HOW TO LIVE WITH DIABETES
A guide with general lifestyle information

www.withyoualltheway.info

At Novo Nordisk, we are changing diabetes.
In our approach to developing treatments,
in our commitment to operate profitably and ethically and in our search for a cure.
With you all the way is a paediatric support programme created by Novo Nordisk, providing practical information on diabetes and its management for you and your child.

This material has been reviewed by a panel of experts:
- Lead Diabetes Specialist Nurse – Nicola Lewis, UK
- Paediatric Endocrinologists – Prof Thomas Danne, Germany and Dr Nandu Thalange, UK

This information is not designed to replace the advice of a healthcare professional. Please consult your healthcare professional if you have any questions or concerns about your child’s condition.
Living with type 1 diabetes

Following your child’s type 1 diabetes diagnosis, monitoring and insulin treatment will have become part of your family’s daily routine.

As your child grows and develops, their needs will change and they will become more independent. It is likely they will want to take a more active role in the management of their diabetes. They should be encouraged to maintain a healthy lifestyle to help achieve blood glucose control.

It is also important that they are fully aware how to manage their condition when away from home.

We hope the information in this booklet will answer some of the questions you may have about caring for a child growing up with diabetes.
Growing up with diabetes

As your child develops, the challenges you face in managing their diabetes are likely to change as they grow.¹ Your healthcare professional and diabetes care team are the best ones to advise you on diabetes care during particular phases of your child’s growth, but here are some typical challenges:¹

**Infants and toddlers (up to 36 months)** – Big fluctuations in glucose levels due to irregular food intake.

**Preschoolers and primary school (3–7 years)** – Unpredictable appetite and activity levels.

**Children of older school age (8–11 years)** – Making diabetes care flexible enough to allow for participation in school/peer activities.

**Adolescents** – Managing increased needs for insulin that may occur during puberty as children grow up and gain independence and sharing responsibility between parents and teenagers.
Healthy eating is important, for people with or without diabetes.\textsuperscript{2,3}

Your child will probably see a dietitian as part of their diabetes care team who will provide advice on how much your child should eat, depending on their age and weight. The recommendations are usually not unlike those for people without diabetes – a healthy, balanced diet containing adequate fibre and carbohydrates, adapted to cultural, ethnic and family traditions and the individual needs of your child.\textsuperscript{4}

Generally, children with diabetes are advised to eat three main meals each day with snacks in between, if necessary.\textsuperscript{4} Usually a child can follow the same healthy eating habits as the rest of the family and does not require a special diet.

Having type 1 diabetes doesn’t mean they can’t eat any sweets as treats.\textsuperscript{2,3} When you learn how your child’s body responds to eating and taking insulin they will be able to have sweets in moderation, along with the appropriate insulin.\textsuperscript{2,3} Planning meals in combination with monitoring and adjusting insulin can help to improve your child’s blood glucose control.\textsuperscript{4}

Working together, you and your child’s dietitian should be aiming to promote a positive relationship with food, while providing all the nutrients your growing child needs.\textsuperscript{2}

For more information, please refer to the ‘What to eat?’ information leaflet provided in this pack.
Physical activity

Regular exercise is recommended for all children with or without diabetes.\(^5,6\) Daily physical activity should become part of your child’s routine for health benefits and consistency in blood glucose management.\(^5\)

It is important to be aware that physical activity lowers blood glucose, so insulin doses or food intake may need to be adjusted prior to exercise.\(^5\)

Short periods of intensive exercise (“anaerobic exercise”) can also elevate blood glucose levels.

If there is significant hyperglycaemia, ketones should be tested as exercise may lead to diabetic ketoacidosis (DKA).

The combination of too much insulin and exercise can lead to low blood glucose or episodes of hypoglycaemia.\(^5\) Hypoglycaemia may be prevented by lowering your child’s insulin dose for the meal beforehand and by having some fruit juice or a long-acting carbohydrate snack before exercise.\(^2,6\)

After very strenuous exercise it is important to have a meal with a good amount of complex carbohydrates, and sometimes to reduce the dose of long-acting insulin the evening after exercise, to reduce the risk of night-time hypoglycaemia.

Your child should test their blood glucose prior to exercise to learn how their body reacts to exercise and ensure appropriate insulin dosing. Testing after exercise may help you to see how exercise affects your child’s blood glucose levels.\(^2,6\)

If activity or exercise is planned, you should adjust the insulin dose or food intake accordingly.

If your child has a more active day than usual, for example running around more than usual, you may need to increase their food intake afterwards to help maintain blood glucose levels or reduce the insulin appropriately (e.g. choosing a temporary basal rate on pump).
The importance of monitoring blood glucose control

Your child’s healthcare professional will advise when and how much insulin your child needs each day and will teach you how to monitor glucose independently.

Regular checking of blood glucose levels is important to help avoid hypoglycaemia or hyperglycaemia, and to meet your child’s changing needs. You should be aiming to maintain glucose control without frequent disruptive episodes of hypoglycaemia. Ideally, your child should aim to achieve the following long-term blood glucose targets:

- Before a meal – levels should be between 4.0 and 8.0 mmol/L (72–144 mg/dL)
- 2 hours after a meal levels should be no more than 10.0 mmol/L (180 mg/dL)
- At bedtime levels should be between 7.0 mmol/L and 10.0 mmol/L (126–180 mg/dL)

These targets can be hard to achieve and it is unlikely your child will reach these levels when they start using insulin. If you struggle to achieve target levels over a long period of time, contact your healthcare professional.

Long periods of poor blood glucose control and sustained high blood glucose levels can lead to long-term complications. The International Society for Paediatric and Adolescent Diabetes (ISPAD) recommend that children of all ages should aim for a blood glucose level below 7.5% (10.6 mmol/L or 190 mg/dL) to avoid such complications. Monitors will vary and have different limits. If your child’s reading is above this upper limit, the monitor will show ‘high’. Check the instructions that come with your monitor for more details.

If your child is not achieving target levels, speak to your healthcare professional about your child’s management plan.

Diabetic ketoacidosis

If left untreated, high blood glucose in diabetes can be dangerous and could lead to a severe condition called diabetic ketoacidosis (DKA). Signs of DKA include:

- Nausea and vomiting
- Stomach pain
- Fruity breath odour (“ketones”) – often described as pear drops or nail varnish smell
- Rapid breathing
- Dehydration (e.g. dry tongue, less frequent urination/dry nappy)
- Increased blood glucose levels

This can happen rapidly, particularly in young children. If your child has any of these symptoms, you must seek emergency medical attention. If available you should measure ketones in the urine or blood using the appropriate test strips.
**Care away from home**

**At school**

When your child starts school, or returns to school after diagnosis, it is important that people involved in their care are aware of their needs.

You may find their teachers have experience looking after other children with diabetes, or it may be something they are unfamiliar with. In any case, each child’s diabetes is different and each child will have a personalised plan for managing meals, hypoglycaemia, hyperglycaemia and exercise etc.

You may worry about leaving your child in someone else’s care but, with the right information and training, school staff should be able to provide the appropriate care to manage your child’s condition.**

Even if your child is old enough to test their blood or inject their own insulin, they will still require supervision by a responsible adult.

It may help if your child or their teacher keeps a diary of blood glucose levels especially if any episodes of hypoglycaemia occur that you can read at the end of the day. Your child should carry a clearly labelled ‘Hypobox’ with them which contains information and supplies to help manage hypoglycaemia.

You will need to arrange a meeting with your child’s teachers and diabetes care team to discuss your child’s needs and what level of help they will need at school.

It may help to show teachers/other support staff the ‘What about diabetes at school?’ information leaflet supplied in this pack.

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Meeting your child’s needs at school

Here are some ideas of points you may want to cover when you meet with school staff:

- **Emergency contacts**
  - Who should they contact in case of a problem? You may want to provide details of another family member or friend in case they can’t get hold of you.

- **Management of hypoglycaemia**
  - What signs should they look out for and what do they need to do?
  - Where will emergency supplies (e.g. Hypobox) be kept?
  - Will school nurses/teachers have access to glucagon for use in emergencies?

- **Mealtimes and snacks**
  - If they need to eat at particular times, how will this fit into the school timetable?
  - Will they have a packed lunch or school lunch?
  - Do they need help with choosing meals or carbohydrate counting?
  - Do they need a snack before physical activity?

- **Blood glucose testing**
  - When should this be done and does your child need assistance?
  - What do the results mean?

- **Management of hyperglycaemia**
  - What should they do if your child has high blood glucose?

- **Insulin dosing**
  - Does your child need to inject insulin during the school day and do they need assistance? Or, if on an insulin pump, can they control their pump themselves?
  - Is refrigeration available? (if required in hot climates)
  - Is there somewhere quiet and private they can inject?

You will need to ensure that your child has all the equipment and supplies they need for management of their condition during the school day. You should check supplies regularly and replenish as necessary.
School trips/ sleepovers

There is no reason why your child can’t go on school trips or stay at a friend’s house as long as they are prepared and the people looking after them are confident managing their condition.²

Tips

- Talk to your child’s teachers or other parents to ensure they know how to manage their condition – you may want to arrange a meeting prior to the trip or additional training
- If they will be staying away overnight, ensure they are aware of signs of night-time hypoglycaemia and how to manage events should they occur
- Find out what activities are planned and what meals will be provided. You may want to give them a packed lunch if it is a day trip
- Ensure they have enough insulin with them for all doses required and that refrigeration is available, if required in hot climates
- Ensure they have adequate supplies of fast-acting carbohydrates e.g. glucose tablets, sweets or cartons of fruit juice, to help manage hypoglycaemic episodes should they occur
After school activities/parties

As your child gets older they may be interested in taking part in activities or clubs after school. They may also be invited to parties at other children’s houses.

Tips

- Ensure staff supervising or other parents are aware of your child’s needs and know how to manage their diabetes.
- If they are going to parties, find out what food will be available at the party and discuss with the other parents what and how much your child can have.
- If they are taking part in physical activity, think about whether they will need an extra snack or a different insulin dose.
- If the activities/party interferes with their normal dosing routine, speak to your healthcare professional to see whether the dose can be taken later.

Older teens/young adults naturally want independence from their parents. As they start going out with friends and partying, it can become more difficult to supervise what they may be eating or drinking and knowing they are taking insulin correctly. There are no specific rules for parents, regardless of how long your child has been diagnosed. Whilst your child may behave like any other teenager, good communication is vital.

- **Timing is key** – Sitting together without distractions or during joint tasks such as cooking or walking.
- **Mood matters** – Discuss issues when the situation is calm and you both can think rationally.
- **Prioritise discussions** – deal with those which are most concerning first rather than every small issue.

It may help to show them the ‘How to look after a child with diabetes’ information leaflet supplied in this pack.
Travelling and holidays

There is no reason why your child’s diabetes should stop you from going on family holidays, they just require a bit more planning.

You may want to consider the following before going away:²

- Talk to your healthcare professional before you go about how to manage your child’s diabetes, particularly if you are travelling to a different time zone
- If you are flying, you should take a letter from your healthcare professional regarding their medication and devices in your hand luggage
- Check you have enough insulin for the entire stay in advance, so you have time to order it if needed
- Does your accommodation have refrigeration to store insulin (if travelling to a hot climate)?
- Do you have the appropriate travel insurance?
- Does your child require any vaccinations or malaria tablets?
- Ensure you have supplies of glucose tablets, sweets or fruit juice for the journey in case of a hypoglycaemic episode
- It is a good idea to take a spare insulin pen (if you use these for injections) and blood glucose meter, as well as sufficient supplies of test strips, lancets and injection needles
- Make sure you are aware of how to manage sick days in case they become dehydrated or sick while you are away (refer to ‘What to do on a sick day’ leaflet for more information)
Diabetes affects siblings as well

A diagnosis of diabetes is not just limited to the child involved; it really impacts the whole family. As parents, you may need to spend extra time with your child as there is a lot to deal with when taking on a diabetes diagnosis, especially at the beginning.2,8

Your child may feel alone, different, frustrated or scared about the future and understandably, will receive a lot of care and attention from you. If you have more than one child, diabetes care may cause some tension in the family.2

It is important to balance your time to minimise the impact diabetes will have on your relationship with your other child or children, as well the relationship between siblings.8,9

Sibling rivalry

Balancing time between siblings may be difficult as a child with diabetes usually needs extra care and attention.2,9

Ask your other children how they feel?
Their siblings may feel ignored, unimportant or forgotten. Some feel scared for their sibling’s future or are worried about their own risk of getting diabetes. They may feel guilty because they did not develop diabetes, or blame themselves for giving their sibling sugary foods in the past. Favouritism could also play a role and siblings could feel a sense of jealousy for the attention from their parents and other close contacts.2,9

Do they feel like they aren’t getting the same attention as they used to?
Siblings could also give too much attention to their brother or sister with diabetes. The child could feel overwhelmed or believe they are being constantly watched. On the other hand, your child with diabetes may be jealous of their brothers or sisters as they perceive them to have more freedom and opportunities.9

It is therefore very important for siblings to be part of this adjustment and the best way to deal with diabetes is to treat it openly and discuss it as a family.

Explain what diabetes is to your children and what it means on a day-to-day basis for their sibling. Make sure you tailor this specifically to each child depending on their age and level of understanding.9 Try to involve them in their care too, such as clinic visits, so they are not excluded.

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Family time is precious so how can you manage it well?

There are a number of ways to help manage the sibling relationship after a diagnosis of diabetes. There are no right or wrong answers and it might be worth speaking to other parents in the same situation, through support groups or forums, for advice on this topic. Ask your healthcare professional about local support groups.

- Make sure you have one-to-one time for each child, respecting their unique interests, needs, and abilities.  
- Don’t let diabetes-related conversations dominate but make an effort to broaden the topics to include areas of interest for the whole family.  
- Ensure that any treats or benefits that your child with diabetes receives match those of their siblings so they don’t feel left out.

- Encourage your children to tell you their thoughts and feelings and listen to what they have to say.  
- Make sure your children understand it is not the fault of their sibling and they are not to blame if they haven’t received much attention recently.  
- Siblings may naturally look out for each other but try not to give them too much responsibility with managing diabetes. Ask if you need help but be cautious about making it a routine task as it can be stressful, even for teenagers.  
- Make sure the whole family eats the same healthy, well balanced meals.  
- Try not to be too overprotective, kids are still kids and they will play, argue, and compete with each other, diabetes does not change that.
The future

If their diabetes is managed effectively, children with diabetes can lead full and active lives.\textsuperscript{2,3}

Diabetes monitoring and treatment will become part of their daily lives, but should not limit their activities.\textsuperscript{2,3}

It is important that your child maintains the insulin schedule specified by their healthcare professional and regularly checks their blood glucose levels to maintain good control. A healthy diet and regular exercise will also help minimise the risk of developing complications in the future.\textsuperscript{2,3,6}

Your child’s healthcare professional will be looking out for signs of any complications when they have their routine check ups, so they can be recognised early and managed appropriately. It is important that you and your child attend all scheduled appointments and ask any questions if you have any concerns.

As diabetes is a lifelong condition, there will be different aspects in approach to management at each stage of life. From recently diagnosed, through to school, university or work-life, you and your child will have access to support every step of the way.\textsuperscript{2}

References


About Novo Nordisk

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Novo Nordisk was started up almost 90 years ago by a Danish couple with a passion for changing diabetes. August Krogh was a professor at the University of Copenhagen and Nobel Prize winner and his wife Marie, a doctor and researcher into metabolic diseases, suffered from type 2 diabetes. They learned of insulin being developed in Canada and were determined to ensure access to insulin for everyone with diabetes, hence in 1923 Novo Nordisk was born.

Since then Novo Nordisk has grown to become a world leader in the provision of diabetes products and support for patients of all ages.11

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HOW TO LOOK AFTER A CHILD WITH TYPE 1 DIABETES

Support for caregivers

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Guidance for children under your care with type 1 diabetes

When parents put their children in your care, whether it be at a party, sleepover or after-school activity, they will most likely give you a rundown of their child’s likes and dislikes, eating habits and allergies. The same is true for parents who have children with type 1 diabetes.

Children with type 1 diabetes are healthy and can do everything other children do, however, in order to stay healthy, they do require careful monitoring of insulin and food intake to maintain control of their blood sugar levels.

This booklet will provide you with background information about type 1 diabetes and its management. This will help to prepare you and make you feel more comfortable having a child with type 1 diabetes in your care. If you have any questions or concerns, speak to the child’s parent or carer.1,2
Insulin is a hormone made by beta cells in the pancreas. Insulin is needed by the body to help remove glucose from the bloodstream and turn it into fuel for tissues that need it, such as muscle and brain. Diabetes is characterised by a partial or complete lack of insulin production by the body.

Insulin plays a role in the two types of diabetes:

**Type 1 diabetes** is an ‘autoimmune disorder’ – the body’s immune system damages its own pancreatic beta cells. As a result they produce little or no insulin and cause high blood glucose, also known as hyperglycaemia. As the body cannot make its own insulin, people with type 1 diabetes will need to inject insulin every day.

**Type 2 diabetes** occurs when the pancreas is capable of making some insulin, but not enough or not sufficient quality for the body to use properly (“insulin resistance”).

Diabetes diagnosed in childhood is much more commonly type 1.

There are other kinds of diabetes but these are rare in childhood.
Hypoglycaemia and hyperglycaemia: What should you look out for?

**Hypoglycaemia** occurs when the blood sugar level is too low – due to too much insulin, too little food or high levels of activity. The most common signs are listed below, but these can depend on the child:

- Hunger
- Nervousness
- Shakiness
- Sweating
- Lip tingling
- Dizziness or light-headedness
- Sleepiness
- Confusion
- Grumpiness
- Other

If you are looking after the child overnight, it is useful to know that hypoglycaemia can also occur at night, with signs of sweating, waking up groggy or disturbed sleep.

The child should have a diabetes management plan which will state exactly how to manage episodes of hypoglycaemia. This may include glucose tablets, fruit juice, a particular snack or a regular (non-diet) fizzy drink. They should also have a clearly labelled ‘Hypobox’ with them too, which contains information and supplies to help manage hypoglycaemia.

**Hyperglycaemia** occurs when the blood sugar level is too high – due to illness, too little insulin or too much food. Signs of this are:

- Lethargy or fatigue
- Sleepy or drowsy
- Extreme thirst
- Frequent urination
- Blurred vision
- Other

If left untreated, hyperglycaemia in type 1 diabetes can be dangerous and could lead to a severe condition called diabetic ketoacidosis (DKA). Signs of DKA include:

- Nausea and vomiting
- Stomach pain
- Fruity breath odour – often described as similar to nail polish remover or pear drops
- Rapid breathing
- Dehydration (e.g. dry tongue, less frequent urination/dry nappy)
- Increased blood glucose levels

This can happen rapidly, particularly in young children.

If the child has any of these symptoms, you must seek emergency medical attention immediately.

Often, if the child is aware, they may be able to tell you if they are hypoglycaemic (low blood glucose) or hyperglycaemic (high blood glucose) and know what action they need to take. If you are at all worried, speak to the child’s parents or carer or contact a healthcare professional immediately.
What about meal planning and physical activity?

In order to replace the body’s insulin, children with type 1 diabetes need insulin injections every day. Food intake is also important as it needs to be balanced with insulin doses in order to avoid high or low blood glucose (hyper- or hypoglycaemia). Children with type 1 diabetes are advised, as any other child, to have a healthy, well balanced diet. Generally, it is recommended that they eat three main meals each day, in addition to snacks in between, if necessary.

If the child is eating with you, it is worth having a discussion with their parents or carer about the meal you have planned so that they can adjust the insulin dose accordingly or advise you about particular foods. It may be a good idea to have some sweets or fruit juice at hand, in case the child experiences a hypoglycaemic event and does not have hypoglycaemia treatment with them.

Having type 1 diabetes doesn’t mean the child can’t eat any sweets as treats. They will be able to in moderation, along with appropriate insulin if they respond to their general balance of food and insulin intake.

Regular exercise is recommended for all children, with or without type 1 diabetes. Physical activity lowers blood glucose, so the combination of too much insulin and exercise can lead to low blood glucose or episodes of hypoglycaemia. This can be prevented by lowering insulin doses or increasing blood sugar, by having some fruit juice or a carbohydrate snack prior to exercise.

As with meal planning, discuss any planned physical activity with the parents or carers (for example playing football or going to an adventure playground) so they can ensure their child has the correct insulin dose.
Insulin injections and blood glucose testing

Depending on the age and maturity of the child, they may be completely in control of their insulin and blood glucose testing. You may want to just observe the child, check in with them from time to time or remind them of the times they need to inject their next insulin dose.

If you are required to inject insulin or test the child’s blood, make sure you are comfortable with this and have been given all the necessary information in order to do so. Speak to the child’s parents or carer if you are at all concerned.

When injecting insulin, you need to be aware that there are a number of different kinds of insulins and injection devices. The child’s parents or carer will inform you about the type of insulin, number of units required and where and when it should be injected.

Insulin is injected under the skin (subcutaneously) in three main areas – stomach, buttocks and thighs. It can also be injected into the arm.

It is advised that blood glucose levels are checked before every meal and bedtime and often before physical activity. If there is significant hyperglycaemia before exercise, ketones in the blood or urine should be tested. If ketone levels are elevated, exercise should not be carried out, due to risk of DKA. The child’s parents or carer will explain exactly what you need to do, the readings to expect and whether any action needs to be taken.
Important contact details

Looking after a child with diabetes is a big responsibility, but in most cases, it is well controlled, and you will have all the necessary information you need. If at any point you are worried, concerned, or have any questions, here is a list of important contacts:

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<thead>
<tr>
<th>Child’s parents or carer</th>
<th>Child’s doctor/nurse</th>
<th>Other</th>
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WHAT TO DO ON A SICK DAY
Support in case of illness

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Managing type 1 diabetes in a sick child

When your child is sick it can be harder to manage their diabetes for a number of reasons:¹,²

- Illness and infection usually cause an increase in blood glucose levels
- Poor food intake can lower blood glucose levels, if the insulin dose remains the same
- Nausea and vomiting can affect blood glucose levels and may be a sign of developing diabetic ketoacidosis (DKA)
Symptoms of diabetic ketoacidosis

If your child shows any of these symptoms, contact your healthcare professional immediately.

- Increased blood glucose levels
- A fruity-like smell ("ketones") around the body – often described as similar to the smell of nail polish remover or pear drops
- Stomach pain
- Rapid breathing
- Signs of dehydration (e.g. dry tongue, less frequent urination/dry nappy)
- Nausea and vomiting

Monitor them closely

It is important that you keep a close eye on them and regularly check their blood glucose and temperature.

Your child must keep taking insulin, even if they don’t really feel like eating.1,2

You may need to adjust the dose which will get easier with experience – your child’s diabetes care team should be able to advise you further on this if required.1,2

If their blood glucose remains high, test their urine or blood for ketones, as advised by your diabetes care team.1,2 If ketones are present, you should contact your healthcare professional immediately, especially if your child has any of the symptoms shown in the diagram.1,2

Illness is a common cause of diabetic ketoacidosis.2
When should I seek emergency medical attention?

Your child’s diabetes management plan provided by your healthcare professional should help you to recognise when you might need to seek emergency medical attention.

You should contact your healthcare professional or go to the emergency department if your child:

- Has high blood glucose which remains high for several checks despite insulin doses
- Has low blood sugar because of poor food intake despite oral glucose
- Has a high level of ketones in their urine or blood
- Has persistent diarrhoea and/or vomiting
- Shows signs of dehydration such as dry tongue or decreased urination/dry nappy
- Is unable to keep liquids or solids down
- Has a high temperature despite medication

MATAYO MKUMBO
Tanzania
Matayo has type 1 diabetes
Tips for caring for a sick child with type 1 diabetes

- Check blood glucose regularly – at least every four hours\textsuperscript{2,3}
- Try and stick to meal plans – if they are being sick, try to give them easily digestible foods such as crackers. If they are not managing to keep food down, try to give them juice or another kind of sugary drink, or let them suck on a glucose tablet, ice lolly or a sweet like a jelly bean\textsuperscript{2,3}
- Make sure they stay hydrated, especially if they are vomiting or have diarrhoea\textsuperscript{2,3}
- Keep giving them their insulin doses to help avoid high blood sugar\textsuperscript{1,2}
- Be prepared – stock up on foods and drinks that may be suitable when they are sick
- As a precaution, find out about out-of-hours and emergency care at your doctor’s practice

Your child’s healthcare professional will provide advice on how to manage your child’s diabetes when they are sick, including:\textsuperscript{2,3}
- How and when to monitor blood glucose and ketones
- Over-the-counter medicines that you can use
- Adjustments to make to food, liquids and medicine intake

If you ever feel worried about your child’s condition, contact your healthcare professional, or take your child to the emergency department of your local hospital for immediate advice\textsuperscript{2,3}
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WHAT ABOUT DIABETES AT SCHOOL?
A guide for teachers

www.withyoualltheway.info

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**With you all the way** is a paediatric support programme created by Novo Nordisk, providing practical information on diabetes and its management for you and your child.

This material has been reviewed by a panel of experts:
- Lead Diabetes Specialist Nurse – Nicola Lewis, UK
- Paediatric Endocrinologists – Prof Thomas Danne, Germany and Dr Nandu Thalange, UK

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Guidance for teachers

Diabetes care at school is necessary for the child’s immediate safety, long-term health and academic performance.¹

For parents of children with type 1 diabetes, help and support from school is very important. They may feel anxious about handing over responsibility of care for their child, especially after a recent diagnosis.²

This booklet will provide you with background information about type 1 diabetes. This will help to prepare you and make you feel more comfortable about having a child with type 1 diabetes at your school. The child’s parents or carers will also work closely with the school, building a diabetes management plan to meet their child’s needs.²,³
Insulin and diabetes

Insulin is a hormone made by beta cells in the pancreas. Insulin is needed by the body to help remove glucose from the bloodstream and turn it into fuel for other cells that need it. Diabetes is characterised by a partial or complete lack of insulin production by the body.

Insulin plays a role in the two types of diabetes:

Type 1 diabetes is an ‘autoimmune disorder’ – the body’s immune system damages its own pancreatic beta cells. They produce little or no insulin and cause high blood glucose, also known as hyperglycaemia. As the body cannot make its own insulin, everyone with type 1 diabetes will need to inject insulin every day.

Type 2 diabetes occurs when the pancreas is not capable of making enough insulin and the insulin works less well (“insulin resistance”), causing hyperglycaemia.

Diabetes diagnosed in childhood is much more commonly type 1.
Insulin, blood glucose tests and supplies

What are their insulin needs?

In order to replace the body’s insulin, children with type 1 diabetes need insulin injections every day, according to their blood glucose level.\(^2\) Depending on the age and maturity of the child, they may be completely in control of their insulin and blood glucose testing.

At least one member of staff should be made aware of the particular insulin types and devices that the child uses.\(^2,6\) They will also be informed by the parents of any dose changes and which injection sites should be used.\(^2\)

The child’s parent should provide a written diabetes management plan to refer to.

Testing blood glucose

In order to test blood glucose, the child will need to prick their finger using a small needle device and place a small drop of blood onto a testing strip. The strip, once inserted into the glucose meter, will read the blood glucose level.\(^2\) It is advised that blood glucose levels are checked before every meal, before physical activity and if they feel/seem unwell.\(^2,4,7\)

The child may have to test in the classroom if they are worried about their blood sugar being too high or low.\(^8\)

Testing blood glucose

Easy access to all supplies

The child should have a supply of everything they need. These should be kept with the child at all times, in their schoolbag or in the classroom:\(^2\)

- Hypoglycaemia remedies (glucose sweets/sugary drink/prescribed equivalent) plus a follow-on snack if necessary
- Water, or another non-sugary drink in case of hyperglycaemia\(^8\)
- Insulin and insulin pen device, plus spares in case of breakage (in hot climates insulin not in current use will need to be stored in a fridge)
- Blood glucose meter and strips, plus spares in case of breakage/malfunction
- If the child is on an insulin pump, they should have spare pump equipment in case the tubing becomes blocked, or have access to an insulin pen if needed
- Ketone strips if they become ill (for testing blood or urine)
Hypoglycaemia and hyperglycaemia – What should you look out for?

As the body does not produce insulin and cannot control fluctuations in blood sugar, daily insulin injections are required in people with type 1 diabetes. Sometimes, if the blood glucose level does not match the amount of insulin injected (due to insulin dose, food intake or physical activity) a child with type 1 diabetes may experience hypoglycaemia or hyperglycaemia.

What is hypoglycaemia?
Hypoglycaemia occurs when the blood sugar level is too low – due to too much insulin, too little food or high levels of activity. These are the most common signs, but they can depend on the child:

- Hunger
- Nervousness
- Shakiness
- Sweating
- Lip tingling
- Dizziness or light-headedness
- Sleepiness
- Confusion
- Grumpiness
- Other __________________________

You should be aware of the child’s diabetes management plan which will state exactly how to manage episodes of hypoglycaemia. This may include glucose tablets, fruit juice, a particular snack or a regular (non-diet) fizzy drink. They should also carry a clearly labelled ‘Hypobox’ with them too, which contains information and supplies to help manage hypoglycaemia.

What is hyperglycaemia?
Hyperglycaemia occurs when the blood sugar level is too high – due to illness, too little insulin or too much food. Signs of this are:

- Lethargy or fatigue
- Sleepy or drowsy
- Extreme thirst
- Frequent urination
- Blurred vision
- Other __________________________

In this case, contact the child’s parents for advice as the child may need more insulin and sugar free drinks such as water.

If left untreated, hyperglycaemia in diabetes can be dangerous and could lead to a severe condition called diabetic ketoacidosis (DKA). This can be assessed by measuring ketones in the urine or blood. Signs of DKA include:

- Nausea and vomiting
- Stomach pain
- Fruity breath odour (“ketones”) – often described as similar to nail polish remover or pear drops
- Rapid breathing
- Dehydration (e.g. dry tongue, less frequent urination/dry nappy)
- Increased blood glucose levels

This may happen quickly, particularly in young children. If the child has any of these symptoms, you must seek emergency medical attention immediately.

Often, if the child is aware, they may be able to tell you if they are hypoglycaemic or hyperglycaemic and know what action they need to take.
Food and physical activity

Food intake is important

This needs to be balanced with insulin doses in order to avoid low blood glucose or hypoglycaemia. Carbohydrates in food increase blood glucose levels, whereas insulin and exercise lower it. Children with diabetes are advised, as any other child, to have a healthy, well balanced diet. Generally, it is recommended that they eat three main meals each day, in addition to snacks in between, if necessary. Parents will notify you if they require any special diet.2

Having diabetes doesn’t mean the child can’t eat any sweets as treats.2,4 They can have such foods in moderation, along with appropriate insulin if they respond well to their general balance of food and insulin intake.2,4

The child may need to eat snacks in the classroom, if they need a snack at a particular time, or are experiencing hypoglycaemia.2

Physical activity and blood glucose testing

Regular exercise is recommended for all children with or without diabetes10,11 but physical activity lowers blood glucose. The combination of too much insulin and exercise can lead to low blood glucose or episodes of hypoglycaemia.2,10,11

The child should test their blood glucose levels before and after physical activity and have a snack beforehand, if necessary.2,10,11 If the activity is prolonged, they may need to test and/or snack during the activity as well. Glucose tablets or a sugary drink should be kept nearby if the child experiences a hypoglycaemic event.2

It is important that anyone supervising the child during physical activity is aware they have diabetes and know what to expect.2

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What about bullying

There is no situation where bullying should be tolerated. Children with diabetes tend to stand out, as they are allowed to eat and drink in the classroom, and may need to inject insulin and test their blood glucose in front of others. This could unfortunately make them a target for bullying or unwanted attention.²

As a teacher, you have the responsibility to watch out for any signs of bullying and notify the school if the child or their parents report this to you. As with any child, the school should take measures to ensure that bullying is prevented and should deal with it appropriately if it does occur.²
## Important contact details

Looking after child with diabetes is a big responsibility but in most cases it is well controlled and you will have all the necessary information you need. If at any point you are worried, concerned or have any questions, here are some important contacts:

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<th>Child’s parents or carer</th>
<th>Child’s doctor/nurse</th>
<th>Other</th>
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References


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Novo Nordisk A/S Novo Alle 2880 Bagsværd Denmark
WHICH DEVICE OPTIONS ARE AVAILABLE?

A guide to insulin devices

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Injecting insulin

Your child will need to receive several insulin injections each day to help manage their diabetes.\(^1\)

At first, injections will be stressful for you and your child, and they may find them uncomfortable – but it will get easier with time as you both start to feel more confident and relaxed.\(^2\)

Older children and teenagers can normally do their own injections from the beginning and take a more active role in managing their own treatment. Your diabetes care team will have a lot of experience helping children get started with injections.

Needles can be scary, particularly for young children. However, the needles used to inject insulin are very small, as insulin only needs to be injected into fatty tissue under the skin (subcutaneously), and not into a muscle or vein.\(^2\)

The most common sites for injecting insulin are the abdomen, buttocks, thigh or arm, as advised by your healthcare professional.\(^3\) It is important to know that insulin is absorbed at different speeds, depending on the site it is injected. It enters the bloodstream more quickly if it is injected into the stomach and more slowly if injected into the buttocks or thighs.\(^2\) Rotation of injection sites is important to avoid a build up of lumps under the skin.\(^2\)

There are a number of insulin devices available including needles and syringes, pen devices and pumps. Your diabetes care team will be able to discuss the options with you and your child.
Insulin pens

Insulin pens are designed to provide a convenient and easy way of administering insulin. They have a discreet, short, fine needle on the end of the pen.

Insulin pens have built-in cartridges. The dose is selected by turning a dial, and then the plunger/button at the end of the pen is pressed to inject the dose.

There are two main types of pens:

- **Reusable (durable) pens** – with this type you need to replace the cartridge when it is empty and all doses have been used.

- **Prefilled (disposable) pens** – this type of pen is supplied with the insulin inside and should be thrown away when it is empty, or after 30 days of use (depending on the type of insulin and its in-use time).

Single-use needles need to be attached before each use of the pen. The size will depend on the age and weight of your child.

Some insulin pens have half-unit dosing which may be better for precise dosing in younger children. There are also some pen devices that have a memory function which records the time the last dose was taken – this may be useful if your child is taking their medication at school or at a friend’s house.

For further details on how to use and store your child’s insulin pen, please refer to the manufacturer’s instructions for use or contact your child’s healthcare professional.
Insulin pump

An insulin pump is a small device about the size of a mobile phone. It provides a steady flow of short-acting insulin continually throughout the day and night, matched to your child’s needs. It also allows extra insulin to be given at mealtimes or if blood sugar levels rise too high.

Some children prefer having a pump than having to inject several times a day, and pumps can be a more flexible option. When children get older, start school and spend more time away from home, delivering insulin via a pump may also be a convenient option.

Pumps work by storing insulin in a special holder and delivering it via a very thin plastic tube, which is inserted just under the skin, usually in the abdomen. This needs to be replaced and repositioned two to three times a week. Pumps are controlled by pressing buttons to change the dose and deliver the dose.

Using a pump is the best way of matching the body’s normal production of insulin, and can help your child get better control of their diabetes with fewer sudden drops in blood sugar. Your child may even be able to reduce the total dose of insulin needed every day as their diabetes control improves.

Insulin pumps can be particularly suitable for very young children, who are more sensitive to insulin and tend to need smaller doses, and for adolescents who can find it difficult to gain good control of their blood sugar.

If your child’s healthcare professional decides that a pump is the right choice, you will receive full training on how to help your child use the pump.
References


Ali has type 1 diabetes
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www.withyoualltheway.info
WHAT IS TYPE 1 DIABETES?

A guide for parents of newly diagnosed children

www.withyoualltheway.info

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The diagnosis

Finding out your child has type 1 diabetes can be distressing. Diabetes can be life changing for both you and your child, but it doesn’t need to limit your child’s life or their future.

Added to the emotional impact of learning your child has type 1 diabetes are a number of practical issues that may need dealing with.

We hope the information in this booklet will answer some of the questions you may have about type 1 diabetes and how to care for your child.
Coming to terms with your child’s diagnosis of type 1 diabetes

Your child’s diagnosis may have happened very quickly, or you may have suspected something was wrong for some time. It probably came as a shock to you – there is a lot of information to take in and strong emotions to deal with.

It is common for parents of children with diabetes to feel stressed, angry, upset or even guilty. This is completely normal and you are not alone.

It is important to remember that:

It’s not your fault
There is nothing you could have done to prevent your child from getting type 1 diabetes. It is not because you have done something wrong, such as allowing them to eat too many sweets.

Diabetes is manageable
Treatments are available that can help your child manage their diabetes and lead a normal life.

Support is available
Your child’s diabetes care team are there to help, and resources are available to help you and your child manage their diabetes with confidence as they grow up and develop.

Don’t be afraid to ask for help
You need support just as much as your child does. Speaking to friends or family can make things easier. It may also help to talk to other parents who are in the same situation as you, and understand how you are feeling. Patient support groups and online forums can help you to make contact with other parents. Ask your healthcare professional about local support groups. An example of a patient website is listed below.

Example of forum:
www.childrenwithdiabetes.com/
What is diabetes?

Insulin is a hormone that is made by beta cells in the pancreas. It is needed by the body to help remove glucose (a sugar) from the bloodstream and turn it into fuel for tissues that need it, such as muscle and brain.

Diabetes is characterised by a partial or complete lack of insulin production by the body.

Type 1 diabetes is known as an ‘autoimmune disorder’—this means that your child’s immune system is damaging the beta cells in their pancreas that make insulin. In type 1 diabetes the body produces little or no insulin at all. This lack of insulin results in high blood glucose, also known as hyperglycaemia.

Type 2 diabetes occurs either when the pancreas does not produce enough insulin to maintain a normal blood glucose level, or when the body is unable to effectively use the insulin that the pancreas is producing (“insulin resistance”) causing hyperglycaemia. This type of diabetes is closely linked with being overweight and is more common in older people and in some ethnic minorities, such as African-Americans, Japanese-Americans and Latinos.

Type 2 diabetes is still relatively rare in children.

Type 2 diabetes is progressive, but in many cases can be managed by healthy eating, exercise and lifestyle modifications.
How common is diabetes?

According to the World Health Organisation, around 346 million people throughout the world have diabetes.\(^9\)

1 in 5000 children have diabetes, but this varies greatly by country.\(^10\)

90% of patients with diabetes have type 2 diabetes and 10% have type 1 diabetes.\(^9\)

Type 1 diabetes is more commonly found in children than type 2 diabetes.\(^9\)
Common symptoms of type 1 diabetes are that your child may have experienced include:3,4,11

- Extreme thirst, including waking at night needing a drink
- A fruity-like smell (“ketones”) around the body – often described as similar to the smell of nail polish remover or pear drops
- Frequent urination (e.g. bedwetting), thrush or urinary tract infection
- Fatigue, weakness, drowsiness
- Sugar in the urine
- Excessive weight loss over a short period of time, for no apparent reason

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Managing your child’s diabetes

Treatment with insulin

Type 1 diabetes is a lifelong condition that is treated with injections of insulin.3,4

Injections must be given every day – multiple injections are required every day to maintain blood glucose control.4

Your child may be given more than one type of insulin, including:3,12

Long-acting insulin (also known as basal insulin) releases a steady amount of insulin throughout the day and is usually injected once or twice a day.

Rapid-acting insulin (also known as bolus insulin) can be taken around mealtimes to provide control.

Premixed insulin (which includes a long-acting and rapid-acting insulin) which is given at mealtimes.

Your child’s healthcare professional will advise you on when your child needs to take their insulin injections and how much insulin they need.4
Before you leave the hospital, a doctor or nurse will have shown you and your child how to inject insulin with the device your child has been prescribed. Refer to the instructions supplied with your child’s medication for further guidance.

The most common places to inject insulin are the abdomen (belly), upper buttocks, thighs and the back of the arms, as advised by your healthcare professional.\(^1\)\(^2\)

It is important to know that insulin is absorbed at different speeds, depending on the site it is injected. It enters the bloodstream more quickly if it is injected into the stomach and more slowly if injected into the buttocks or thighs.\(^3\)

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Monitoring blood glucose levels

To help manage your child’s diabetes, it is important that your child’s blood glucose levels are monitored regularly. As your child gets older they may feel comfortable monitoring their own blood glucose.

Food increases the blood glucose, whereas insulin and exercise lower the blood glucose.

Monitoring blood sugar tells you if your child’s insulin is working. It also shows you how physical activity and the foods your child eats are affecting their blood sugar levels.

You will probably be advised to test your child’s blood glucose four times a day – before every meal and before bedtime. At times, you may also be advised to test after a meal, after physical activity or in the night.

Blood glucose testing is carried out using a meter. A test strip is inserted into the meter. You will then need to prick your child’s finger and put a drop of blood onto the testing strip. The meter will then give you a blood glucose reading.

What is a ‘good’ reading?

Ideally you should be aiming to achieve the following long-term blood glucose targets:

- Before a meal levels should be between 4.0 and 8.0 mmol/L (72–144 mg/dL)
- 2 hours after a meal levels should be no more than 10.0 mmol/L (180 mg/dL)
- At bedtime levels should be between 7.0 mmol/L and 10.0 mmol/L (126–180 mg/dL)

These targets can be hard to achieve and it is unlikely that your child will reach these levels when they first start using insulin. If you struggle to achieve target levels over a long period of time, contact your healthcare professional.
Recognising signs of low blood glucose

Low blood glucose is also commonly referred to as hypoglycaemia. Episodes of low blood glucose are caused by an imbalance in factors which may reduce glucose – insulin and physical activity – and food or snacks that raise blood glucose.

It is important that you, your family and any other people involved in your child’s care learn to recognise the specific signs your child shows when they are experiencing hypoglycaemia. This is particularly important in children who are too young to clearly communicate how they are feeling.

You may want to encourage your child to use simple words to describe how they are feeling i.e. ‘shaky’ or ‘fuzzy’. Speak to your healthcare professional about the best way to communicate with your child about diabetes and its symptoms.

Symptoms of low blood glucose include:

- Sleepiness
- Sweating
- Dizziness or light-headedness
- Lip tingling
- Grumpiness
- Confusion
- Hunger
- Shakiness
- Nervousness
Night-time hypoglycaemia

Hypoglycaemia at night can be worrying. Signs that your child may be experiencing night-time hypoglycaemia include:\(^4,16\)

- **Sweating** – waking up with damp night clothes/sheets
- **Waking up groggy** – headache/feeling tired, irritability and confusion upon waking
- **Disturbed sleep** – crying out or nightmares during the night
- **Unexpected low blood glucose** reading upon wakening

If you suspect hypoglycaemia, it is a good idea to talk to your healthcare professional who may recommend that you test your child’s blood glucose during the night. It is a good idea to check blood glucose in the night whenever your child has had an increase in insulin dose in the evening.\(^4,16\)

Remember, there may be other causes for the above signs and sleep disturbances, so testing may help to rule out hypoglycaemia and set your mind at rest.\(^4,16\)

Night-time hypoglycaemia can be caused by:\(^3\)

- High levels of activity during day or before bedtime
- Recovery from illness
- Poor food intake at evening meal

It may also be caused by a higher than needed dose of long-acting insulin being given.

Night-time hypoglycaemia may be prevented by:\(^3\)

- Giving your child a small snack before they go to bed (e.g. a complex carbohydrate, slow release snack such as wheat cereal or porridge)
- Reducing the long-acting insulin dose

Managing hypoglycaemia

Your child’s healthcare professional will provide a diabetes management plan for your child which will include how to manage episodes of hypoglycaemia. This may include drinking fruit juice, eating a snack or sweets or taking a glucose tablet.\(^3,4,17\)

It may be a good idea to carry glucose tablets, fruit juice or sugar-coated sweets with you in case of emergencies.\(^3,4\) If your child is at school, you may also want to pack an emergency supply in their school bag.\(^3,4\)

Your child’s healthcare professional may also supply you with a glucagon kit for use in case of emergencies.\(^3,4\) They will explain how this should be used and in what circumstances.

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Mealtimes

At the time of diagnosis, your child’s diabetes care team should provide you with some guidance around management of mealtimes.

Food intake is important as it needs to be balanced with insulin doses in order to avoid low blood glucose or hypoglycaemia. Children with diabetes are advised, as any other child, to have a healthy, well balanced diet.

When your child is first diagnosed with type 1 diabetes, managing mealtimes may seem complicated. But it will get easier over time and you will soon learn about the effects of specific foods and physical activity on your child’s blood glucose levels. You may find it helps to write down your child’s diet to help track your child’s progress.

You may also have an appointment with a dietitian who can help you plan meals.

25%

PROTEIN

Meat, chicken, fish, eggs…

Do not increase blood glucose
A balanced diet

In general, children with type 1 diabetes have the same basic nutritional requirements as children without diabetes. You should try and aim for a balanced diet including fat, protein, carbohydrates and a healthy amount of fruit and vegetables. Carbohydrates result in increased blood glucose levels, while protein and fat do not.

Generally, children with diabetes are advised to eat three main meals each day with snacks in between, if necessary. You may want to consider giving your child a complex carbohydrate snack at bedtime.

Having diabetes doesn’t mean the child can’t eat any sweets as treats. They will be able to in moderation, along with appropriate insulin if necessary.

Please refer to the ‘What to eat?’ leaflet for further information.
Talking to people about your child’s diabetes

Growing up with type 1 diabetes can be hard, and your child may find it difficult to express how they are feeling. Encourage your child to talk to you about their emotions and how their diabetes is affecting them. They may also find it helps to talk to other children facing the same challenges. Patient support groups can help you make contact with other parents and children in the same position. Ask your healthcare professional about local support groups.

Children who are a little older may have a better understanding of their condition and understand the words associated with their condition and treatment. As they get older, they will be able to self-inject and take a more active role in managing their diabetes.

If you are worried about anything your child speaks to you about, contact your child’s diabetes care team – they may be able to put your mind at rest.

It is important that your child receives good support to help them manage their diabetes. Because you can’t be with your child all the time, you will need to ask other adults to help your child manage their condition, especially when they are young.

When your child is newly diagnosed with diabetes, there will be a lot of people that you will need to tell – family, friends, schools and clubs. As your child grows, changes schools, makes new friends and takes up new activities, there will be many more people that you will have to talk to about their diabetes.

Although many people will have heard of diabetes, it’s unlikely that they will really know what it means. It’s important that you have a good understanding of diabetes yourself before you try to speak to other people about your child’s diabetes. Make sure that you talk to them using language that is appropriate for their age group and understanding – for instance, a child is unlikely to understand the word ‘hypoglycaemia’ but they may understand what low blood sugar means.

Before you leave your child in the care of another adult, always make sure that they know that your child has diabetes and what they will need to do to help them manage it. Tell them about any warning signs they need to be aware of and what to do in case of hypoglycaemia or an emergency.

Let them know if your child uses words such as ‘shaky’ or ‘fuzzy’ to describe how they feel when experiencing hypoglycaemia.

Although it is your responsibility that anyone involved in your child’s care understands what is involved in helping to manage their diabetes, you are not alone. We have produced two guides that will help provide a lot of the information that teachers and other people looking after your child will need to know: ‘How to look after a child with diabetes’ and ‘What about diabetes at school?’

This information is not designed to replace the advice of a healthcare professional. Please consult your healthcare professional if you have any questions or concerns about your child’s condition.
Do not be afraid to ask for support

Caring for a child with diabetes can be challenging and stressful, especially during the early stages of care. Parents have reported hypoglycaemia as being a constant fear, especially when the child is very young and may not fully understand how actions like refusing to eat can affect their condition. It’s important that you receive support, as well as your child.

Diabetes support groups can help to connect you with other parents of children with diabetes, to share experiences and exchange ideas with people who may understand what you are going through. You can also speak to your child’s diabetes care team if you have any concerns or are having trouble coping.
References


About Novo Nordisk

This information was developed by Novo Nordisk, a global healthcare company specialising in the care of people with diabetes.

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WHAT TO EAT?
A guide to mealtime planning

www.withyoualltheway.info

At Novo Nordisk, we are changing diabetes.
In our approach to developing treatments, in our commitment to operate profitably and ethically and in our search for a cure.
**With you all the way** is a paediatric support programme created by Novo Nordisk, providing practical information on diabetes and its management for you and your child.

This material has been reviewed by a panel of experts:
- Lead Diabetes Specialist Nurse – Nicola Lewis, UK
- Paediatric Endocrinologists – Prof Thomas Danne, Germany and Dr Nandu Thalange, UK

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Healthy eating

Just because your child has been diagnosed with diabetes, it doesn’t mean that they will have to stop eating the foods they enjoy. But it’s important to remember that food choices, just like their insulin treatment, are an important part of diabetes management.

At the time of diagnosis, your child’s care team should provide you with some guidance around their diet and management of mealtimes. By giving your child a healthy diet at home and encouraging a positive attitude towards food, you can help provide them with all the nutrients they need for growth, as well as help them to manage their diabetes.

This booklet provides some basic information on meal planning and carbohydrate counting. Your child’s diabetes care team will be able to provide you with more specific advice.
Mealtimes

When your child is first diagnosed with type 1 diabetes, managing mealtimes may seem complicated. But it will get easier over time and you will soon learn about the effects of specific foods and physical activity on your child’s blood glucose levels. You may find it helps to keep a food diary to help track your child’s meals and blood glucose levels.

In general, children with type 1 diabetes have the same basic nutritional requirements as children without diabetes. No single food group provides everything your child needs to stay healthy, so you should try and aim for a balanced diet including protein, carbohydrates and fruit and vegetables.
A balanced diet

It is important to try and maintain a healthy balanced diet, along with regular exercise and taking insulin.

**VEGETABLES**
Broccoli, cabbage, cauliflower, lettuce, tomato, carrots, peas…
Do not increase blood glucose

**PROTEIN**
Meat, chicken, fish, eggs…
Do not increase blood glucose

**CARBOHYDRATE**
Potato, pasta, rice…
Lead to increases in blood glucose

50%

25%
Guide to carbohydrate counting

Getting the balance right between carbohydrate (‘carbs’) and insulin is key for maintaining good glycaemic control in children with diabetes.\(^5\)

Carbohydrate counting can help you and your child to better understand how food affects their diabetes and help to keep their blood glucose levels in check. It will also give you greater flexibility at mealtimes. Your child’s dietitian will work with you to develop a meal plan that fits your child’s needs.\(^3\)

What are carbohydrates?

Carbohydrates can be found in many of the foods we eat and are needed for energy to grow and develop. Proteins and fats also supply energy to the body, but carbohydrates have the biggest effect on blood glucose levels. Within an hour or two of eating, the majority of carbohydrate is converted into blood glucose.\(^1\)

There are three main types of carbohydrates:

- Sugar (simple carbohydrates)
- Starch (complex carbohydrates)
- Fibre (complex carbohydrates)
What foods contain carbohydrates?

Common foods that are high in carbohydrates:

<table>
<thead>
<tr>
<th>Sugar (simple carbohydrates)</th>
<th>Starch (complex carbohydrates)</th>
<th>Fibre (complex carbohydrates)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits and juices</td>
<td>Potatoes</td>
<td>Fruits and vegetables</td>
</tr>
<tr>
<td>Milk and yoghurt</td>
<td>Bread</td>
<td>Whole grain bread</td>
</tr>
<tr>
<td>Cakes</td>
<td>Pasta</td>
<td>Whole grain/oat cereals</td>
</tr>
<tr>
<td>Cookies</td>
<td>Rice</td>
<td>Lentils and beans</td>
</tr>
<tr>
<td>Some cereals</td>
<td>Peas</td>
<td>Nuts</td>
</tr>
<tr>
<td></td>
<td>Corn</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lentils and beans</td>
<td></td>
</tr>
</tbody>
</table>

Always read food labels to find out the precise carbohydrate content.

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How do I know how much carbohydrate is in food?

The nutrition labels on foods usually state the total carbohydrate count (including sugar, starch and fibre) and the amount of this that comes from sugars. Some food labels are colour-coded red, orange or green to indicate the sugar levels. Food labels may vary from country to country.

Reading food labels

<table>
<thead>
<tr>
<th>Nutrition Facts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serving Size</td>
</tr>
<tr>
<td>Amount per serving</td>
</tr>
<tr>
<td>Calories</td>
</tr>
<tr>
<td>Fat Calories</td>
</tr>
<tr>
<td>% Daily Value</td>
</tr>
<tr>
<td>Total Fat</td>
</tr>
<tr>
<td>5%</td>
</tr>
<tr>
<td>Saturated Fat</td>
</tr>
<tr>
<td>5%</td>
</tr>
<tr>
<td>Trans Fat</td>
</tr>
<tr>
<td>Polyunsaturated Fat</td>
</tr>
<tr>
<td>5%</td>
</tr>
<tr>
<td>Monounsaturated Fat</td>
</tr>
<tr>
<td>Cholesterol</td>
</tr>
<tr>
<td>0%</td>
</tr>
<tr>
<td>Sodium</td>
</tr>
<tr>
<td>6%</td>
</tr>
<tr>
<td>Total Carbohydrate</td>
</tr>
<tr>
<td>7%</td>
</tr>
<tr>
<td>Dietary Fiber</td>
</tr>
<tr>
<td>3%</td>
</tr>
<tr>
<td>Sugars</td>
</tr>
<tr>
<td>Protein</td>
</tr>
<tr>
<td>Vitamin A</td>
</tr>
<tr>
<td>Vitamin C</td>
</tr>
<tr>
<td>Calcium</td>
</tr>
<tr>
<td>Iron</td>
</tr>
</tbody>
</table>

Check the serving size: 8 Crackers
Is that how much your child is going to eat?
This number (28g) is the weight of the crackers, not the amount of carbohydrate in the serving.
You do not need to count sugars separately because they are already counted as part of the total carbohydrate.
Weighing food?

Measuring and weighing food can also be used to work out carbohydrate content of foods.\textsuperscript{6}

One carbohydrate serving = 15g

<table>
<thead>
<tr>
<th>Food</th>
<th>Carbohydrate (g)</th>
<th>Carbohydrate (servings)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 small cup of apple juice</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>1 slice of toast</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>1 tsp butter/margarine</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1 tbsp jam</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>45</strong></td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>

If the item has more than 5g of fibre, subtract half the amount of fibre from the total carbohydrate.\textsuperscript{6}

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There are two main methods of carbohydrate counting:

**Matching carbohydrate to consistent insulin dose**

This method provides a limit on the number of servings of carbohydrate to keep blood glucose levels in target range on a particular insulin dose. Every child has different needs. Your child’s dietitian will advise on how many carbohydrate servings your child should have each day.

**Changing insulin dose to match carbohydrate intake**

This method, sometimes referred to as carbohydrate counting, matches your child’s short-acting insulin dose to the amount of carbohydrates in a meal.

This allows more flexibility and choice at mealtimes, and may make things easier if you are eating out (as long as you can estimate the carbohydrate content of restaurant food). Your child’s dietitian or healthcare professional can help you to work out how much insulin is needed for the amount of carbohydrate eaten – or the insulin-to-carbohydrate ratio. It is important to know that this ratio varies with age and weight so this will change over time as your child grows up. This ratio also varies throughout the day (more insulin in the morning, less at lunch and intermediate in the evening in most children).

You may find that some types of carbohydrates cause your child’s blood glucose to rise more quickly than others. Therefore, you may need to adjust insulin doses for different types of food.
Timing of meals and snacks

Generally, children with diabetes are advised to eat three main meals each day with two or three snacks in between. You may want to consider giving your child a complex long-acting carbohydrate snack at bedtime.

The type of insulin regimen your child is on will affect the level of flexibility around mealtimes. Keeping to a routine with regular mealtimes, where the child and family sit down together to eat, has been shown to help improve glycaemic control, along with healthy eating and monitoring of food intake.

Your child’s dietitian will help you to plan timing and content of meals to fit in with your child’s needs and insulin profiles.

What if my child won’t eat?

Sometimes it can be hard to predict how much your child will eat, particularly in younger children. You may find some days they are not hungry or are feeling ill, so can’t manage their usual amount of food.

Some rapid-acting insulins can be given after meals so you can work out the dose based on what they have actually eaten.

What about school lunches?

If your child is at school, you may find it easier to provide them with packed lunches and ask them to bring home anything they don’t eat. You may also want to write down carbohydrate content for your child or school staff so they know how much carbohydrate your child is eating.

If your child would like a hot lunch at school, you may be able to get a menu in advance so you can work out how much carbohydrate is in each dish. Speak to your child’s teacher or nurse about your child’s specific needs and who will take responsibility for helping them at mealtimes.
Eating out and special occasions

Eating out

You may feel anxious about eating out as you cannot always be sure of the timing of the meal or carbohydrate content. There is no harm in not being 100% accurate all of the time. Going out for a meal is a special occasion and you should be able to relax and enjoy yourself. Many restaurants will provide nutritional information if you ask them and some restaurants show this information on their website if you want to check. Some rapid-acting insulins provide you with the option to dose when the meal arrives or immediately after eating.⁶ ⁷

Parties

At birthday parties, children with diabetes can still enjoy cake and other treats. You may however need to adjust the amount of other carbohydrates (such as potatoes, bread or pasta) your child has that day to compensate. Some activities at parties may counteract the treats eaten.⁵

SUDE İGDAR
Turkey
Sude has type 1 diabetes
References


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ANY QUESTIONS ON DIABETES?
Frequent questions and common terms
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Frequently asked questions

Here are some of the most common questions asked by parents of children with diabetes:

Why has my child got type 1 diabetes?

Your child has been diagnosed with type 1 diabetes, an autoimmune disease. This means that their immune system is damaging the beta cells in the pancreas that make insulin. Your child is therefore unable to produce enough insulin to remove sugar (glucose) from their bloodstream.

This is not because of anything you have done, and there is nothing you could have done differently to prevent your child from getting type 1 diabetes. Type 1 diabetes is not a hereditary disease but genetic factors are involved, because some people are genetically more at risk of developing autoimmune diseases, such as type 1 diabetes.

Will my other children also get type 1 diabetes?

If one of your children has type 1 diabetes, you may worry that other siblings will be affected too. They have an increased risk, but the risk is still relatively low, around 6–10%.
Is there a cure for type 1 diabetes?

Currently, there is no cure for type 1 diabetes, however, it can be managed successfully with insulin injections in combination with a healthy, balanced diet and regular physical activity.

Will my child with type 1 diabetes always have to take insulin?

Yes, your child will need to inject insulin every day for the rest of their life. This is because their pancreas cannot produce the insulin needed to remove glucose from the bloodstream. Their insulin device, whether it is a pen or pump, will provide them with the insulin they need.

What are my child’s treatment goals?

Ideally you should be aiming to achieve the following long-term blood glucose targets:

- Before a meal – levels should be between 4.0 and 8.0 mmol/L (72–144 mg/dL)
- 2 hours after a meal – levels should be no more than 10.0 mmol/L (180 mg/dL)
- At bedtime – levels should be between 7.0 mmol/L and 10.0 mmol/L (126–180 mg/dL)

These targets can be hard to achieve and it is unlikely your child will reach these levels when they start using insulin. If you struggle to achieve target levels over a long period of time, contact your healthcare professional.

How do I know when my child’s blood glucose level is too low?

If your child’s blood glucose level is low, they will have what’s known as a hypoglycaemic event. Every child will show different signs, the most common being:

- Hunger
- Nervousness
- Shakiness
- Sweating
- Lip tingling
- Dizziness or light-headedness
- Sleepiness
- Confusion
- Grumpiness

At first it may be hard to recognise signs but you and your family will get to know them over time. If you are unsure, test their blood glucose. If it is below 4.0 mmol/L or 72 mg/dL, they are experiencing hypoglycaemia.

Should blood glucose levels be kept high to avoid low blood glucose or hypoglycaemic events?

No. It is harmful to your child if blood glucose levels remain high long-term. Prolonged high blood glucose can lead to life-threatening conditions. When there is a shortage of insulin in the blood, the body cannot use all the glucose available and instead breaks down fat for energy, producing toxic chemicals called ketones. High levels of ketones, a condition called diabetic ketoacidosis (DKA), is toxic to the body and could lead to coma. Although hypoglycaemia events can be scary, they are manageable. Some children experience severe hypoglycaemia. If severe hypoglycaemic events occur regularly, speak to your healthcare professional.
Does having diabetes mean my child can’t eat sweet/sugary foods?

Having diabetes doesn’t mean they can’t eat any sweets as treats, but you will need to learn to balance food intake with insulin. When you learn how your child’s body responds to eating and taking insulin they will be able to have sweets in moderation, along with the appropriate insulin and regular activity.

Can my child still do sports?

Yes, exercise is recommended for general health benefits and to help maintain blood glucose control. It is important to be aware that exercise reduces blood glucose levels, so your child may need to have a snack before exercise or alter their insulin dose to help prevent low blood glucose or a hypoglycaemic event.

Can we still go on holiday abroad?

Having diabetes will not prevent you from going away on holiday, but it will require some extra planning. For instance, you will need to make sure you have enough insulin for your stay and that your accommodation has a fridge to store it in (if you are travelling to a hot climate). You will also need to speak to your child’s healthcare professional and get a letter from them to fly with your child’s medication.
Diabetes Dictionary

When you find out your child has diabetes, there will be a lot of information to take in, which may use words you are not familiar with.

Here is a guide to some of the most common terms used when talking about diabetes.
**Autoimmune disease**
A disorder in which the body attacks its own cells. In type 1 diabetes, the body mistakenly damages beta cells in the pancreas that make insulin, resulting in high blood glucose.

**Basal insulin**
See ‘Long-acting insulin’.

**Beta cells**
Cells in the pancreas that make insulin.

**Blood glucose**
The concentration of sugar in the bloodstream – the body’s main source of energy.

**Bolus insulin**
See ‘Rapid-acting insulin’.

**Carbohydrate**
Type of food that provides the body with energy. Carbohydrates are mainly sugars and starches that are broken down into glucose, a simple sugar that the body’s cells use as fuel.

**Diabetic KetoAcidosis (DKA)**
A serious life-threatening condition, where the body is unable to use the blood glucose for energy because of lack of insulin. So the body starts to burn fat as fuel instead. This breakdown of fat leads to the production of ketones and a build-up of acids. Nausea and vomiting are typical symptoms. Checking ketones in the urine blood can help to distinguish DKA from other causes.

**Fasting blood glucose (FBG)**
This is the blood sugar level after not eating anything for at least 8 hours. This test is often used to help diagnose diabetes.

**Glucagon**
A hormone that raises the levels of blood glucose in the body by releasing stored glucose (glycogen) from the liver. Injectable glucagon may be given when a child has episodes of severe hypoglycaemia.

**HbA1c**
This is a blood test to measure blood glucose to estimate levels of control over the past 2–3 months and is a marker of the risk of developing complications. HbA1c is formed when glucose and haemoglobin in the blood come together. When glucose sticks to haemoglobin, the haemoglobin becomes ‘glycosylated’, also known as HbA1c or A1c. Levels in healthy individuals usually go up to 5–9% (equivalent to 7.4 mmol/L)

**Hormone**
A chemical released in the body which helps to control functions in other cells in the body. Insulin is a hormone which helps cells to remove blood glucose from the bloodstream so other cells can use it as fuel.

**Hyperglycaemia**
This term is used for high blood glucose or sugar. This occurs in diabetes when there is a lack of insulin so glucose is not removed from the bloodstream.

**Hypoglycaemia**
This term is used for low blood glucose or sugar. Hypoglycaemia can be triggered by taking too much insulin, inadequate food intake or by participating in unusually strenuous or prolonged activity or exercise.

**Insulin-dependent diabetes**
This term was used in the past to describe type 1 diabetes.

**Juvenile onset diabetes**
This term was used in the past to describe type 1 diabetes.
Ketones
Chemicals produced when there is a shortage of insulin in the blood and the body breaks down body fat for energy. High levels of ketones can lead to diabetic ketoacidosis and coma.9

Long-acting insulin
This type of insulin is usually given once or twice a day to provide a constant supply of insulin.4

Monogenic diabetes
This is a rare type that is often misdiagnosed as type 1 or type 2 diabetes. Different types of monogenic diabetes include neonatal and MODY (maturity onset diabetes in the young). The body has more than 30,000 individual genes. Mutations in more than 20 genes have been linked to monogenic diabetes.

Non-insulin dependent diabetes
This term was used in the past to describe type 2 diabetes.9

Oral AntiDiabetics (OAD)
Oral medications that help to control blood glucose (e.g. metformin). They are generally used for type 2 diabetes, sometimes in addition to insulin.11

Pancreas
An organ in the body that stretches across the back of the abdomen behind the stomach. The pancreas is where insulin and digestive enzymes are made.9

Post-Prandial BLOOD Glucose (PPG)
The level of blood glucose measured 1 to 2 hours after eating.9

Prefilled (disposable) insulin pen
This type of pen comes with the insulin already in it. These pens are thrown away when all the insulin doses have been used.12

Premixed insulin
A mixture of a rapid-acting insulin and a long-acting insulin, usually injected before breakfast and dinner.4

Pump
A device that delivers insulin via a tube that is inserted under the skin in the abdomen.4

Rapid-acting insulin
This type of insulin acts quickly. It is typically given around mealtimes to help manage blood glucose levels.4

Reusable (durable) insulin pens
This type of pen requires cartridges to be inserted. When all the doses are used, the cartridges are thrown away and replaced.12

Type 1 diabetes
This type of diabetes occurs when the body produces little or no insulin at all. It is caused by an autoimmune disorder, in which the body attacks the beta cells in the pancreas that make insulin. Type 1 diabetes is the most common form of diabetes in children.13

Type 2 diabetes
This type of diabetes occurs when not enough insulin is being made by the beta cells in the pancreas or the body stops using insulin properly. This type is more commonly diagnosed later in life.9
ALEKSEY EVSTRATOV
Russia
Aleksey has type 1 diabetes
Key things you need to learn/do following your child’s diagnosis of type 1 diabetes

Please ensure that you feel confident in the following aspects of your child’s diabetes and have informed the relevant people of your child’s diagnosis. If you have any questions or concerns, speak to your healthcare professional.

<table>
<thead>
<tr>
<th>Injections</th>
<th>✔</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure you feel confident injecting your child with insulin and know what dose is required and when</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blood glucose monitoring</th>
<th>✔</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure you feel confident using the blood glucose meter and know when to test and what the results mean</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meal planning</th>
<th>✔</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure you understand how to balance food intake with insulin doses</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Managing low blood glucose</th>
<th>✔</th>
</tr>
</thead>
<tbody>
<tr>
<td>You will need to ensure that you have a supply of sugary snacks or fruit juice at home to help manage episodes of low blood glucose (hypoglycaemia). Your child should also carry supplies with them at school or away from home (e.g. Hypobox)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contacts</th>
<th>✔</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure you have a phone number for your doctor and nurse. It is important to know who to contact in an emergency – you or your child should make sure to have this number with you at all times</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who to tell</th>
<th>✔</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure you inform anyone involved in your child’s care about their diagnosis of type 1 diabetes:</td>
<td></td>
</tr>
<tr>
<td>- Nursery assistants/caregivers</td>
<td></td>
</tr>
<tr>
<td>- School teachers</td>
<td></td>
</tr>
<tr>
<td>- Other members of your family</td>
<td></td>
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</tbody>
</table>

The ‘What about diabetes at school?’ information leaflet can help you to explain your child’s condition and their needs to teachers
### Important information

<table>
<thead>
<tr>
<th>First appointment</th>
<th>Doctor’s name: Location:</th>
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</thead>
<tbody>
<tr>
<td>Date:</td>
<td>Time:</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Contacts</th>
<th>Nurse: Tel:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor:</td>
<td>Tel:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Insulin regimen</th>
<th>Timing of doses:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulin/device:</td>
<td></td>
</tr>
</tbody>
</table>
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