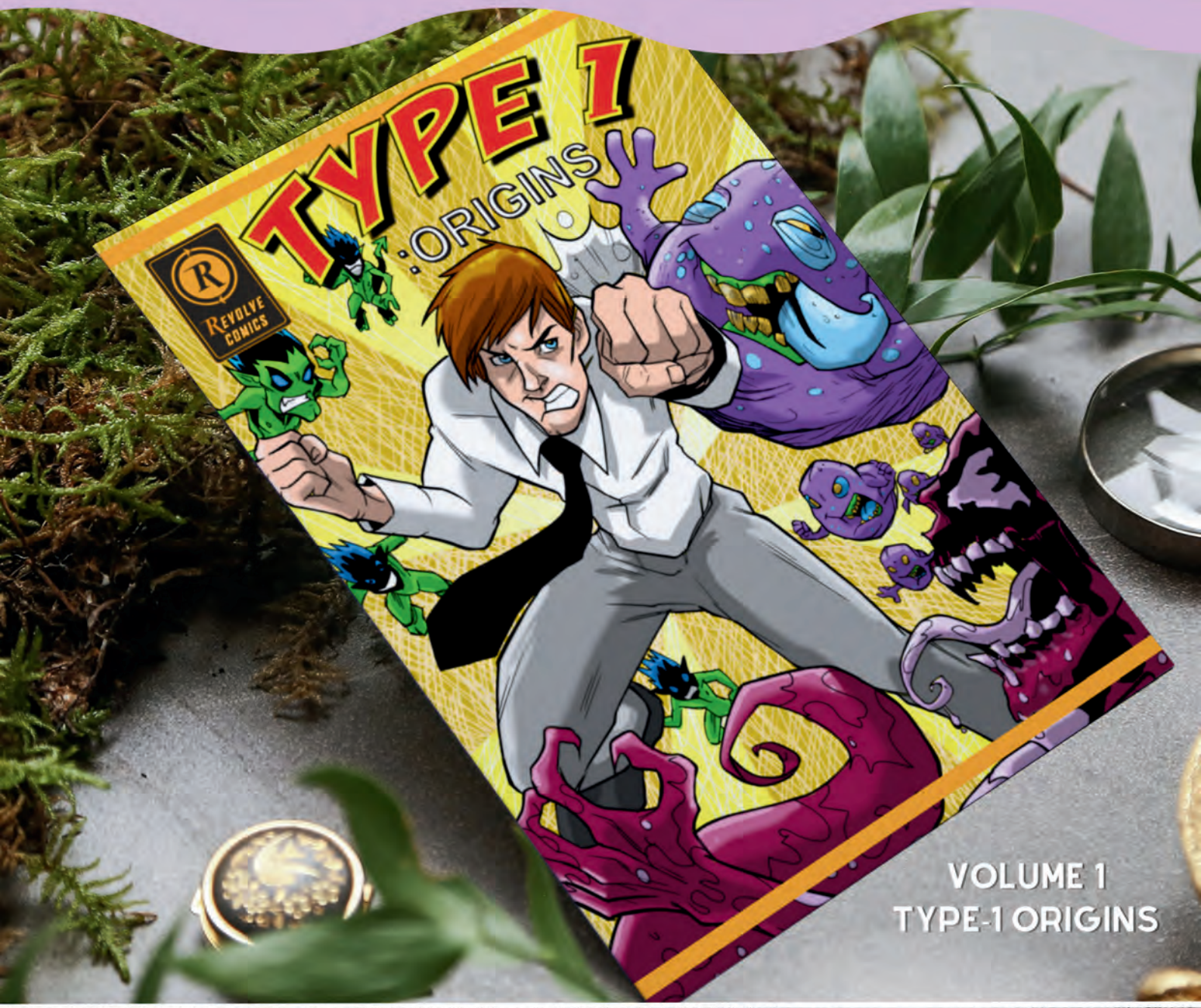
Not meal time
Have 10–15g slow of release carbohydrates

A banana is a good follow-on treatment but there are lots of options, talk to your diabetes team and dietician if you are unsure.

Everything is fine and you can return to normal activity.

Advice for parents/carers
ALERT: Call 999 and ask for an ambulance.

- If your child/young person is not responding to treatment.
- If they are unable to swallow.
- If they become confused or unresponsive.
- Place your child/young person in the recovery position.
- Do not put anything in their mouth.
- Give a Glucagon injection or Ogluo and wait for ambulance to arrive.



TYPE 1 COMICS SET

Free Online Comics

Session 5 Sick Day Rules

In this section we are going to look at Sick Day Rules, which means looking after your diabetes during illness.

Having diabetes doesn't make you more likely to become unwell. You are not going to get more colds, coughs, tummy bugs. However, it can make your diabetes more challenging to manage.

We would recommend that you have the flu vaccination at the beginning of winter every year. If you get ill, things like coughs, colds, flu or any type of infection can affect your glucose levels and generally cause these to go higher rather than lower.

The most common exception to this is if you have vomiting and diarrhoea, which can cause your glucose level to go down rather than up, as you're not absorbing the food in your tummy.

If you have glucose above 14mmol/L and you feel unwell you should also check your ketone level.

When you are unwell your insulin does not work as well and so your glucose levels go high. If these don't come down you start to make ketones instead. Ketones are a by-product of your body burning fat. This could lead to a very serious condition known as 'Diabetic Ketoacidosis' also known as 'DKA', where the ketones cause a chemical imbalance in the body. Because of this it is important to keep a close eye on your glucose levels during illness.

If you have a glucose reading of above 14mmol/L, you should also check your ketone level

You will need to check your glucose levels and ketones every 2 hours, until your glucose and ketone levels are back within normal range.

Ketones can be checked in the same way as your glucose levels – by pricking your finger and placing a spot of blood on a strip. You will be given a ketone meter that uses 'ketone' strips to test ketone levels. Always make sure that you carry your ketone meter and some ketone strips with you at all times.

Session 5

Understanding blood ketone results

To understand ketone results and what you should do if your glucose is 14mmol/L or higher, you can use the chart below:

Negative Ketones	Small to Moderate Ketones	Moderate to Large Ketones
Less than 0.6mmol/L	**0.6 – 1.5mmol/L**	**More than 1.5mmol/L**
Take Take a correction dose to correct high glucose in addition to a normal bolus for carbohydrates eaten (as per the insulin calculator or pump)	**Give** Give 10% of your total daily dose (TDD) of insulin as additional fast acting insulin	**Give** Give 20% of your total daily dose (TDD) of insulin as additional fast acting insulin
Re-check Re-check glucose and ketones in two hours	**Then** Monitor fluid intake and ensure you are drinking enough fluids to keep well-hydrated	**Then** Monitor fluid intake and ensure you are drinking enough fluids to keep well-hydrated
	Re-check Re-check glucose and ketones in two hours	**Re-check** Re-check glucose and ketones in two hours
	Repeat Repeat until ketones are below 0.6mmol/L If ketones remain above 0.6, call your diabetes team or out of hours (switchboard) for advice	**Repeat** Repeat this again and then call your diabetes team for advice

Understanding the ketones levels

Green means that you have a ketone level of less than 0.6 mmol/L.

That's fine, anyone can have a small amount of ketones. This could be because you have not eaten for a while. Throughout the illness try to eat if you can, but you must continue to have regular sips of water. This helps to keep you hydrated, which is important. If glucose levels are high, give a correction dose of rapid acting insulin every 2 hours.

Amber means that you have a ketone level between 0.6 and 1.5 mmol.

If this is the case, give 10% of your total daily dose (TDD) of fast acting insulin every 2 hours. Keep a close eye on your glucose levels. Carry on giving your long acting insulin as usual.

The final colour Red means that your ketones are above 1.5mmol.

This is a high ketone level, which needs addressing urgently. Call your diabetes team for advice. You will likely need to double your dose of fast acting insulin if you have ketones that are in the red.

If your glucose levels and ketones are still not coming down after 3 corrections and you're feeling more unwell or you start vomiting, you must call your diabetes team or out of hours for advice immediately.

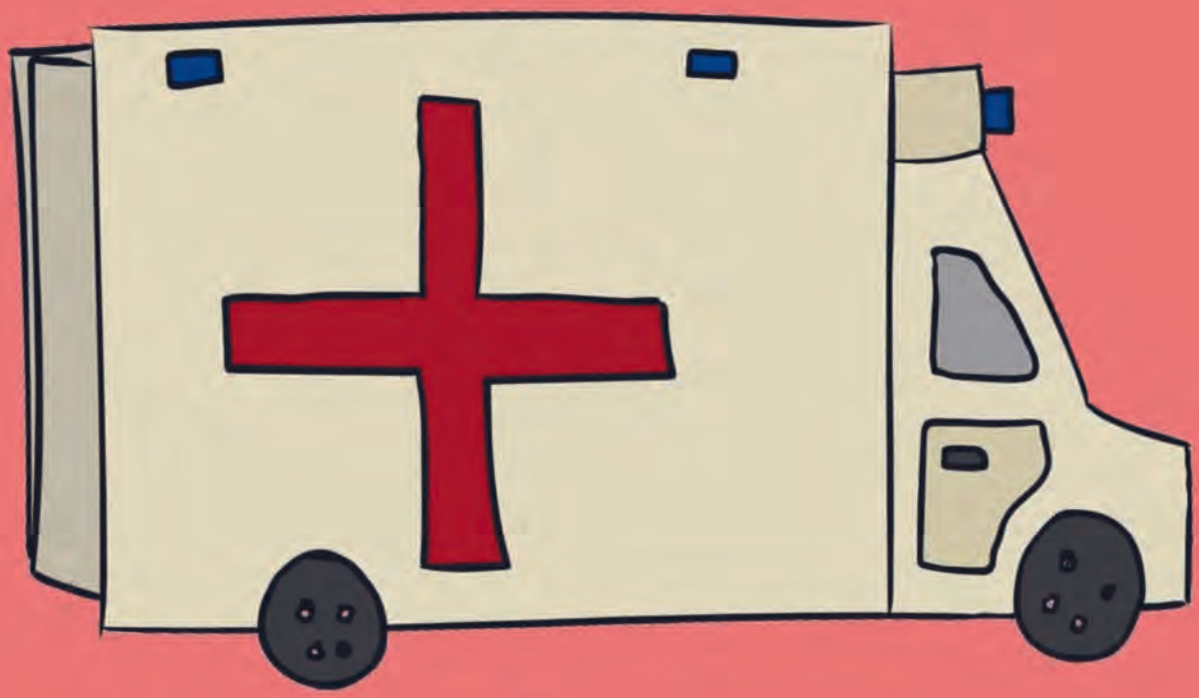
Remember

If you start vomiting, show any changes in breathing or become drowsy along with high glucose levels and ketones you need to go to hospital immediately.

Throughout your illness continue to drink water little and often. When you are feeling better and you feel like eating again have food with your normal insulin dose.

Just remember that when you are unwell, even though you are not eating, you may need higher doses of insulin to get you back on track.

It is important to continue with your long acting insulin as normal.



Never stop taking your Long Acting Insulin.

Take a look at the 'QUICK LINK' section of the Deapp app for 'sick day rules' information.

If you are unwell and haven't eaten for a while, you may find your glucose is below 14mmol/L but ketones are above 0.6mmol/L. These are known as starvation ketones, and as long as you have a normal glucose reading, are not dangerous, you are not at risk of DKA.

You should contact your Diabetes Team or Out of Hours Service if you are concerned.

Pumps

An insulin pump delivers tiny amounts of insulin into the blood throughout the day and night. You then add extra mealtime insulin using the pump. This can improve blood glucose levels by more closely matching your insulin needs.

You attach the pump to your skin. Insulin flows into your body through a tiny tube under your skin. The tube is replaced every 2 to 3 days and is usually moved to another part of your body.

A pump can give you more flexibility with what you eat and help you have more stable blood glucose levels.

(NHS.uk website)

Insulin acts as a key unlocking cell doors to let glucose in for the body to use as energy.

If there is no insulin, the cell doors stay locked, and the glucose cannot get into the cells to give the body energy.

The body will try to get energy from somewhere else. It will do this by breaking down the fat in the body. When fat is broken down, it produces a waste product called 'Ketones'. If the body produces too many ketones, they can make the blood too acidic.

Without insulin and with the build-up of ketones, the glucose in your blood increases, causing the glucose to spill over into your wee. This will make you feel thirsty as your body tries to replace the water lost. Eventually you will become dry and dehydrated.

The combined effects of dehydration and ketones building up in your body can make you very unwell. This is called 'Diabetic Ketoacidosis' or 'DKA' and it can be life threatening.

High Glucose + Ketones + feeling unwell = DANGER!

- DKA is extremely dangerous and can be life threatening if not treated immediately.
- If you have a ketone level of 1.5mmol/L or above you will require urgent medical advice

Warning Signs and Symptoms of DKA are:

- Feeling or being sick (vomiting or nausea)
- Rapid breathing
- Headache
- Stomach ache
- Feeling more sleepy than usual (drowsiness)
- Feeling more thirsty
- Going to the toilet for a wee (passing urine) more often
- Ketones in your blood
- Sweet smell on the breath

If you have these symptoms you will most likely require hospital admission, so that we can increase your fluid levels whilst reducing your glucose levels.

The safest and most effective way to do this is by giving insulin and fluids via a drip directly into your veins.

You will not be able to eat or drink during this time and you may be in hospital for a few days so the diabetes team can monitor your progress.

It is essential that you should never ignore a high glucose level above 15mmol/L with high ketones.

It is also important that you should never stop your insulin when unwell.

Please look at the Sick Day section on what to do at the different stages of ketone levels. By careful management you will be able to prevent going into DKA. You can do this with regular glucose monitoring and insulin injections. The contact details for who you will need to call if you are concerned are at the back of this booklet.

When you are newly diagnosed with diabetes, your glucose levels may be higher than the target range your diabetes team has set for you.

This is because your body needs to get used to the insulin and it can take time to see how your body responds. Over the next few days, your diabetes team will look at your glucose readings and adjust your insulin doses. When your glucose level is too high, you will need more Rapid Acting Insulin to bring it back down to target.

This may mean adding a correction dose to the dose of insulin given with your meal, or it may mean giving an extra injection of fast-acting insulin in between meals. Your diabetes team will decide what action is required and tell you what to do.

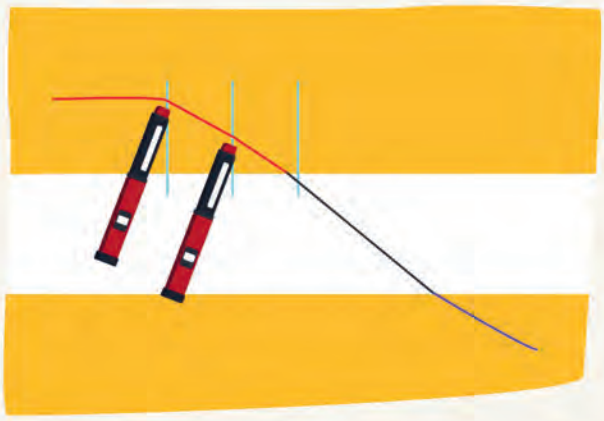
When your glucose level is too high, you will need more Rapid Acting Insulin to bring it back down to target

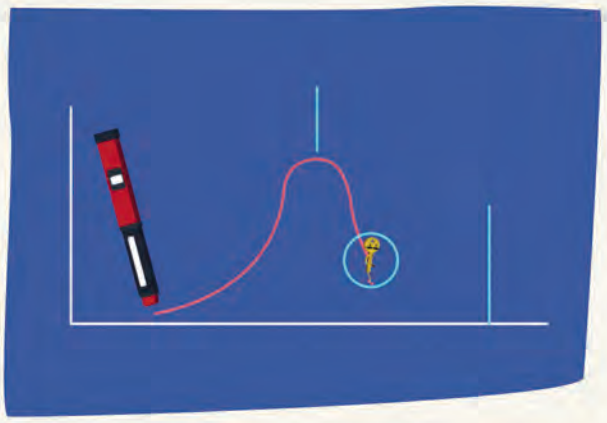
Before leaving hospital you will be given your own individual correction plan. This will be reviewed each time you come to your clinic appointment as it may need to be changed as you grow. A correction dose is usually given at meal times when you are routinely checking your glucose levels. If a correction dose is needed at meal times, you would add the correction dose to the dose you will be giving for your food. If you have to correct frequently then this means your insulin doses need to be increased. Your diabetes team will advise you what to change.

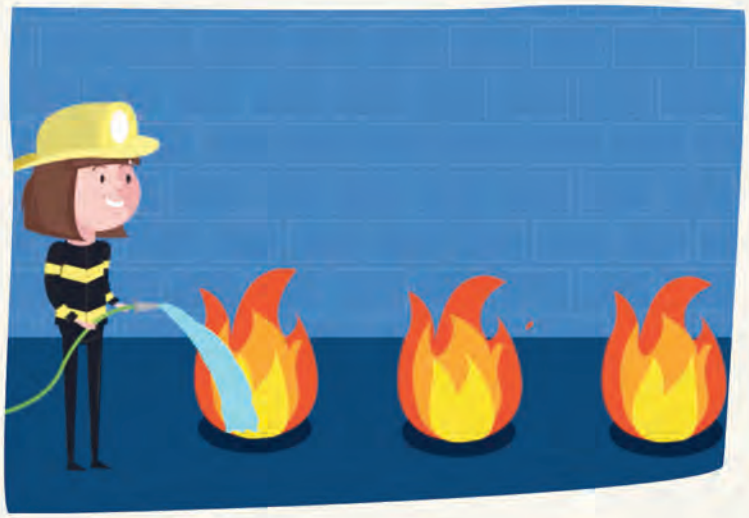
It is important to remember when giving a correction dose there should be 2 hour gaps between doses.

Your team will explain when to give correction doses. High glucose level is a bit like a fire burning and a correction dose helps to put out the fire.

Think if your glucose levels are constantly high, and you are doing lots of firefighting, your aim would be to try and prevent the fire from starting in the first place. It is important to contact your diabetes team if you feel this is happening, as your doses of insulin may need increasing.







As you grow, changes to your body may mean your insulin doses need increasing. You should contact your diabetes team for advice, who will regularly review your correction doses and doses of insulin.

This is because fast acting insulin peaks at 2 hours, but will continue to keep working up to 4 hours. If another correction dose is given before 2 hours, you run the risk of 'stacking' your insulin doses and this will cause a 'Hypo'.

If you have high glucose levels and feel unwell, please look at the 'Sick Day Rules' section of this booklet as well as the Deapp you have downloaded on your iPad/ tablet or mobile phone.

Session 8

Emotional wellbeing

A diagnosis of type 1 diabetes can be a huge shock for the whole family. Young people, their parents and siblings are suddenly tasked with taking on board new information and making practical changes to routines.

Some young people will have been unwell for some time, creating added pressure and concern for the family. These experiences can be incredibly stressful, and it is normal for families to experience a range of emotions.

In some cases young people and families blame themselves, even though a diagnosis of type 1 diabetes is no one's fault; it can happen to anyone at any time.

As a family you may feel a sense of loss, sadness, anger, confusion, guilt or denial.

These feelings are common and they are a normal response to adjusting to a big change. The process that follows diagnosis is a journey of adjustment as young people and their families get used to living with diabetes in their lives.

Resources

Diabetes UK School

Diabetes shouldn't stop your child enjoying school, and having the same experiences as any other child. It's important that schools and parents work together to make sure that children with diabetes are getting the care they need and deserve.

https://www.diabetes.org.uk/guide-to-diabetes/your-child-and-diabetes/schools/parents

Diabetes UK University

Starting university for most people is a massive change. For a lot of new students, it means moving away from home for the first time. If you have type 1 diabetes, use our information below to help you make sure your diabetes doesn't stop you getting the most out of your time at university.

https://www.diabetes.org.uk/guide-to-diabetes/young-adults/university

Type 1 Resources

A collection of resources for people with type 1 diabetes. The resources are reviewed by healthcare professionals and updated regularly.

https://www.t1resources.uk/home/

DigiBete

DigiBete is a video platform and app, and is a one-stop-shop for young people's diabetes management.

www.digibete.org

Health for Kids & Teens

Health advice and support through online webchat and school nurse texting service. They give information on feelings, growing up, health, lifestyles, relationships, sexual health and local services.

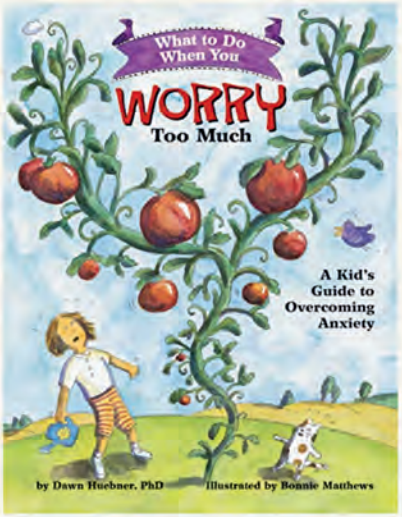
https://www.healthforkids.co.uk/
https://www.healthforteens.co.uk/

Young Minds

A charity aiming to support children and adolescents' mental health. Offers free texting service for young people in crisis, and a parent helpline. It also provides information and support around several psychological conditions commonly experienced by young people.

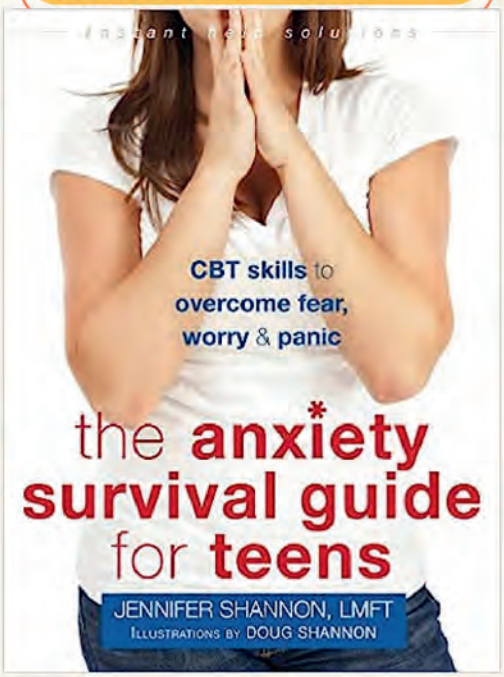
www https://youngminds.org.uk/

What To Do When You Worry Too Much
Dawn Huebner

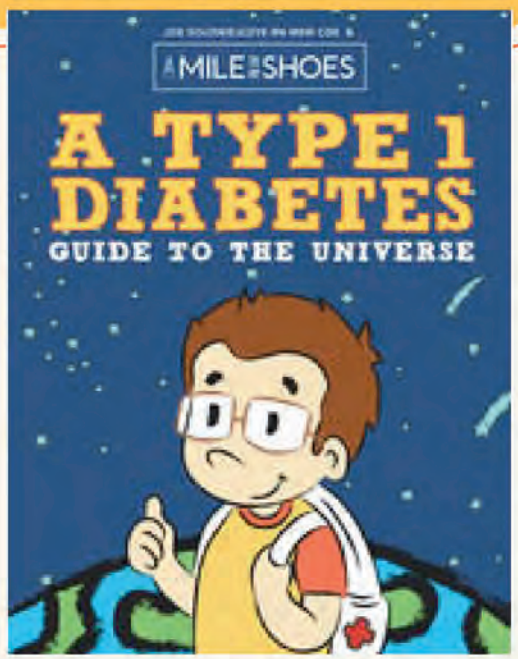


Stepping Up magazine, ask a member of your diabetes team.

The Anxiety Survival Guide for Teens
Jennifer Shannon



A Mile in My Shoes a Type 1 Diabetes Guide to the Universe
Joe Solowiejczyk



Get Out of Your Mind and Into Your Life for Teens
Ciarrochi, Hayes & Bailey

Capitan Lantus
Gary & Max Rapson

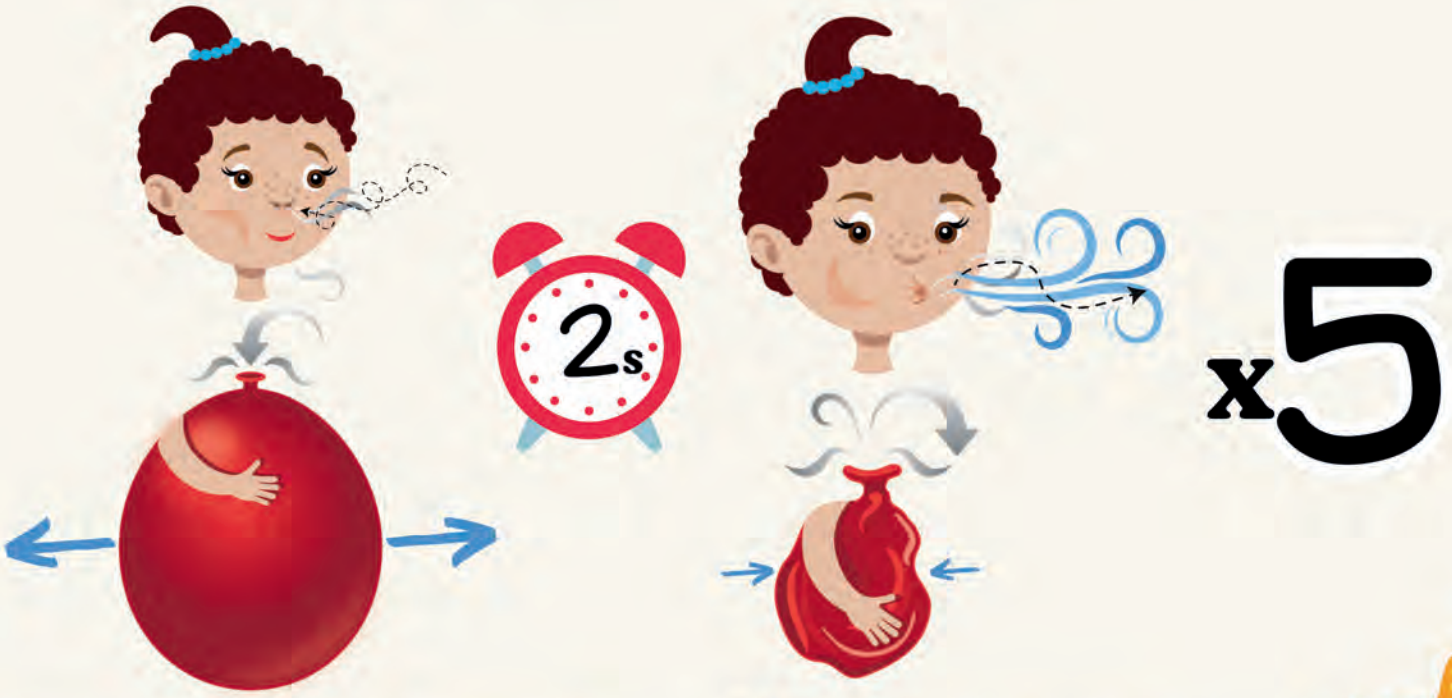
Self-Care Activities

Please ask a member of the diabetes team for an activity book, it has great ideas to help you, such as:

- Mindfulness Activities/Mindfulness Jar
- Wellbeing jar
- Distraction ideas
- Positive self-talk
- Self-care kit/Self-care plan
- An example below is Balloon Breathing

Balloon Breathing

- **Think of your belly as a balloon**
- **Place your hand on your belly and feel it rise and fall**
- **Take a deep breath in through your nose to fill your balloon**
- **Hold your breath for 2 seconds**
- **Breathe out through your mouth to slowly deflate your balloon**
- **Repeat balloon breathing 5 times.**



Nursery, School and College

Your diabetes nurse will arrange a meeting with your nursery, school or college and they will be able to help your school understand what diabetes is.
If you're not yet ready to give your own injections or do your own blood glucose test your diabetes nurse will train your school on how to do this.

There is a school pack from Diabetes UK explaining what your school responsibilities are to help keep you healthy, safe and to make sure you can continue with your education, so that you can achieve what you want. Your diabetes nurse will give a copy of this to your school.

Your diabetes team will train your school on how to give you injections

Your diabetes team will arrange a meeting with your nursery or school. They will be able to help staff and teachers understand what diabetes is.

Session 9

You will need an Individual Diabetes Care Plan

You will need an Individual Diabetes Health Care Plan at school to help everyone understand what their responsibilities are and what is expected from them to keep you safe whilst at school, including any out of school activities. This should be done before you go back to school. Your Care Plan will be completed with your Diabetes team, school, parents or carers and you.

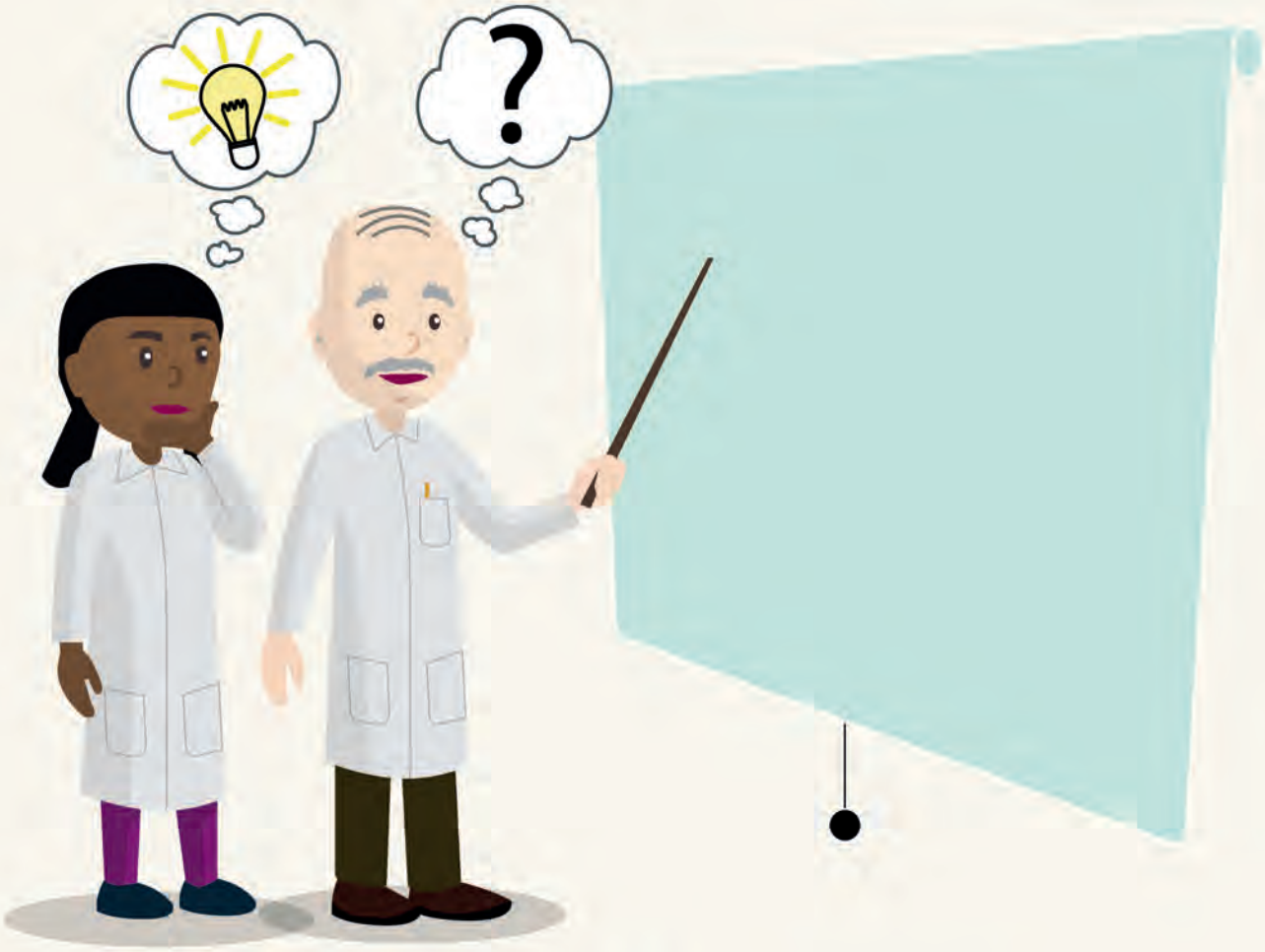
According to the Equality Act 2010 you should be able to do the same activities as your friends and classmates at school. This includes any of the school activities and team sports. You should not be excluded from doing anything unless your diabetes team have advised you not to do so.

Your diabetes nurse will support you and your school in preparing a care plan for any activities you undertake including any residential trips.

It is a good idea to tell your friends about your diabetes. This will make life much easier for you at school, as your friends may spot the signs of high and low glucose levels before you feel it in yourself and can inform school staff.

You may want to talk to them about how you are feeling. They will be able to help you if you are feeling poorly. They may even be able to join you for lunch when you are first in the queue, but best of all if you tell your friends they will understand more about type 1 diabetes.

Your diabetes nurse will support you and your school



Having an active lifestyle and doing exercise is important for keeping your body and mind healthy. Exercise can be a great way of helping to keep your glucose levels under control. It is important to find activities you enjoy.

We are all different and activity/exercise can affect us in different ways.
How your body uses energy depends on the type of exercise you do.

It may be helpful to think of your body as a car. When you fill your car (body) with petrol (carbohydrate) and then go on a drive at 30mph (gentle walk), then your car uses fuel (glucose) much more slowly and therefore the petrol tank (body) does not need topping up as frequently. However if you drove your car fast (running) at 70mph on the motorway, your car would use fuel (glucose) much faster and you would need to top the petrol tank (body) up more often.

Your glucose levels may be affected for some time after exercising.

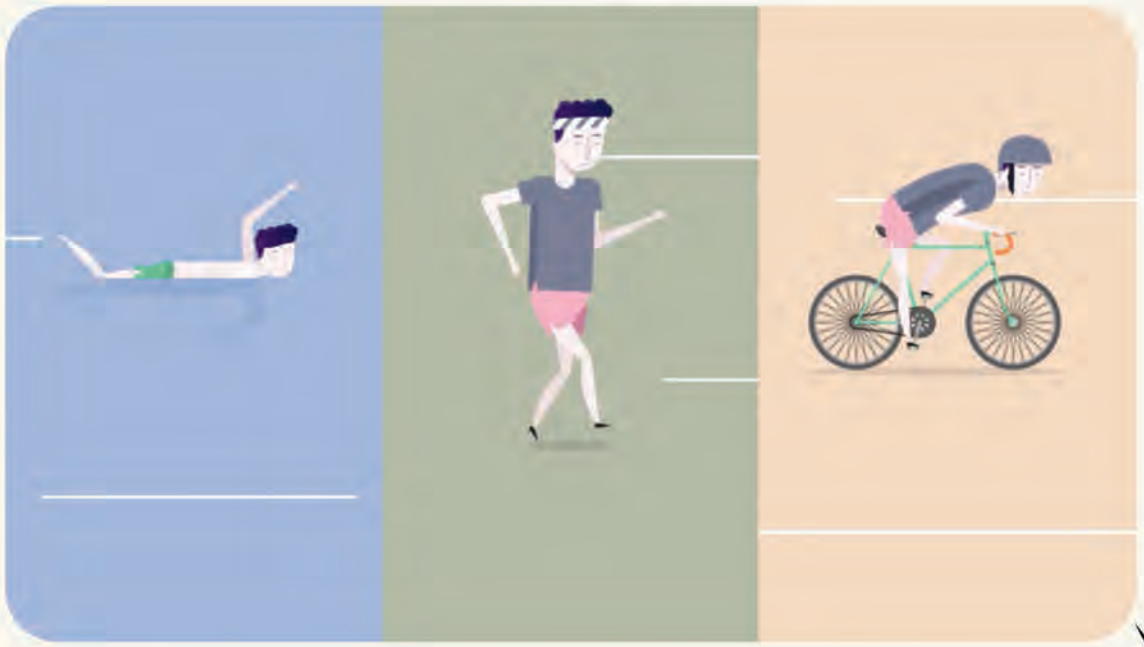
You may experience a delayed hypo several hours after exercise. This happens because your metabolism continues to use the glucose quickly. This varies from person to person and from exercise to exercise.

At other times you may experience a high level after exercise. If you are doing a very high intensity exercise or sport such as sprinting, boxing or weight lifting then you might actually find your glucose levels start to rise.

This is because when you exercise at a higher intensity, the body pulls glucose from its stores including the liver to make sure there is enough to fuel the exercise. Your body may also produce adrenalin when you exercise, and this temporarily reduces how well the insulin in your body works

For team sports such as football, netball, rugby, hockey and tennis you may have times in the game when you are exercising normally and other times when you are sprinting at maximum efforts. Therefore depending on the amount of effort you are putting in and what sport or form of exercise you play, you may find your glucose goes higher, lower or stays the same.

You might find different changes in your glucose level with activity dependent on what time of day you exercise. This depends on how sensitive to insulin you are at that time of the day, how long it has been since your last insulin injection (if on multi daily doses MDI) and how long it has been since you last ate carbohydrate.



If you play sport for a long time you can sometimes see the effects on your glucose levels for some hours after finishing the activity or even the next day. You might find on the day of a competition or tournament your levels may be different as excitement and adrenaline can affect your glucose levels. Unfortunately we cannot predict exactly how much your glucose might change during activity, so regular monitoring of glucose is important.

The prospect of managing your glucose levels during exercise can feel daunting especially when you are newly diagnosed. Check your glucose regularly (every 30mins) during exercise or at any time if you feel unwell.

For PE in school you might find that you are not active for long enough for your glucose levels to be affected. We don't recommend you change your insulin (refer to the before PE exercise chart). Unless you see a pattern of this happening regularly, then your diabetes team can advise you on what to do.

If your glucose levels have gone too high or low during exercise speak to your healthcare team

The table below can be used as a starting point/guidance

Glucose below 4mmol/L	Glucose between 4–7mmol/L	Glucose 7.1mmol/L – 14mmol/L	Glucose 14mmol/L or above and feels well	Glucose 14mmol/L or above and feels unwell
Hypo	10g – 15g carbohydrate prior to exercise	Fast acting sugar for every 30 mins of exercise	Ketones less than 0.6mmol/L	Ketones above 0.6mmol/L
Do not exercise Treat hypo	Further 10g of fast acting carbohydrate for every 30 mins of exercise		Drink plenty of fluids Able to exercise	No exercise Drink plenty of water Ring parent/carers Corrective dose of insulin

If you have gone too high or too low during exercise then don't worry, speak to your diabetes team and they can advise you on what to do next. Your team can recommend if you should reduce your insulin doses to avoid hypos, or sometimes it may be necessary to have a snack before exercise if your glucose is 7mmol/L or below.

When you learn to carbohydrate count, you will be able to calculate the amount of carbohydrate you need for exercise to keep glucose levels stable. In time you are going to become an expert in knowing your own body and how to change your insulin and food regime around doing exercise.

Session 10 - Top 7 tips – Enjoy being active

Here are the top 7 tips to get you started, but you can ask your healthcare team for advice specific to you

1. **Monitor your glucose levels before, during and after to learn from your patterns.**
   Remember, if finger pricking, wash your hands, as sweat on hands can affect the glucose reading.

2. **Do not exercise if you have a glucose level above 14mmol/L with ketones above 0.6 mmol/L.**

3. **After you have finished exercise, monitor your glucose levels closely.**
   Check your glucose to see if you need a snack. Slow releasing carbohydrates may be helpful to prevent low glucose levels later on.

4. **Having raised glucose levels during exercise can make you feel tired and make it difficult to perform to your full potential.**
   Having more stable glucose levels during exercise will ensure you can perform to your best ability.

5. **Keep your hypo treatment and meter at the location of the activity.**
   For example on a sports pitch or side of a swimming pool, rather than in a locker in the changing rooms.

6. **Tell your friends and your coach that you have diabetes.**
   Tell your friends and your coach that you have diabetes or ask your diabetes team to give you information leaflets to share with them.

7. **If your glucose is less than 4.0mmol/L, treat with fast acting carbs and wait until level is 7.0mmol/L or above.**

There are professional sports people who have diabetes. The important thing is to go out and be active.

Celebrities living with type 1 diabetes

Henry Slade, Rugby Player

It's frustrating having diabetes,but it doesn't stop you doing anything.

Johnny Labey, Actor and dancer

Everyone with diabetes is, in my eyes, a bit of a legend.

Jeremy Irvine, Actor

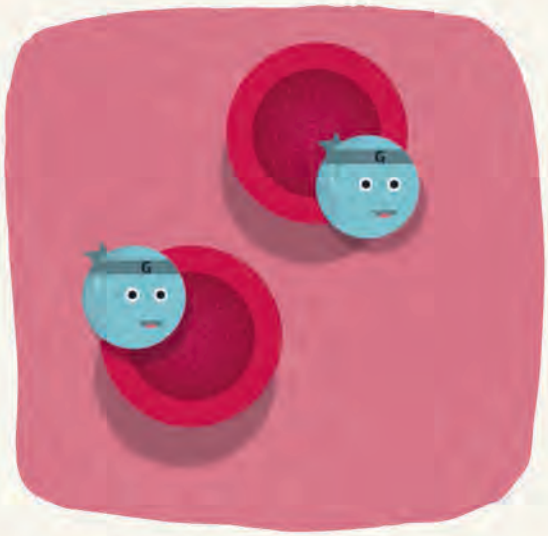
I've always had the opinion that everyone has something to deal with and there are worse things than having diabetes.

Mary Mouser, Cobra Kai Actor

[If] I could impact just one version of me who really needed to know that you can do absolutely anything and also be type 1 diabetic and that it can make you stronger–it adds grit and bravery and strength to all the things that you do in life–that would mean the world to me.

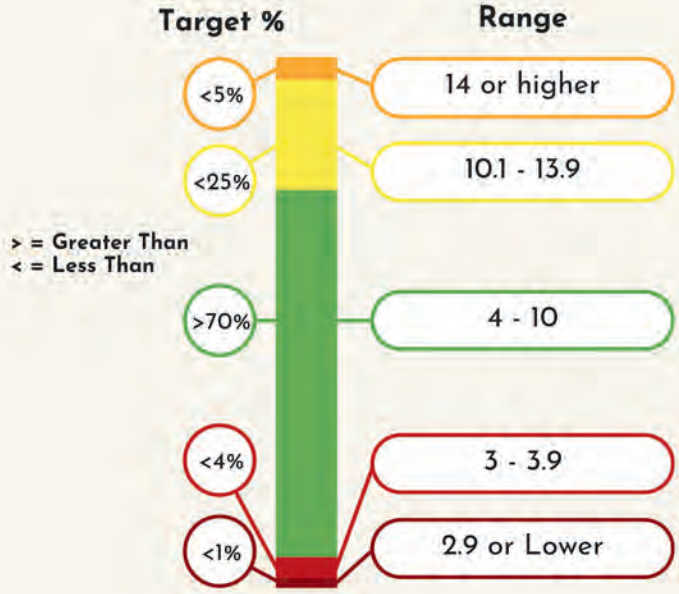
One of the blood tests we did when you first came in to hospital was something called "HbA1c". We will check your HbA1c level every time you come to clinic.

The glucose in your blood sticks to your red blood cells. HbA1c measures how much glucose has stuck to your red blood cells over the past 3 months. The more your glucose levels are within target, the lower your HbA1c will be. This is important because if you have high glucose levels for a long period of time, the high levels can cause serious problems with your health when you are older. These problems are called complications.



A HbA1c of 6.5% (48 mmol/mol) or lower is ideal to minimise the risk of complications. See the green zone in the table on the next page.

Time in Range (mmol/L)



Time in range (TIR) is the amount of time you spend in your target glucose range. It's usually set between 4-7 mmol/L. Using TIR with HBA1c can be an effective way for your healthcare team to review your diabetes care to help you reduce any risk of long term health problems. Aim for a TIR of 70% and above, as this means your diabetes is being managed well.

When you are first diagnosed, your HbA1c is usually high and in the red zone. You will have had high glucose levels for a while, but soon the level will fall. You are aiming for your HbA1c to be below 50 mmol/mol or 6.5% by the time you have had diabetes for 3 months. We know that your risk of complications is directly linked to how long you have had diabetes and how high your HbA1c is. If you get really good control early on with your HbA1c in the green zone, it can help reduce the chances of you having complications.

HbA1c

Having good control of your HbA1c early on can help reduce the chance of complications.

HbA1c (%)	HbA1c (mmol/mol)	Mean Glucose
6.0	42	7.0
6.5	48	7.6 ←
7.0	53	8.5
7.5	58	9.3
7.6	60	9.5
8.0	64	10.0
8.5		10.9
8.9	74	11.6
9.0	75	11.8
9.5	80	12.5
10.0	86	13.3
10.5	91	14.1
11.0	97	14.9
11.5	102	15.7
12.0	108	16.5

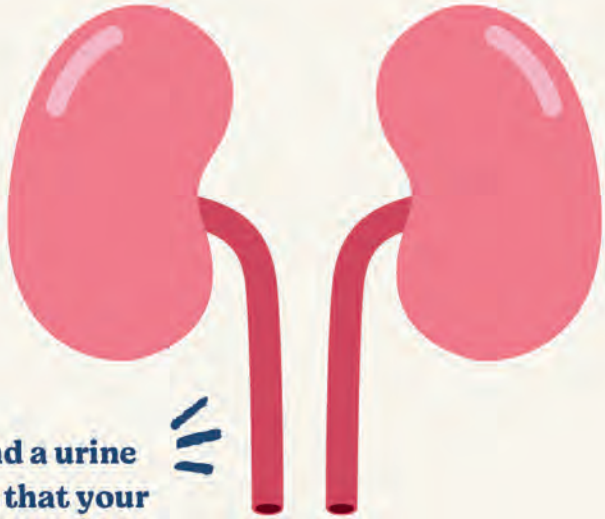
Eye Damage

From the age of 12 you will have a special eye check, known as a retinal screening test, every year to make sure that there aren't any changes in your eyes due to diabetes. If changes are picked up early they can be treated.

It is also recommended for everyone to have an eye examination with an optometrist every year.

Kidney Damage

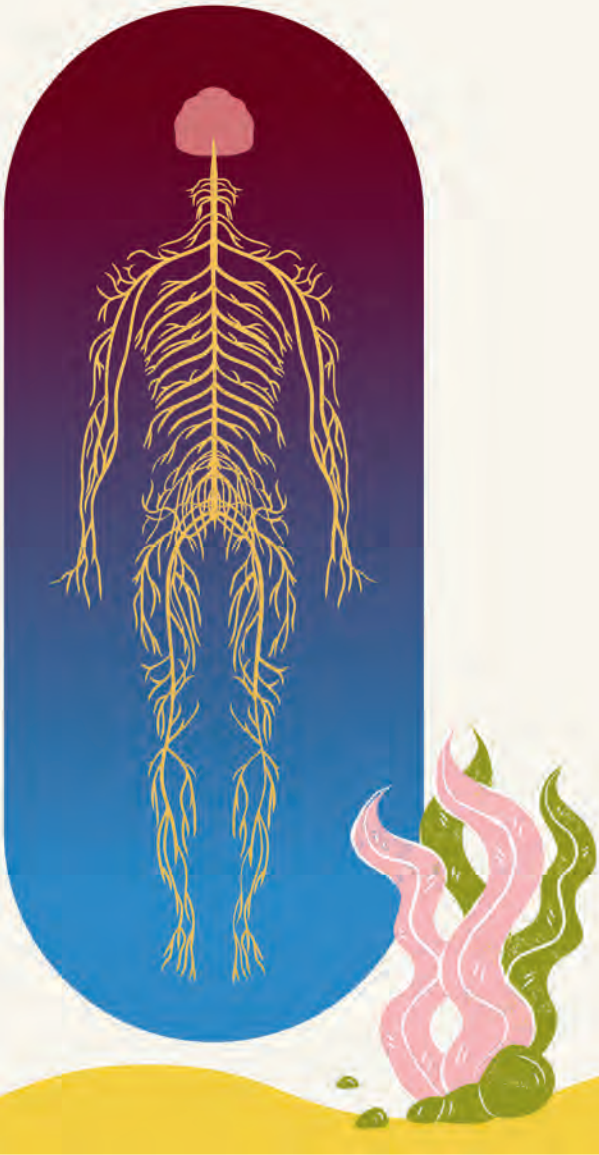
The most common reason for kidney failure in young adults is diabetes that hasn't been looked after. We start testing for kidney problems from 12 years of age.

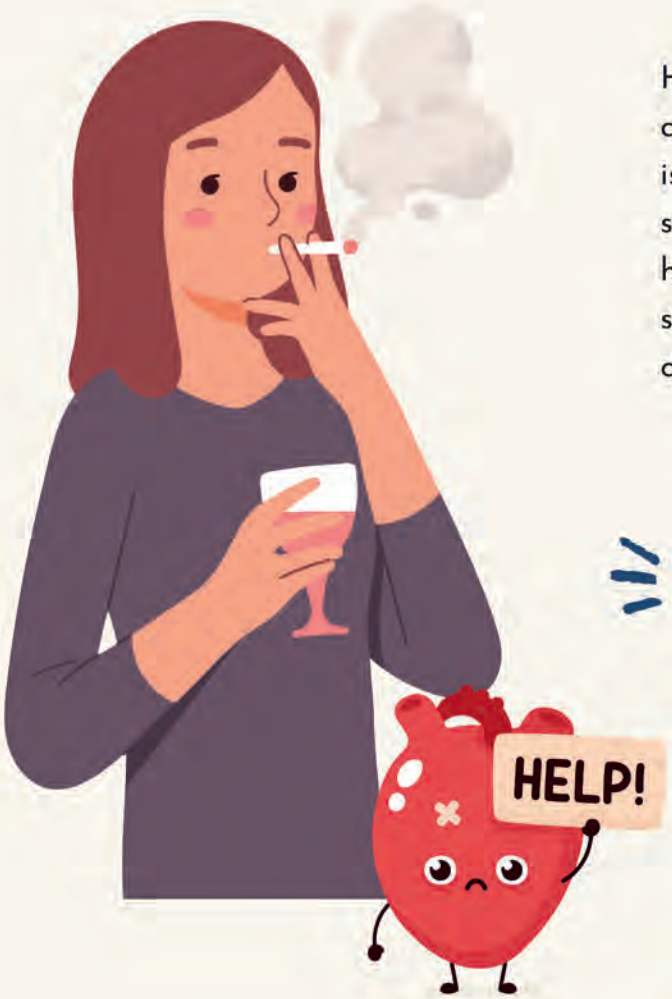


Once a year we send a urine sample off to check that your kidneys are working properly.

Nerve Damage

If your nerves are damaged because of diabetes, you won't feel pain properly. If you can't feel pain you may not be aware of a cut on your foot and because you can't feel pain it may become infected and cause problems.





Heart Attacks and Strokes

Heart attacks and strokes are more common in people with diabetes and this is why it is important that you don't smoke. Smoking makes you more likely to have a heart attack and if you put smoking and diabetes together then your chances of having one are greater.

It is important that you keep your weight at a healthy level. We will also check your blood pressure once a year to make sure this is normal too.

As explained previously, type 1 diabetes is an autoimmune condition where the body's immune system gets confused and attacks itself. If you have one autoimmune problem then you have a slightly higher risk of having another autoimmune condition, such as a thyroid problem or coeliac disease. This is why you will have a blood test once a year to check that these other parts of your body are working properly.

This is why you will have a blood test once a year to check that these other parts of your body are working properly.

Travelling

You will still be able to travel anywhere in the world and good preparation will ensure you have an enjoyable time. We advise that you discuss your specific travel plans with the diabetes team well in advance.

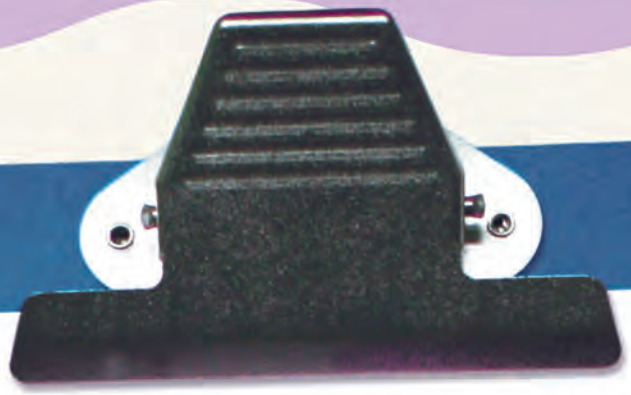
Everyone should follow these basic principles:

01 **Take a double supply of all insulin and equipment.**

02 **Keep all insulin and equipment in your hand luggage and separate the items between different travellers.**
This way you are not going to panic if any hand luggage gets lost or stolen as you will have another set of supplies.

03 **Do not pack insulin in your suitcase if flying.**
Do not pack insulin in your suitcase, as it will freeze in the hold of the aircraft and then you wouldn't be able to use it.

Equipment you will need to take with you



Here are all the items of equipment you will need to take with you:

- Fast Acting Insulin
- Long Acting Insulin
- Needles
- Small sharps bin
- Injection Pens
- Glucose Meter plus spare
- Testing Strips
- Lancets
- Ketone Meter, charger plus spare
- Ketone strips
- Batteries
- Glucose tablets or other 'hypo' food
- Snacks in case of delays
- Carb ratios and correction plan written down in case meter breaks
- Sick Day Rule information
- Identification to show you have diabetes – wristband or necklace
- Travel letter from the diabetes team
- Insurance Details
- Glucagon
- Glucogel
- Travel Company Details

Patients on pumps or Sensors will also need

- Spare Pump
- Pump Reservoirs &insulin
- Spare clips &Belts
- Sensors & reader
- Cannulas

Session 12 Travelling

When travelling by plane don't forget to ask your diabetes team for a travel letter, which will state your diagnosis of diabetes and the equipment which you will need to carry with you. Inform your travel insurer that you have type 1 diabetes and take your travel insurance details with you.

01 **You should declare items you are carrying when you go through customs.**

02 **Do not allow your Glucose meter, CGM ,or pump to go through the x-ray machine.**

03 **If you are travelling to a hot climate keep your insulin in a cool place out of direct sunlight. You could use a cool bag or fridge (if available) to store your unused insulin, but make sure it does not freeze.**

04 **Hot or cold weather can affect your diabetes, so keep monitoring your glucose levels regularly.**

05 **Take a small sharps bin that can be sealed for the journey home.**

06 **The diabetes team can prepare a travel plan for you if you are travelling to a different time zone.**

Activities

Diabetes won't stop you from doing all the things in life that you enjoy, as long as you manage it well. Your diabetes team will work with you to achieve this. There are lots of very successful and well known people like Olympians and politicians who have type 1 diabetes. If they can do it, then so can you!

As a teenager or young adult some activities may need a little more planning than others such as going to a party, a music festival or going away with friends.

Recreational Drugs and Substance Misuse

As well as being illegal, drugs and other substances have a huge impact on diabetes and well-being. Your diabetes team will give advice should you need support.

Diabetes won't stop you from doing things you enjoy as long as you manage your diabetes well. Don't forget to ask for a copy of the Stepping up magazine.

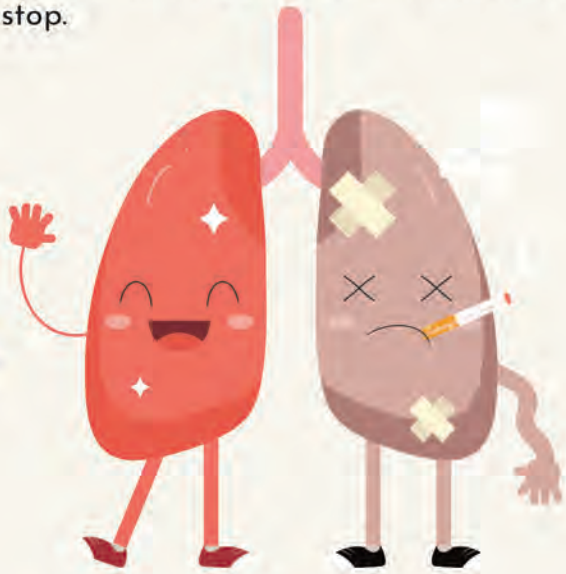
Alcohol

When you are old enough you may want to drink alcohol. You will be able to, but you will need to take extra care because alcohol can affect your diabetes. One of the effects is an increased risk of hypoglycaemia.

Do not drink on an empty stomach and have a slow releasing carbohydrate snack before bed (without any rapid acting insulin) after drinking alcohol to reduce this risk. It is important to get more information on drinking safely from the diabetes team.

Smoking

Smoking is NOT recommended due to the effects it can have on your diabetes and long-term health. Anyone who has started smoking will be offered help to stop.



Carrying Identification

It is important to remember to wear some form of identification to show you have diabetes. For older children and young adults, a bystander may confuse your symptoms with the effects of alcohol or drugs so wearing an ID wristband or necklace will help you get appropriate help and treatment. Your diabetes team can advise you where you can purchase these items or scan the QR code to got to the HEAL.med online shop.

Many mobile phones have a medical alert section on the phone that paramedics know about and will easily identify a patient as having type 1 diabetes.

Employment

As you get older you will start to think about a job you would like to do or a career you would like to have. Whether it's being a zoo keeper, a teacher or a nurse, having diabetes won't stop you from doing what you want to do. However, there are a few exceptions to this, such as being in the armed forces. This is for safety reasons.

Driving

You will be able to drive a car when you are old enough, providing you have good control of your diabetes and are hypo aware. Don't Drive Under 5.
You can read more about this if you visit:

https://www.gov.uk/diabetes-driving

Ramadan – Fasting and Feasting

Children who have not entered puberty and people with diabetes are exempt from fasting during Ramadan. There is an increased risk of both hypo and hyperglycaemia when fasting. If you need further information, please talk to the diabetes team.

Dental Health

Using hypo treatments sweets such as jelly beans can cause tooth decay. Hypo treatments drunk through a straw such as juice are effective at treating your hypos and allow less sugar coming into contact with your teeth and potentially less tooth decay. Brushing your teeth twice a day and having regular check-ups with your dentist is important.

Remember to tell your dentist that you have diabetes.

Contact Numbers and E-mail Addresses

Paediatric Diabetes Team– Office Hours

Mon-Fri: 09:00- 16:00
Phone :
Email:

Paediatric Diabetes Team– Out of Hours

Phone:
Email:

Give your name or the name of the patient and say they have diabetes to the person answering the phone and that you have concerns. They will contact the "on call" Childrens Registrar. Wait for a doctor to call you back and they will advise you on what to do.

Dietitians:

Mon- Fri
Phone:

Email:

Out-Patients:

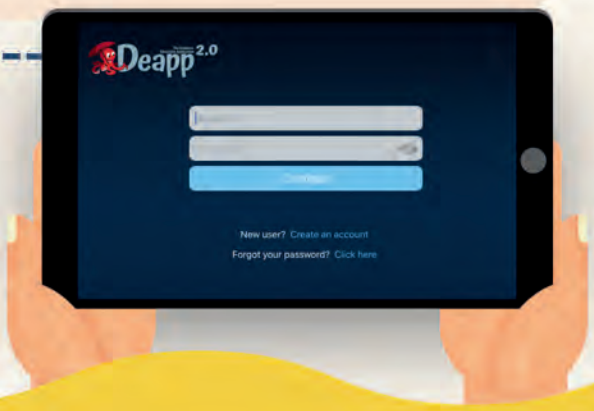
Mon- Fri
Phone:

Email:

Accessing Deapp from your Mobile Phone

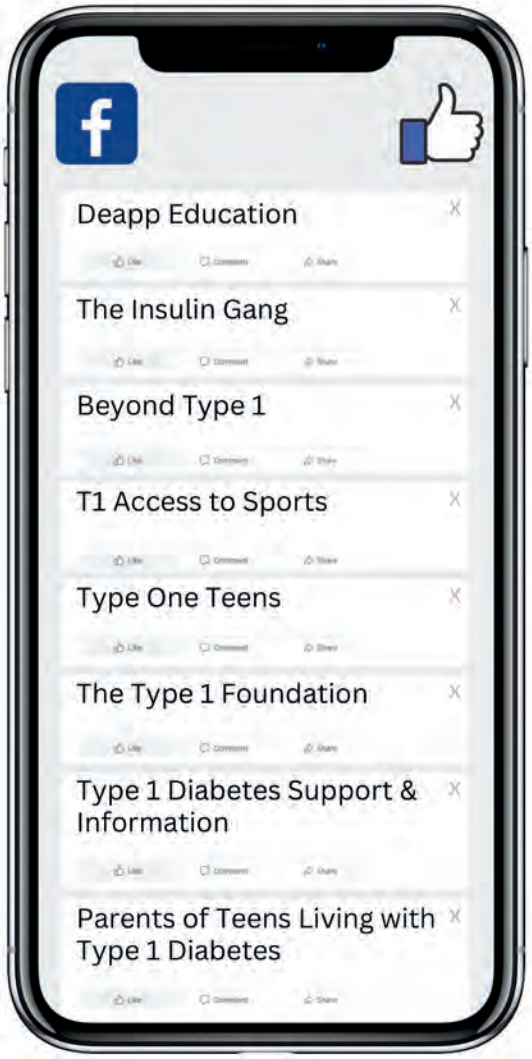
Register for Deapp (The Diabetes Education App) on the Google Play Store (Android) or the Apple App Store.

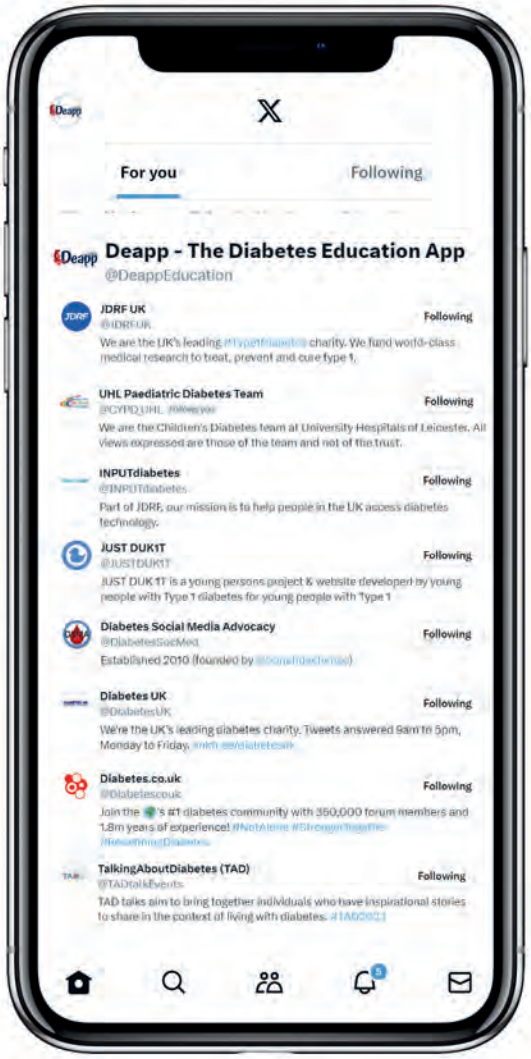
Search: Deapp 2.0 "Deapp" or "Deapp 2".



This magazine is here as a guide to help you through some topics as you start your journey transitioning from a paediatric clinic to a young adult one.

More independence brings more opportunities, more experiences and also more challenges.





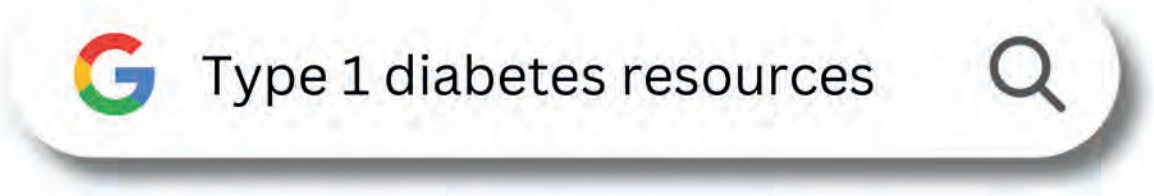
YouTube

Diabetes

Suggestions

Living with type 1 diabetes, a day in the life of Tom
www.youtube.com/watch?v=pOHpnnF3mlw

Professor Bumblebee's Guide to type 1 diabetes
www.youtube.com/watch?v=S9eac8vKY44



Deapp:
www.heal-med.co.uk
The Diabetes Education App, by HEAL.med CIC

Diabetes UK:
www.diabetes.org.uk/

Goining back to school:
www.diabetes.org.uk/guide-to-diabetes/teens/me-and-my-diabetes/school-and-college

Bullying:
www.diabetes.org.uk/guide-to-diabetewww.diabetes.org.uk/guide-to-diabetes/teens/me-and-my-diabetes/school-and-college/bullyings/teens/me-and-my-diabetes/school-and-college/bullying

Going to University:
www.diabetes.org.uk/guide-to-diabetes/teens/me-and-my-diabetes/school-and-college/type-1-and-uni-life

Living my life for teens:
www.diabetes.org.uk/guide-to-diabetes/teens/me-and-my-diabetes/living-my-life

Top tips for teens:
www.diabetes.org.uk/guide-to-diabetes/teens/me-and-my-diabetes/top-tips

Fun stuff:
www.diabetes.org.uk/guide-to-diabetes/teens/fun-stuff

DigiBete:
www.didibete.org

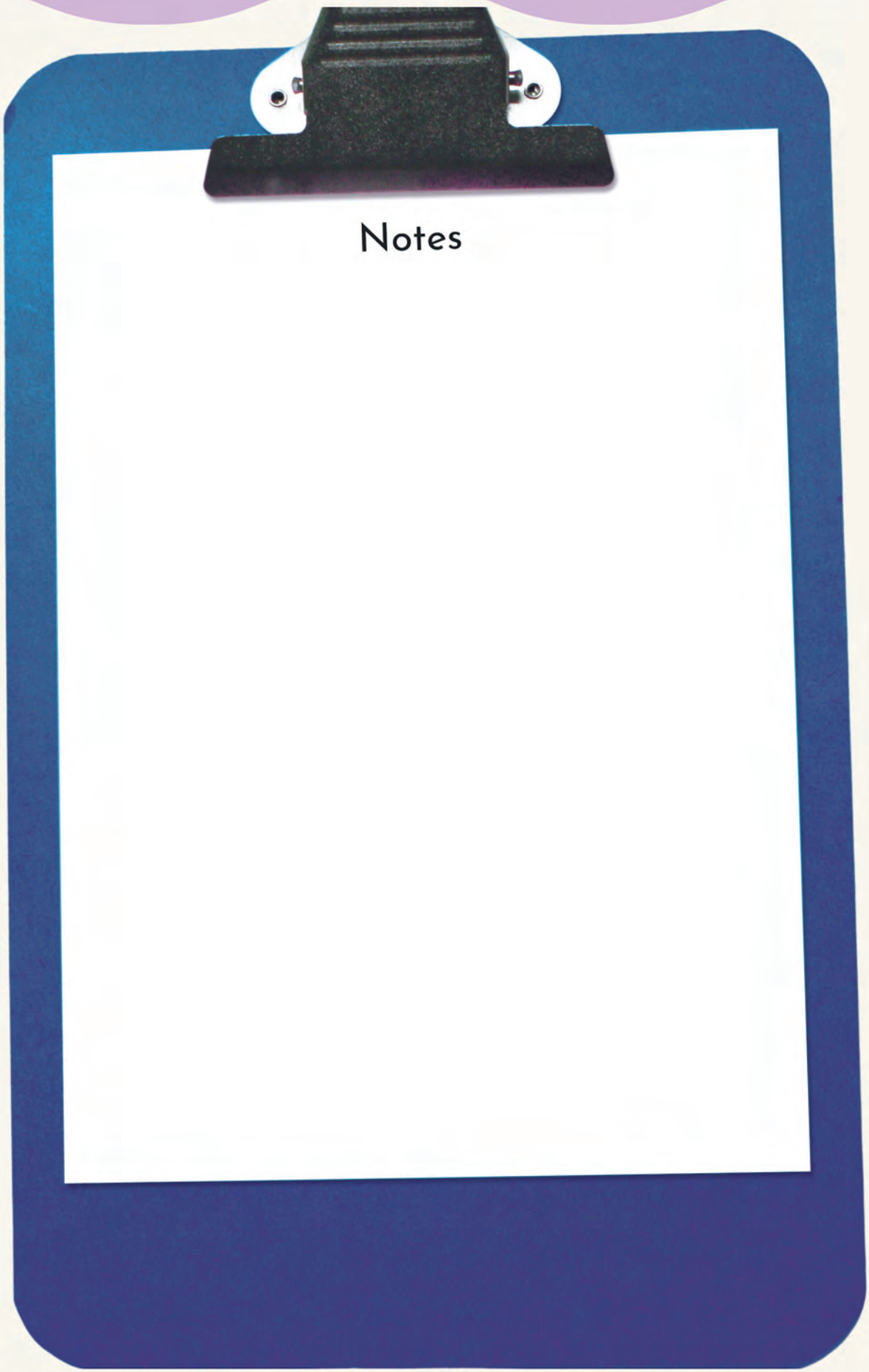
Disability Living Allowance:
www.gov.uk

HEAL.med:
www.heal-med.co.uk

Juvenile Diabetes Research Foundation:
www.jdrf.org.uk

National Children & Young Peoples Diabetes Network:
www.cypdiabetesnetwork.nhs.uk

NHS website:
www.nhs.uk/conditions/type-1-diabetes.uk



Notes

NHS

Deapp 2.0 Children's Diabetes Handbook 2023/24

Information for Children, Parents and Carers

The Deapp Childrens Diabetes Handbook 2023/24 is your complete guide to type-1 diabetes from diagnosis.

The Handbook guides you through our NHS co-written curriculum, starting with "What is Diabetes?" and leading you through complicated topics such as DKA and Hypoglyceamia.

The Handbook can be read by newly diagnosed patients with type-1 Diabetes, family, friends, and even people who have been living with Type-1 diabetes already in their lives.

Created with the support of University Hospitals of Leicester NHS Trust and the Leicester Children's Research Team.

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Design Lee Paxman-Clarke, Viktoria Digital Studio & Sarah Lockwood-Lee.

Original book compiled by Anne Rogers, Emma Green, Emily Robinson, Aan Mayes & Kate Radford.

Illustrations and graphics David Terris, Sophie Mitchell, Jack Tite, Oliver Hoy, Alex Smeaton & Lee Paxman-Clarke.

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